

# **2022 Transportation Conformity**

## **Appendix 12.3: Applicable Federal Register Excerpts and Other Documents**

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 51 and 93**

[FRL-5871-4]

RIN 2060-AG16

**Transportation Conformity Rule Amendments: Flexibility and Streamlining**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** Today EPA promulgates a clarified and more flexible transportation conformity rule. The conformity rule requires that transportation plans, programs, and projects conform to state air quality implementation plans (SIPs) and establishes the criteria and procedures for determining whether or not they do. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the national ambient air quality standards.

The conformity rule changes promulgated today result from the experience that EPA, the Department of Transportation (DOT), and state and local air and transportation officials have had with implementation of the rule since it was first published in November of 1993. While these changes clarify the rule and in some cases offer increased flexibility, they will not result in any negative change in health and environmental benefits.

Today's rule gives state and local governments more authority in selecting the performance measures used as tests of conformity and more discretion when a transportation plan does not conform to a SIP. For example, the rule allows motor vehicle emissions budgets in a submitted SIP to be used to determine conformity instead of the "build/no-build" test, and rural areas can choose among several conformity tests to address the time period after that covered by the SIP.

**EFFECTIVE DATE:** September 15, 1997.

**ADDRESSES:** Materials relevant to this rulemaking are contained in Docket No. A-96-05. The docket is located in room M-1500 Waterside Mall (ground floor) at the Environmental Protection Agency, 401 M Street SW., Washington, DC 20460. The docket may be inspected from 8 a.m. to 5:30 p.m., Monday through Friday, including all non-government holidays. For information on electronic availability see Supplementary Information.

**FOR FURTHER INFORMATION CONTACT:** Meg Patulski, Transportation and Market Incentives Group, Regional and State Programs Division, U.S. Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, MI 48105, patulski.meg@epamail.epa.gov. (313) 741-7842.

**SUPPLEMENTARY INFORMATION:**

**Regulated Entities**

Entities potentially regulated by the conformity rule are those which adopt, approve, or fund transportation plans, programs, or projects under title 23 U.S.C. or title 49 U.S.C. Regulated categories and entities include:

Category	Examples of regulated entities
Local government .....	Local transportation and air quality agencies.
State government .....	State transportation and air quality agencies.
Federal government ..	Department of Transportation (Federal Highway Administration and Federal Transit Administration).

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be affected by this rule. This table lists the types of entities that EPA is now aware could potentially be regulated by the conformity rule. Other types of entities not listed in the table could also be regulated. To determine whether your organization is regulated by this action, you should carefully examine the applicability requirements in § 93.102 of the conformity rule. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

**Electronic Availability**

The final rule is also available electronically from the EPA internet web site. Users are able to access and download files on their first call using a personal computer according to the following information:

*Internet Web Sites*

<http://www.epa.gov/docs/fedrgstr/EPA-AIR/>  
(either select desired date or use Search feature)

Or

<http://www.epa.gov/OMSWWW/>  
(look in What's New or under the Conformity file area)

The electronic version of this final rule should be available today on any of the above-listed sites. Please note that due to differences between the software used to develop the document and the software into which the document may be downloaded, changes in format, page length, etc. may occur.

The contents of this preamble are listed in the following outline:

- I. Background on Transportation Conformity
- II. Replacement of Build/No-build Test With Submitted SIPs
- III. Other Comments on Conformity Tests
- IV. Conformity Tests for Areas That Are Not Required to Submit SIPs
- V. Rural Nonattainment and Maintenance Areas
- VI. Mismatch in SIP/Transportation Plan Timeframe
- VII. Non-federal Projects
- VIII. Deadline for Use of Network Models and Affected Areas
- IX. Content of Network Modeling Requirements in Serious and Above Ozone and CO Areas
- X. Adding Non-Exempt Projects to the Plan/TIP Without Regional Analysis
- XI. Consequences of SIP Disapproval
- XII. Traffic Signal Synchronization
- XIII. Conformity SIPs
- XIV. Hot-spot Tests
- XV. TCM Flexibility
- XVI. Conformity and the Proposed NAAQS Revisions
- XVII. Minor Changes to the Rule
- XVIII. Administrative Requirements

**I. Background on Transportation Conformity**

Today's action amends the transportation conformity rule, "Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act" (58 FR 62188, November 24, 1993). Required under section 176(c) of the Clean Air Act as amended in 1990, the transportation conformity rule established the criteria and procedures by which the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and metropolitan planning organizations (MPOs) determine the conformity of federally funded or approved highway and transit plans, programs, and projects to state air quality implementation plans (SIPs). Conformity ensures that transportation plans, programs, and projects do not produce new air quality violations, worsen existing violations, or delay timely attainment of national ambient air quality standards (NAAQS). According to the Clean Air Act, federally supported activities must conform to the implementation plan's

purpose of attaining and maintaining these standards.

Since publication of the transportation conformity rule in November 1993, EPA, the Department of Transportation (DOT), and state and local air and transportation officials have had considerable experience implementing the criteria and procedures in the rule. This experience has led to the streamlining, clarification, and new opportunities for flexibility found in today's rule, which is the third of a series of amendments to the transportation conformity rule. In each case, the amendments were needed to clarify ambiguities, correct errors, or make the conformity process more logical and feasible.

The first set of amendments was published as an interim final rule on February 8, 1995 (60 FR 7449), and was finalized on August 7, 1995 (60 FR 40098). The first set of amendments aligned the dates of conformity lapses (i.e., halting conformity determinations for new federally funded highway/transit projects) due to SIP failures with the application of Clean Air Act highway sanctions for certain ozone areas and all areas with disapproved SIPs with a protective finding (defined below in section XI.).

The second set of amendments was proposed on August 29, 1995 (60 FR 44790), and was finalized on November 14, 1995 (60 FR 57179). The second set of amendments aligned the date of conformity lapses with the date of application of Clean Air Act highway sanctions for any failure to submit or submission of an incomplete control strategy SIP; extended the grace period before which areas must determine conformity to a submitted control strategy SIP; established a grace period before which transportation plan and program conformity must be determined in newly designated nonattainment areas; and corrected the nitrogen oxides (NO<sub>x</sub>) provisions of the transportation conformity rule to be consistent with the NO<sub>x</sub> requirements of the Clean Air Act and previous commitments made by EPA.

The second set of amendments also allowed any transportation control measure (TCM) from an approved SIP to proceed during a conformity lapse, although EPA stated that it did not intend to approve SIPs containing TCMs that have not been coordinated through the transportation planning process, as required by 23 CFR part 450 and 49 CFR part 613. The Clean Air Act and the Intermodal Surface Transportation Efficiency Act require that an integrated transportation/air quality planning

process be used to identify effective TCMs and ensure their funding sources.

The Notice of Proposed Rulemaking for today's rule was published in the **Federal Register** on July 9, 1996 (61 FR 36111). This proposal was undertaken in response to several issues raised by conformity implementers and other interested parties. EPA worked closely with conformity stakeholders in developing the proposal, and had input from the National Governors' Association (NGA), the Environmental Council of States (ECOS), state DOTs, state environmental agencies, MPOs, environmentalists, industry groups, other public interest groups, and DOT. In 1995, meetings to discuss potential amendments to the conformity rule were held by NGA and ECOS as well as the EPA. EPA developed draft regulatory language in response and sought comment from stakeholders.

The proposal's comment period ended September 9, 1996. EPA held a public hearing for this proposal on August 6, 1996. EPA received more than 50 comments from a variety of interests, including MPOs, state and local air quality agencies, state DOTs, NGA, and environmentalists. Copies of comments in their entirety can be obtained from the docket for this rule (see **ADDRESSES**). The docket also includes a complete Response to Comments document for this rule.

Since 1993, the transportation conformity rule has been included in 40 CFR part 51 and largely duplicated in 40 CFR part 93. In order to streamline the CFR and eliminate this duplication, the only section of today's conformity rule that remains in 40 CFR part 51 is § 51.390, which requires a conformity SIP revision. Part 51 is entitled, "Requirements for Preparation, Adoption, and Submittal of Implementation Plans." The remainder of the conformity rule is included in 40 CFR part 93, which is entitled, "Determining Conformity of Federal Actions to State or Federal Implementation Plans."

## **II. Replacement of Build/No-Build Test With Submitted SIPs**

### *A. Description of Final Rule*

Today's action finalizes the proposal to eliminate the build/no-build test and other emission reduction tests once a control strategy SIP or maintenance plan has been submitted to EPA and EPA has had 45 days to review the SIP submission and the adequacy of its motor vehicle emissions budget(s) for conformity purposes. This final rule also includes regulatory text from the proposal's preamble which establishes

the minimum criteria that must be satisfied in order for EPA to find a submitted motor vehicle emissions budget adequate for transportation conformity purposes. EPA clarifies today that submitted SIPs must already meet these minimum criteria in order to be approved; EPA is not imposing any new requirements for submitted SIPs.

EPA described the minimum adequacy criteria in the preamble to the proposal (61 FR 36114, July 9, 1996), and they are outlined as follows. In accordance with this final rule, an area's submitted SIP must be endorsed by the Governor (or his/her designee) and subject to a public hearing in order for EPA to find the submitted SIP adequate. Prior to submitting the SIP, consultation between federal, state, and local agencies must occur. SIP development must be documented and any technical support information needed to review the adequacy of the SIP must be submitted to EPA. In addition, any concerns stated by EPA must be addressed before the SIP is submitted. The emissions budget(s) must be clearly identified and precisely quantified. When considered with point, area, and mobile sources, the emissions budget(s) must be consistent with applicable requirements for reasonable further progress (RFP), attainment, or maintenance, depending upon the particular SIP submission. The SIP budget(s) must be consistent with the area's emissions inventory for all sources and a clear relationship among the budget(s), control measures and emissions inventory must be shown.

In addition, submitted SIPs must explain and document any changes to previously submitted motor vehicle emissions budgets and control measures; impacts on point and area source emissions; any changes to established safety margins; and reasons for the changes, including the basis for any changes related to emission factors or estimates of vehicle miles traveled (VMT). EPA is defining safety margin in this final rule to be the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable Clean Air Act requirement for RFP, attainment, or maintenance.

EPA will interpret these adequacy criteria to mean that if a submitted SIP's emissions budgets rely upon additional control measures to demonstrate RFP, attainment, or maintenance, such new control measures must be specified in the SIP submission. The submitted SIP would need to quantify the emissions impacts of any new control measures in its revised SIP, and at a minimum,

include commitments by appropriate agencies for adoption and implementation schedules, in addition to draft regulations or other relevant documents. These are minimum criteria for adequacy of emissions budgets for conformity purposes; an approvable SIP must have adopted and enforceable control measures.

Prior to EPA determining the adequacy of a submitted SIP budget, EPA will also review documentation from the state's public comment hearing on the SIP submission and the state's responses to the public comments received. This documentation is currently required to be included in the SIP package when it is submitted to EPA for its review. EPA will send a letter to the state documenting EPA's finding of adequacy or inadequacy, including EPA's consideration of public comment.

The conformity adequacy review is separate from EPA's completeness review of a submitted SIP for purposes of SIP processing. In addition, EPA's 45-day adequacy review should not be used to prejudge EPA's ultimate approval or disapproval of the SIP. As stated in the proposal, EPA cannot ensure that a submitted SIP is consistent with RFP, attainment, or maintenance until EPA has completed its formal review process and the SIP has been approved or disapproved through notice-and-comment rulemaking. Although the minimum criteria for adequacy allow EPA to make a cursory review of the submitted motor vehicle emissions budget for conformity purposes, EPA recognizes that other elements must also be in the SIP for it to ultimately be approved. Therefore, a budget that is found adequate in the 45-day review period could later be disapproved when reviewed with the entire SIP submission.

EPA will find a submitted motor vehicle emissions budget inadequate if the submitted budget does not meet the minimum criteria. However, the criteria included in the conformity rule are not intended to be a comprehensive definition of an adequate SIP for SIP approval purposes.

EPA also clarifies that the 45-day adequacy review period begins upon the receipt of the SIP submission in the EPA regional office.

Areas that submit SIPs after the effective date of this final rule will be able to use their SIP budget(s) within 45 days of submission or sooner if EPA finds them adequate. Areas that submit SIPs prior to the effective date of this final rule can use those SIPs according to the requirements of § 51.448(a)(2)/§ 93.128(a)(2) as amended on November 14, 1995 (60 FR 57179). According to

these sections, areas can use submitted SIP budgets beginning 90 days after submission unless EPA finds them inadequate; areas can use them earlier if EPA declares them adequate.

EPA's 90-day review period that is described in § 51.448(a)(2)/§ 93.128(a)(2) of the previous conformity rule may have used different standards for adequacy than are being outlined in this final rule, because under the previous rule the build/no-build test applied in addition to the submitted budget. SIPs that EPA believed adequate under that rule may not be adequate if they are the sole test of conformity. As a result, EPA may use the adequacy criteria of this final rule to re-examine SIPs that were submitted before this final rule and have not yet been approved. EPA intends to complete this re-examination within 45 days after the effective date of this final rule. During this time, areas will continue using their SIPs that have been submitted for more than 90 days; EPA's possible re-examination will not delay or in any way interfere with areas determining conformity unless EPA finds the SIP inadequate.

#### *B. Rationale and Response to Comments*

Most commenters agreed that the emission reduction tests should not be required once a SIP is submitted. The majority of commenters agreed that compared to the budget test, the value of the build/no-build test is limited. Commenters believed that the proposed flexibility would streamline conformity and use state and local resources more efficiently. Most commenters also supported the proposal's reduction of the adequacy review period for a submitted SIP from 90 to 45 days.

However, some commenters were concerned that submitted budgets may not be able to fully satisfy the purpose of the emission reduction tests, which is to ensure that annual emissions will be reduced and/or that violations will not be created or worsened (see Clean Air Act sections 176(c)(3)(A)(iii) and (c)(1)(B)). Specifically, some commenters stated that the proposed EPA review period would not be sufficient to ensure the adequacy of submitted budgets because the proposal did not establish any objective criteria for adequacy in the regulatory language, or provide an opportunity for public comment on EPA's adequacy finding. Some argued that the absence of adequacy criteria for submitted budgets could lead to the submission of inflated budgets (not based on credible, quantifiable attainment demonstrations) for the convenience of determining conformity. Commenters felt that although these SIPs would ultimately

not prove acceptable, they could allow projects to proceed during EPA's rulemaking to disapprove the SIP. This could also lead to delays in attainment. Another commenter was concerned that the lack of objective criteria for adequacy in the rule would make EPA more vulnerable to political pressure to approve inadequate budgets.

EPA agrees that if submitted budgets are to replace the build/no-build test as the primary measure of conformity, the criteria by which EPA will judge their adequacy must be clearly articulated in the rule. EPA has done so in this final action, and these criteria are those described in the preamble to the proposal. In addition, submitted SIPs must already meet these criteria in order for EPA to ultimately approve them. Since the criteria included in this final rule are the same as those described in the proposal and thus subjected to public comment, EPA does not believe a reproposal is necessary prior to adding the criteria to the regulatory language.

EPA also agrees that the public should be given the opportunity to comment on the adequacy of a submitted SIP. Some commenters suggested requiring public notice of submitted budgets and a 60-day period during which the public could file objections and present arguments to EPA for its consideration in its adequacy review. However, because the state already holds a public hearing on the draft SIP before submitting it to EPA, EPA believes the public has sufficient opportunity to comment at the state level on the adequacy of the budgets contained in the SIP. EPA believes the rule now addresses commenters' concerns by requiring EPA to review and consider the compilation of public comment that the state is already required to include with any SIP submission. EPA will document its consideration of such comments in the letter to the state indicating the adequacy of the submitted budget(s).

Commenters also expressed concern that EPA is not even obligated to determine adequacy, since a submitted budget can be used even if EPA has not determined adequacy within the 45-day review period. However, EPA is committed to helping ensure that conformity and future transportation investment decisions are made using the best possible SIPs, and EPA intends to review all submitted SIPs within the 45-day period.

Some commenters stated that EPA may not establish a motor vehicle emissions budget as a legally enforceable obligation without following the notice and comment procedures of the Administrative

Procedure Act (APA). EPA believes that it is appropriate not to provide notice and comment for adequacy determinations for submitted SIPs, since these determinations are only administrative reviews and not substantive rules. When EPA reviews a SIP for completeness, EPA does not perform a notice-and-comment rulemaking. EPA believes that determining adequacy is more similar to completeness review than a SIP approval action, in that adequacy determinations are merely administrative applications of established criteria to emissions budgets. For these reasons, EPA is not requiring notice and comment for its 45-day adequacy review period. However, EPA believes the commenters' concerns relating to public review under the APA are addressed because EPA has established the criteria for determining adequacy through this final rule, which has gone through APA notice and comment procedures. In addition, EPA is ensuring that public comment on adequacy of individual budgets is considered through review of comments submitted to the state.

In addition to specific criteria for adequacy, some commenters wanted to limit the grandfathering of new projects found to conform on the basis of a submitted SIP's budget. A "grandfathered" project can proceed without further conformity determinations (see § 93.102(c) for more details). Transportation projects are currently grandfathered after a National Environmental Policy Act (NEPA) document is approved and a project-level conformity determination is made. In order for a project-level conformity determination to occur, a conforming plan and TIP must be in place at the time of the determination.

Under the commenters' scenario, projects would only be grandfathered when a project agreement authorizing federal funds pursuant to 23 USC 110 or 49 USC 5309 has been executed. This would grandfather projects later in the transportation planning process than is currently the case. Changing the grandfathering in this manner would make it more likely that local and state planners could halt a project(s) if the SIP is ultimately disapproved. The commenters were concerned that a submitted SIP's budget may not contain the necessary emission reductions for demonstrating conformity in the future. If EPA declared a budget adequate during the 45-day review period but later disapproved it, commenters were concerned that an area may have difficulty demonstrating conformity in the future if all the projects planned

according to that budget are grandfathered.

EPA believes that current grandfathering requirements are appropriate and should not be changed. EPA has always believed that there should only be one point in the transportation planning process at which a project-level conformity determination is necessary. This maintains stability and efficiency in the transportation planning process.

Completion of the NEPA process is the step EPA has selected historically for grandfathering transportation projects for several reasons. Making a determination under NEPA is clearly an action to support or approve an activity, and the Clean Air Act does not allow a federal agency to take such an action without a conformity determination. In addition, an air quality analysis is already required by NEPA. To require this analysis again at a later date may create redundancies in the transportation process and cause state and local resources to be used less efficiently.

EPA is partially addressing these stakeholder concerns by maintaining adverse conformity consequences in the case of SIP disapproval without a protective finding. As described in section XI. of this preamble, today's final rule does not allow any new projects to be added to the plan or TIP beginning 120 days after a SIP is disapproved without a protective finding. In cases of a SIP disapproval without a protective finding, areas would only be able to advance projects in the first three years of the currently conforming plan and TIP. Therefore, although EPA is not changing the grandfathering of projects after a SIP is submitted, there are real consequences if a submitted SIP is ultimately found to have emissions budgets that will not result in reasonable further progress or attainment. In addition, EPA believes that with the adequacy requirements added to the rule and the review of submitted public comments, it is less likely that budgets which EPA finds adequate will ultimately be disapproved.

### III. Other Comments on Conformity Tests

#### A. Implementation of Budget Test: Submitted vs. Approved Budgets

Some commenters stated that EPA should allow submitted SIP budgets to override those in approved SIPs for years directly addressed by the approved SIP. These commenters believed that newly submitted SIPs often provide a more realistic picture of

the future than approved SIPs. Some believed that, unlike approved SIPs, newly submitted SIPs are more accurate because they are based on an area's latest planning assumptions.

Although EPA acknowledges that using updated budgets may be preferable, EPA does not believe that it is legal to allow a submitted SIP to supersede an approved SIP for years addressed by the approved SIP. As stated in the proposal, Clean Air Act section 176(c) specifically requires conformity to be demonstrated to approved SIPs. SIP revisions that EPA has approved under Clean Air Act section 110 are enforceable and cannot be relieved by a submission, even if that submission utilizes better data. Approved SIP budgets have also been subject to full technical review and public comment and should not be replaced by budgets that have not yet been fully analyzed and reviewed. Some commenters suggested that EPA should institute another adequacy review process (similar to that being finalized today for submitted SIPs) which could ensure that submitted SIPs are consistent with attainment or maintenance. However, this type of process does not resolve the legal prohibition on overriding approved SIPs, and it would not be possible to determine whether submitted SIPs are consistent with attainment or maintenance without EPA's full public review and approval process. Although submitted SIPs cannot override approved SIPs for years addressed by the approved SIP, EPA did clarify in the proposal and this final rule that submitted SIPs can be used for years later than those addressed by an approved SIP.

Others suggested that, if EPA could not allow submitted SIPs to override approved SIPs, then EPA should require conformity determinations to be done using the same models and inputs that were used in the approved SIP. However, Clean Air Act section 176(c)(1)(B)(iii) requires that conformity determinations "be based on the most recent estimates of emissions, and such estimates shall be determined from the most recent population, employment, travel, and congestion estimates." As stated in the preamble to the 1993 conformity rule (58 FR 62210), it is expected that over time conformity determinations will deviate from the SIP's assumptions regarding VMT growth, demographics, trip generation, etc. Conformity is intended to ensure that a SIP's emission targets are achieved given the most recent planning assumptions. If conformity cannot be demonstrated using the most recent

planning assumptions, either the SIP or the transportation plan and TIP must be adjusted.

Even though an approved SIP can be changed if another SIP is submitted and approved by EPA, some commenters believed that EPA's review and approval of submitted SIPs would not occur in a timely manner. The commenters urged EPA to conduct expedited review and approval of submitted SIPs (e.g., 6- to 12-month timeframe), especially those that are revisions of the currently approved SIP.

EPA recognizes these stakeholder concerns and has already made expedited approval processes, such as parallel processing, available to states. In parallel processing, states can develop a draft SIP revision with close EPA involvement. If all approvability issues are resolved prior to submitting the SIP to EPA, the state and EPA then request public comment on the SIP at the same time. If no adverse comment is received, EPA then finalizes approval as soon as possible after formal state adoption and submittal, as long as no substantive changes have occurred and the package is still approvable. Parallel processing is encouraged when SIP revisions are straightforward, especially when assumptions are updated and new, significant control measures are unnecessary. In addition to parallel processing, EPA can use direct final rulemaking to approve SIPs more quickly in cases where EPA does not expect adverse comment.

#### *B. VMT Comparison as Substitute for Budget Test*

A few commenters recommended that areas be given the option to use a VMT comparison test instead of the budget test, especially if data sets and modeling used in the SIP are different than those used in the plan and TIP. These commenters argued that the present budget test's analytical inconsistencies could be eliminated if areas were allowed to replace the budget test with a comparison of the projected vehicle travel activity in the plan/TIP and that assumed in the SIP. If the projected VMT in the plan/TIP is consistent with that in the SIP, the commenters argued that Clean Air Act conformity requirements would be met.

In order to meet the "VMT test," commenters said that areas would have to demonstrate that: a) vehicle trips, VMT, and number of vehicles projected in the proposed plan/TIP have not exceeded these projections in the SIP; and, b) the transportation system in the proposed plan and TIP, and vehicle speed distributions on that system, are found through the consultation process

to be in reasonable agreement with the system and speed distributions assumed in the SIP. Commenters argued that this idea is supported by Clean Air Act section 176(c)(2)(A) which says that "emissions expected from the implementation of plans and programs are consistent with estimates of emissions from motor vehicles and necessary emissions reductions contained in the applicable implementation plan \* \* \*" If an MPO's "most recent population, employment, travel and congestion estimates" (section 176(c)(1)) do not exceed estimates of these parameters in the SIP, the commenters believe that the transportation community has fulfilled its Clean Air Act requirements.

EPA believes that this is not the correct legal interpretation of Clean Air Act section 176(c)(2)(A), and consequently, a VMT-based test is not a viable substitute for the budget test. As cited by the commenters, section 176(c)(2)(A) emphasizes that the projected emissions from the plan and TIP must be consistent with emissions targets in the SIP. Emissions estimates depend on numerous factors other than VMT, such as travel speed, fuels, inspection and maintenance (I/M), or other technological factors, and thus emissions could decrease even where VMT increases or vice-versa. Therefore, a VMT-based test could possibly make it more difficult for some areas to demonstrate conformity. For example, an area with high VMT growth could have difficulty passing a VMT-based test, even though it might have a cleaner fleet of vehicles resulting from electric vehicles or a successful I/M program. For all of these reasons, EPA is not offering a VMT-based test in this final rule.

### **IV. Conformity Tests for Areas That Are Not Required to Submit SIPs**

#### *A. Description of Final Rule*

Today's action finalizes many of the options that were proposed for demonstrating conformity in areas that are not required to submit control strategy SIPs. The July 9, 1996 proposal outlined three options for determining conformity in these types of areas: (1) create a budget through the SIP process and use the budget test; (2) create a default budget based on clean data in areas that have achieved the standard but have not submitted a maintenance plan; or (3) use either the build/no-build or "no-greater-than-1990" emission reduction test. Today's final rule keeps the first and third proposed options, while limiting the second option.

Areas that are not required to submit control strategy SIPs include: marginal and below ozone nonattainment areas, not classified carbon monoxide (CO) nonattainment areas, and moderate CO nonattainment areas with a design value of 12.7 ppm or less. In addition, some moderate and above ozone nonattainment areas that are meeting the NAAQS are not required to submit control strategy SIPs. (See May 10, 1995, memorandum from John S. Seitz, Director of the Office of Air Quality Planning and Standards, to Regional Air Division Directors, entitled "Reasonable Further Progress, Attainment Demonstrations, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard" for more information about this small number of ozone areas.)

Under the November 1993 transportation conformity rule, all areas that are not required to submit control strategy SIPs had two options for demonstrating conformity. They could choose between satisfying both emission reduction tests (i.e., the build/no-build and less-than-1990 tests) or submitting a SIP and using the budget test. Areas that decided to choose the latter option, under the former conformity rule, were required to perform the build/no-build and less-than-1990 tests until the submitted SIP was approved.

According to this final rule, all areas that are not required to submit control strategy SIPs can demonstrate conformity by using either the build/no-build test or no-greater-than-1990 test (i.e., emissions must be equal to or less than 1990 emissions); or, by submitting a SIP through the regular SIP process and using the budget test 45 days after submittal, provided EPA has not found the submitted SIP inadequate. The SIP budget could be based on a modeled attainment demonstration or, for areas with clean data (defined in the conformity rule as complete, quality-assured monitoring data demonstrating attainment in accordance with 40 CFR part 58), the SIP budget could be based on the motor vehicle emissions in the most recent year of clean data.

In addition to these options, moderate and above ozone nonattainment areas which EPA declares through rulemaking to be "clean data areas" under the May 10, 1995 policy could request that a budget based on the level of motor vehicle emissions in the most recent year of clean data be established through that EPA rulemaking process. See the May 10, 1995 memorandum cited above for more information about these types of areas.

## B. Discussion of Comments and Rationale

### 1. Default Budgets for Clean Data Areas

Most commenters supported the proposed options for demonstrating conformity in areas that are not required to submit control strategy SIPs. However, some questioned the enforceability of a "default" budget for clean data areas because such a budget would be created through interagency consultation instead of the SIP process. Another commenter argued that state air quality agencies should not be allowed to create default budgets without EPA approval and public comment. The commenter believed that this would be the equivalent of adopting an element of the SIP, and it should be subject to the conformity rule's public participation requirements and approval by EPA.

After further consideration, EPA agrees that budgets must be established through rulemaking; an area cannot adopt a default budget without EPA review and public comment. As a result, if clean data areas choose to create a budget, the SIP process must be used (through which they could establish a budget based on clean data); or, if they are subject to the May 10, 1995 memo, they could establish a budget through the EPA rulemaking process described in the memo. Of course, clean data areas could also choose to use the emission reduction test flexibility already described above. Because both the SIP and rulemaking processes provide for EPA review and an opportunity for public comment, EPA believes that the commenters' concerns are addressed in the clean data option of this final rule.

EPA does not believe that areas choosing the rulemaking option will have any additional administrative burden in submitting clean data budgets for EPA review. Furthermore, since public comment is already a part of the rulemaking process, additional time will not be needed for gathering public input.

EPA recognizes there are clean data areas for which EPA has already completed rulemaking under the May 10, 1995, memorandum. If these areas are not subject to a control strategy SIP, they have the choice of using either the build/no-build or no-greater-than-1990 test, or the budget test if they decide to create one through the SIP process. Again, if such areas choose to submit a SIP budget, they have the option of basing the budget on a demonstration of clean data (rather than modeling) and the budget could be the motor vehicle emissions in the most recent year of clean data.

One commenter was concerned that, under the proposal, clean data areas would not have an incentive to submit maintenance plans for redesignation. EPA acknowledges the commenter's concern and believes that limiting the default budget option in today's final rule addresses this concern. However, EPA does believe that other significant incentives already exist for areas with clean data to submit maintenance plans.

Another commenter argued that the July 9, 1996, proposal was flawed because it would allow areas to adopt de facto budgets based on clean years even if subsequent years have NAAQS violations (thus demonstrating that budgets derived from clean data years are not adequate to maintain the standard). EPA believes that the final rule addresses this concern since any SIP budget would be established only through the rulemaking or SIP process. If an approved emissions budget is based on clean data and violations occur, EPA can issue a SIP call or, if a SIP has not yet been approved, EPA can declare the submitted budget inadequate during adequacy review. EPA also has the ability to disapprove a submitted SIP based on clean data if violations occur prior to approval.

### 2. Maintenance Areas

A few commenters believed that the proposed options for areas that are not required to submit control strategy SIPs should also be available to these areas during the maintenance period.

Since maintenance areas have already submitted SIP budgets and EPA has approved those budgets, maintenance areas must use the motor vehicle emissions budget(s) in their maintenance plans to demonstrate conformity unless a subsequent budget demonstrating maintenance is approved. As discussed in section III. of this preamble, "Other Comments on Conformity Tests," Clean Air Act section 176(c) specifically requires conformity findings to be based on approved SIPs. Maintenance plans that EPA has approved under Clean Air Act section 110 are enforceable and their budgets must be used for conformity.

### 3. Emission Reduction Test Flexibility in PM-10 and NO<sub>2</sub> Nonattainment Areas

One commenter requested that EPA remove the build/no-build test as an option for demonstrating conformity in PM-10 (particles with an aerodynamic diameter of less than or equal to a nominal 10 micrometers) and NO<sub>2</sub> (nitrogen dioxide) nonattainment areas that have not submitted control strategy SIPs or maintenance plans. Section

93.119(c) of the proposal, like the November 1993 final transportation conformity rule, offered PM-10 and NO<sub>2</sub> nonattainment areas the option to use either the build/no-build test or no-greater-than-1990 test to determine conformity, provided they have not submitted a control strategy SIP or maintenance plan. The commenter believed that the build/no-build test will not ensure that the frequency and severity of existing violations will not be increased, as required by Clean Air Act section 176(c)(1). Furthermore, commenters did not believe that the same logic that was used in the November 1993 final rule could be used to provide the build/no-build test option in ozone and CO nonattainment areas that are not required to submit control strategy SIPs.

Since the flexibility for PM-10 and NO<sub>2</sub> nonattainment areas was finalized in the November 24, 1993 conformity rule, the deadline for commenting on this provision has passed, and EPA is not obligated to respond to this comment. Nevertheless, EPA does believe that it is appropriate to continue to offer the build/no-build test as an option in PM-10 and NO<sub>2</sub> nonattainment areas. By ensuring that motor vehicle emissions are less than they would be if no new transportation investments were made, the build/no-build test does ensure that the frequency and severity of violations are not increased as a result of new transportation investments. EPA believes that this same rationale can be used to justify the build/no-build test option in ozone and CO areas that are not required to submit control strategy SIPs. In summary, EPA continues to believe that where no SIP has been submitted, the build/no-build test is sufficient for areas to meet the requirements of section 176(c)(1).

## V. Rural Nonattainment and Maintenance Areas

### A. Description of the Final Rule

In today's action, EPA finalizes the flexibility proposed in § 93.119, with two minor clarifications. Rural nonattainment and maintenance areas with submitted or approved control strategy SIPs or maintenance plans will be allowed to choose among several tests for demonstrating conformity for years after the time period addressed by the SIP: (1) the budget test; (2) the emissions reduction tests ("build/no-build test" and/or one of the 1990 tests, depending on what is required of the area's classification); or (3) air quality modeling.

In the proposal, EPA's third option was "air quality dispersion modeling," which was more specific than intended. The final rule's language has been changed to allow an area to use the air quality modeling technique it used in its SIP attainment or maintenance demonstration, even if that technique is not dispersion modeling. For example, some SIP attainment demonstrations (most commonly in PM-10 areas) are developed using rollback/rollforward techniques based on emission inventories, and/or chemical mass balance modeling, pursuant to EPA guidance. Where the SIP demonstration correctly used one of these techniques, the conformity determination can use the same technique. EPA will reject SIP budgets during the 45-day review period if such non-dispersion modeling was used inappropriately.

EPA also clarifies in the final rule that areas electing to use the emissions reduction tests to demonstrate conformity for the outyears must perform these tests even if the area has received a NO<sub>x</sub> waiver.

Generally, NO<sub>x</sub> waivers are findings by the EPA Administrator under Clean Air Act sections 182(b) or 182(f) that additional reductions of NO<sub>x</sub> would not contribute to attainment of the ozone standard by the statutory deadline. Areas have historically applied for NO<sub>x</sub> waivers to eliminate the NO<sub>x</sub> emissions reduction requirement.

When EPA proposed to allow rural ozone areas with attainment demonstrations or maintenance plans to have the option of relying on the NO<sub>x</sub> emissions reduction tests for the years not addressed by these SIPs, EPA did not intend to allow these areas the option of performing no NO<sub>x</sub> test at all. This would be the result, however, if such areas could avoid meeting the substitute tests by receiving NO<sub>x</sub> waivers. In the November 14, 1995, conformity amendments (60 FR 57183), EPA stated that areas with NO<sub>x</sub> budgets have to conform to these budgets even if they were granted a NO<sub>x</sub> waiver. EPA emphasized that "a NO<sub>x</sub> waiver's demonstration that additional NO<sub>x</sub> reductions would not contribute to attainment does not necessarily mean that NO<sub>x</sub> increases would not affect an area's ability to attain and maintain the standard. The purpose of a NO<sub>x</sub> budget is to prevent NO<sub>x</sub> emissions from reaching levels that would threaten attainment or maintenance of the ozone standard."

EPA is allowing rural ozone areas to substitute the emissions reduction tests for the budget test as a means of demonstrating that these areas are meeting the requirements of Clean Air

Act section 176(c)(1) that plans, TIPs, and projects not cause or contribute to any new violation, worsen existing violations, or delay attainment of the NAAQS. Therefore, for the same reasons a NO<sub>x</sub> waiver cannot exempt an area from the budget test, a NO<sub>x</sub> waiver cannot exempt an area from the NO<sub>x</sub> emission reduction tests when these tests are selected as a substitute for existing NO<sub>x</sub> budgets. EPA believes that the clarification in the final rule is consistent with EPA's original intentions and stakeholders' understanding of the proposal, and therefore believes that a reproposal is not necessary to incorporate this minor change.

The choice of a test in rural areas will be determined through the interagency consultation process and will reflect the consensus of the state and local air and transportation agencies and the project sponsor.

#### *B. Rationale and Response to Comments*

Most commenters supported the proposal for increased flexibility in rural areas. EPA changed the language for the air quality modeling option because EPA agrees with the stakeholder who pointed out that modeling techniques deemed adequate in certain areas for SIP attainment demonstrations ought to be adequate in those areas for conformity determinations as well. EPA originally referred to air quality dispersion modeling because it is the technique generally required for SIP demonstrations. Because some PM-10 areas appropriately use air quality modeling that is not dispersion modeling, EPA has broadened its language to allow use of these other techniques.

One stakeholder commented that the proposal is illegal, because the Clean Air Act does not provide for an exemption from the budget test for rural areas. However, as explained in the proposal's preamble, EPA believes that providing some flexibility for the years not addressed by the SIP is consistent with the Clean Air Act. The Clean Air Act requirement for consistency with the SIP's emissions reduction goals can be construed to apply only for the years that an individual SIP revision addresses, where there is another appropriate method of demonstrating conformity as defined in Clean Air Act section 176(c)(1).

In general, EPA believes that a SIP budget, even if it is not yet approved by EPA, is a better measure of conformity than the build/no-build test. For this reason, EPA requires most areas to continue demonstrating conformity to

the SIP emissions budgets even after the timeframe of the SIP (see section VI., "Mismatch in SIP/Transportation Plan Timeframe," for more explanation). However, EPA believes it does have the flexibility to allow conformity to be demonstrated using some test other than the SIP budget for years not addressed by the SIP, if that test is more appropriate.

EPA believes that the reasons why the build/no-build test is less desirable than the budget test for most areas do not apply in the special circumstances of rural areas. The main critique of the build/no-build test is that the difference in emissions that it predicts is often small enough to be within the range of error of the models themselves. EPA believes this will not be as problematic in rural areas. Since there are fewer transportation projects and the transportation network is less complex in rural areas, the build/no-build test is more reliable. The test is better able to capture the effects of new projects in such areas. Therefore, EPA believes it is reasonable to allow the use of the build/no-build test as an option to demonstrate conformity for the time period of the transportation plan not covered by the SIP in rural areas.

Several commenters provided ideas for additional flexibilities in rural areas. One stakeholder suggested that areas should be able to use the budget from any year of clean data when employing the budget test. This suggestion is not being implemented today because SIP budgets must be established through notice-and-comment rulemaking. As stated in section IV. of this preamble, EPA believes that areas cannot adopt a default budget based on clean data without EPA review and public comment. See this section for more details on the options available for areas with clean data.

Another commenter suggested that areas be allowed to use alternatives to regional modeling, such as "subregional" modeling or "mesoscale analysis." EPA is not including that suggestion in this section because specific modeling requirements do not apply to rural areas; they only apply to urbanized areas with populations greater than 200,000. As a result, rural areas already have flexibility in modeling, provided that their methods consider all regionally significant projects in the nonattainment or maintenance area.

Several stakeholders suggested that the rule explicitly require state and local air agency concurrence for the selection of conformity tests, rather than just consultation. EPA does intend that



agencies reach agreement on which test to use to demonstrate conformity in a rural area. However, EPA is retaining the language of the proposal, because of concerns that requiring concurrence would imply that the existing conflict resolution process (by which state agencies can elevate disputes to the governor) cannot be used. EPA believes that the regulatory language adequately indicates that consensus should be reached or disputes raised through the conflict resolution process.

## VI. Mismatch in SIP/Transportation Plan Timeframe

### A. Description of Final Rule

This final rule retains the November 1993 conformity rule's requirements (described in the proposal as option 1). Conformity must continue to be demonstrated over a 20-year timeframe, and SIP budgets continue to apply for conformity purposes for all future years until superseded by other SIP revisions (except as provided in rural areas, as described above).

Although EPA is not changing the November 1993 conformity rule requirements with respect to the mismatch issue, EPA's existing SIP policy already does provide for some of the flexibility proposed in option 3, which would have allowed a default emissions budget to be established for years outside the maintenance plan's timeframe. Because EPA is aware of the challenges posed by the differing timeframes of the SIP and the transportation plan, EPA does allow SIPs to establish motor vehicle emissions budgets for conformity purposes for years outside the timeframe that the SIP normally addresses. For example, some areas are developing maintenance plans that include motor vehicle emissions budgets for conformity purposes for the years 2010 and 2015, even though the initial demonstration of maintenance is only required to address ten years. EPA's approval of these budgets is not an approval of a full 20-year maintenance demonstration; these budgets are for conformity purposes only and will be superseded when the second ten-year maintenance plan is submitted.

EPA will require areas to demonstrate that motor vehicle emissions budgets for years outside the timeframe of the maintenance plan are consistent with maintenance of air quality standards. EPA will not permit areas to simply use the motor vehicle emissions in the year of redesignation as a budget without considering growth in non-mobile source emissions, which was a

possibility discussed in the proposal under option 3. However, EPA believes it has the flexibility to approve budgets for years outside the usual maintenance plan timeframe for conformity purposes based on less rigorous demonstrations than are required for the Clean Air Act-mandated ten-year maintenance plan. Whereas normally control measures must be fully adopted in order for EPA to approve the SIP, EPA would be willing to approve conformity budgets that were based in part on enforceable commitments to adopt specific control measures in the future. Because these commitments would be included in the approved SIP, they would be enforceable by all parties, including the public. In addition, EPA would consider allowing the motor vehicle emissions budgets in the last year of the ten-year maintenance plan to be increased for future years provided offsetting emissions reductions are adopted or committed to in the SIP.

The ability to establish motor vehicle emissions budgets for conformity purposes for years outside the normal timeframe of the SIP is not specifically discussed in this final rule's regulatory text because it is currently possible under EPA's existing SIP policy, and therefore no regulatory changes are needed.

### B. Rationale and Discussion of Comments

EPA is finalizing option 1 (i.e., not changing conformity rule requirements to address the mismatch in plan/SIP timeframes) for two reasons. First, EPA believes there are important benefits associated with this option, as commenters pointed out (discussed below). Second, EPA believes there are adequate flexibilities under the existing conformity rule and EPA SIP policy that will help areas address the challenges of the timeframe mismatch in a manner that is more supportive of air quality goals and prudent planning than any of the other options proposed. The other options proposed included option 2, which would have required emission reduction tests ("build/no-build test" and less-than-1990 test) for demonstrating conformity in years not addressed by SIPs; and option 3, which would have allowed a default motor vehicle emissions budget (such as the motor vehicle emissions in the year of redesignation) to be used for the years outside the maintenance plan's timeframe.

Many commenters supported option 1 because they believe that maintaining the SIP's emission targets for the timeframe of the transportation plan is a central purpose of conformity and

perhaps its most important requirement. Commenters stated that because the obligation to meet air quality standards persists indefinitely, the obligation to meet the motor vehicle emissions budget should not terminate after the attainment date or the last year of the maintenance plan. According to some commenters, it is appropriate to analyze the effects of transportation investments over a 20-year timeframe, because it may in fact take decades for these effects to be fully realized. They stated that it is better to use a long timeframe and make the right choices at the outset than to pursue a path for several years and then try to quickly overcome the adverse consequences of that path. One commenter pointed out that demonstrating conformity to the SIP's budget over the 20 years of the transportation plan is the best way to prepare for the fact that the benefits of fleet turnover do decline over time.

Some commenters preferred option 1 to the other options proposed because option 1 requires emissions related to growth to be specifically addressed and tradeoffs to be examined. According to these commenters, the other options would not accomplish this, and the conformity determinations that would result from these other options would not have as much integrity because they would not be based on a performance target with real meaning (i.e., a SIP budget that supports reasonable further progress, attainment, or maintenance).

Many other commenters supported option 3, which would have allowed a default motor vehicle emissions budget for the years after the last year of the maintenance plan. These commenters believe this option would be less burdensome than the other options. They also believe that SIP budgets may be unrealistic because they are not established with a 20-year horizon in mind, and therefore it is not necessarily appropriate to require areas to conform to them indefinitely. Option 3 was broadly discussed in the preamble to the proposal and included possibilities that ranged from allowing motor vehicle emissions to grow to levels in the year of redesignation without consideration of growth in non-mobile emissions, to allowing budgets to increase only if it is demonstrated that the standards will be maintained when growth in mobile, area, and stationary sources is considered. Several commenters supported option 3 only if the motor vehicle emissions budgets were based on a demonstration of maintenance that considered all emissions sources.

The approach that EPA is finalizing combines the benefits of option 1 with some of the flexibility contemplated by

option 3. EPA agrees with the commenters' reasons for supporting option 1. EPA is sympathetic to the concerns that prompted commenters to advocate option 3, but EPA believes that the flexibility allowed under existing SIP policy to establish reasonable budgets outside the timeframe of the SIP is an effective means of addressing those concerns without compromising the benefits of option 1. EPA is committed to assisting areas with the challenges that arise when addressing long-term emissions impacts. EPA also encourages a collaborative process between local, state, and federal agencies in order to facilitate acceptable solutions to these challenges under existing SIP policy.

A few commenters preferred option 2 (emission reduction tests) because in their specific areas they could pass the build/no-build test but not the NO<sub>x</sub> budget test. However, some commenters opposed option 2 because the emission reduction tests have significant limitations and would not ensure that regional mobile source emissions remain consistent with attainment or maintenance requirements. One commenter stated that the build/no-build test is an imprecise analytical approach that bears no direct relationship to the attainment demonstration.

EPA agrees that these arguments against option 2 are compelling. Allowing areas to use emission reduction tests instead of SIP budgets would be inconsistent with EPA's action described in section II. to eliminate the emission reduction tests where SIP budgets have been established. Overwhelming support has been expressed for this elimination of the emission reduction tests in such cases, and this has convinced EPA that option 2 is not a suitable solution for addressing the mismatch of transportation plan and SIP timeframes. EPA is pursuing the approach proposed in option 2 only in the limited case of rural nonattainment and maintenance areas, for reasons specific to such areas as explained in section V.

### C. Response to Specific Comments

Several commenters stated that EPA should allow areas to use any of the three proposed options. A commenter suggested that the choice of options would be decided by each area through its own interagency consultation process. As explained above, EPA believes that the option being finalized is the most appropriate. One commenter supported option 1 provided areas have more flexibility to account for future programs that will affect emissions. Currently, areas cannot assume future

programs unless they are adopted or included in the SIP. EPA believes that the approach being finalized today will allow the flexibility the commenter is seeking, because it allows budgets established for conformity purposes to be based on enforceable commitments in the SIP rather than requiring fully adopted control measures, as needed for approval as part of a control strategy SIP.

One commenter suggested that the plan should be qualitatively analyzed for the years beyond the timeframe of the SIP. EPA believes this would not be consistent with the Clean Air Act's requirement for the use of emissions estimates for determining conformity. In addition, EPA believes that both the air quality and transportation planning processes benefit from long-term quantitative analyses of transportation plans. EPA believes that areas have sufficient flexibility in analysis methods to develop a quantitative approach that is both reasonable and useful.

Some commenters suggested that conformity should not be required at all in years beyond the timeframe of the SIP. Other commenters suggested that conformity should not be required until there are tools adequate to the task. EPA believes this is not consistent with the Clean Air Act's requirement to demonstrate that the transportation plan will not cause or worsen violations of air quality standards. Conformity of a transportation plan cannot be determined unless all years of the transportation plan are considered. EPA believes that adequate analytical tools are currently available and are continually being improved. All areas have great freedom to improve their own analysis techniques, which EPA supports.

One commenter suggested that the options proposed for rural nonattainment and maintenance areas be provided for all areas as a way of addressing the mismatch in transportation plan and SIP timeframes. The options being provided to rural areas include a choice among the SIP emissions budget, the emission reduction tests, or air quality modeling. The emission reduction tests are not being pursued for all areas as described in the discussion of option 2, above. The reasons for using the emission reduction tests in rural areas, as described in section V., are only applicable in rural areas and would not provide a basis to use these tests in other areas. However, option 1 does give areas the opportunity to use either the SIP emissions budget or establish new budgets that are supported by air quality modeling.

Some commenters stated that demonstrating consistency with the motor vehicle emissions budget established for the attainment year or the last year of the maintenance plan is not sufficient to demonstrate that an activity will not cause or worsen air quality violations. These commenters argue that it must be demonstrated that the motor vehicle emissions budget is consistent with attainment or maintenance when the most recent projections about non-mobile source emissions growth are also considered. EPA does not believe that this is required by the Clean Air Act. EPA believes that if motor vehicle emissions are less than or equal to the most recent motor vehicle emissions budgets in the SIP that was approved as meeting attainment or maintenance requirements, then it can be stated that motor vehicles are not "causing or contributing" to violations, as required by the Clean Air Act. It is not the role of the conformity requirements to provide attainment or maintenance plans, but merely to prevent adverse impacts on such demonstrations.

However, EPA does recognize that consistency with the motor vehicle emissions budgets for the transportation plan's 20-year timeframe does not guarantee attainment or maintenance because of the possibility for growth in non-mobile sources. This is one reason why EPA is not finalizing a version of option 3 that would allow motor vehicle emissions to increase above approved SIP budgets without considering emissions from other sources.

## VII. Non-Federal Projects

### A. Description of Final Rule

As was proposed, the final rule allows certain regionally significant non-federal transportation projects to be adopted or approved during a transportation plan/TIP conformity lapse, provided the project was included in the regional emissions analysis supporting the most recent transportation plan and TIP conformity determination. Non-federal projects are projects which are funded or approved by a recipient of federal funds designated under title 23 U.S.C. or the Federal Transit Laws (49 U.S.C. Chapter 53) but which do not rely at all on any FHWA/FTA funding or approvals.

The final rule clarifies that only those non-federal projects from the first three years of the most recent conforming plan and TIP (or supporting regional emissions analysis) may proceed during a conformity lapse. In the proposal, EPA had simply stated that non-federal projects in the most recent conforming

plan and TIP's regional emissions analysis could proceed when a lapse occurs.

#### *B. Rationale for Clarification and Response to Comments*

Most commenters supported the proposal, and many said that it was appropriate because the emissions impacts from affected non-federal projects have already been considered and sufficient project reviews have already occurred. However, some commenters expressed concern that in their understanding the proposal would facilitate the exchanging of funds between federal and non-federal projects during a conformity lapse. Some even implied that there may be areas that would build large numbers of non-federal projects by exchanging funds, and thereby, avoid conformity consequences for an indefinite amount of time. There was concern that because some TIPs cover more than three years, sometimes even five or more years, a substantial number of non-federal projects could be built during a conformity lapse. Some of these commenters even believed that the proposal would allow areas to advance all non-federal projects in the 20-year transportation planning horizon during a conformity lapse, thus reducing or removing the incentive to develop transportation plans and TIPs that actually do conform. EPA did not intend this in the proposal, and as a result, EPA believes that a regulatory clarification is necessary in this final rule.

Although commenters suggested possible safeguards to protect against such abuses, including limiting the number of non-federal projects that could go forward during a lapse or restricting the ability to exchange funds between federal and non-federal projects, EPA believes that the final rule's clarification addresses these concerns.

EPA did not intend that a non-federal project identified for any year in the 20-year transportation planning horizon could proceed at any time. This interpretation would be inconsistent with other regulatory requirements and with the stated rationale for the proposed non-federal project flexibility. Under DOT's metropolitan planning requirements (23 CFR 450.332(c)), projects identified for funding in the first three years of the plan and TIP are the only projects that can proceed under any approved TIP. New TIPs are required every two years, and projects from the outyears of an approved TIP cannot be moved forward without a TIP amendment. Therefore, EPA believes that allowing non-federal projects in the

outyears of the TIP and plan to advance at any time for conformity purposes is inconsistent with this general regulatory context. In the proposal, EPA had intended that only those projects already scheduled to begin in the timeframe of the first three years of the TIP could proceed during a conformity lapse.

There are several reasons why the final rule's clarification is consistent with EPA's original intentions and rationale for providing areas flexibility for non-federal projects. During the development of the proposal, stakeholders who suggested the proposed non-federal project flexibility argued that it was appropriate because future plans and TIPs would have to consider the emissions from non-federal projects and offset them as necessary. These projects would ultimately have to be considered in the next TIP in the metropolitan planning process. In addition, as EPA pointed out in the preamble to the proposal and as many commenters argued, requiring non-federal projects to have been included in the most recent conforming plan and TIP ensures that the emissions consequences of the projects have been considered.

Neither of these rationales would be consistent with allowing a non-federal project from the outyears to proceed at any time. The emissions analysis for the plan and TIP would no longer be valid if the implementation dates of non-federal projects were altered. Allowing non-federal projects from the outyears to be accelerated during a conformity lapse so that a new conforming plan and TIP could be substantially delayed would in effect be allowing the non-federal projects to escape the scrutiny of the metropolitan planning process which EPA had relied on in making the proposal. The final rule's clarification ensures that the flexibility operates as originally intended by EPA and conformity stakeholders. EPA believes this is fully consistent with the original proposal and therefore does not require any reproposal prior to proceeding with final action.

#### *C. Governor Approval*

EPA requested comment on whether the governor should be required to approve each non-federal project that would proceed during a conformity lapse. EPA did not believe that it could propose such a change because governor approval is not explicitly required by the Clean Air Act, and it was unclear whether state and local officials should have the authority to adopt or approve non-federal projects during a lapse. Due to the comments received, EPA has

decided not to require governor approval in the final rule.

EPA received many comments on this issue that strongly supported the proposal to not require governor approval of non-federal projects affected by the final rule. Many reasons were cited by commenters. Some said that governor approval isn't necessary since the governor appoints the directors of the state transportation and air agencies, and in some cases, governors have even appointed the MPO as his/her designee for air quality planning. Others emphasized that the conformity rule already provides for involving the governor, when necessary, through the conflict resolution process. Many argued that local non-federal projects are usually time-sensitive and many local governments fund these projects in order to expeditiously move them through the planning process. In this case, requiring governor approval is unnecessary and would impede rather than facilitate the process of non-federal project implementation. Finally, some believed that it was not appropriate for governors to have authority over approving local non-federal projects. EPA agrees generally with commenters and believes that requiring governor approval is not necessary. Therefore, EPA is not requiring governor approval of non-federal projects during a conformity lapse.

#### *D. Responses to Other Comments on Non-Federal Projects*

EPA received other comments on the proposed non-federal project flexibility which did not result in changes to the proposal.

##### *1. Comments Opposing Statutory Interpretation*

One commenter argued that any exemption for non-federal projects would violate the statutory requirement that any such project only be approved or funded if it either "comes from a conforming plan and program," or its emissions when considered with those of "the conforming transportation plans and programs within the nonattainment area" do not exceed the applicable emissions budgets. The commenter argued that the present tense of the operative verbs in the statutory language does not allow exemptions for projects that come from a plan and program that no longer conform. The commenter also argued that this exemption cannot be justified as a grandfathering mechanism because it allegedly applies to projects that have not yet satisfied applicable federal requirements. Finally, the commenter objected that the proposal allows state DOTs to continue to build

projects with state funds during periods when the metropolitan transportation plans fail to satisfy the Clean Air Act's requirements for emission reductions, and therefore leads to a delay in attainment.

EPA believes that it is appropriate to allow non-federally funded projects that have previously satisfied conformity requirements to proceed during a conformity lapse because the existence of a conforming plan and TIP is not necessary to facilitate the implementation of such projects. As to the commenter's concern about potential emissions increases, any future plan and TIP will have to account for and offset if necessary the emissions of any non-federal projects that are implemented during a conformity lapse.

EPA acknowledges that there is some tension with the present tense statutory language concerning the existence of a conforming plan and TIP. However, EPA believes that this is a proper case of grandfathering projects that had been previously found to satisfy the applicable federal conformity requirements. The only obligation imposed by the conformity rule on non-federal projects is to account for project emissions in a conforming plan and TIP. If this has been done, EPA believes that it is appropriate to allow projects in the timeframe of the first three years of the plan and TIP to proceed towards implementation, so as not to interfere with the priorities of non-federal entities funding such projects.

## 2. Changes in Implementation Date

Another commenter said that it was unclear whether a non-federal project could go forward during a lapse if the project's design concept and scope had changed; or, if the project's implementation date had changed in a manner that changed emissions in a milestone or analysis year. Under the proposal and this final rule, a non-federal project cannot go forward during a conformity lapse if its design concept and scope has changed significantly. A non-federal project also cannot go forward if its implementation date changes in a manner that changes the emissions that the emissions analysis supporting the most recent conforming plan and TIP projected for a given analysis year. In either case, a new air quality analysis would be needed to ensure that the project would still conform, and it would be inappropriate to allow such projects to proceed based on the analysis in the most recent plan/TIP. The final rule's clarification should reduce confusion on this point.

## 3. Comments on Original Conformity Rule

One commenter objected to the provisions of the original conformity rule that do not require conformity determinations for non-federally funded projects. The commenter included detailed statutory arguments alleging that Clean Air Act section 176(c) on its face requires conformity determinations for all transportation projects, and the commenter also included citations to the legislative history supporting these allegations. The commenter also argued that non-federal project sponsors should provide a public process prior to determining that emissions from non-federal projects are consistent with applicable emissions budgets.

EPA's proposal did not cover this aspect of the conformity rule, which has been final since 1993. EPA did not intend to reopen the issue of whether non-federal projects should undergo conformity determinations when it proposed to allow certain non-federal projects to proceed during a lapse. As EPA explained in the preamble to the 1993 conformity rule, Clean Air Act section 176(c)(2)(C) clearly distinguishes non-federal projects from those projects required to conduct a conformity determination, requiring only that non-federal projects be considered in a regional emissions analysis prior to adoption or approval. Non-federal projects are not covered in the requirement to conduct a conformity determination in section 176(c)(1), which applies only to actions of federal agencies and metropolitan planning agencies. For these reasons, EPA is not responding in full to comments submitted on this issue. For more explanation of EPA's rationale for the provisions of the original conformity rule, see the preamble to the final rule at 58 FR 62188, 62204 (Nov. 24, 1993). Finally, since federal agencies do not approve non-federal projects, such approvals are not subject to the requirements of the federal Administrative Procedure Act. Non-federal project sponsors would have to comply with any applicable public participation processes required under state law.

## VIII. Deadline for Use of Network Models and Affected Areas

### A. Description of Final Rule

Today's action finalizes the proposal to require serious CO and serious, severe, and extreme ozone areas to use network models for conformity determinations by January 1, 1997. In addition, as proposed, these network modeling requirements are revised so

that they only apply to metropolitan planning areas with an urbanized area population over 200,000. EPA continues to believe that network modeling requirements are most important for large urbanized areas, and therefore believes that it is appropriate for the conformity rule to focus its specific modeling requirements on them. See section IX.A. for a description of the final rule's requirements for network models.

As stated in the proposal and required under the original conformity rule, whether or not an area is required to use a network model, all areas must use the consultation process to select regional models and assumptions, as required by § 93.105(c).

### B. Rationale and Discussion of Comments

Most commenters supported the final rule's limiting of network modeling requirements to serious and above areas with an urbanized population over 200,000. Commenters agreed with EPA that network modeling is not always appropriate in rural or urban areas with smaller populations, and therefore, should not be required in these areas.

One commenter suggested that all urban areas with a population greater than 50,000 people should also be required to use network models because these models are simple and inexpensive. However, the commenter did not believe that the proposal would seriously weaken the conformity process, since most of these smaller cities already use network models for conformity analyses.

As previously stated, EPA believes that network modeling requirements are most important for large urbanized areas. As a result, EPA is not changing the proposed population threshold. However, EPA also notes that § 93.122(c) of the conformity rule requires areas that are already using network models to continue using them, even if they are not serious or above areas or have a population less than 200,000. EPA and DOT will consider the specific technical needs of smaller areas when developing future modeling guidance.

A couple of commenters supported stratifying the network modeling requirements by size of urban area. EPA believes that the final rule in part addresses this concern by only requiring larger urbanized areas to adhere to the network modeling requirements. However, EPA does not want to create a complicated stratification system that would require multiple sets of modeling requirements. Therefore, EPA did not

change the rule in response to this comment.

As proposed, today's action also extends the deadline for implementing the network modeling requirements from January 1, 1995, to January 1, 1997. A few commenters suggested that MPOs that are not meeting the rule's network modeling requirements should be put on a timetable for compliance. Other commenters thought that extending the deadline was unnecessary due to the ease of implementing such a network model, especially since the majority of areas already have a network model in place. They also felt that an extension would seriously weaken the modeling regulation. Some commenters stated that the extension of the deadline is obsolete, since the final rule would be published after January 1, 1997.

EPA acknowledges that the January 1, 1997, deadline has already passed. The original conformity rule required that areas use network models in conformity analyses by January 1, 1995, and when the proposal was being developed, most areas had achieved the rule's network modeling requirements by this deadline. However, as discussed in the proposal, a few areas had not yet complied with the deadline, and EPA believed that an extension until January 1, 1997, would be adequate to address their difficulties.

EPA did consider extending the deadline even further when it became apparent that the final rule would not be effective before January 1, 1997. However, reproposal would have been necessary to significantly extend the proposed January 1, 1997, deadline, and EPA believes it is likely that the few areas in question will have adequate network models developed before a reproposal could be finalized.

For all of these reasons, EPA is retaining the January 1, 1997, deadline. EPA agrees with the commenters that the majority of affected areas are already using network models. EPA and DOT are currently working with the two areas that have not yet met the network modeling requirements so that they will overcome their unique circumstances and meet the requirements in the future.

## **IX. Content of Network Modeling Requirements in Serious and Above Ozone and CO Areas**

### *A. Description of Final Rule*

In today's final rule, EPA is streamlining the conformity rule's modeling requirements and committing to collaborate with DOT to develop future modeling guidance. Specifically, EPA is eliminating several modeling criteria from regulatory text while

retaining those criteria that establish minimum acceptable practice.

The proposal requested comment on three options for addressing the modeling criteria in the conformity rule. Option 1 proposed to eliminate all of the 11 required attributes of network models in the original November 24, 1993, final transportation conformity rule and address the attributes only in guidance. Option 2 would have retained all of the original modeling attributes. Option 3 proposed to streamline the original requirements for network models and address the eliminated attributes in guidance. Today's action finalizes option 3 with some minor modifications.

The final rule includes six required elements for network modeling in serious and above ozone and CO areas with an urbanized population over 200,000. These elements include the five that were proposed as option 3 (with minor wording changes), as well as the November 1993 conformity rule's requirement in § 51.452(b)(1)(iv)/§ 93.130(b)(1)(iv) for reasonable agreement between zone-to-zone travel times used in trip distribution and the travel times resulting from traffic assignment.

Specifically, this final rule requires network-based models to be validated against observed counts (peak and off-peak, if possible) for a base year that is not more than ten years prior to the date of the conformity determination. Model forecasts must be analyzed for reasonableness and compared to historical trends and other factors, and the results must be documented. Land use, population, employment, and other network-based model assumptions must be documented and based on the best available information. Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. The distribution of employment and residences for different transportation options must be reasonable.

A capacity-restrained traffic assignment methodology must be used, and emissions estimates must be based on a methodology which differentiates between peak and off-peak volumes and speeds, and which uses speeds based on final assigned volumes. Zone-to-zone travel impedances used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times that are estimated from final assigned traffic volumes. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling

mode splits. Finally, network-based models must be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices.

EPA believes that the streamlined criteria and clarified rule language will assist areas in implementing the rule's network modeling provisions. The final rule does not create any new network modeling requirements for large, urbanized serious and above ozone and CO areas.

As stated in the proposal, EPA and DOT will develop modeling guidance in the future to address some of the modeling requirements that were eliminated from the final rule and to foster the exchange of information on current and future modeling improvements. As discussed later in this section, EPA and DOT are committed to an open stakeholder process about modeling procedures that will begin shortly after the rule becomes effective.

### *B. Rationale and Discussion of Comments: Selected Option*

There were commenters who supported each of the three proposed options for the content of the network modeling requirements. Some supported option 1 because they believed that eliminating all modeling attributes would simplify the conformity rule and create maximum flexibility for areas. Other commenters argued strongly for option 2, which would have retained all 11 modeling attributes from the original rule. According to one commenter, removing all of the modeling attributes from the rule would have detrimental effects on the entire conformity process. Finally, many commenters from the transportation and environmental communities supported option 3, which proposed to streamline the modeling requirements without fully eliminating them. These commenters believed that having some baseline modeling criteria in the rule ensures national consistency of network models while streamlining the rule to allow for flexibility at the state and local levels.

As previously stated, this final rule streamlines the original conformity rule's network modeling criteria by eliminating some criteria and clarifying the rule's language. EPA is retaining some modeling requirements in this final rule because EPA agrees with commenters that minimum modeling standards are an important component of the conformity process. Many commenters believed that all or some of the original modeling criteria should be retained in the final rule, because without them, modeling practice would

become highly variable across the country. They also thought that eliminating all criteria would undermine the integrity, reliability, and credibility of the process for assessing the expected impacts of transportation investments on travel demand, travel behavior, and estimates of future vehicle miles traveled (VMT) and emissions. Others believed that having modeling criteria in the conformity rule has spurred the funding and development of state and local transportation model improvements. Finally, some pointed out that sound network models are needed for other processes besides conformity, such as SIP development, and therefore should be retained.

Other commenters were concerned that lawsuits would increase if all of the modeling attributes were eliminated, due to the inconsistency of requirements across the country. According to commenters, the outcomes of these suits would be hard to predict and money would be wasted in the adversarial process.

EPA agrees with these comments and believes that the final rule addresses them. EPA also agrees that nationally consistent and enforceable minimum standards are central to the integrity of the conformity process. Minimum standards clarify the expectations of all agencies involved in the conformity process and thus ensure some equity among all areas.

One commenter argued that EPA cannot eliminate all of the modeling attributes because they are a regulatory requirement which cannot be substituted with unspecified guidance that is developed outside of the rulemaking process. EPA agrees with this comment and is addressing it by retaining minimum standards in this final rule.

Although some commenters supported option 1, EPA does not believe that eliminating the modeling requirements is necessary to achieve the objectives of these particular commenters. Some supported option 1 because eliminating all modeling criteria would allow areas to tailor their network models to satisfy their current modeling and air quality planning needs. According to one commenter, this option would distribute resources and technical expertise appropriately in state and local agencies. Commenters also believed that under option 1 areas would be able to do sound quantitative analysis while having the flexibility to accommodate modeling improvements and demographic changes in their area. A couple of commenters suggested states should have the authority to determine network model attributes on

an area-by-area basis, and one approach for this is to allow state-level approval of an area's model subject to the interagency consultation process.

EPA believes that areas have the flexibility to appropriately tailor their models and distribute their resources under option 3 as well as option 1. The conformity rule's modeling requirements define minimum acceptable practice, and beyond this, areas have flexibility to determine appropriate modeling practices and accommodate modeling improvements through interagency consultation. EPA does not believe that areas should be able to use models that do not meet minimum standards of acceptable professional practice, for the reasons described in this section.

One commenter stated that the criteria in options 2 and 3 are accounted for in some way in existing practice, and that requiring them does not advance the state of the practice and may hinder it if future developments lead to improved, but different, methodologies. Another commenter suggested that by eliminating all modeling criteria, EPA and DOT could incorporate future modeling improvements by revising the guidance rather than having to go through the difficult and time-consuming process of revising the rule. Others believed option 1 would give agencies across the country access to technical changes and expertise which may not be available to them on a case-by-case basis, and may provide a better way of communicating updates and improvements in network modeling procedures.

EPA does not believe that establishing baseline modeling criteria, as is being done in this final rule, will inhibit the adoption of future modeling improvements. EPA agrees that future modeling guidance should provide information to state and local agencies about modeling updates, and EPA and DOT are committed to working with stakeholders to exchange ideas in the guidance development process. However, EPA does not believe it is necessary to eliminate the rule's modeling requirements in order to issue future modeling guidance. As general modeling practices improve, EPA and DOT will make periodic updates in the form of non-enforceable modeling guidance, rather than future amendments to the conformity rule.

An area that has not yet implemented the currently required model improvements supported option 1 because the area believed option 1 would provide flexibility and make a conformity lapse for this area less likely. EPA believes that it would be

inappropriate to eliminate all of the modeling criteria just because a few areas are having temporary difficulty achieving them. This stakeholder concern was also raised in the context of extending the deadline for implementing network modeling requirements. EPA considered the merits of this comment, and as outlined above, decided that a reproposal to extend the deadline could not be completed in time to provide relief to the few affected areas. As previously mentioned, EPA and DOT are assisting the two areas without adequate network models to achieve the minimum standards in this rule.

EPA believes that option 3 also addresses the concerns of the commenters who supported option 2. These commenters seemed most concerned with whether any modeling requirements would be retained in the rule; option 1 would have eliminated all of the rule's network modeling requirements. Many of the commenters who supported option 2 also supported option 3, provided there were modifications for some of the language in option 3. EPA believes that the changes made to option 3, which are discussed below, make the final rule's language more streamlined, clear, and useful than the 1993 conformity rule language proposed for retention in option 2.

A few commenters who supported option 3 also thought that areas should not be required to use network modeling improvements in the conformity process prior to their application in the SIP process. The commenters believed this would remedy problems associated with inconsistencies between the models used in conformity analysis and those used in SIP development. EPA recognizes the commenters' concerns about the implementation difficulties that may occur as a result of model improvements. However, Clean Air Act section 176(c)(1)(B)(iii) requires conformity determinations to "be based on the most recent estimates of emissions." EPA believes that areas must use the most current tools available at the time of the conformity determination, in accordance with the Clean Air Act. Using the best models and assumptions will also produce the best emissions estimates on which areas will base decisions regarding transportation and air quality. EPA also notes that areas already have the ability to use the consultation process to coordinate the introduction of transportation modeling improvements into their planning processes. For these reasons, EPA is not finalizing the commenters' suggestion.

### *C. Future Modeling Guidance and Response to Comments*

As stated in the proposal, EPA and DOT will develop modeling guidance in the future. This guidance will address some of the modeling requirements that were eliminated from the final rule; provide guidance on implementing modeling requirements; and facilitate the exchange of information on advancements in modeling. EPA and DOT are committed to working with stakeholders in the development of the guidance, an idea which was supported by many commenters. This process will begin soon after this rule becomes effective, and will include stakeholder participation in workshops for developing the guidance. In addition, EPA and DOT will make drafts available for stakeholder comments. This joint federal, state, and local effort will bring together the expertise to assure national consistency and meaningful emissions results in conformity analyses.

Some commenters were concerned that the guidance would be mandatory and that future guidance updates would be difficult to implement if it were mandatory. Today, EPA clarifies that the guidance will not be an enforceable requirement, although EPA and DOT encourage use of future guidance on a voluntary basis as deemed appropriate by affected state and local agencies. There is also no specific date by which future modeling guidance must be used, or by which models are required to be improved in accordance with future guidance, since the use of future guidance is not an enforceable requirement. Areas will decide upon how to implement modeling guidance using the interagency consultation process.

Another commenter said that each MPO should have the responsibility to demonstrate the adequacy of their model through documentation, and such documentation should be included as an appendix to the area's conformity package. EPA agrees with this comment and encourages MPOs to submit such documentation with their conformity determinations.

### *D. Rationale and Discussion of Comments: Specific Criteria*

As discussed above, this final rule specifies six requirements for network models for serious and above ozone and CO areas. These replace the 11 that were required by the November 1993 conformity rule. This final rule includes the five requirements that were proposed as option 3, as well as a requirement from the November 1993 conformity rule that was not originally

proposed as part of option 3 (but was included in proposed option 2, which included all requirements of the 1993 rule). Several minor changes were made to the wording proposed in option 3 in order to respond to comments, reduce ambiguity, and streamline the text.

EPA proposed to require network-based models to be validated against peak and off-peak ground counts for a base year that is not more than ten years prior to the date of the conformity determination. The final rule requires validation against "observed" counts rather than "ground" counts because the term "ground" counts sometimes implies automobile counts only. In fact, models should be validated against counts for all modes, including transit, bicycle, and pedestrian. EPA believes that because "observed" counts is a more general term, it more appropriately conveys the intent of the proposed requirement.

EPA has also qualified the proposed requirement for validation against peak and off-peak counts so that validation against both peak and off-peak counts is only required where it is possible. The November 1993 conformity rule simply required validation against ground counts; there was no reference to peak and off-peak. When EPA proposed option 3, it did not intend to impose any new or more stringent network modeling requirements. Since the time of the proposal EPA has become aware that not all areas collect peak and off-peak counts. As a result, although EPA continues to believe that validation against peak and off-peak counts is preferable, the rule only requires it where it is already possible given available data.

A commenter suggested that the conformity rule should require areas to validate their models for a second year at least three years before or after the base year whenever possible. The commenter also suggested that the rule require validation against peak and off-peak travel demand, traffic volume, speed, and mode share data for household and commercial travel. EPA did not incorporate these suggestions in the conformity rule because the modeling requirements are only intended to outline minimum practice, and in addition, EPA intends for these amendments to streamline the existing rule. The EPA/DOT modeling guidance will have further discussion about best practices and other advances in validation techniques, and EPA believes that this will be a better forum to address the commenter's ideas.

This final rule adds to the proposed validation requirement a sentence specifying that model forecasts must be

analyzed for reasonableness and compared to historical trends and other factors, and that the results must be documented. This sentence was added for several reasons. First, a commenter suggested that the conformity rule should require model forecasts to be compared to documented historical trends in travel behavior, such as changes in per capita vehicle trips and VMT, trip length, mode shares, and time-of-day-travel, and require significant differences between trends and forecasts to be explained. EPA agrees that this is minimum acceptable practice and has added language to the conformity rule accordingly. The language that is included in the final rule is more general than that suggested by the commenter, and EPA plans for the EPA/DOT modeling guidance to address the issue in more detail. EPA also added this language because it better reflects what EPA intended when it proposed that network-based modeling inputs (such as land use, population, and employment) be appropriate to the validation base year. This language is consistent with the proposal on this issue and does not require reproposal prior to final action.

The second network modeling requirement in the final rule requires land use, population, employment, and other network-based model assumptions to be documented and based on the best available information. The proposal's requirement for these assumptions to be "appropriate to the validation base year" has been eliminated in favor of the new language described above that requires reasonableness checks as part of validation. A commenter suggested that the proposed requirement be expanded to refer not only to land use, population, and employment assumptions, but also demographic and spatial attribute assumptions. EPA believes that the final rule's reference to "other network-based modeling inputs" is sufficiently inclusive, and specificity such as the commenter suggests is more appropriate to the EPA/DOT modeling guidance.

The final rule's third network modeling requirement states that scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. This is substantially similar to the language proposed as the fourth modeling requirement in option 3, with minor wording adjustments for the sake of clarity. The final rule also includes a sentence stating that the distribution of employment and residences for different transportation options must be reasonable. This statement is intended

as further clarification of what was intended by the original proposed language. Appropriate consideration must be given to major anticipated transportation system improvements might influence development and, in turn, how that might affect the forecasted distribution of population and employment used to estimate travel and emissions.

A commenter suggested that instead of the proposed language, EPA should require that areas make reasonable adjustments to land use assumptions between scenarios to account for effects of changes in accessibility on the likely timing and pattern of development, using the best methods available. EPA does not believe it is appropriate for the conformity rule to specifically require the use of the "best" methods, because cutting-edge practices may not be reasonably available at the same time in all areas subject to conformity's network modeling requirements. With this exception, EPA believes that the commenter's suggestion is basically a restatement of the language that is being finalized.

The final rule's fourth network modeling requirement states that a capacity-sensitive assignment methodology must be used. In addition, emission estimates must be based on a methodology which differentiates between peak and off-peak link volumes and speeds and uses speeds based on final assigned volumes. This additional language clarifies the proposed requirement that "peak and off-peak travel demand and travel times must be provided," which did not indicate which step in the modeling process was being referred to. EPA in fact simply intends that emissions be calculated on the basis of peak and off-peak speeds separately and applied to peak and off-peak final assigned volumes, regardless of whether these assigned volumes are based on peak and off-peak modeling or are modeled on a 24-hour basis.

The final rule's fifth network modeling requirement is based on § 51.452(b)(1)(iv)/§ 93.130(b)(1)(iv) of the November 1993 conformity rule, which requires feedback of travel times resulting from traffic assignment to travel times used in trip distribution. Although this requirement was not proposed as part of option 3, EPA received comments based on proposed option 2 that this requirement of the original rule should be retained. Commenters pointed out that this type of consistency in the evaluation of travel time is almost universally recognized to be scientifically valid. A commenter stated that not requiring feedback would allow analyses to be manipulated to

produce desired results. Another commenter stated that most MPOs have already implemented full feedback, and it is easy to perform and more accurate than partial feedback. Commenters submitted technical reports and papers to the docket in order to document their claims that full feedback is recognized to be a necessary and sound modeling improvement.

EPA agrees with commenters that there is clear theoretical justification for feedback between traffic assignment and trip distribution, and that feedback may be essential to accurate forecasts when congestion exists. In addition, EPA agrees that full feedback is already widely available and used. As a result, EPA believes it is appropriate to retain the feedback requirement.

The regulatory language has been slightly modified from the November 1993 rule to read that zone-to-zone travel impedances used in trip distribution must be in reasonable agreement with travel times that are estimated from final assigned traffic volumes. The language now refers to "impedances" rather than "travel times" because trip distribution impedances may reflect more than just vehicle travel time (e.g., cost, travel times by other modes, etc.). The language refers to travel times "estimated from final assigned traffic volumes" rather than travel times "which result from" traffic assignment in order to reflect the fact that speeds should be estimated by post-processing assigned volumes.

The final rule's sixth and final network modeling requirement is for network-based models to be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices. EPA's proposed option 3 would have required models to be reasonably sensitive to trip-making changes due to changes in the cost, travel time, capacity, and quality of all travel choices, if the necessary information is available. EPA has eliminated the reference to "trip-making changes" because EPA received comments indicating that this implies a requirement for trip generation to be dependent on accessibility. This is not what EPA intended. The November 1993 conformity rule strongly encouraged a dependence of trip generation on the accessibility of destinations, but it was not specifically required. EPA continues to believe that such a trip generation requirement is not widely available, minimum practice. In addition to deleting "trip-making changes," EPA made other modifications to the proposed requirement in order to streamline the

language. By making the language more general, EPA believes that the qualification "if the necessary information is available" is no longer necessary. EPA has therefore eliminated this language.

EPA received comment that § 51.452(b)(1)(v)/§ 93.130(b)(1)(v) of the November 1993 conformity rule should be retained in addition to the other paragraphs proposed as option 3. Section 51.452(b)(1)(v)/§ 93.130(b)(1)(v) of the November 1993 conformity rule required free-flow speeds on network links to be based on empirical observations. EPA is not including this requirement in the final rule because it has been widely misinterpreted, and because issues relating to the use of speeds in network models are complex enough that they are best handled in modeling guidance, where they can be fully discussed. The November 1993 requirement was read by some to require significant data collection efforts. In fact, EPA had simply intended that available empirical information be used instead of posted speed limits. In addition to creating this misinterpretation, the original language was not clear about which step of the modeling process it referred to, and whether it was directed at input assumptions or outputs.

EPA believes that this issue warrants a full discussion in the EPA/DOT modeling guidance, and that the original regulatory requirement regarding free-flow speeds should be eliminated from the streamlined rule in order to avoid confusion. However, EPA and DOT would like to emphasize that input network speed assumptions used in model application must be consistent with speed assumptions used in model development and calibration, and that these assumptions and calibration techniques should be documented. EPA and DOT recognize that free-flow impedance inputs into traffic assignment may not reflect empirically observed free-flow speeds, because these input impedances may reflect considerations that affect travel behavior other than travel time, such as driver preferences for using specific classes of facilities. If free-flow impedance inputs used in traffic assignment deviate significantly from observed free-flow speeds, the documentation should include a discussion of the differences and rationale for adjustments made.

In addition, since emissions estimates are extremely sensitive to vehicle speed, EPA and DOT recommend that speeds be estimated in a separate step after traffic assignment (also known as "post-processing"), using refined speed-



volume relationships and final assigned traffic volumes. Post-processed speeds estimated in the validation year should be compared with speeds empirically observed during the peak and off-peak periods. These comparisons may be made for typical facilities, for example, by facility class/area type category. Based on these comparisons, speed-volume relationships used for speed post-processing should be adjusted to obtain reasonable agreement with observed speeds. Regardless of the specific analytical technique, every effort must be made to ensure that speed estimates are credible and based on a reproducible and logical analytical procedure.

## **X. Adding Non-Exempt Projects to the Plan/TIP Without Regional Analysis**

### *A. Description of Final Rule*

In today's final rule, EPA is not finalizing the flexibility proposed in § 93.122(b)(4), which would have allowed projects to be added to the plan and TIP based on an alternate emissions analysis that does not use network modeling (for areas that are required to use network models, i.e., serious and above areas with an urbanized population over 200,000). This final rule retains the 1993 conformity rule requirement that every plan/TIP amendment that involves regionally significant, non-exempt projects requires the same level of regional emissions analysis. For the purposes of this discussion, a non-exempt project is any transportation project other than those listed in § 93.126, "Exempt projects," and § 93.127, "Projects exempt from regional emissions analysis."

Areas that are not serious or above or do not have an urbanized population over 200,000 are not affected by the proposal or this change to the proposal, because they are not subject to requirements for network models.

### *B. Rationale*

Based on stakeholder comments received, EPA has determined that the flexibility to add projects without a regional emissions analysis would have to be accompanied by safeguards or limitations that were not proposed. EPA believes that the restrictions that would have to be imposed on the flexibility would outweigh its benefits.

EPA agrees with a commenter who pointed out that regulatory requirements that govern how satisfaction of a conformity test is demonstrated cannot be removed and replaced with unspecified guidance that is not subject to notice and comment. EPA believes

that the commenter is correct in asserting that guidelines for how the alternate emissions analysis would have to be performed would have to be included in regulatory language, if the flexibility were to be finalized. Such additional regulatory language would require reproposal because it is a significant departure from what was originally proposed; EPA did not propose any specific guidelines or limitations for this flexibility in either the preamble or regulatory language of the July 9, 1996, proposal.

Other commenters expressed serious concerns that the flexibility to add projects without analysis could undermine the coordinated planning process and achievement of air quality objectives unless some safeguards are included. Suggestions for limitations and safeguards included adding minimum criteria for alternate analysis methodology in the rule; limiting the flexibility to projects which are unlikely to cause major long-term changes in travel and development patterns; limiting the flexibility to a certain number of projects per planning cycle; or requiring that the emissions from the existing plan and TIP be below a minimum threshold of the applicable emissions budget. Commenters were also concerned that safeguards needed to be applied consistently throughout the country. Including such safeguards would require reproposal, and could result in additional rule complexity that would hamper use of the proposed flexibility.

Because EPA believes it is legally compelled to include minimum guidelines for alternate emissions analysis in the regulatory text, EPA's choice was to either repropose regulatory guidelines and safeguards or eliminate the proposed flexibility. EPA is choosing the latter in today's final rule because the few alternate methodologies suggested by commenters were not sufficient to provide a basis for EPA to propose general regulatory guidelines. In addition, EPA believes that additional regulatory text would outweigh the benefits of the flexibility.

The few methodologies proposed by stakeholders were not sufficient to form the basis of nationally applicable, minimum guidelines for alternate emissions analysis. When EPA proposed the flexibility, it was seeking a procedure that would yield similar results as a full-scale regional analysis but with less effort. However, the methodologies suggested by commenters were sketch planning techniques, which are ancillary to but not substitutes for network modeling.

While sketch planning techniques may be appropriate for certain projects in certain circumstances, the commenters did not suggest guidelines that would delineate when sketch planning techniques may be an adequate approximation or how these techniques could be replicated nationally.

Based on comments received during the development of the proposal and during the comment period on the proposal itself, EPA and DOT believe that regulatory constraints on the proposed flexibility would defeat the flexibility's purpose. Many commenters did not believe EPA could or should develop alternate analysis techniques that would apply nationally, because the value of the flexibility would be its application on a case-by-case basis. In addition, many stakeholders want the regulatory text to be streamlined and procedural modeling guidelines to be minimized.

EPA and DOT also believe that the possible benefits of the proposed flexibility do not warrant the complication of a new set of modeling guidelines. Commenters have indicated that the proposed flexibility would not have a large impact on day-to-day implementation of the conformity rule. Many commenters stated that the flexibility would be used infrequently, or only in limited circumstances. Some commenters believe that a full-scale regional analysis is just as easy as using an alternate sketch planning method. For example, a commenter indicated that adding a project and running the regional model again is not time-consuming once the network for the plan has already been coded. EPA and DOT believe the time and effort spent in developing an alternate procedure and getting agreement from all involved agencies seems greater than that involved in running the regional model.

### *C. Pilot Program*

Although EPA did not grant the general analysis flexibility in today's final rule, EPA and DOT remain willing to consider alternate procedures on a case-by-case basis for determining the impact of transportation projects, since a substitute may prove to be more expeditious and less costly in certain circumstances than a network-based analysis. Those areas that develop such an alternate procedure are invited to apply to the conformity pilot program, proposed on July 9, 1996. Given the pilot program's purposes to allow greater flexibility in implementing the rule and to evaluate potential improvements to the rule, the pilot program is an appropriate vehicle for this flexibility.

## XI. Consequences of SIP Disapproval

### A. Description of the Rule

EPA is finalizing the primary option in the proposal, which is the option for which the regulatory text was proposed. In today's final rule, EPA is also clarifying the definition of a protective finding. Consequences of SIP disapproval apply when control strategy SIPs are disapproved. Control strategy SIPs are 15% SIPs, post-1996 SIPs, and attainment demonstrations.

#### 1. Disapproval With a Protective Finding

When disapproving a control strategy SIP revision, EPA may give the SIP a protective finding. If EPA disapproves a SIP but gives a protective finding, the motor vehicle emissions budget in the disapproved SIP could still be used to demonstrate conformity. There would be no adverse conformity consequences unless highway sanctions were imposed, as is the case with respect to all other SIP planning failures. Highway sanctions would be imposed two years following EPA's disapproval if the SIP deficiency had not been remedied. The conformity of the plan and TIP would lapse once highway sanctions were imposed.

EPA would give a protective finding where a submitted SIP contains adopted control measures or written commitments to adopt enforceable control measures that fully satisfy the emissions reductions requirements relevant to the statutory provision for which the SIP was submitted, such as reasonable further progress (RFP) or attainment. That is, EPA would give such a submitted SIP a protective finding if it contains enough emissions reduction measures or commitments to these measures to achieve its purpose of either demonstrating RFP or attainment. Like the November 1993 rule, a SIP could receive a protective finding even if all control measures are not fully adopted in enforceable form, provided there are written commitments to such measures. EPA would not give a protective finding to a SIP whose emission reduction measures or commitments are inadequate to achieve the required RFP or attainment.

#### 2. Disapproval Without a Protective Finding

In the cases where EPA disapproves a SIP and does not give it a protective finding, an area has a 120-day grace period, after which the only transportation projects that could be found to conform would be those included in the first three years of the currently conforming transportation plan and TIP. No new plans, TIPs, or

plan/TIP amendments could be found to conform after the grace period. Further, no additional projects not already in the first three years of the currently conforming plan and TIP could be found to conform. Since exempt projects and non-federal projects do not require conformity determinations, they could proceed as long as they meet other applicable requirements of the conformity rule (for example, a regionally significant non-federal project must have been included in the regional emissions analysis supporting the most recent plan and TIP conformity determination).

If any one phase of a project is included in the first three years of the currently conforming plan/TIP, all subsequent phases could proceed following a disapproval, provided that all phases of the project were included in the plan/TIP conformity analysis and all other applicable project-level conformity criteria were satisfied (e.g., hot-spot requirements).

The "freeze" on new transportation plans, TIPs, and projects would be removed once an area submits another control strategy SIP or maintenance plan to replace the disapproved SIP, provided EPA does not find the budget inadequate. If such a replacement SIP does not apply for conformity purposes by the time Clean Air Act highway sanctions are imposed (two years after EPA's final disapproval), conformity would lapse, and no new project-level conformity determinations could be made, even for projects in the first three years of the plan and TIP. The lapse would last until a replacement SIP applies for conformity purposes (i.e., until an adequate replacement SIP has been submitted to EPA).

During the 120-day grace period, plans, TIPs, and projects could be found to conform using the budgets from the disapproved SIP, if there is no applicable replacement SIP for transportation conformity purposes. This 120-day grace period is intended to allow areas to complete conformity determinations that were in progress at the time of EPA's final disapproval. Both the MPO and DOT must have determined conformity by the end of the 120-day grace period.

As in the previous conformity rule, adverse consequences would occur following any EPA final disapproval action on a control strategy SIP without a protective finding, even if the disapproval is limited or partial. The motor vehicle emissions budget is sufficient for conformity determinations only if the SIP as a whole satisfies the Clean Air Act requirements for RFP or attainment. If one part of a SIP is disapproved without a protective

finding, even if that part does not address mobile sources, then there is no overall strategy for RFP or attainment, and it is not possible to determine whether consistency with the motor vehicle emissions budget will result in a level of emissions consistent with RFP or attainment.

A plan/TIP conformity lapse previously imposed under the November 1993 rule due to SIP disapproval without a protective finding would convert to a "freeze" as described in this notice once this rule becomes effective, provided highway sanctions have not yet been imposed. The "freeze" would continue until highway sanctions are imposed, which normally occurs two years after EPA's final disapproval. Once highway sanctions are imposed, the conformity of the plan and TIP would lapse, as occurs whether or not the SIP had received a protective finding.

Finally, EPA wishes to clarify that although the preamble to the proposal inadvertently indicated that consequences of SIP disapproval also apply to disapproval of maintenance plans, this is not what EPA intends nor is it included in the final rule language. Consequences of SIP disapproval only apply when control strategy SIPs are disapproved. EPA did not refer to maintenance plans in the relevant regulatory text of the proposal or the conformity rule as amended in 1995. The regulatory text would not make sense with respect to maintenance plans because sanctions do not apply for maintenance plan disapprovals. Furthermore, there is less need to apply the consequences for disapproving a maintenance plan, since an area could revert to using its attainment SIP budget for demonstrating conformity if a maintenance plan is disapproved.

### B. Rationale

EPA believes that the option finalized today provides the best balance between the competing objectives of minimizing new transportation commitments after a SIP disapproval and minimizing disruption to the transportation planning process. EPA believes that new projects should not be approved when the control strategy SIP has been disapproved without a protective finding, because if a SIP does not identify enough emission reductions and the motor vehicle emissions budget does not provide for RFP or attainment, then there is no basis to claim that a transportation activity conforms within the meaning of Clean Air Act section 176(c). Furthermore, adding more transportation projects may make it

more difficult for the air agency to create a SIP that achieves sufficient emissions reductions, and may intensify the need for additional control strategies later. EPA is allowing areas to grandfather projects included in the first three years of the currently conforming plan and TIP in order to provide stability for planning.

Most commenters supported the primary option EPA is finalizing today, and gave a variety of reasons. Several stakeholders commented that this option allows some continuity for transportation planning, since ideally it allows the TIP to continue in the short term while changes to the SIP are underway. Another commenter noted that since this option minimizes the disruption of projects in the first three years of the TIP, it limits the financial and legal risk to local governments when they undertake local bond programs to finance these projects. Another commenter noted that SIPs may be disapproved for numerous reasons outside of the control of the DOT or MPO, and stopping all transportation projects immediately is not in the public's best interest. Finally, a commenter added that since the projects that would be allowed to proceed would have been included in a plan and TIP found to conform previously, it seems reasonable to allow these projects to advance.

Some commenters supported aligning the timing of conformity consequences of SIP disapproval with imposition of highway sanctions, which was option 4 in the proposal. Commenters suggested that this option would simplify communication, make the rule more consistent, and eliminate a perceived inequity with stationary sources. However, for the reasons stated above, EPA believes that there is no appropriate basis to find new projects that were not included in the previously conforming plan/TIP to conform when the SIP has been disapproved without a protective finding. Commenters supporting option 4 did not identify a means by which to claim that such projects would not contribute to violations of the standards.

### *C. Discussion of Specific Comments*

Some objections to the legality of the primary option were raised. One commenter objected to any project approvals based on plans and TIPs that have lapsed, since even projects in the first three years cannot satisfy the statutory test for coming from a conforming plan and TIP if the conformity of the plan and TIP has lapsed. EPA agrees that projects cannot be approved if the plan and TIP have

lapsed. However, in this situation, the conformity status of existing plans and TIPs is not lapsing. The plan and TIP is frozen such that no new projects can be added, but projects in the first three years can proceed to project-level approval. EPA is grandfathering plans and TIPs that have already been found to conform. EPA agrees that new plans and TIPs or plan/TIP amendments cannot be found to conform after the 120-day grace period.

Another objection raised was that EPA cannot allow plans, TIPs, or projects to conform based on SIPs that have been disapproved, since conformity must be based on the applicable implementation plan. EPA agrees with this statement as well. Today's action makes it clear that an area cannot find any new projects to conform once the SIP has been disapproved without a protective finding. EPA is only allowing areas to approve projects that are within the first three years of a plan and TIP that has already been found to conform, for the two years prior to lapsing.

A commenter objected to codification of EPA's committal SIP policy by the adoption of the definition of "protective finding" and the authorization for protective findings in § 93.120.

EPA responds by clarifying that granting a protective finding does not codify a committal SIP policy. By giving a SIP a protective finding, EPA does not mean to imply that these SIPs are in any way approvable. Rather, by disapproving the SIP, EPA is stating that the SIP does not meet Clean Air Act SIP requirements. Granting a protective finding merely allows an area to use the motor vehicle emissions budget in the disapproved SIP to demonstrate conformity, where appropriate. As other commenters stated, there are many reasons why a SIP could be disapproved by EPA, some of which would have nothing to do with the integrity of the motor vehicle emissions budget. A protective finding ensures that the transportation community is not penalized as a result of a SIP failure when the emissions budget in the SIP is adequate to serve as the basis of a conformity determination.

Finally, a commenter believed that prohibiting any project funding except for grandfathered projects after the imposition of highway sanctions (i.e., a conformity lapse) is not consistent with the policy adopted by Congress for the imposition of sanctions. The commenter stated that the conformity rule should be revised to explicitly adopt the policy of prohibiting funding only for highway capacity expansion while providing funding for all those projects that will

improve air quality identified in Clean Air Act section 179(b)(1)(B). Section 179(b)(1)(B) lists the types of projects that can proceed under sanctions.

However, sanctions and conformity are two different parts of the Clean Air Act, and serve quite different purposes. Because certain activities can proceed under sanctions does not mean that these types of projects should not have to undergo a conformity analysis prior to implementation, or should be permanently grandfathered from conformity requirements. Furthermore, EPA does allow transportation control measures in approved SIPs to proceed even during a conformity lapse. This is consistent with the sanctions policy's provision for projects that benefit air quality to proceed.

### **XII. Traffic Signal Synchronization**

On September 24, 1996, Congress amended the Clean Air Act to state that traffic signal synchronization projects are exempt from conformity determinations prior to their funding, approval, or implementation. However, once these projects are funded, approved, or implemented (whichever occurs first), they are to be included in the conformity determinations for future transportation plans, TIPs, and projects.

The final rule reflects this Clean Air Act amendment in new § 93.128, "Traffic signal synchronization projects." This section states that traffic signal synchronization projects may be approved, funded, and implemented without a conformity determination. However, all subsequent regional emissions analyses required by §§ 93.118 and 93.119 for transportation plans, TIPs, or projects not from a conforming plan and TIP must include such regionally significant traffic signal synchronization projects.

In the preamble to the proposal, prior to congressional action on this issue, EPA had discussed whether traffic signal synchronization projects should be exempt from conformity. This topic was included because several stakeholders had advocated the exemption of signal synchronization projects on the basis of positive air quality and congestion mitigation impacts. EPA did not propose to exempt these projects for reasons explained in the proposal's preamble. EPA received a few comments on both sides of this issue. However, EPA is now promulgating this change to the conformity rule without repropounding because Congress has already amended the Clean Air Act and any additional comments could not change the outcome. The Clean Air Act has exempted these projects from advance

conformity determinations as a matter of law, and EPA is now merely reflecting this statutory change in the regulations. EPA finds good cause to dispense with notice and comment because EPA has no discretion in this matter and is merely clarifying the rule to be consistent with the amended statute.

### XIII. Conformity SIPs

As specified in the original November 1993 conformity rule and § 51.390(b) of today's final rule, the federal conformity requirements no longer govern conformity determinations once EPA approves a state conformity SIP revision. The provisions of the approved SIP apply instead. Therefore, the new flexibilities found in today's rulemaking will not take effect in areas that already have an approved conformity SIP until the state prepares a new conformity SIP and it is approved by EPA.

Several stakeholders commented that this process could take too long to give areas adequate relief. Commenters suggested several possible solutions. For example, EPA could grant relief from the build/no-build test without the approval of the new conformity SIP, or today's rule could become effective upon submission of a formal statement that the state is preparing a new conformity SIP. These suggestions cannot be implemented because once EPA approves a state's conformity SIP, that SIP becomes federally enforceable law, and cannot be changed without notice-and-comment rulemaking. The conformity rule itself cannot change the applicability of approved conformity SIPs.

Another commenter suggested that EPA add language to the rule to automatically approve conformity SIPs that adopt the EPA language by reference. However, SIP approval requires public notice and comment in the **Federal Register** in accordance with the APA; it cannot be given automatically. Furthermore, there are sections of the conformity SIP, for example, the consultation section, that cannot be adopted by reference or verbatim because they must be tailored for the state's own circumstances.

However, EPA understands areas' desire to determine conformity using the procedures in today's final rule, and EPA will give priority to processing conformity SIP revisions designed to incorporate these changes in those areas with approved conformity SIPs. EPA also commits to expedite the approval of conformity SIP revisions that, to the extent possible, incorporate the amendments verbatim or by reference.

EPA is requiring conformity SIPs to be submitted to EPA within 12 months of

today's rulemaking. One commenter stated that the 12-month timeframe for revising conformity SIPs is too short given that state air quality agencies would have to hire new staff to accomplish the task, and that 12 months is inconsistent with the Clean Air Act provisions that allow 18 months after a SIP call for an area to remedy its deficiencies. EPA agrees that experience has shown 12 months to be a very ambitious deadline. However, Clean Air Act section 176(c)(4)(C) is very specific in its intent that states submit conformity SIPs within 12 months of EPA's rules. EPA does not believe that the Clean Air Act's general language regarding SIP calls should be used to override the specific timeframe for submitting conformity SIPs that is evidenced in Clean Air Act section 176(c)(4)(C). In the case of a SIP call, EPA is allowed to establish reasonable deadlines not to exceed 18 months for an area to correct its SIP inadequacies. However, because it cannot be argued that revising a conformity SIP to include these amendments is more time-consuming than preparing an original conformity SIP, there is no appropriate basis to claim that the general SIP call language should override the specific intent of Congress regarding deadlines for submission of conformity SIPs relative to promulgation of federal conformity rules.

### XIV. Hot-Spot Tests

Most commenters supported the clarification to § 93.123, "Procedures for determining localized CO and PM-10 concentrations (hot-spot analysis)," which allows the use of procedures other than "Guideline" models in hot-spot analyses if the alternate procedures are developed through the interagency consultation process and are approved by the EPA Regional Administrator.

A few commenters believed that the CO hot-spot requirements for all projects affecting intersections of level of service (LOS) D, E, and F are too stringent and burdensome when compared to the realized benefits from such analyses. Other commenters thought that the requirements were too prescriptive, because LOS D does not automatically indicate an air quality problem. One commenter suggested that the conformity rule should only require hot-spot analyses for the worst, most representative intersection on each major street impacted by a project, rather than all intersections that fit the current rule's hot-spot criteria. EPA believes no change to the proposal is necessary to address these concerns because it does have flexibility that allows areas to develop their own

protocols that have different screening mechanisms.

A few commenters suggested that the conformity rule should be clarified to allow projects which decrease the likelihood of public exposure to exceedances of the NAAQS. For example, commenters stated that a project should be allowed to make a violation worse in a place not frequented by the public if it improves air quality and eliminates violations where public exposure is more likely. However, Clean Air Act section 176(c)(1)(B) states that transportation projects must not cause or contribute to any new violation of any standard in any area, or increase the frequency or severity of any existing violation of any standard in any area. It is not public exposure to a violation of a standard that the Clean Air Act language prohibits; it prohibits any violation of any standard in any area. The conformity rule cannot override the Clean Air Act to make exceptions that create new or worsen existing violations.

### XV. TCM Flexibility

As discussed in the proposal preamble, EPA remains committed to issuing guidance on how areas can substitute TCMs in previously approved SIPs without additional EPA approvals. EPA also stated in the proposal that development of such a substitution mechanism is possible under existing EPA SIP policy, so this final rule does not address the issue.

### XVI. Conformity and the Proposed NAAQS Revisions

Several commenters requested information on how the revisions of the ozone and particulate matter (PM) NAAQS standards would affect conformity. EPA issued a notice of proposed policy entitled, "Interim Implementation Policy on New or Revised Ozone and Particulate Matter NAAQS" (61 FR 65752, December 13, 1996), which proposes how current programs would be affected while states are developing plans to implement the new NAAQS. This proposed policy notice specifically discusses conformity. A final policy for implementing the one hour ozone and pre-existing PM NAAQS will be published in the **Federal Register** in September 1997.

EPA proposed in its December 1996 notice that conformity determinations would not be required to address the new NAAQS until SIPs addressing the new NAAQS are approved by EPA. New nonattainment areas would not be subject to conformity until EPA approves the SIPs that address these

standards. Existing nonattainment and maintenance areas would not have to consider the 8-hour ozone standard or the PM-2.5 standard in their conformity determinations until EPA approved SIPs addressing those pollutants.

In general, the existing control strategy SIPs and maintenance plans that establish motor vehicle emissions budgets will remain in force until they are superseded by new or revised SIPs that have been approved by EPA. Thus, conformity will continue as usual in existing nonattainment and maintenance areas for several years. Areas that have not submitted post-1996 rate-of-progress plans or attainment demonstrations for the one hour ozone standard would be required to conform to the 15% SIP until a post-1996 plan or new attainment demonstration is submitted.

In such areas, conformity to that plan would not be required, and these areas would continue to demonstrate conformity to the 15% SIP. Areas that are not required to submit control strategy SIPs (e.g., marginal areas) and have not been demonstrating conformity to motor vehicle emissions budgets would be required to continue demonstrating conformity using the emission reduction tests until SIPs with motor vehicle emissions budgets are submitted. Areas with approved maintenance plans would continue demonstrating conformity using the budgets established by those plans.

States are free to establish, through the SIP process, a motor vehicle emissions budget that addresses the new NAAQS in advance of a complete SIP attainment demonstration. That is, a state could submit a motor vehicle emissions budget that does not demonstrate attainment but is consistent with projections and commitments to control measures and achieves some progress toward attainment. Such a budget would apply for conformity purposes in addition to existing budgets addressing the old NAAQS (i.e., a SIP that does not demonstrate attainment of the new NAAQS would not supersede existing control strategy SIPs).

Today's final conformity rule does not include any changes specifically intended to address the NAAQS revisions. No changes are necessary in the short term because the existing conformity process will continue for several years. The Federal Advisory Committee Act (FACA) Subcommittee for Ozone, PM and Regional Haze Implementation Programs is discussing the longer-term conformity issues, and EPA's decisions will be published in future policy notices. In addition, EPA will be promulgating a conformity rule

addressing transitional ozone areas under the new standard by December 1998.

## **XVII. Minor Changes to the Rule**

### *A. Definitions*

This final rule includes three new definitions in § 93.101. For the purposes of this final rule, EPA has defined "written commitment" to mean a commitment that includes a description of the action to be taken; a schedule for the completion of the action; a demonstration that funding necessary to implement the action has been authorized by the appropriating or authorizing body; and an acknowledgment that the commitment is an enforceable obligation under the SIP. The conformity rule uses the term "written commitment" with respect to SIP commitments to control measures, and also with respect to commitments to project-level emissions mitigation or control measures as part of a conformity determination. As described in § 93.125(c), these latter commitments are enforceable under the conformity SIP. As is the case with any other type of SIP commitments, written commitments as defined by the conformity rule must be made by an agency that has legal authority to implement the action in question.

EPA is defining the term "written commitment" because a commenter requested it, and EPA agrees that this will ease implementation by clarifying EPA's intent. This definition is consistent with EPA's historical implementation of the conformity rule.

EPA is also defining the term "safety margin" to mean the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable Clean Air Act requirement for reasonable further progress, attainment, or maintenance. EPA has added a reference to that term in § 93.118(e)(4), which lists the requirements for the adequacy of submitted SIPs. This section specifies that documentation of any changes to established safety margins is a criterion for the adequacy of a submitted SIP. The term "safety margin" is also used in § 93.124(b), although it is used and defined in that section in a specific context. This definition is consistent with the historical implementation of the conformity rule and with the definition in § 93.124(b).

EPA is defining "lapse" to mean that the conformity determination for a transportation plan or TIP has expired, and thus there is no currently conforming transportation plan and TIP.

### *B. Consultation*

EPA is making two minor changes to the consultation section in response to comments on the proposal. One commenter suggested that the public consultation requirements of § 93.105(e) should be included in the conformity SIP. EPA agrees with this commenter and has modified § 93.105(a) to clarify that the public consultation requirements described in § 93.105(e) must also be required by the conformity SIP. Because the federal conformity rule ceases to apply once the conformity SIP has been approved, the requirements of § 93.105(e) must be required by the conformity SIP or the SIP would not provide for appropriate public input.

Section 93.105(e) requires public consultation consistent with the requirements of 23 CFR 450.316(b) and articulates a few specific requirements. EPA intends for the conformity SIP to reiterate these statements; EPA does not intend for the conformity SIP to actually include the specific public consultation procedures that an area develops under 23 CFR 450.316(b).

EPA is also adding a new element to the list of processes for which consultation procedures must be developed. Section 93.105(c)(1)(vii) requires areas to establish a process for choosing conformity tests and methodologies for isolated rural nonattainment and maintenance areas, as required by § 93.109(g)(2)(iii). (Refer to section V. of this preamble, "Rural Nonattainment and Maintenance Areas" for a discussion of the choices of conformity tests that are available to rural areas.) Of course, states without isolated rural nonattainment and maintenance areas would not need to develop such procedures.

As explained in the proposal preamble, EPA had not proposed to amend § 51.402/§ 93.105 of the original conformity rule to add this element to the list of processes for which consultation procedures must be developed, because EPA believed it was clear that consultation would be necessary to use the new rural provision. Commenters had mixed opinions about whether and how the new consultation needs should be integrated into the conformity rule. Some commenters did not believe that the conformity rule needed to be changed. However, some thought that further guidance regarding necessary changes in areas' consultation procedures would be useful. Given these comments, EPA decided to add the new consultation requirement to the conformity rule for clarity and so that the rule could serve as a comprehensive

list of items that consultation procedures must address.

One commenter requested that EPA explain that Memoranda of Understanding, or MOUs, can be used to establish interagency consultation procedures. The commenter is correct that MOUs can be used to establish interagency consultation procedures, provided that the MOU is enforceable under state law. In order for the MOU to be enforceable, all agencies that are covered by the conformity rule must sign the MOU, including federal agencies and the recipients of funds designated under title 23 U.S.C. or the Federal Transit Laws (i.e., non-federal project sponsors). In addition, the conformity SIP must include a rule that requires all future parties covered by the rule, including new recipients of funds designated under title 23 U.S.C. or the Federal Transit Laws, to sign the MOU. This ensures that the MOU approach will continue to apply to all subject parties. EPA does not believe that any regulatory changes are needed to address this issue.

#### C. Changes to § 93.109

Section 93.109, "Criteria and procedures for determining conformity of transportation plans, programs, and projects: General," describes which conformity tests apply and when they apply for each pollutant and for rural areas. This section has been revised to reflect changes discussed elsewhere in this preamble. In addition, this section has been slightly revised so that its description of conformity requirements does not refer solely to an area's nonattainment classification. The section now also refers to the control strategy SIP requirements for a given classification. EPA believes this clarifies the conformity rule and makes it more flexible in the case of future revisions to the classification system, which could occur if the NAAQS are revised. These clarifications do not change the substance of the section's requirements.

### XVIII. Administrative Requirements

#### A. Administrative Designation

##### Executive Order 12866

Under Executive Order 12866, (58 FR 51735 (October 4, 1993)) the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of \$100 million or more, or otherwise adversely affect in a material

way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof;

(4) Raise novel or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a "significant regulatory action" because this action raises novel legal or policy issues arising out of legal mandates, the President's priorities, and the principles set forth in the Executive Order. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

#### B. Paperwork Reduction Act

This final rule does not impose any new information collection requirements and results in no change to the currently approved collection requirements. OMB has approved the information collection requirements contained in this rule under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq.

The information collection requirements of EPA's Transportation Conformity Rule and these amendments to it are covered under the Information Collection Request of the Department of Transportation entitled, "Metropolitan and Statewide Transportation Planning," approved by OMB under the Paperwork Reduction Act, and assigned OMB Control Number 2132-0529.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for DOT's regulations are listed in 5 CFR Part 1320.

Send any comments on the recordkeeping and reporting requirements of Transportation Conformity to: Mr. Sean Libberton, U.S. Department of Transportation, TPL11, 400 7th Street, SW., Washington, DC 20590, and Office of Information and Regulatory Affairs, Office of Management and Budget, Attention: Desk Officer for EPA/OAR, Room 10202, 725 17th Street, NW., Washington, DC 20503. In any correspondence please refer to OMB Control Number 2132-0529.

#### C. Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 requires federal agencies to identify potentially adverse impacts of federal regulations upon small entities. In instances where significant impacts are possible on a substantial number of these entities, agencies are required to perform a Regulatory Flexibility Analysis (RFA).

EPA has determined that today's regulations will not have a significant impact on a substantial number of small entities. This regulation affects federal agencies and metropolitan planning organizations, which by definition are designated only for metropolitan areas with a population of at least 50,000. These organizations do not constitute small entities.

Therefore, as required under section 605 of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., I certify that this rule will not have a significant economic impact on a substantial number of small entities.

#### D. Submission to Congress and the Comptroller General

Under 5 U.S.C. 801(a)(1)(A), as added by the Small Business Regulatory Enforcement Fairness Act of 1996, EPA submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in today's **Federal Register**. This rule is not a "major rule" as defined by 5 U.S.C. 804(2).

#### E. Unfunded Mandates

Under Sections 202, 203, and 205 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act"), signed into law on March 22, 1995, EPA

must undertake various actions in association with proposed or final rules that include a federal mandate that may result in estimated costs of \$100 million or more to the private sector, or to state, local, or tribal governments in the aggregate.

EPA has determined that to the extent this rule imposes any mandate within the meaning of the Unfunded Mandates Act, this final action does not include a mandate that may result in estimated costs of \$100 million or more to state, local, or tribal governments in the aggregate or to the private sector. These rule amendments relax requirements of the previously applicable conformity rule, and thus do not impose any additional burdens. Therefore, EPA has not prepared a statement with respect to budgetary impacts.

#### List of Subjects

##### 40 CFR Part 51

Environmental protection, Administrative practice and procedure, Air pollution control, Carbon monoxide, Intergovernmental relations, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Transportation, Volatile organic compounds.

##### 40 CFR Part 93

Administrative practice and procedure, Air pollution control, Carbon monoxide, Intergovernmental relations, Nitrogen dioxide, Ozone, Particulate matter, Transportation, Volatile organic compounds.

Dated: July 31, 1997.

**Carol M. Browner,**  
Administrator.

For the reasons set out in the preamble, 40 CFR parts 51 and 93 are amended as follows:

#### PART 51—[AMENDED]

1. The authority citation for part 51 is revised to read as follows:

**Authority:** 42 U.S.C. 7401–7671q.

2. Subpart T is revised to read as follows:

#### **Subpart T—Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 U.S.C. or the Federal Transit Laws**

##### **§ 51.390 Implementation plan revision.**

(a) States with areas subject to this subpart and part 93, subpart A, of this chapter must submit to the EPA and DOT a revision to their implementation plan which contains criteria and

procedures for DOT, MPOs and other State or local agencies to assess the conformity of transportation plans, programs, and projects, consistent with this subpart and part 93, subpart A, of this chapter. This revision is to be submitted by November 25, 1994 (or within 12 months of an area's redesignation from attainment to nonattainment, if the State has not previously submitted such a revision). Further revisions to the implementation plan required by amendments to part 93, subpart A, of this chapter must be submitted within 12 months of the date of publication of such final amendments. EPA will provide DOT with a 30-day comment period before taking action to approve or disapprove the submission. A State's conformity provisions may contain criteria and procedures more stringent than the requirements described in this subpart and part 93, subpart A, of this chapter only if the State's conformity provisions apply equally to non-federal as well as Federal entities.

(b) The Federal conformity rules under part 93, subpart A, of this chapter, in addition to any existing applicable State requirements, establish the conformity criteria and procedures necessary to meet the requirements of Clean Air Act section 176(c) until such time as EPA approves the conformity implementation plan revision required by this subpart. Following EPA approval of the State conformity provisions (or a portion thereof) in a revision to the applicable implementation plan, conformity determinations would be governed by the approved (or approved portion of the) State criteria and procedures. The Federal conformity regulations contained in part 93, subpart A, of this chapter would apply only for the portion, if any, of the State's conformity provisions that is not approved by EPA. In addition, any previously applicable implementation plan conformity requirements remain enforceable until the State submits a revision to its applicable implementation plan to specifically remove them and that revision is approved by EPA.

(c) The implementation plan revision required by this section must meet all of the requirements of part 93, subpart A, of this chapter.

(d) In order for EPA to approve the implementation plan revision submitted to EPA and DOT under this subpart, the plan must address all requirements of part 93, subpart A, of this chapter in a manner which gives them full legal effect. In particular, the revision shall incorporate the provisions of the following sections of part 93, subpart A,

of this chapter in verbatim form, except insofar as needed to clarify or to give effect to a stated intent in the revision to establish criteria and procedures more stringent than the requirements stated in the following sections of this chapter: §§ 93.101, 93.102, 93.103, 93.104, 93.106, 93.109, 93.110, 93.111, 93.112, 93.113, 93.114, 93.115, 93.116, 93.117, 93.118, 93.119, 93.120, 93.121, 93.126, and 93.127.

#### **PART 93—[AMENDED]**

3. The authority citation for part 93 continues to read as follows:

**Authority:** 42 U.S.C. 7401–7671q.

4. Subpart A is revised to read as follows:

#### **Subpart A—Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 U.S.C. or the Federal Transit Laws**

Sec.

- 93.100 Purpose.
- 93.101 Definitions.
- 93.102 Applicability.
- 93.103 Priority.
- 93.104 Frequency of conformity determinations.
- 93.105 Consultation.
- 93.106 Content of transportation plans.
- 93.107 Relationship of transportation plan and TIP conformity with the NEPA process.
- 93.108 Fiscal constraints for transportation plans and TIPs.
- 93.109 Criteria and procedures for determining conformity of transportation plans, programs, and projects: General.
- 93.110 Criteria and procedures: Latest planning assumptions.
- 93.111 Criteria and procedures: Latest emissions model.
- 93.112 Criteria and procedures: Consultation.
- 93.113 Criteria and procedures: Timely implementation of TCMs.
- 93.114 Criteria and procedures: Currently conforming transportation plan and TIP.
- 93.115 Criteria and procedures: Projects from a plan and TIP.
- 93.116 Criteria and procedures: Localized CO and PM<sub>10</sub> violations (hot spots).
- 93.117 Criteria and procedures: Compliance with PM<sub>10</sub> control measures.
- 93.118 Criteria and procedures: Motor vehicle emissions budget.
- 93.119 Criteria and procedures: Emission reductions in areas without motor vehicle emissions budgets.
- 93.120 Consequences of control strategy implementation plan failures.
- 93.121 Requirements for adoption or approval of projects by other recipients of funds designated under title 23 U.S.C. or the Federal Transit Laws.
- 93.122 Procedures for determining regional transportation-related emissions.
- 93.123 Procedures for determining localized CO and PM<sub>10</sub> concentrations (hot-spot analysis).

- 93.124 Using the motor vehicle emissions budget in the applicable implementation plan (or implementation plan submission).
- 93.125 Enforceability of design concept and scope and project-level mitigation and control measures.
- 93.126 Exempt projects.
- 93.127 Projects exempt from regional emissions analyses.
- 93.128 Traffic signal synchronization projects.

**Subpart A—Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 U.S.C. or the Federal Transit Laws**

**§ 93.100 Purpose.**

The purpose of this subpart is to implement section 176(c) of the Clean Air Act (CAA), as amended (42 U.S.C. 7401 et seq.), and the related requirements of 23 U.S.C. 109(j), with respect to the conformity of transportation plans, programs, and projects which are developed, funded, or approved by the United States Department of Transportation (DOT), and by metropolitan planning organizations (MPOs) or other recipients of funds under title 23 U.S.C. or the Federal Transit Laws (49 U.S.C. Chapter 53). This subpart sets forth policy, criteria, and procedures for demonstrating and assuring conformity of such activities to an applicable implementation plan developed pursuant to section 110 and Part D of the CAA.

**§ 93.101 Definitions.**

Terms used but not defined in this subpart shall have the meaning given them by the CAA, titles 23 and 49 U.S.C., other Environmental Protection Agency (EPA) regulations, or other DOT regulations, in that order of priority.

*Applicable implementation plan* is defined in section 302(q) of the CAA and means the portion (or portions) of the implementation plan, or most recent revision thereof, which has been approved under section 110, or promulgated under section 110(c), or promulgated or approved pursuant to regulations promulgated under section 301(d) and which implements the relevant requirements of the CAA.

CAA means the Clean Air Act, as amended (42 U.S.C. 7401 et seq.).

*Cause or contribute to a new violation* for a project means:

- (1) To cause or contribute to a new violation of a standard in the area substantially affected by the project or over a region which would otherwise not be in violation of the standard

during the future period in question, if the project were not implemented; or

- (2) To contribute to a new violation in a manner that would increase the frequency or severity of a new violation of a standard in such area.

*Clean data* means air quality monitoring data determined by EPA to meet the requirements of 40 CFR part 58 that indicate attainment of the national ambient air quality standard.

*Control strategy implementation plan revision* is the implementation plan which contains specific strategies for controlling the emissions of and reducing ambient levels of pollutants in order to satisfy CAA requirements for demonstrations of reasonable further progress and attainment (CAA sections 182(b)(1), 182(c)(2)(A), 182(c)(2)(B), 187(a)(7), 189(a)(1)(B), and 189(b)(1)(A); and sections 192(a) and 192(b), for nitrogen dioxide).

*Design concept* means the type of facility identified by the project, e.g., freeway, expressway, arterial highway, grade-separated highway, reserved right-of-way rail transit, mixed-traffic rail transit, exclusive busway, etc.

*Design scope* means the design aspects which will affect the proposed facility's impact on regional emissions, usually as they relate to vehicle or person carrying capacity and control, e.g., number of lanes or tracks to be constructed or added, length of project, signalization, access control including approximate number and location of interchanges, preferential treatment for high-occupancy vehicles, etc.

*DOT* means the United States Department of Transportation.

*EPA* means the Environmental Protection Agency.

*FHWA* means the Federal Highway Administration of DOT.

*FHWA/FTA project*, for the purpose of this subpart, is any highway or transit project which is proposed to receive funding assistance and approval through the Federal-Aid Highway program or the Federal mass transit program, or requires Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) approval for some aspect of the project, such as connection to an interstate highway or deviation from applicable design standards on the interstate system.

*Forecast period* with respect to a transportation plan is the period covered by the transportation plan pursuant to 23 CFR part 450.

*FTA* means the Federal Transit Administration of DOT.

*Highway project* is an undertaking to implement or modify a highway facility or highway-related program. Such an undertaking consists of all required

phases necessary for implementation. For analytical purposes, it must be defined sufficiently to:

- (1) Connect logical termini and be of sufficient length to address environmental matters on a broad scope;

- (2) Have independent utility or significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and

- (3) Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

*Horizon year* is a year for which the transportation plan describes the envisioned transportation system according to § 93.106.

*Hot-spot analysis* is an estimation of likely future localized CO and PM<sub>10</sub> pollutant concentrations and a comparison of those concentrations to the national ambient air quality standards. Hot-spot analysis assesses impacts on a scale smaller than the entire nonattainment or maintenance area, including, for example, congested roadway intersections and highways or transit terminals, and uses an air quality dispersion model to determine the effects of emissions on air quality.

*Increase the frequency or severity* means to cause a location or region to exceed a standard more often or to cause a violation at a greater concentration than previously existed and/or would otherwise exist during the future period in question, if the project were not implemented.

*Lapse* means that the conformity determination for a transportation plan or TIP has expired, and thus there is no currently conforming transportation plan and TIP.

*Maintenance area* means any geographic region of the United States previously designated nonattainment pursuant to the CAA Amendments of 1990 and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under section 175A of the CAA, as amended.

*Maintenance plan* means an implementation plan under section 175A of the CAA, as amended.

*Metropolitan planning organization (MPO)* is that organization designated as being responsible, together with the State, for conducting the continuing, cooperative, and comprehensive planning process under 23 U.S.C. 134 and 49 U.S.C. 5303. It is the forum for cooperative transportation decision-making.

*Milestone* has the meaning given in sections 182(g)(1) and 189(c) of the CAA. A milestone consists of an



emissions level and the date on which it is required to be achieved.

*Motor vehicle emissions budget* is that portion of the total allowable emissions defined in the submitted or approved control strategy implementation plan revision or maintenance plan for a certain date for the purpose of meeting reasonable further progress milestones or demonstrating attainment or maintenance of the NAAQS, for any criteria pollutant or its precursors, allocated to highway and transit vehicle use and emissions.

*National ambient air quality standards (NAAQS)* are those standards established pursuant to section 109 of the CAA.

*NEPA* means the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*).

*NEPA process completion*, for the purposes of this subpart, with respect to FHWA or FTA, means the point at which there is a specific action to make a determination that a project is categorically excluded, to make a Finding of No Significant Impact, or to issue a record of decision on a Final Environmental Impact Statement under NEPA.

*Nonattainment area* means any geographic region of the United States which has been designated as nonattainment under section 107 of the CAA for any pollutant for which a national ambient air quality standard exists.

*Project* means a highway project or transit project.

*Protective finding* means a determination by EPA that a submitted control strategy implementation plan revision contains adopted control measures or written commitments to adopt enforceable control measures that fully satisfy the emissions reductions requirements relevant to the statutory provision for which the implementation plan revision was submitted, such as reasonable further progress or attainment.

*Recipient of funds designated under title 23 U.S.C. or the Federal Transit Laws* means any agency at any level of State, county, city, or regional government that routinely receives title 23 U.S.C. or Federal Transit Laws funds to construct FHWA/FTA projects, operate FHWA/FTA projects or equipment, purchase equipment, or undertake other services or operations via contracts or agreements. This definition does not include private landowners or developers, or contractors or entities that are only paid for services or products created by their own employees.

*Regionally significant project* means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

*Safety margin* means the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for reasonable further progress, attainment, or maintenance.

*Standard* means a national ambient air quality standard.

*Transit* is mass transportation by bus, rail, or other conveyance which provides general or special service to the public on a regular and continuing basis. It does not include school buses or charter or sightseeing services.

*Transit project* is an undertaking to implement or modify a transit facility or transit-related program; purchase transit vehicles or equipment; or provide financial assistance for transit operations. It does not include actions that are solely within the jurisdiction of local transit agencies, such as changes in routes, schedules, or fares. It may consist of several phases. For analytical purposes, it must be defined inclusively enough to:

- (1) Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
- (2) Have independent utility or independent significance, i.e., be a reasonable expenditure even if no additional transportation improvements in the area are made; and
- (3) Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

*Transportation control measure (TCM)* is any measure that is specifically identified and committed to in the applicable implementation plan that is either one of the types listed in section 108 of the CAA, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the first sentence of this definition, vehicle technology-based, fuel-based,

and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of this subpart.

*Transportation improvement program (TIP)* means a staged, multiyear, intermodal program of transportation projects covering a metropolitan planning area which is consistent with the metropolitan transportation plan, and developed pursuant to 23 CFR part 450.

*Transportation plan* means the official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR part 450.

*Transportation project* is a highway project or a transit project.

*Written commitment* for the purposes of this subpart means a written commitment that includes a description of the action to be taken; a schedule for the completion of the action; a demonstration that funding necessary to implement the action has been authorized by the appropriating or authorizing body; and an acknowledgment that the commitment is an enforceable obligation under the applicable implementation plan.

#### § 93.102 Applicability.

##### (a) Action applicability.

(1) Except as provided for in paragraph (c) of this section or § 93.126, conformity determinations are required for:

(i) The adoption, acceptance, approval or support of transportation plans and transportation plan amendments developed pursuant to 23 CFR part 450 or 49 CFR part 613 by an MPO or DOT;

(ii) The adoption, acceptance, approval or support of TIPs and TIP amendments developed pursuant to 23 CFR part 450 or 49 CFR part 613 by an MPO or DOT; and

(iii) The approval, funding, or implementation of FHWA/FTA projects.

(2) Conformity determinations are not required under this subpart for individual projects which are not FHWA/FTA projects. However, § 93.121 applies to such projects if they are regionally significant.

(b) *Geographic applicability.* The provisions of this subpart shall apply in all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan.

(1) The provisions of this subpart apply with respect to emissions of the following criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide

(NO<sub>2</sub>), and particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM<sub>10</sub>).

(2) The provisions of this subpart apply with respect to emissions of the following precursor pollutants:

(i) Volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>) in ozone areas;

(ii) NO<sub>x</sub> in NO<sub>2</sub> areas; and

(iii) VOC, NO<sub>x</sub>, and PM<sub>10</sub> in PM<sub>10</sub> areas if the EPA Regional Administrator or the director of the State air agency has made a finding that transportation-related precursor emissions within the nonattainment area are a significant contributor to the PM<sub>10</sub> nonattainment problem and has so notified the MPO and DOT, or if the applicable implementation plan (or implementation plan submission) establishes a budget for such emissions as part of the reasonable further progress, attainment or maintenance strategy.

(3) The provisions of this subpart apply to maintenance areas for 20 years from the date EPA approves the area's request under section 107(d) of the CAA for redesignation to attainment, unless the applicable implementation plan specifies that the provisions of this subpart shall apply for more than 20 years.

(c) *Limitations.* (1) Projects subject to this subpart for which the NEPA process and a conformity determination have been completed by DOT may proceed toward implementation without further conformity determinations unless more than three years have elapsed since the most recent major step (NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications and estimates) occurred. All phases of such projects which were considered in the conformity determination are also included, if those phases were for the purpose of funding final design, right-of-way acquisition, construction, or any combination of these phases.

(2) A new conformity determination for the project will be required if there is a significant change in project design concept and scope, if a supplemental environmental document for air quality purposes is initiated, or if three years have elapsed since the most recent major step to advance the project occurred.

(d) *Grace period for new nonattainment areas.* For areas or portions of areas which have been designated attainment for either ozone, CO, PM<sub>10</sub> or NO<sub>2</sub> since 1990 and are subsequently redesignated to nonattainment for any of these

pollutants, the provisions of this subpart shall not apply for 12 months following the date of final designation to nonattainment for such pollutant.

#### § 93.103 Priority.

When assisting or approving any action with air quality-related consequences, FHWA and FTA shall give priority to the implementation of those transportation portions of an applicable implementation plan prepared to attain and maintain the NAAQS. This priority shall be consistent with statutory requirements for allocation of funds among States or other jurisdictions.

#### § 93.104 Frequency of conformity determinations.

(a) Conformity determinations and conformity redeterminations for transportation plans, TIPs, and FHWA/FTA projects must be made according to the requirements of this section and the applicable implementation plan.

(b) *Frequency of conformity determinations for transportation plans.*

(1) Each new transportation plan must be demonstrated to conform before the transportation plan is approved by the MPO or accepted by DOT.

(2) All transportation plan revisions must be found to conform before the transportation plan revisions are approved by the MPO or accepted by DOT, unless the revision merely adds or deletes exempt projects listed in § 93.126 or § 93.127. The conformity determination must be based on the transportation plan and the revision taken as a whole.

(3) The MPO and DOT must determine the conformity of the transportation plan no less frequently than every three years. If more than three years elapse after DOT's conformity determination without the MPO and DOT determining conformity of the transportation plan, the existing conformity determination will lapse.

(c) *Frequency of conformity determinations for transportation improvement programs.* (1) A new TIP must be demonstrated to conform before the TIP is approved by the MPO or accepted by DOT.

(2) A TIP amendment requires a new conformity determination for the entire TIP before the amendment is approved by the MPO or accepted by DOT, unless the amendment merely adds or deletes exempt projects listed in § 93.126 or § 93.127.

(3) The MPO and DOT must determine the conformity of the TIP no less frequently than every three years. If more than three years elapse after DOT's conformity determination without the

MPO and DOT determining conformity of the TIP, the existing conformity determination will lapse.

(4) After an MPO adopts a new or revised transportation plan, conformity of the TIP must be redetermined by the MPO and DOT within six months from the date of DOT's conformity determination for the transportation plan, unless the new or revised plan merely adds or deletes exempt projects listed in §§ 93.126 and 93.127.

Otherwise, the existing conformity determination for the TIP will lapse.

(d) *Projects.* FHWA/FTA projects must be found to conform before they are adopted, accepted, approved, or funded. Conformity must be redetermined for any FHWA/FTA project if three years have elapsed since the most recent major step to advance the project (NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications and estimates) occurred.

(e) *Triggers for transportation plan and TIP conformity determinations.* Conformity of existing transportation plans and TIPs must be redetermined within 18 months of the following, or the existing conformity determination will lapse, and no new project-level conformity determinations may be made until conformity of the transportation plan and TIP has been determined by the MPO and DOT:

(1) November 24, 1993;

(2) The date of the State's initial submission to EPA of each control strategy implementation plan or maintenance plan establishing a motor vehicle emissions budget;

(3) EPA approval of a control strategy implementation plan revision or maintenance plan which establishes or revises a motor vehicle emissions budget;

(4) EPA approval of an implementation plan revision that adds, deletes, or changes TCMs; and

(5) EPA promulgation of an implementation plan which establishes or revises a motor vehicle emissions budget or adds, deletes, or changes TCMs.

#### § 93.105 Consultation.

(a) *General.* The implementation plan revision required under § 51.390 of this chapter shall include procedures for interagency consultation (Federal, State, and local), resolution of conflicts, and public consultation as described in paragraphs (a) through (e) of this section. Public consultation procedures will be developed in accordance with the requirements for public involvement in 23 CFR part 450.

(1) The implementation plan revision shall include procedures to be undertaken by MPOs, State departments of transportation, and DOT with State and local air quality agencies and EPA before making conformity determinations, and by State and local air agencies and EPA with MPOs, State departments of transportation, and DOT in developing applicable implementation plans.

(2) Before EPA approves the conformity implementation plan revision required by § 51.390 of this chapter, MPOs and State departments of transportation must provide reasonable opportunity for consultation with State air agencies, local air quality and transportation agencies, DOT, and EPA, including consultation on the issues described in paragraph (c)(1) of this section, before making conformity determinations.

(b) *Interagency consultation procedures: General factors.* (1) States shall provide well-defined consultation procedures in the implementation plan whereby representatives of the MPOs, State and local air quality planning agencies, State and local transportation agencies, and other organizations with responsibilities for developing, submitting, or implementing provisions of an implementation plan required by the CAA must consult with each other and with local or regional offices of EPA, FHWA, and FTA on the development of the implementation plan, the transportation plan, the TIP, and associated conformity determinations.

(2) Interagency consultation procedures shall include at a minimum the following general factors and the specific processes in paragraph (c) of this section:

(i) The roles and responsibilities assigned to each agency at each stage in the implementation plan development process and the transportation planning process, including technical meetings;

(ii) The organizational level of regular consultation;

(iii) A process for circulating (or providing ready access to) draft documents and supporting materials for comment before formal adoption or publication;

(iv) The frequency of, or process for convening, consultation meetings and responsibilities for establishing meeting agendas;

(v) A process for responding to the significant comments of involved agencies; and

(vi) A process for the development of a list of the TCMs which are in the applicable implementation plan.

(c) *Interagency consultation procedures: Specific processes.* Interagency consultation procedures shall also include the following specific processes:

(1) A process involving the MPO, State and local air quality planning agencies, State and local transportation agencies, EPA, and DOT for the following:

(i) Evaluating and choosing a model (or models) and associated methods and assumptions to be used in hot-spot analyses and regional emissions analyses;

(ii) Determining which minor arterials and other transportation projects should be considered "regionally significant" for the purposes of regional emissions analysis (in addition to those functionally classified as principal arterial or higher or fixed guideway systems or extensions that offer an alternative to regional highway travel), and which projects should be considered to have a significant change in design concept and scope from the transportation plan or TIP;

(iii) Evaluating whether projects otherwise exempted from meeting the requirements of this subpart (see §§ 93.126 and 93.127) should be treated as non-exempt in cases where potential adverse emissions impacts may exist for any reason;

(iv) Making a determination, as required by § 93.113(c)(1), whether past obstacles to implementation of TCMs which are behind the schedule established in the applicable implementation plan have been identified and are being overcome, and whether State and local agencies with influence over approvals or funding for TCMs are giving maximum priority to approval or funding for TCMs. This process shall also consider whether delays in TCM implementation necessitate revisions to the applicable implementation plan to remove TCMs or substitute TCMs or other emission reduction measures;

(v) Identifying, as required by § 93.123(b), projects located at sites in PM<sub>10</sub> nonattainment areas which have vehicle and roadway emission and dispersion characteristics which are essentially identical to those at sites which have violations verified by monitoring, and therefore require quantitative PM<sub>10</sub> hot-spot analysis;

(vi) Notification of transportation plan or TIP revisions or amendments which merely add or delete exempt projects listed in § 93.126 or § 93.127; and

(vii) Choosing conformity tests and methodologies for isolated rural nonattainment and maintenance areas, as required by § 93.109(g)(2)(iii).

(2) A process involving the MPO and State and local air quality planning agencies and transportation agencies for the following:

(i) Evaluating events which will trigger new conformity determinations in addition to those triggering events established in § 93.104; and

(ii) Consulting on emissions analysis for transportation activities which cross the borders of MPOs or nonattainment areas or air basins.

(3) Where the metropolitan planning area does not include the entire nonattainment or maintenance area, a process involving the MPO and the State department of transportation for cooperative planning and analysis for purposes of determining conformity of all projects outside the metropolitan area and within the nonattainment or maintenance area.

(4) A process to ensure that plans for construction of regionally significant projects which are not FHWA/FTA projects (including projects for which alternative locations, design concept and scope, or the no-build option are still being considered), including those by recipients of funds designated under title 23 U.S.C. or the Federal Transit Laws, are disclosed to the MPO on a regular basis, and to ensure that any changes to those plans are immediately disclosed.

(5) A process involving the MPO and other recipients of funds designated under title 23 U.S.C. or the Federal Transit Laws for assuming the location and design concept and scope of projects which are disclosed to the MPO as required by paragraph (c)(4) of this section but whose sponsors have not yet decided these features, in sufficient detail to perform the regional emissions analysis according to the requirements of § 93.122.

(6) A process for consulting on the design, schedule, and funding of research and data collection efforts and regional transportation model development by the MPO (e.g., household/ travel transportation surveys).

(7) A process for providing final documents (including applicable implementation plans and implementation plan revisions) and supporting information to each agency after approval or adoption. This process is applicable to all agencies described in paragraph (a)(1) of this section, including Federal agencies.

(d) *Resolving conflicts.* Conflicts among State agencies or between State agencies and an MPO shall be escalated to the Governor if they cannot be resolved by the heads of the involved agencies. The State air agency has 14

calendar days to appeal to the Governor after the State DOT or MPO has notified the State air agency head of the resolution of his or her comments. The implementation plan revision required by § 51.390 of this chapter shall define the procedures for starting the 14-day clock. If the State air agency appeals to the Governor, the final conformity determination must have the concurrence of the Governor. If the State air agency does not appeal to the Governor within 14 days, the MPO or State department of transportation may proceed with the final conformity determination. The Governor may delegate his or her role in this process, but not to the head or staff of the State or local air agency, State department of transportation, State transportation commission or board, or an MPO.

(e) *Public consultation procedures.* Affected agencies making conformity determinations on transportation plans, programs, and projects shall establish a proactive public involvement process which provides opportunity for public review and comment by, at a minimum, providing reasonable public access to technical and policy information considered by the agency at the beginning of the public comment period and prior to taking formal action on a conformity determination for all transportation plans and TIPs, consistent with these requirements and those of 23 CFR 450.316(b). Any charges imposed for public inspection and copying should be consistent with the fee schedule contained in 49 CFR 7.95. In addition, these agencies must specifically address in writing all public comments that known plans for a regionally significant project which is not receiving FHWA or FTA funding or approval have not been properly reflected in the emissions analysis supporting a proposed conformity finding for a transportation plan or TIP. These agencies shall also provide opportunity for public involvement in conformity determinations for projects where otherwise required by law.

#### § 93.106 Content of transportation plans.

(a) *Transportation plans adopted after January 1, 1997 in serious, severe, or extreme ozone nonattainment areas and in serious CO nonattainment areas.* If the metropolitan planning area contains an urbanized area population greater than 200,000, the transportation plan must specifically describe the transportation system envisioned for certain future years which shall be called horizon years.

(1) The agency or organization developing the transportation plan may

choose any years to be horizon years, subject to the following restrictions:

(i) Horizon years may be no more than 10 years apart;

(ii) The first horizon year may be no more than 10 years from the base year used to validate the transportation demand planning model;

(iii) If the attainment year is in the time span of the transportation plan, the attainment year must be a horizon year; and

(iv) The last horizon year must be the last year of the transportation plan's forecast period.

(2) For these horizon years:

(i) The transportation plan shall quantify and document the demographic and employment factors influencing expected transportation demand, including land use forecasts, in accordance with implementation plan provisions and the consultation requirements specified by § 93.105;

(ii) The highway and transit system shall be described in terms of the regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in the horizon years. Additions and modifications to the highway network shall be sufficiently identified to indicate intersections with existing regionally significant facilities, and to determine their effect on route options between transportation analysis zones. Each added or modified highway segment shall also be sufficiently identified in terms of its design concept and design scope to allow modeling of travel times under various traffic volumes, consistent with the modeling methods for area-wide transportation analysis in use by the MPO. Transit facilities, equipment, and services envisioned for the future shall be identified in terms of design concept, design scope, and operating policies that are sufficient for modeling of their transit ridership. Additions and modifications to the transportation network shall be described sufficiently to show that there is a reasonable relationship between expected land use and the envisioned transportation system; and

(iii) Other future transportation policies, requirements, services, and activities, including intermodal activities, shall be described.

(b) *Moderate areas reclassified to serious.* Ozone or CO nonattainment areas which are reclassified from moderate to serious and have an urbanized population greater than 200,000 must meet the requirements of paragraph (a) of this section within two years from the date of reclassification.

(c) *Transportation plans for other areas.* Transportation plans for other areas must meet the requirements of paragraph (a) of this section at least to the extent it has been the previous practice of the MPO to prepare plans which meet those requirements. Otherwise, the transportation system envisioned for the future must be sufficiently described within the transportation plans so that a conformity determination can be made according to the criteria and procedures of §§ 93.109 through 93.119.

(d) *Savings.* The requirements of this section supplement other requirements of applicable law or regulation governing the format or content of transportation plans.

#### § 93.107 Relationship of transportation plan and TIP conformity with the NEPA process.

The degree of specificity required in the transportation plan and the specific travel network assumed for air quality modeling do not preclude the consideration of alternatives in the NEPA process or other project development studies. Should the NEPA process result in a project with design concept and scope significantly different from that in the transportation plan or TIP, the project must meet the criteria in §§ 93.109 through 93.119 for projects not from a TIP before NEPA process completion.

#### § 93.108 Fiscal constraints for transportation plans and TIPs.

Transportation plans and TIPs must be fiscally constrained consistent with DOT's metropolitan planning regulations at 23 CFR part 450 in order to be found in conformity.

#### § 93.109 Criteria and procedures for determining conformity of transportation plans, programs, and projects: General.

(a) In order for each transportation plan, program, and FHWA/FTA project to be found to conform, the MPO and DOT must demonstrate that the applicable criteria and procedures in this subpart are satisfied, and the MPO and DOT must comply with all applicable conformity requirements of implementation plans and of court orders for the area which pertain specifically to conformity. The criteria for making conformity determinations differ based on the action under review (transportation plans, TIPs, and FHWA/FTA projects), the relevant pollutant(s), and the status of the implementation plan.

(b) Table 1 in this paragraph indicates the criteria and procedures in §§ 93.110 through 93.119 which apply for transportation plans, TIPs, and FHWA/

FTA projects. Paragraphs (c) through (f) of this section explain when the budget, emission reduction, and hot spot tests are required for each pollutant. Paragraph (g) of this section addresses isolated rural nonattainment and maintenance areas. Table 1 follows:

TABLE 1.—CONFORMITY CRITERIA

All Actions at all times: § 93.110 § 93.111 § 93.112	Latest planning assumptions. Latest emissions model. Consultation.
Transportation Plan: § 93.113(b) § 93.118 or § 93.119	TCMs. Emissions budget or Emission reduction.
TIP: § 93.113(c) § 93.118 or § 93.119	TCMs. Emissions budget or Emission reduction.
Project (From a Conforming Plan and TIP): § 93.114	Currently conforming plan and TIP.
§ 93.115	Project from a conforming plan and TIP.
§ 93.116 § 93.117	CO and PM <sub>10</sub> hot spots. PM <sub>10</sub> control measures.
Project (Not From a Conforming Plan and TIP): § 93.113(d) § 93.114	TCMs. Currently conforming plan and TIP.
§ 93.116 § 93.117 § 93.118 or § 93.119	CO and PM <sub>10</sub> hot spots. PM <sub>10</sub> control measures. Emissions budget or Emission reduction.

(c) *Ozone nonattainment and maintenance areas.* In addition to the criteria listed in Table 1 in paragraph (b) of this section that are required to be satisfied at all times, in ozone nonattainment and maintenance areas conformity determinations must include a demonstration that the budget and/or emission reduction tests are satisfied as described in the following:

(1) In ozone nonattainment and maintenance areas the budget test must be satisfied as required by § 93.118 for conformity determinations made:

(i) 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared the motor vehicle emissions budget inadequate for transportation conformity purposes; or

(ii) After EPA has declared that the motor vehicle emissions budget in a submitted control strategy implementation plan revision or

maintenance plan is adequate for transportation conformity purposes.

(2) In ozone nonattainment areas that are required to submit a control strategy implementation plan revision (usually moderate and above areas), the emission reduction tests must be satisfied as required by § 93.119 for conformity determinations made:

(i) During the first 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared a motor vehicle emissions budget adequate for transportation conformity purposes; or

(ii) If EPA has declared the motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan inadequate for transportation conformity purposes, and there is no previously established motor vehicle emissions budget in the approved implementation plan or a previously submitted control strategy implementation plan revision or maintenance plan.

(3) An ozone nonattainment area must satisfy the emission reduction test for NO<sub>x</sub>, as required by § 93.119, if the implementation plan or plan submission that is applicable for the purposes of conformity determinations is a 15% plan or Phase I attainment demonstration that does not include a motor vehicle emissions budget for NO<sub>x</sub>. The implementation plan will be considered to establish a motor vehicle emissions budget for NO<sub>x</sub> if the implementation plan or plan submission contains an explicit NO<sub>x</sub> motor vehicle emissions budget that is intended to act as a ceiling on future NO<sub>x</sub> emissions, and the NO<sub>x</sub> motor vehicle emissions budget is a net reduction from NO<sub>x</sub> emissions levels in 1990.

(4) Ozone nonattainment areas that have not submitted a maintenance plan and that are not required to submit a control strategy implementation plan revision (usually marginal and below areas) must satisfy one of the following requirements:

(i) The emission reduction tests required by § 93.119; or

(ii) The State shall submit to EPA an implementation plan revision that contains motor vehicle emissions budget(s) and an attainment demonstration, and the budget test required by § 93.118 must be satisfied using the submitted motor vehicle emissions budget(s) (as described in paragraph (c)(1) of this section).

(5) Notwithstanding paragraphs (c)(1) and (c)(2) of this section, moderate and above ozone nonattainment areas with

three years of clean data that have not submitted a maintenance plan and that EPA has determined are not subject to the Clean Air Act reasonable further progress and attainment demonstration requirements must satisfy one of the following requirements:

(i) The emission reduction tests as required by § 93.119;

(ii) The budget test as required by § 93.118, using the motor vehicle emissions budgets in the submitted control strategy implementation plan (subject to the timing requirements of paragraph (c)(1) of this section); or

(iii) The budget test as required by § 93.118, using the motor vehicle emissions of ozone precursors in the most recent year of clean data as motor vehicle emissions budgets, if such budgets are established by the EPA rulemaking that determines that the area has clean data.

(d) *CO nonattainment and maintenance areas.* In addition to the criteria listed in Table 1 in paragraph (b) of this section that are required to be satisfied at all times, in CO nonattainment and maintenance areas conformity determinations must include a demonstration that the hot spot, budget and/or emission reduction tests are satisfied as described in the following:

(1) FHWA/FTA projects in CO nonattainment or maintenance areas must satisfy the hot spot test required by § 93.116(a) at all times. Until a CO attainment demonstration or maintenance plan is approved by EPA, FHWA/FTA projects must also satisfy the hot spot test required by § 93.116(b).

(2) In CO nonattainment and maintenance areas the budget test must be satisfied as required by § 93.118 for conformity determinations made:

(i) 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared the motor vehicle emissions budget inadequate for transportation conformity purposes; or

(ii) After EPA has declared that the motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan is adequate for transportation conformity purposes.

(3) Except as provided in paragraph (d)(4) of this section, in CO nonattainment areas the emission reduction tests must be satisfied as required by § 93.119 for conformity determinations made:

(i) During the first 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared a motor vehicle emissions

budget adequate for transportation conformity purposes; or

(ii) If EPA has declared the motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan inadequate for transportation conformity purposes, and there is no previously established motor vehicle emissions budget in the approved implementation plan or a previously submitted control strategy implementation plan revision or maintenance plan.

(4) CO nonattainment areas that have not submitted a maintenance plan and that are not required to submit an attainment demonstration (e.g., moderate CO areas with a design value of 12.7 ppm or less or not classified CO areas) must satisfy one of the following requirements:

(i) The emission reduction tests required by § 93.119; or

(ii) The State shall submit to EPA an implementation plan revision that contains motor vehicle emissions budget(s) and an attainment demonstration, and the budget test required by § 93.118 must be satisfied using the submitted motor vehicle emissions budget(s) (as described in paragraph (d)(2) of this section).

(e) *PM<sub>10</sub> nonattainment and maintenance areas.* In addition to the criteria listed in Table 1 in paragraph (b) of this section that are required to be satisfied at all times, in *PM<sub>10</sub>* nonattainment and maintenance areas conformity determinations must include a demonstration that the hot spot, budget and/or emission reduction tests are satisfied as described in the following:

(1) FHWA/FTA projects in *PM<sub>10</sub>* nonattainment or maintenance areas must satisfy the hot spot test required by § 93.116(a).

(2) In *PM<sub>10</sub>* nonattainment and maintenance areas the budget test must be satisfied as required by § 93.118 for conformity determinations made:

(i) 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared the motor vehicle emissions budget inadequate for transportation conformity purposes; or

(ii) After EPA has declared that the motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan is adequate for transportation conformity purposes.

(3) In *PM<sub>10</sub>* nonattainment areas the emission reduction tests must be satisfied as required by § 93.119 for conformity determinations made:

(i) During the first 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared a motor vehicle emissions budget adequate for transportation conformity purposes;

(ii) If EPA has declared the motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan inadequate for transportation conformity purposes, and there is no previously established motor vehicle emissions budget in the approved implementation plan or a previously submitted control strategy implementation plan revision or maintenance plan; or

(iii) If the submitted implementation plan revision is a demonstration of impracticability under CAA section 189(a)(1)(B)(ii) and does not demonstrate attainment.

(f) *NO<sub>2</sub> nonattainment and maintenance areas.* In addition to the criteria listed in Table 1 in paragraph (b) of this section that are required to be satisfied at all times, in *NO<sub>2</sub>* nonattainment and maintenance areas conformity determinations must include a demonstration that the budget and/or emission reduction tests are satisfied as described in the following:

(1) In *NO<sub>2</sub>* nonattainment and maintenance areas the budget test must be satisfied as required by § 93.118 for conformity determinations made:

(i) 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared the motor vehicle emissions budget inadequate for transportation conformity purposes; or

(ii) After EPA has declared that the motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan is adequate for transportation conformity purposes.

(2) In *NO<sub>2</sub>* nonattainment areas the emission reduction tests must be satisfied as required by § 93.119 for conformity determinations made:

(i) During the first 45 days after a control strategy implementation plan revision or maintenance plan has been submitted to EPA, unless EPA has declared a motor vehicle emissions budget adequate for transportation conformity purposes; or

(ii) If EPA has declared the motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan inadequate for transportation conformity purposes, and there is no previously established motor vehicle emissions budget in the approved

implementation plan or a previously submitted control strategy implementation plan revision or maintenance plan.

(g) *Isolated rural nonattainment and maintenance areas.* This paragraph applies to any nonattainment or maintenance area (or portion thereof) which does not have a metropolitan transportation plan or TIP and whose projects are not part of the emissions analysis of any MPO's metropolitan transportation plan or TIP. This paragraph does not apply to "donut" areas which are outside the metropolitan planning boundary and inside the nonattainment/maintenance area boundary.

(1) FHWA/FTA projects in all isolated rural nonattainment and maintenance areas must satisfy the requirements of §§ 93.110, 93.111, 93.112, 93.113(d), 93.116, and 93.117. Until EPA approves the control strategy implementation plan or maintenance plan for a rural CO nonattainment or maintenance area, FHWA/FTA projects must also satisfy the requirements of § 93.116(b) ("Localized CO and *PM<sub>10</sub>* violations (hot spots)").

(2) Isolated rural nonattainment and maintenance areas are subject to the budget and/or emission reduction tests as described in paragraphs (c) through (f) of this section, with the following modifications:

(i) When the requirements of §§ 93.118 and 93.119 apply to isolated rural nonattainment and maintenance areas, references to "transportation plan" or "TIP" should be taken to mean those projects in the statewide transportation plan or statewide TIP which are in the rural nonattainment or maintenance area.

(ii) In isolated rural nonattainment and maintenance areas that are subject to § 93.118, FHWA/FTA projects must be consistent with motor vehicle emissions budget(s) for the years in the timeframe of the attainment demonstration or maintenance plan. For years after the attainment year (if a maintenance plan has not been submitted) or after the last year of the maintenance plan, FHWA/FTA projects must satisfy one of the following requirements:

(A) § 93.118;

(B) § 93.119 (including regional emissions analysis for *NO<sub>x</sub>* in all ozone nonattainment and maintenance areas, notwithstanding § 93.119(d)(2)); or

(C) As demonstrated by the air quality dispersion model or other air quality modeling technique used in the attainment demonstration or maintenance plan, the FHWA/FTA project, in combination with all other

regionally significant projects expected in the area in the timeframe of the statewide transportation plan, must not cause or contribute to any new violation of any standard in any areas; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. Control measures assumed in the analysis must be enforceable.

(iii) The choice of requirements in paragraph (g)(2)(ii) of this section and the methodology used to meet the requirements of paragraph (g)(2)(ii)(C) of this section must be determined through the interagency consultation process required in § 93.105(c)(1)(vii) through which the relevant recipients of title 23 U.S.C. or Federal Transit Laws funds, the local air quality agency, the State air quality agency, and the State department of transportation should reach consensus about the option and methodology selected. EPA and DOT must be consulted through this process as well. In the event of unresolved disputes, conflicts may be escalated to the Governor consistent with the procedure in § 93.105(d), which applies for any State air agency comments on a conformity determination.

**§ 93.110 Criteria and procedures: Latest planning assumptions.**

(a) The conformity determination, with respect to all other applicable criteria in §§ 93.111 through 93.119, must be based upon the most recent planning assumptions in force at the time of the conformity determination. The conformity determination must satisfy the requirements of paragraphs (b) through (f) of this section.

(b) Assumptions must be derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other agency authorized to make such estimates and approved by the MPO. The conformity determination must also be based on the latest assumptions about current and future background concentrations.

(c) The conformity determination for each transportation plan and TIP must discuss how transit operating policies (including fares and service levels) and assumed transit ridership have changed since the previous conformity determination.

(d) The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time.

(e) The conformity determination must use the latest existing information

regarding the effectiveness of the TCMs and other implementation plan measures which have already been implemented.

(f) Key assumptions shall be specified and included in the draft documents and supporting materials used for the interagency and public consultation required by § 93.105.

**§ 93.111 Criteria and procedures: Latest emissions model.**

(a) The conformity determination must be based on the latest emission estimation model available. This criterion is satisfied if the most current version of the motor vehicle emissions model specified by EPA for use in the preparation or revision of implementation plans in that State or area is used for the conformity analysis. Where EMFAC is the motor vehicle emissions model used in preparing or revising the applicable implementation plan, new versions must be approved by EPA before they are used in the conformity analysis.

(b) EPA will consult with DOT to establish a grace period following the specification of any new model.

(1) The grace period will be no less than three months and no more than 24 months after notice of availability is published in the **Federal Register**.

(2) The length of the grace period will depend on the degree of change in the model and the scope of re-planning likely to be necessary by MPOs in order to assure conformity. If the grace period will be longer than three months, EPA will announce the appropriate grace period in the **Federal Register**.

(c) Transportation plan and TIP conformity analyses for which the emissions analysis was begun during the grace period or before the **Federal Register** notice of availability of the latest emission model may continue to use the previous version of the model. Conformity determinations for projects may also be based on the previous model if the analysis was begun during the grace period or before the **Federal Register** notice of availability, and if the final environmental document for the project is issued no more than three years after the issuance of the draft environmental document.

**§ 93.112 Criteria and procedures: Consultation.**

Conformity must be determined according to the consultation procedures in this subpart and in the applicable implementation plan, and according to the public involvement procedures established in compliance with 23 CFR part 450. Until the implementation plan revision required

by § 51.390 of this chapter is fully approved by EPA, the conformity determination must be made according to § 93.105 (a)(2) and (e) and the requirements of 23 CFR part 450.

**§ 93.113 Criteria and procedures: Timely implementation of TCMs.**

(a) The transportation plan, TIP, or any FHWA/FTA project which is not from a conforming plan and TIP must provide for the timely implementation of TCMs from the applicable implementation plan.

(b) For transportation plans, this criterion is satisfied if the following two conditions are met:

(1) The transportation plan, in describing the envisioned future transportation system, provides for the timely completion or implementation of all TCMs in the applicable implementation plan which are eligible for funding under title 23 U.S.C. or the Federal Transit Laws, consistent with schedules included in the applicable implementation plan.

(2) Nothing in the transportation plan interferes with the implementation of any TCM in the applicable implementation plan.

(c) For TIPs, this criterion is satisfied if the following conditions are met:

(1) An examination of the specific steps and funding source(s) needed to fully implement each TCM indicates that TCMs which are eligible for funding under title 23 U.S.C. or the Federal Transit Laws are on or ahead of the schedule established in the applicable implementation plan, or, if such TCMs are behind the schedule established in the applicable implementation plan, the MPO and DOT have determined that past obstacles to implementation of the TCMs have been identified and have been or are being overcome, and that all State and local agencies with influence over approvals or funding for TCMs are giving maximum priority to approval or funding of TCMs over other projects within their control, including projects in locations outside the nonattainment or maintenance area.

(2) If TCMs in the applicable implementation plan have previously been programmed for Federal funding but the funds have not been obligated and the TCMs are behind the schedule in the implementation plan, then the TIP cannot be found to conform if the funds intended for those TCMs are reallocated to projects in the TIP other than TCMs, or if there are no other TCMs in the TIP, if the funds are reallocated to projects in the TIP other than projects which are eligible for Federal funding intended for air quality

improvement projects, e.g., the Congestion Mitigation and Air Quality Improvement Program.

(3) Nothing in the TIP may interfere with the implementation of any TCM in the applicable implementation plan.

(d) For FHWA/FTA projects which are not from a conforming transportation plan and TIP, this criterion is satisfied if the project does not interfere with the implementation of any TCM in the applicable implementation plan.

**§ 93.114 Criteria and procedures: Currently conforming transportation plan and TIP.**

There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval.

(a) Only one conforming transportation plan or TIP may exist in an area at any time; conformity determinations of a previous transportation plan or TIP expire once the current plan or TIP is found to conform by DOT. The conformity determination on a transportation plan or TIP will also lapse if conformity is not determined according to the frequency requirements specified in § 93.104.

(b) This criterion is not required to be satisfied at the time of project approval for a TCM specifically included in the applicable implementation plan, provided that all other relevant criteria of this subpart are satisfied.

**§ 93.115 Criteria and procedures: Projects from a plan and TIP.**

(a) The project must come from a conforming plan and program. If this criterion is not satisfied, the project must satisfy all criteria in Table 1 of § 93.109(b) for a project not from a conforming transportation plan and TIP. A project is considered to be from a conforming transportation plan if it meets the requirements of paragraph (b) of this section and from a conforming program if it meets the requirements of paragraph (c) of this section. Special provisions for TCMs in an applicable implementation plan are provided in paragraph (d) of this section.

(b) A project is considered to be from a conforming transportation plan if one of the following conditions applies:

(1) For projects which are required to be identified in the transportation plan in order to satisfy § 93.106 ("Content of transportation plans"), the project is specifically included in the conforming transportation plan and the project's design concept and scope have not changed significantly from those which were described in the transportation

plan, or in a manner which would significantly impact use of the facility; or

(2) For projects which are not required to be specifically identified in the transportation plan, the project is identified in the conforming transportation plan, or is consistent with the policies and purpose of the transportation plan and will not interfere with other projects specifically included in the transportation plan.

(c) A project is considered to be from a conforming program if the following conditions are met:

(1) The project is included in the conforming TIP and the design concept and scope of the project were adequate at the time of the TIP conformity determination to determine its contribution to the TIP's regional emissions, and the project design concept and scope have not changed significantly from those which were described in the TIP; and

(2) If the TIP describes a project design concept and scope which includes project-level emissions mitigation or control measures, written commitments to implement such measures must be obtained from the project sponsor and/or operator as required by § 93.125(a) in order for the project to be considered from a conforming program. Any change in these mitigation or control measures that would significantly reduce their effectiveness constitutes a change in the design concept and scope of the project.

(d) *TCMs.* This criterion is not required to be satisfied for TCMs specifically included in an applicable implementation plan.

**§ 93.116 Criteria and procedures: Localized CO and PM<sub>10</sub> violations (hot spots).**

(a) This paragraph applies at all times. The FHWA/FTA project must not cause or contribute to any new localized CO or PM<sub>10</sub> violations or increase the frequency or severity of any existing CO or PM<sub>10</sub> violations in CO and PM<sub>10</sub> nonattainment and maintenance areas. This criterion is satisfied if it is demonstrated that no new local violations will be created and the severity or number of existing violations will not be increased as a result of the project. The demonstration must be performed according to the consultation requirements of § 93.105(c)(1)(i) and the methodology requirements of § 93.123.

(b) This paragraph applies for CO nonattainment areas as described in § 93.109(d)(1). Each FHWA/FTA project must eliminate or reduce the severity and number of localized CO violations in the area substantially affected by the

project (in CO nonattainment areas). This criterion is satisfied with respect to existing localized CO violations if it is demonstrated that existing localized CO violations will be eliminated or reduced in severity and number as a result of the project. The demonstration must be performed according to the consultation requirements of § 93.105(c)(1)(i) and the methodology requirements of § 93.123.

**§ 93.117 Criteria and procedures: Compliance with PM<sub>10</sub> control measures.**

The FHWA/FTA project must comply with PM<sub>10</sub> control measures in the applicable implementation plan. This criterion is satisfied if the project-level conformity determination contains a written commitment from the project sponsor to include in the final plans, specifications, and estimates for the project those control measures (for the purpose of limiting PM<sub>10</sub> emissions from the construction activities and/or normal use and operation associated with the project) that are contained in the applicable implementation plan.

**§ 93.118 Criteria and procedures: Motor vehicle emissions budget.**

(a) The transportation plan, TIP, and project not from a conforming transportation plan and TIP must be consistent with the motor vehicle emissions budget(s) in the applicable implementation plan (or implementation plan submission). This criterion applies as described in § 93.109(c) through (g). This criterion is satisfied if it is demonstrated that emissions of the pollutants or pollutant precursors described in paragraph (c) of this section are less than or equal to the motor vehicle emissions budget(s) established in the applicable implementation plan or implementation plan submission.

(b) Consistency with the motor vehicle emissions budget(s) must be demonstrated for each year for which the applicable (and/or submitted) implementation plan specifically establishes motor vehicle emissions budget(s), for the last year of the transportation plan's forecast period, and for any intermediate years as necessary so that the years for which consistency is demonstrated are no more than ten years apart, as follows:

(1) Until a maintenance plan is submitted:

(i) Emissions in each year (such as milestone years and the attainment year) for which the control strategy implementation plan revision establishes motor vehicle emissions budget(s) must be less than or equal to that year's motor vehicle emissions budget(s); and



(ii) Emissions in years for which no motor vehicle emissions budget(s) are specifically established must be less than or equal to the motor vehicle emissions budget(s) established for the most recent prior year. For example, emissions in years after the attainment year for which the implementation plan does not establish a budget must be less than or equal to the motor vehicle emissions budget(s) for the attainment year.

(2) When a maintenance plan has been submitted:

(i) Emissions must be less than or equal to the motor vehicle emissions budget(s) established for the last year of the maintenance plan, and for any other years for which the maintenance plan establishes motor vehicle emissions budgets. If the maintenance plan does not establish motor vehicle emissions budgets for any years other than the last year of the maintenance plan, the demonstration of consistency with the motor vehicle emissions budget(s) must be accompanied by a qualitative finding that there are no factors which would cause or contribute to a new violation or exacerbate an existing violation in the years before the last year of the maintenance plan. The interagency consultation process required by § 93.105 shall determine what must be considered in order to make such a finding;

(ii) For years after the last year of the maintenance plan, emissions must be less than or equal to the maintenance plan's motor vehicle emissions budget(s) for the last year of the maintenance plan; and

(iii) If an approved control strategy implementation plan has established motor vehicle emissions budgets for years in the timeframe of the transportation plan, emissions in these years must be less than or equal to the control strategy implementation plan's motor vehicle emissions budget(s) for these years.

(c) Consistency with the motor vehicle emissions budget(s) must be demonstrated for each pollutant or pollutant precursor in § 93.102(b) for which the area is in nonattainment or maintenance and for which the applicable implementation plan (or implementation plan submission) establishes a motor vehicle emissions budget.

(d) Consistency with the motor vehicle emissions budget(s) must be demonstrated by including emissions from the entire transportation system, including all regionally significant projects contained in the transportation plan and all other regionally significant highway and transit projects expected in

the nonattainment or maintenance area in the timeframe of the transportation plan.

(1) Consistency with the motor vehicle emissions budget(s) must be demonstrated with a regional emissions analysis that meets the requirements of §§ 93.122 and 93.105(c)(1)(i).

(2) The regional emissions analysis may be performed for any years in the timeframe of the transportation plan provided they are not more than ten years apart and provided the analysis is performed for the attainment year (if it is in the timeframe of the transportation plan) and the last year of the plan's forecast period. Emissions in years for which consistency with motor vehicle emissions budgets must be demonstrated, as required in paragraph (b) of this section, may be determined by interpolating between the years for which the regional emissions analysis is performed.

(e) *Motor vehicle emissions budgets in submitted control strategy implementation plan revisions and submitted maintenance plans.* (1) Consistency with the motor vehicle emissions budgets in submitted control strategy implementation plan revisions or maintenance plans must be demonstrated if EPA has declared the motor vehicle emissions budget(s) adequate for transportation conformity purposes, or beginning 45 days after the control strategy implementation plan revision or maintenance plan has been submitted (unless EPA has declared the motor vehicle emissions budget(s) inadequate for transportation conformity purposes). However, submitted implementation plans do not supersede the motor vehicle emissions budgets in approved implementation plans for the period of years addressed by the approved implementation plan.

(2) If EPA has declared an implementation plan submission's motor vehicle emissions budget(s) inadequate for transportation conformity purposes, the inadequate budget(s) shall not be used to satisfy the requirements of this section. Consistency with the previously established motor vehicle emissions budget(s) must be demonstrated. If there are no previous approved implementation plans or implementation plan submissions with motor vehicle emissions budgets, the emission reduction tests required by § 93.119 must be satisfied.

(3) If EPA declares an implementation plan submission's motor vehicle emissions budget(s) inadequate for transportation conformity purposes more than 45 days after its submission to EPA, and conformity of a

transportation plan or TIP has already been determined by DOT using the budget(s), the conformity determination will remain valid. Projects included in that transportation plan or TIP could still satisfy §§ 93.114 and 93.115, which require a currently conforming transportation plan and TIP to be in place at the time of a project's conformity determination and that projects come from a conforming transportation plan and TIP.

(4) EPA will not find a motor vehicle emissions budget in a submitted control strategy implementation plan revision or maintenance plan to be adequate for transportation conformity purposes unless the following minimum criteria are satisfied:

(i) The submitted control strategy implementation plan revision or maintenance plan was endorsed by the Governor (or his or her designee) and was subject to a State public hearing;

(ii) Before the control strategy implementation plan or maintenance plan was submitted to EPA, consultation among federal, State, and local agencies occurred; full implementation plan documentation was provided to EPA; and EPA's stated concerns, if any, were addressed;

(iii) The motor vehicle emissions budget(s) is clearly identified and precisely quantified;

(iv) The motor vehicle emissions budget(s), when considered together with all other emissions sources, is consistent with applicable requirements for reasonable further progress, attainment, or maintenance (whichever is relevant to the given implementation plan submission);

(v) The motor vehicle emissions budget(s) is consistent with and clearly related to the emissions inventory and the control measures in the submitted control strategy implementation plan revision or maintenance plan; and

(vi) Revisions to previously submitted control strategy implementation plans or maintenance plans explain and document any changes to previously submitted budgets and control measures; impacts on point and area source emissions; any changes to established safety margins (see § 93.101 for definition); and reasons for the changes (including the basis for any changes related to emission factors or estimates of vehicle miles traveled).

(5) Before determining the adequacy of a submitted motor vehicle emissions budget, EPA will review the State's compilation of public comments and response to comments that are required to be submitted with any implementation plan. EPA will document its consideration of such

comments and responses in a letter to the State indicating the adequacy of the submitted motor vehicle emissions budget.

(6) When the motor vehicle emissions budget(s) used to satisfy the requirements of this section are established by an implementation plan submittal that has not yet been approved or disapproved by EPA, the MPO and DOT's conformity determinations will be deemed to be a statement that the MPO and DOT are not aware of any information that would indicate that emissions consistent with the motor vehicle emissions budget will cause or contribute to any new violation of any standard; increase the frequency or severity of any existing violation of any standard; or delay timely attainment of any standard or any required interim emission reductions or other milestones.

**§ 93.119 Criteria and procedures: Emission reductions in areas without motor vehicle emissions budgets.**

(a) The transportation plan, TIP, and project not from a conforming transportation plan and TIP must contribute to emissions reductions. This criterion applies as described in § 93.109(c) through (g). It applies to the net effect of the action (transportation plan, TIP, or project not from a conforming transportation plan and TIP) on motor vehicle emissions from the entire transportation system.

(b) This criterion may be met in moderate and above ozone nonattainment areas that are subject to the reasonable further progress requirements of CAA section 182(b)(1) and in moderate with design value greater than 12.7 ppm and serious CO nonattainment areas if a regional emissions analysis that satisfies the requirements of § 93.122 and paragraphs (e) through (h) of this section demonstrates that for each analysis year and for each of the pollutants described in paragraph (d) of this section:

(1) The emissions predicted in the "Action" scenario are less than the emissions predicted in the "Baseline" scenario, and this can be reasonably expected to be true in the periods between the analysis years; and

(2) The emissions predicted in the "Action" scenario are lower than 1990 emissions by any nonzero amount.

(c) This criterion may be met in PM<sub>10</sub> and NO<sub>2</sub> nonattainment areas; marginal and below ozone nonattainment areas and other ozone nonattainment areas that are not subject to the reasonable further progress requirements of CAA section 182(b)(1); and moderate with design value less than 12.7 ppm and below CO nonattainment areas if a

regional emissions analysis that satisfies the requirements of § 93.122 and paragraphs (e) through (h) of this section demonstrates that for each analysis year and for each of the pollutants described in paragraph (d) of this section, one of the following requirements is met:

(1) The emissions predicted in the "Action" scenario are less than the emissions predicted in the "Baseline" scenario, and this can be reasonably expected to be true in the periods between the analysis years; or

(2) The emissions predicted in the "Action" scenario are not greater than baseline emissions. Baseline emissions are those estimated to have occurred during calendar year 1990, unless the conformity implementation plan revision required by § 51.390 of this chapter defines the baseline emissions for a PM<sub>10</sub> area to be those occurring in a different calendar year for which a baseline emissions inventory was developed for the purpose of developing a control strategy implementation plan.

(d) *Pollutants.* The regional emissions analysis must be performed for the following pollutants:

(1) VOC in ozone areas;

(2) NO<sub>x</sub> in ozone areas, unless the EPA Administrator determines that additional reductions of NO<sub>x</sub> would not contribute to attainment;

(3) CO in CO areas;

(4) PM<sub>10</sub> in PM<sub>10</sub> areas;

(5) Transportation-related precursors of PM<sub>10</sub> in PM<sub>10</sub> nonattainment and maintenance areas if the EPA Regional Administrator or the director of the State air agency has made a finding that such precursor emissions from within the area are a significant contributor to the PM<sub>10</sub> nonattainment problem and has so notified the MPO and DOT; and

(6) NO<sub>x</sub> in NO<sub>2</sub> areas.

(e) *Analysis years.* The regional emissions analysis must be performed for analysis years that are no more than ten years apart. The first analysis year must be no more than five years beyond the year in which the conformity determination is being made. The last year of transportation plan's forecast period must also be an analysis year.

(f) *"Baseline" scenario.* The regional emissions analysis required by paragraphs (b) and (c) of this section must estimate the emissions that would result from the "Baseline" scenario in each analysis year. The "Baseline" scenario must be defined for each of the analysis years. The "Baseline" scenario is the future transportation system that will result from current programs, including the following (except that exempt projects listed in § 93.126 and projects exempt from regional emissions

analysis as listed in § 93.127 need not be explicitly considered):

(1) All in-place regionally significant highway and transit facilities, services and activities;

(2) All ongoing travel demand management or transportation system management activities; and

(3) Completion of all regionally significant projects, regardless of funding source, which are currently under construction or are undergoing right-of-way acquisition (except for hardship acquisition and protective buying); come from the first year of the previously conforming transportation plan and/or TIP; or have completed the NEPA process.

(g) *"Action" scenario.* The regional emissions analysis required by paragraphs (b) and (c) of this section must estimate the emissions that would result from the "Action" scenario in each analysis year. The "Action" scenario must be defined for each of the analysis years. The "Action" scenario is the transportation system that would result from the implementation of the proposed action (transportation plan, TIP, or project not from a conforming transportation plan and TIP) and all other expected regionally significant projects in the nonattainment area. The "Action" scenario must include the following (except that exempt projects listed in § 93.126 and projects exempt from regional emissions analysis as listed in § 93.127 need not be explicitly considered):

(1) All facilities, services, and activities in the "Baseline" scenario;

(2) Completion of all TCMs and regionally significant projects (including facilities, services, and activities) specifically identified in the proposed transportation plan which will be operational or in effect in the analysis year, except that regulatory TCMs may not be assumed to begin at a future time unless the regulation is already adopted by the enforcing jurisdiction or the TCM is identified in the applicable implementation plan;

(3) All travel demand management programs and transportation system management activities known to the MPO, but not included in the applicable implementation plan or utilizing any Federal funding or approval, which have been fully adopted and/or funded by the enforcing jurisdiction or sponsoring agency since the last conformity determination;

(4) The incremental effects of any travel demand management programs and transportation system management activities known to the MPO, but not included in the applicable implementation plan or utilizing any

Federal funding or approval, which were adopted and/or funded prior to the date of the last conformity determination, but which have been modified since then to be more stringent or effective;

(5) Completion of all expected regionally significant highway and transit projects which are not from a conforming transportation plan and TIP; and

(6) Completion of all expected regionally significant non-FHWA/FTA highway and transit projects that have clear funding sources and commitments leading toward their implementation and completion by the analysis year.

(h) *Projects not from a conforming transportation plan and TIP.* For the regional emissions analysis required by paragraphs (b) and (c) of this section, if the project which is not from a conforming transportation plan and TIP is a modification of a project currently in the plan or TIP, the 'Baseline' scenario must include the project with its original design concept and scope, and the 'Action' scenario must include the project with its new design concept and scope.

**§ 93.120 Consequences of control strategy implementation plan failures.**

(a) *Disapprovals.* (1) If EPA disapproves any submitted control strategy implementation plan revision (with or without a protective finding), the conformity status of the transportation plan and TIP shall lapse on the date that highway sanctions as a result of the disapproval are imposed on the nonattainment area under section 179(b)(1) of the CAA. No new transportation plan, TIP, or project may be found to conform until another control strategy implementation plan revision fulfilling the same CAA requirements is submitted and conformity to this submission is determined.

(2) If EPA disapproves a submitted control strategy implementation plan revision without making a protective finding, then beginning 120 days after such disapproval, only projects in the first three years of the currently conforming transportation plan and TIP may be found to conform. This means that beginning 120 days after disapproval without a protective finding, no transportation plan, TIP, or project not in the first three years of the currently conforming plan and TIP may be found to conform until another control strategy implementation plan revision fulfilling the same CAA requirements is submitted and conformity to this submission is determined. During the first 120 days

following EPA's disapproval without a protective finding, transportation plan, TIP, and project conformity determinations shall be made using the motor vehicle emissions budget(s) in the disapproved control strategy implementation plan, unless another control strategy implementation plan revision has been submitted and its motor vehicle emissions budget(s) applies for transportation conformity purposes, pursuant to § 93.109.

(3) In disapproving a control strategy implementation plan revision, EPA would give a protective finding where a submitted plan contains adopted control measures or written commitments to adopt enforceable control measures that fully satisfy the emissions reductions requirements relevant to the statutory provision for which the implementation plan revision was submitted, such as reasonable further progress or attainment.

(b) *Failure to submit and incompleteness.* In areas where EPA notifies the State, MPO, and DOT of the State's failure to submit a control strategy implementation plan or submission of an incomplete control strategy implementation plan revision (either of which initiates the sanction process under CAA sections 179 or 110(m)), the conformity status of the transportation plan and TIP shall lapse on the date that highway sanctions are imposed on the nonattainment area for such failure under section 179(b)(1) of the CAA, unless the failure has been remedied and acknowledged by a letter from the EPA Regional Administrator.

(c) *Federal implementation plans.* If EPA promulgates a Federal implementation plan that contains motor vehicle emissions budget(s) as a result of a State failure, the conformity lapse imposed by this section because of that State failure is removed.

**§ 93.121 Requirements for adoption or approval of projects by other recipients of funds designated under title 23 U.S.C. or the Federal Transit Laws.**

(a) Except as provided in paragraph (b) of this section, no recipient of Federal funds designated under title 23 U.S.C. or the Federal Transit Laws shall adopt or approve a regionally significant highway or transit project, regardless of funding source, unless the recipient finds that the requirements of one of the following are met:

(1) The project was included in the first three years of the most recently conforming transportation plan and TIP (or the conformity determination's regional emissions analyses), even if conformity status is currently lapsed; and the project's design concept and

scope has not changed significantly from those analyses; or

(2) There is a currently conforming transportation plan and TIP, and a new regional emissions analysis including the project and the currently conforming transportation plan and TIP demonstrates that the transportation plan and TIP would still conform if the project were implemented (consistent with the requirements of §§ 93.118 and/or 93.119 for a project not from a conforming transportation plan and TIP).

(b) In isolated rural nonattainment and maintenance areas subject to § 93.109(g), no recipient of Federal funds designated under title 23 U.S.C. or the Federal Transit Laws shall adopt or approve a regionally significant highway or transit project, regardless of funding source, unless the recipient finds that the requirements of one of the following are met:

(1) The project was included in the regional emissions analysis supporting the most recent conformity determination for the portion of the statewide transportation plan and TIP which are in the nonattainment or maintenance area, and the project's design concept and scope has not changed significantly; or

(2) A new regional emissions analysis including the project and all other regionally significant projects expected in the nonattainment or maintenance area demonstrates that those projects in the statewide transportation plan and statewide TIP which are in the nonattainment or maintenance area would still conform if the project were implemented (consistent with the requirements of §§ 93.118 and/or 93.119 for projects not from a conforming transportation plan and TIP).

**§ 93.122 Procedures for determining regional transportation-related emissions.**

(a) *General requirements.* (1) The regional emissions analysis required by §§ 93.118 and 93.119 for the transportation plan, TIP, or project not from a conforming plan and TIP must include all regionally significant projects expected in the nonattainment or maintenance area. The analysis shall include FHWA/FTA projects proposed in the transportation plan and TIP and all other regionally significant projects which are disclosed to the MPO as required by § 93.105. Projects which are not regionally significant are not required to be explicitly modeled, but vehicle miles traveled (VMT) from such projects must be estimated in accordance with reasonable professional practice. The effects of TCMs and similar projects that are not regionally

significant may also be estimated in accordance with reasonable professional practice.

(2) The emissions analysis may not include for emissions reduction credit any TCMs or other measures in the applicable implementation plan which have been delayed beyond the scheduled date(s) until such time as their implementation has been assured. If the measure has been partially implemented and it can be demonstrated that it is providing quantifiable emission reduction benefits, the emissions analysis may include that emissions reduction credit.

(3) Emissions reduction credit from projects, programs, or activities which require a regulatory action in order to be implemented may not be included in the emissions analysis unless:

(i) The regulatory action is already adopted by the enforcing jurisdiction;

(ii) The project, program, or activity is included in the applicable implementation plan;

(iii) The control strategy implementation plan submission or maintenance plan submission that establishes the motor vehicle emissions budget(s) for the purposes of § 93.118 contains a written commitment to the project, program, or activity by the agency with authority to implement it; or

(iv) EPA has approved an opt-in to a Federally enforced program, EPA has promulgated the program (if the control program is a Federal responsibility, such as vehicle tailpipe standards), or the Clean Air Act requires the program without need for individual State action and without any discretionary authority for EPA to set its stringency, delay its effective date, or not implement the program.

(4) Emissions reduction credit from control measures that are not included in the transportation plan and TIP and that do not require a regulatory action in order to be implemented may not be included in the emissions analysis unless the conformity determination includes written commitments to implementation from the appropriate entities.

(i) Persons or entities voluntarily committing to control measures must comply with the obligations of such commitments.

(ii) The conformity implementation plan revision required in § 51.390 of this chapter must provide that written commitments to control measures that are not included in the transportation plan and TIP must be obtained prior to a conformity determination and that such commitments must be fulfilled.

(5) A regional emissions analysis for the purpose of satisfying the requirements of § 93.119 must make the same assumptions in both the "Baseline" and "Action" scenarios regarding control measures that are external to the transportation system itself, such as vehicle tailpipe or evaporative emission standards, limits on gasoline volatility, vehicle inspection and maintenance programs, and oxygenated or reformulated gasoline or diesel fuel.

(6) The ambient temperatures used for the regional emissions analysis shall be consistent with those used to establish the emissions budget in the applicable implementation plan. All other factors, for example the fraction of travel in a hot stabilized engine mode, must be consistent with the applicable implementation plan, unless modified after interagency consultation according to § 93.105(c)(1)(i) to incorporate additional or more geographically specific information or represent a logically estimated trend in such factors beyond the period considered in the applicable implementation plan.

(7) Reasonable methods shall be used to estimate nonattainment or maintenance area VMT on off-network roadways within the urban transportation planning area, and on roadways outside the urban transportation planning area.

(b) Regional emissions analysis in serious, severe, and extreme ozone nonattainment areas and serious CO nonattainment areas must meet the requirements of paragraphs (b)(1) through (3) of this section if their metropolitan planning area contains an urbanized area population over 200,000.

(1) By January 1, 1997, estimates of regional transportation-related emissions used to support conformity determinations must be made at a minimum using network-based travel models according to procedures and methods that are available and in practice and supported by current and available documentation. These procedures, methods, and practices are available from DOT and will be updated periodically. Agencies must discuss these modeling procedures and practices through the interagency consultation process, as required by § 93.105(c)(1)(i). Network-based travel models must at a minimum satisfy the following requirements:

(i) Network-based travel models must be validated against observed counts (peak and off-peak, if possible) for a base year that is not more than 10 years prior to the date of the conformity determination. Model forecasts must be analyzed for reasonableness and

compared to historical trends and other factors, and the results must be documented;

(ii) Land use, population, employment, and other network-based travel model assumptions must be documented and based on the best available information;

(iii) Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. The distribution of employment and residences for different transportation options must be reasonable;

(iv) A capacity-sensitive assignment methodology must be used, and emissions estimates must be based on a methodology which differentiates between peak and off-peak link volumes and speeds and uses speeds based on final assigned volumes;

(v) Zone-to-zone travel impedances used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times that are estimated from final assigned traffic volumes. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling mode splits; and

(vi) Network-based travel models must be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices.

(2) Reasonable methods in accordance with good practice must be used to estimate traffic speeds and delays in a manner that is sensitive to the estimated volume of travel on each roadway segment represented in the network-based travel model.

(3) Highway Performance Monitoring System (HPMS) estimates of vehicle miles traveled (VMT) shall be considered the primary measure of VMT within the portion of the nonattainment or maintenance area and for the functional classes of roadways included in HPMS, for urban areas which are sampled on a separate urban area basis. For areas with network-based travel models, a factor (or factors) may be developed to reconcile and calibrate the network-based travel model estimates of VMT in the base year of its validation to the HPMS estimates for the same period. These factors may then be applied to model estimates of future VMT. In this factoring process, consideration will be given to differences between HPMS and network-based travel models, such as differences in the facility coverage of the HPMS and the modeled network description. Locally developed count-

based programs and other departures from these procedures are permitted subject to the interagency consultation procedures of § 93.105(c)(1)(i).

(c) In all areas not otherwise subject to paragraph (b) of this section, regional emissions analyses must use those procedures described in paragraph (b) of this section if the use of those procedures has been the previous practice of the MPO. Otherwise, areas not subject to paragraph (b) of this section may estimate regional emissions using any appropriate methods that account for VMT growth by, for example, extrapolating historical VMT or projecting future VMT by considering growth in population and historical growth trends for VMT per person. These methods must also consider future economic activity, transit alternatives, and transportation system policies.

(d) *PM<sub>10</sub> from construction-related fugitive dust.* (1) For areas in which the implementation plan does not identify construction-related fugitive PM<sub>10</sub> as a contributor to the nonattainment problem, the fugitive PM<sub>10</sub> emissions associated with highway and transit project construction are not required to be considered in the regional emissions analysis.

(2) In PM<sub>10</sub> nonattainment and maintenance areas with implementation plans which identify construction-related fugitive PM<sub>10</sub> as a contributor to the nonattainment problem, the regional PM<sub>10</sub> emissions analysis shall consider construction-related fugitive PM<sub>10</sub> and shall account for the level of construction activity, the fugitive PM<sub>10</sub> control measures in the applicable implementation plan, and the dust-producing capacity of the proposed activities.

(e) *Reliance on previous regional emissions analysis.* (1) The TIP may be demonstrated to satisfy the requirements of §§ 93.118 ("Motor vehicle emissions budget") or 93.119 ("Emission reductions in areas without motor vehicle emissions budgets") without new regional emissions analysis if the regional emissions analysis already performed for the plan also applies to the TIP. This requires a demonstration that:

(i) The TIP contains all projects which must be started in the TIP's timeframe in order to achieve the highway and transit system envisioned by the transportation plan;

(ii) All TIP projects which are regionally significant are included in the transportation plan with design concept and scope adequate to determine their contribution to the transportation plan's regional emissions

at the time of the transportation plan's conformity determination; and

(iii) The design concept and scope of each regionally significant project in the TIP is not significantly different from that described in the transportation plan.

(2) A project which is not from a conforming transportation plan and a conforming TIP may be demonstrated to satisfy the requirements of § 93.118 or § 93.119 without additional regional emissions analysis if allocating funds to the project will not delay the implementation of projects in the transportation plan or TIP which are necessary to achieve the highway and transit system envisioned by the transportation plan, and if the project is either:

(i) Not regionally significant; or  
(ii) Included in the conforming transportation plan (even if it is not specifically included in the latest conforming TIP) with design concept and scope adequate to determine its contribution to the transportation plan's regional emissions at the time of the transportation plan's conformity determination, and the design concept and scope of the project is not significantly different from that described in the transportation plan.

**§ 93.123 Procedures for determining localized CO and PM<sub>10</sub> concentrations (hot-spot analysis).**

(a) *CO hot-spot analysis.* (1) The demonstrations required by § 93.116 ("Localized CO and PM<sub>10</sub> violations") must be based on quantitative analysis using the applicable air quality models, data bases, and other requirements specified in 40 CFR part 51, Appendix W (Guideline on Air Quality Models). These procedures shall be used in the following cases, unless different procedures developed through the interagency consultation process required in § 93.105 and approved by the EPA Regional Administrator are used:

(i) For projects in or affecting locations, areas, or categories of sites which are identified in the applicable implementation plan as sites of violation or possible violation;

(ii) For projects affecting intersections that are at Level-of-Service D, E, or F, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes related to the project;

(iii) For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with highest traffic volumes, as identified in the applicable implementation plan; and

(iv) For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst level of service, as identified in the applicable implementation plan.

(2) In cases other than those described in paragraph (a)(1) of this section, the demonstrations required by § 93.116 may be based on either:

(i) Quantitative methods that represent reasonable and common professional practice; or

(ii) A qualitative consideration of local factors, if this can provide a clear demonstration that the requirements of § 93.116 are met.

(b) *PM<sub>10</sub> hot-spot analysis.* (1) The hot-spot demonstration required by § 93.116 must be based on quantitative analysis methods for the following types of projects:

(i) Projects which are located at sites at which violations have been verified by monitoring;

(ii) Projects which are located at sites which have vehicle and roadway emission and dispersion characteristics that are essentially identical to those of sites with verified violations (including sites near one at which a violation has been monitored); and

(iii) New or expanded bus and rail terminals and transfer points which increase the number of diesel vehicles congregating at a single location.

(2) Where quantitative analysis methods are not required, the demonstration required by § 93.116 may be based on a qualitative consideration of local factors.

(3) The identification of the sites described in paragraph (b)(1)(i) and (ii) of this section, and other cases where quantitative methods are appropriate, shall be determined through the interagency consultation process required in § 93.105. DOT may choose to make a categorical conformity determination on bus and rail terminals or transfer points based on appropriate modeling of various terminal sizes, configurations, and activity levels.

(4) The requirements for quantitative analysis contained in this paragraph (b) will not take effect until EPA releases modeling guidance on this subject and announces in the **Federal Register** that these requirements are in effect.

(c) *General requirements.* (1) Estimated pollutant concentrations must be based on the total emissions burden which may result from the implementation of the project, summed together with future background concentrations. The total concentration must be estimated and analyzed at appropriate receptor locations in the

area substantially affected by the project.

(2) Hot-spot analyses must include the entire project, and may be performed only after the major design features which will significantly impact concentrations have been identified. The future background concentration should be estimated by multiplying current background by the ratio of future to current traffic and the ratio of future to current emission factors.

(3) Hot-spot analysis assumptions must be consistent with those in the regional emissions analysis for those inputs which are required for both analyses.

(4) PM<sub>10</sub> or CO mitigation or control measures shall be assumed in the hot-spot analysis only where there are written commitments from the project sponsor and/or operator to implement such measures, as required by § 93.125(a).

(5) CO and PM<sub>10</sub> hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established "Guideline" methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site.

**§ 93.124 Using the motor vehicle emissions budget in the applicable implementation plan (or implementation plan submission).**

(a) In interpreting an applicable implementation plan (or implementation plan submission) with respect to its motor vehicle emissions budget(s), the MPO and DOT may not infer additions to the budget(s) that are not explicitly intended by the implementation plan (or submission). Unless the implementation plan explicitly quantifies the amount by which motor vehicle emissions could be higher while still allowing a demonstration of compliance with the milestone, attainment, or maintenance requirement and explicitly states an intent that some or all of this additional amount should be available to the MPO and DOT in the emissions budget for conformity purposes, the MPO may not interpret the budget to be higher than the implementation plan's estimate of future emissions. This applies in particular to applicable implementation plans (or submissions) which demonstrate that after implementation of control measures in the implementation plan:

(1) Emissions from all sources will be less than the total emissions that would

be consistent with a required demonstration of an emissions reduction milestone;

(2) Emissions from all sources will result in achieving attainment prior to the attainment deadline and/or ambient concentrations in the attainment deadline year will be lower than needed to demonstrate attainment; or

(3) Emissions will be lower than needed to provide for continued maintenance.

(b) If an applicable implementation plan submitted before November 24, 1993, demonstrates that emissions from all sources will be less than the total emissions that would be consistent with attainment and quantifies that "safety margin," the State may submit an implementation plan revision which assigns some or all of this safety margin to highway and transit mobile sources for the purposes of conformity. Such an implementation plan revision, once it is endorsed by the Governor and has been subject to a public hearing, may be used for the purposes of transportation conformity before it is approved by EPA.

(c) A conformity demonstration shall not trade emissions among budgets which the applicable implementation plan (or implementation plan submission) allocates for different pollutants or precursors, or among budgets allocated to motor vehicles and other sources, unless the implementation plan establishes appropriate mechanisms for such trades.

(d) If the applicable implementation plan (or implementation plan submission) estimates future emissions by geographic subarea of the nonattainment area, the MPO and DOT are not required to consider this to establish subarea budgets, unless the applicable implementation plan (or implementation plan submission) explicitly indicates an intent to create such subarea budgets for the purposes of conformity.

(e) If a nonattainment area includes more than one MPO, the implementation plan may establish motor vehicle emissions budgets for each MPO, or else the MPOs must collectively make a conformity determination for the entire nonattainment area.

**§ 93.125 Enforceability of design concept and scope and project-level mitigation and control measures.**

(a) Prior to determining that a transportation project is in conformity, the MPO, other recipient of funds designated under title 23 U.S.C. or the Federal Transit Laws, FHWA, or FTA must obtain from the project sponsor

and/or operator written commitments to implement in the construction of the project and operation of the resulting facility or service any project-level mitigation or control measures which are identified as conditions for NEPA process completion with respect to local PM<sub>10</sub> or CO impacts. Before a conformity determination is made, written commitments must also be obtained for project-level mitigation or control measures which are conditions for making conformity determinations for a transportation plan or TIP and are included in the project design concept and scope which is used in the regional emissions analysis required by §§ 93.118 ("Motor vehicle emissions budget") and 93.119 ("Emission reductions in areas without motor vehicle emissions budgets") or used in the project-level hot-spot analysis required by § 93.116.

(b) Project sponsors voluntarily committing to mitigation measures to facilitate positive conformity determinations must comply with the obligations of such commitments.

(c) The implementation plan revision required in § 51.390 of this chapter shall provide that written commitments to mitigation measures must be obtained prior to a positive conformity determination, and that project sponsors must comply with such commitments.

(d) If the MPO or project sponsor believes the mitigation or control measure is no longer necessary for conformity, the project sponsor or operator may be relieved of its obligation to implement the mitigation or control measure if it can demonstrate that the applicable hot-spot requirements of § 93.116, emission budget requirements of § 93.118, and emission reduction requirements of § 93.119 are satisfied without the mitigation or control measure, and so notifies the agencies involved in the interagency consultation process required under § 93.105. The MPO and DOT must find that the transportation plan and TIP still satisfy the applicable requirements of §§ 93.118 and/or 93.119 and that the project still satisfies the requirements of § 93.116, and therefore that the conformity determinations for the transportation plan, TIP, and project are still valid. This finding is subject to the applicable public consultation requirements in § 93.105(e) for conformity determinations for projects.

**§ 93.126 Exempt projects.**

Notwithstanding the other requirements of this subpart, highway and transit projects of the types listed in Table 2 of this section are exempt from the requirement to determine

conformity. Such projects may proceed toward implementation even in the absence of a conforming transportation plan and TIP. A particular action of the type listed in Table 2 of this section is not exempt if the MPO in consultation

with other agencies (see § 93.105(c)(1)(iii)), the EPA, and the FHWA (in the case of a highway project) or the FTA (in the case of a transit project) concur that it has potentially adverse emissions impacts for any

reason. States and MPOs must ensure that exempt projects do not interfere with TCM implementation. Table 2 follows:

TABLE 2.—EXEMPT PROJECTS

#### Safety

Railroad/highway crossing.  
Hazard elimination program.  
Safer non-Federal-aid system roads.  
Shoulder improvements.  
Increasing sight distance.  
Safety improvement program.  
Traffic control devices and operating assistance other than signalization projects.  
Railroad/highway crossing warning devices.  
Guardrails, median barriers, crash cushions.  
Pavement resurfacing and/or rehabilitation.  
Pavement marking demonstration.  
Emergency relief (23 U.S.C. 125).  
Fencing.  
Skid treatments.  
Safety roadside rest areas.  
Adding medians.  
Truck climbing lanes outside the urbanized area.  
Lighting improvements.  
Widening narrow pavements or reconstructing bridges (no additional travel lanes).  
Emergency truck pullovers.

#### Mass Transit

Operating assistance to transit agencies.  
Purchase of support vehicles.  
Rehabilitation of transit vehicles<sup>1</sup>.  
Purchase of office, shop, and operating equipment for existing facilities.  
Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.).  
Construction or renovation of power, signal, and communications systems.  
Construction of small passenger shelters and information kiosks.  
Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures).  
Rehabilitation or reconstruction of track structures, track, and trackbed in existing rights-of-way.  
Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet<sup>1</sup>.  
Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR part 771.

#### Air Quality

Continuation of ride-sharing and van-pooling promotion activities at current levels.  
Bicycle and pedestrian facilities.

#### Other

Specific activities which do not involve or lead directly to construction, such as:  
    Planning and technical studies.  
    Grants for training and research programs.  
    Planning activities conducted pursuant to titles 23 and 49 U.S.C.  
    Federal-aid systems revisions.  
Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action.  
Noise attenuation.  
Emergency or hardship advance land acquisitions (23 CFR 712.204(d)).  
Acquisition of scenic easements.  
Plantings, landscaping, etc.  
Sign removal.  
Directional and informational signs.  
Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities).  
Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes.

**Note:** <sup>1</sup>In PM<sub>10</sub> nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan.

#### § 93.127 Projects exempt from regional emissions analyses.

Notwithstanding the other requirements of this subpart, highway and transit projects of the types listed in Table 3 of this section are exempt from regional emissions analysis requirements. The local effects of these

projects with respect to CO or PM<sub>10</sub> concentrations must be considered to determine if a hot-spot analysis is required prior to making a project-level conformity determination. These projects may then proceed to the project development process even in the absence of a conforming transportation

plan and TIP. A particular action of the type listed in Table 3 of this section is not exempt from regional emissions analysis if the MPO in consultation with other agencies (see § 93.105(c)(1)(iii)), the EPA, and the FHWA (in the

case of a highway project) or the FTA (in the case of a transit project) concur that it has potential regional impacts for any reason. Table 3 follows:

TABLE 3.—PROJECTS EXEMPT FROM REGIONAL EMISSIONS ANALYSES

---

Intersection channelization projects.  
Intersection signalization projects at individual intersections.  
Interchange reconfiguration projects.  
Changes in vertical and horizontal alignment.  
Truck size and weight inspection stations.  
Bus terminals and transfer points.

---

**§ 93.128 Traffic signal synchronization projects.**

Traffic signal synchronization projects may be approved, funded, and implemented without satisfying the requirements of this subpart. However,

all subsequent regional emissions analyses required by §§ 93.118 and 93.119 for transportation plans, TIPs, or projects not from a conforming plan and TIP must include such regionally

significant traffic signal synchronization projects.

[FR Doc. 97-20968 Filed 8-14-97; 8:45 am]

BILLING CODE 6560-50-P





# Federal Register

---

**Friday,  
April 30, 2004**

---

**Part II**

## **Environmental Protection Agency**

---

**40 CFR Part 81**

**40 CFR Parts 50, 51, and 81  
8-Hour Ozone National Ambient Air  
Quality Standards; Final Rules**

**ENVIRONMENTAL PROTECTION AGENCY****40 CFR Part 81**

[OAR-2003-0083; FRL-7651-8]

RIN 2060-

**Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Early Action Compact Areas With Deferred Effective Dates****AGENCY:** Environmental Protection Agency (EPA).**ACTION:** Final rule.

**SUMMARY:** This rule sets forth the air quality designations and classifications for every area in the United States, including Indian country, for the 8-hour ozone national ambient air quality standard. We are issuing this rule so that citizens will know whether the air where they live and work is healthful or unhealthy and to establish the boundaries and classifications for areas designated as nonattainment. Children are at risk when exposed to ozone pollution because their lungs are still developing, people with existing respiratory disease are at risk, and even healthy people who are active outdoors can experience difficulty breathing

when exposed to ozone pollution. In this document, EPA is also promulgating the first deferral of the effective date, to September 30, 2005, of the nonattainment designation for Early Action Compact areas that have met all milestones through March 31, 2004. Finally, we are inviting States to submit by July 15, 2004, requests to reclassify areas if their design value falls within five percent of a high or lower classification. This rule does not establish or address State and Tribal obligations for planning and control requirements which apply to nonattainment areas for the 8-hour ozone standard. Two separate rules, one of which is also published today, set forth the planning and control requirements which apply to nonattainment areas for this standard. The second rule will be published at a later date.

**EFFECTIVE DATE:** This final rule is effective on June 15, 2004.

**ADDRESSES:** EPA has established dockets for this action under Docket ID No. OAR-2003-0083 (Designations) and OAR-2003-0090 (Early Action Compacts). All documents in the docket are listed in the EDOCKET index at <http://www.epa.gov/edocket>. Although listed in the index, some information is not publicly available, *i.e.*, Confidential

Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in EDOCKET or in hard copy at the Docket, EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m. Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Office of Air and Radiation Docket and Information Center is (202) 566-1742. In addition, we have placed a copy of the rule and a variety of materials regarding designations on EPA's designation Web site at: <http://www.epa.gov/oar/oaqps/glo/designations> and on the Tribal Web site at: <http://www.epa.gov/air/tribal>. Materials relevant to Early Action Compact (EAC) areas are on EPA's Web site at: [http://www.epa.gov/ttn/naaqs/ozone/eac/w1040218\\_eac\\_resources.pdf](http://www.epa.gov/ttn/naaqs/ozone/eac/w1040218_eac_resources.pdf). In addition, the public may inspect the rule and technical support at the following locations.

Regional offices	States
Dave Conroy, Acting Branch Chief, Air Programs Branch, EPA New England, 1 Congress Street, Suite 1100, Boston, MA 02114-2023, (617) 918-1661.	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
Raymond Werner, Chief, Air Programs Branch, EPA Region II, 290 Broadway, 25th Floor, New York, NY 10007-1866, (212) 637-4249.	New Jersey, New York, Puerto Rico, and Virgin Islands.
Makeba Morris, Branch Chief, Air Quality Planning Branch, EPA Region III, 1650 Arch Street, Philadelphia, PA 19103-2187, (215) 814-2187.	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia.
Richard A. Schutt, Chief, Regulatory Development Section, EPA Region IV, Sam Nunn Atlanta Federal Center, 61 Forsyth Street, SW., 12th Floor, Atlanta, GA 30303, (404) 562-9033.	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.
Pamela Blakley, Acting Chief, Air Programs Branch, EPA Region V, 77 West Jackson Street, Chicago, IL 60604, (312) 886-4447.	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.
Donna Ascenzi, Acting Associate Director, Air Programs, EPA Region VI, 1445 Ross Avenue, Dallas, TX 75202, (214) 665-2725.	Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.
Joshua A. Tapp, Chief, Air Programs Branch, EPA Region VII, 901 North 5th Street, Kansas City, Kansas 66101-2907, (913) 551-7606.	Iowa, Kansas, Missouri, and Nebraska.
Richard R. Long, Director, Air and Radiation Program, EPA Region VIII, 999 18th Street, Suite 300, Denver, CO 80202-2466, (303) 312-6005.	Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.
Steven Barhite, Air Planning Office, EPA Region IX, 75 Hawthorne Street, San Francisco, CA 94105, (415) 972-3980.	Arizona, California, Guam, Hawaii, and Nevada.
Bonnie Thie, Manager, State and Tribal Air Programs, EPA Region X, Office of Air, Waste, and Toxics, Mail Code OAQ-107, 1200 Sixth Avenue, Seattle, WA 98101, (206) 553-1189.	Alaska, Idaho, Oregon, and Washington.

**FOR FURTHER INFORMATION CONTACT:** Ms. Sharon Reinders, Designations, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail Code C539-02, Research Triangle Park, NC 27711, phone number (919)

541-5284 or by e-mail at: [reinders.sharon@epa.gov](mailto:reinders.sharon@epa.gov).

Ms. Annie Nikbakht, Part 81 Code of Federal Regulations, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail

Code C539-02, Research Triangle Park, NC 27711, phone number (919) 541-5246 or by e-mail at: [nikbakht.annie@epa.gov](mailto:nikbakht.annie@epa.gov).

Mr. Doug Grano, Classifications, Office of Air Quality Planning and

Standards, U.S. Environmental Protection Agency, Mail Code C539-02, Research Triangle Park, NC 27711, phone number (919) 541-3292 or by e-mail at: [grano.doug@epa.gov](mailto:grano.doug@epa.gov).

Mr. David Cole, Early Action Compacts, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail Code C539-02, Research Triangle Park, NC 27711, phone number (919) 541-5565 or by e-mail at: [cole.david@epa.gov](mailto:cole.david@epa.gov).

Mr. Barry Gilbert, Technical Issues, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail Code C539-02, Research Triangle Park, NC 27711, phone number (919) 541-5238 or by e-mail at: [gilbert.barry@epa.gov](mailto:gilbert.barry@epa.gov).

#### SUPPLEMENTARY INFORMATION:

##### Table of Contents

The following is an outline of the preamble.

- I. Preamble Glossary of Terms and Acronyms
- II. What Is the Purpose of This Document?
- III. How Is Ground-Level Ozone Formed?
- IV. What Are the Health Concerns Addressed by the 8-Hour Ozone Standard?
- V. What Is the Chronology of Events Leading Up to This Rule?
- VI. What Are the Statutory Requirements for Designating Areas and What Is EPA's Policy and Guidance for Determining Ozone Nonattainment Area Boundaries for the 8-Hour Ozone NAAQS?
- VII. What Are the Clean Air Act (CAA or Act) Requirements for Air Quality Designations and what Actions Has EPA Taken To Meet the Requirements?
  - A. Where Can I Find Information Forming the Basis for This Rule and Exchanges Between EPA, States, and Tribes Related to This Rule?
- VIII. What Are the CAA Requirements for Air Quality Classifications?
- IX. What Action Is EPA Taking To Defer the Effective Date of Nonattainment Designation for EAC Areas?
  - A. When Did EPA Propose the First Deferred Effective Date of Nonattainment Designations?
  - B. What Progress Are Compact Areas Making Toward Completing Their Milestones?
  - C. What Is Today's Final Action for Compact Areas?
  - D. What Is EPA's Schedule for Taking Further Action To Continue To Defer the Effective Date of Nonattainment Designation for Compact Areas?
  - E. What Action Will EPA Take if a Compact Area Does Not Meet a Milestone?
  - F. What Comments Did EPA Receive on the December 16, 2003 Proposal and on the June 2, 2003 Proposed Implementation Rule Specific to Compacts?
- X. How Do Designations Affect Indian Country?
- XI. Statutory and Executive Order Reviews
  - A. Executive Order 12866: Regulatory Planning and Review

- B. Paperwork Reduction Act
- C. Regulatory Flexibility Act
- D. Unfunded Mandates Reform Act
- E. Executive Order 13132: Federalism
- F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments
- G. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks
- H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use
- I. National Technology Transfer Advancement Act
- J. Congressional Review Act

#### I. Preamble Glossary Of Terms And Acronyms

The following are abbreviations of terms used in the preamble.

- CAA—Clean Air Act  
 CFR—Code of Federal Regulations  
 CBI—Confidential Business Information  
 CMAQ—Congestion Mitigation Air Quality  
 CMSA—Consolidated Metropolitan Statistical Area  
 D.C.—District of Columbia  
 EAC—Early Action Compact or Compact  
 EPA—Environmental Protection Agency or Agency  
 FR—Federal Register  
 MPO—Metropolitan Planning Organization  
 MSA—Metropolitan Statistical Area  
 NAAQS—National Ambient Air Quality Standard or Standard  
 NO<sub>x</sub>—Nitrogen Oxides  
 NOA—Notice of Availability  
 NPR—Notice of Proposed Rulemaking  
 NSR—New Source Review  
 OMB—Office of Management and Budget  
 PPM—Parts Per Million  
 RFG—Reformulated Fuel  
 RTC—Response to Comment  
 SIP—State Implementation Plan  
 TAR—Tribal Authority Rule  
 TEA-21—Transportation Equity Act for the 21st Century  
 TPY—Tons Per Year  
 TSD—Technical Support Document  
 U.S.—United States  
 VOC—Volatile Organic Compounds

#### II. What Is the Purpose of This Document?

The purpose of this document is to announce and promulgate designations, classifications, and boundaries for areas of the country with respect to the 8-hour ground-level ozone National Ambient Air Quality Standard (NAAQS) in accordance with the requirements of the CAA. We took several steps to announce that this rule was available. We posted the rule on several EPA Web sites and provided a copy of the rule, which was

signed by the Administrator on April 15, 2004, to States and Tribes.

#### III. How Is Ground-Level Ozone Formed?

Ground-level ozone (sometimes referred to as smog) is formed by the reaction of volatile organic compounds (VOCs) and oxides of nitrogen (NO<sub>x</sub>) in the atmosphere in the presence of sunlight. These two pollutants, often referred to as ozone precursors, are emitted by many types of pollution sources, including on-road and off-road motor vehicles and engines, power plants and industrial facilities, and smaller sources, collectively referred to as area sources. Ozone is predominately a summertime air pollutant. Changing weather patterns contribute to yearly differences in ozone concentrations from region to region. Ozone and the pollutants that form ozone also can be transported into an area from pollution sources found hundreds of miles upwind.

#### IV. What Are the Health Concerns Addressed by the 8-Hour Ozone Standard?

During the hot summer months, ground-level ozone reaches unhealthy levels in several parts of the country. Ozone is a significant health concern, particularly for children and people with asthma and other respiratory diseases. Ozone has also been associated with increased hospitalizations and emergency room visits for respiratory causes, school absences, and reduced activity and productivity because people are suffering from ozone-related respiratory symptoms.

Breathing ozone can trigger a variety of health problems. Ozone can irritate the respiratory system, causing coughing, throat irritation, an uncomfortable sensation in the chest, and/or pain when breathing deeply. Ozone can worsen asthma and possibly other respiratory diseases, such as bronchitis and emphysema. When ozone levels are high, more people with asthma have attacks that require a doctor's attention or the use of additional medication. Ozone can reduce lung function and make it more difficult to breathe deeply, and breathing may become more rapid and shallow than normal, thereby limiting a person's normal activity. In addition, breathing ozone can inflame and damage the lining of the lungs, which may lead to permanent changes in lung tissue, irreversible reductions in lung function, and a lower quality of life if the inflammation occurs repeatedly over a long time period (months, years, a lifetime). People who are particularly

susceptible to the effects of ozone include children and adults who are active outdoors, people with respiratory disease, such as asthma, and people with unusual sensitivity to ozone.

More detailed information on the health effects of ozone can be found at the following Web site: [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html).

### V. What Is the Chronology of Events Leading Up to This Rule?

This section summarizes the relevant activities leading up to today's rule, including promulgation of the 8-hour ozone NAAQS and litigation challenging that standard. The CAA establishes a process for air quality management through the NAAQS. Area designations are required after promulgation of a new or revised NAAQS. In 1979, we promulgated the 0.12 parts per million (ppm) 1-hour ozone standard, (44 *Federal Register* 8202, February 8, 1979). On July 18, 1997, we promulgated a revised ozone standard of 0.08 ppm, measured over an 8-hour period, *i.e.*, the 8-hour standard (62 FR 38856). The 8-hour standard is more protective of public health and more stringent than the 1-hour standard. The NAAQS rule was challenged by numerous litigants and in May 1999, the U.S. Court of Appeals for the D.C. Circuit issued a decision remanding, but not vacating, the 8-hour ozone standard. Among other things, the Court recognized that EPA is required to designate areas for any new or revised NAAQS in accordance with the CAA and addressed a number of other issues, which are not related to designations. *American Trucking Assoc. v. EPA*, 175 F.3d 1027, 1047–48, *on rehearing* 195 F.3d 4 (D.C. Cir., 1999). We sought review of two aspects of that decision in the U.S. Supreme Court. In February 2001, the Supreme Court upheld our authority to set the NAAQS and remanded the case back to the D.C. Circuit for disposition of issues the Court did not address in its initial decision. *Whitman v. American Trucking Assoc.*, 121 S. Ct. 903, 911–914, 916–919 (2001) (Whitman). The Supreme Court also remanded the 8-hour implementation strategy to EPA. In March 2002, the D.C. Circuit rejected all remaining challenges to the 8-hour ozone standard. *American Trucking Assoc. v. EPA*, 283 F.3d 355 (D.C. Cir. 2002).

The process for designations following promulgation of a NAAQS is contained in section 107(d)(1) of the CAA. For the 8-hour NAAQS, the Transportation Equity Act for the 21st Century (TEA–21) extended by 1 year

the time for EPA to designate areas for the 8-hour NAAQS.<sup>1</sup> Thus, EPA was required to designate areas for the 8-hour NAAQS by July 2000. However, HR3645 (EPA's appropriation bill in 2000) restricted EPA's authority to spend money to designate areas until June 2001 or the date of the Supreme Court ruling on the standard, whichever came first. As noted earlier, the Supreme Court decision was issued in February 2001. In 2003, several environmental groups filed suit in district court claiming EPA had not met its statutory obligation to designate areas for the 8-hour NAAQS. We entered into a consent decree, which requires EPA to issue the designations by April 15, 2004.

### VI. What Are the Statutory Requirements for Designating Areas and What Is EPA's Policy and Guidance for Determining Nonattainment Area Boundaries for the 8-Hour Ozone NAAQS?

This section describes the statutory definition of nonattainment and EPA's guidance for determining air quality attainment and nonattainment areas for the 8-hour ozone NAAQS. In March 2000<sup>2</sup> and July 2000<sup>3</sup> we issued designation guidance on how to determine the boundaries for nonattainment areas. In that guidance, we rely on the CAA definition of a nonattainment area that is defined in section 107(d)(1)(A)(i) as an area that is violating an ambient standard or is contributing to a nearby area that is violating the standard. If an area meets this definition, EPA is obligated to designate the area as nonattainment.

In making designations and classifications, we use the most recent 3 years of monitoring data.<sup>4</sup> Therefore, today's designations and classifications are generally based on monitoring data collected in 2001–2003 although other relevant years of data may have been used in certain circumstances. Once we determine that a monitor is recording a violation, the next step is to determine if there are any nearby areas that are contributing to the violation and

include them in the designated nonattainment area.

For guidance on determining the nonattainment boundary for the 8-hour ozone standard, we look to CAA section 107(d)(4) that established the Consolidated Metropolitan Statistical Area (CMSA) or Metropolitan Statistical Area (MSA) presumptive boundary for more polluted areas when we promulgated our designation actions in 1991 for the 1-hour ozone standard. In our guidance on determining nonattainment area boundaries for the 8-hour ozone standard, we advised States that if a violating monitor is located in a CMSA or MSA (as defined by the Office of Management and Budget (OMB) in 1999), the larger of the 1-hour ozone nonattainment area or the CMSA or MSA should be considered in determining the boundary of a nonattainment area. The actual size of the nonattainment area may be larger or smaller, depending on air quality-related technical factors contained in our designation guidance. We start with counties in the CMSA or MSA because that area, defined by OMB, generally shares economic, transportation, population and other linkages that are similar to air quality related factors that produce ozone pollution. Also, many CMSAs and MSAs generally are associated with higher levels of ozone concentrations and ozone precursor emissions than areas that are not in or near CMSAs or MSAs.

In June 2003, OMB released a new list of statistical areas. This release was so late in the designation process that we determined that it would be disruptive and unfair to the States and Tribes to revise our guidance. However, we believe it is necessary to evaluate all counties in and around an area containing a monitor that is violating the standard, pursuant to our guidance to consider nearby areas that are contributing to a violation in determining the boundaries of the nonattainment area.

Once a CMSA, MSA or single county area is determined to contain a monitor that is violating the standard, the area can be evaluated using all applicable suggested air quality related factors in our guidance. The factors can be used to justify including counties outside the CMSA or MSA or excluding counties in the CMSA or MSA. The factors were compiled based on our experience in designating areas for the ozone standard in March 1978 and November 1991 and by looking to the CAA, section 107(d)(4), which states that the Administrator and the Governor shall consider factors such as population density, traffic congestion, commercial

<sup>1</sup> CAA 107(d)(1); TEA–21 § 6103(a).

<sup>2</sup> Memorandum of March 28, 2002, from John S. Seitz, "Boundary Guidance on Air Quality Designations for the 8-Hour Ozone National Ambient Air Quality Standards."

<sup>3</sup> Memorandum of July 18, 2000, from John S. Seitz, "Guidance on 8-Hour Ozone Designations for Indian Tribes."

<sup>4</sup> To determine whether an area is attaining the 8-hour ozone NAAQS, EPA considers the most recent 3 consecutive years of data in accordance with 40 Code of Federal Regulations (CFR) part 50, appendix I.

development, industrial development, meteorological conditions, and pollution transport. State and local agencies also had extensive input into compiling the factors.

The factors are:

(1) Emissions and air quality in adjacent areas (including adjacent CMSAs and MSAs),

(2) Population density and degree of urbanization including commercial development (significant difference from surrounding areas),

(3) Monitoring data representing ozone concentrations in local areas and larger areas (urban or regional scale),

(4) Location of emission sources (emission sources and nearby receptors should generally be included in the same nonattainment area),

(5) Traffic and commuting patterns,

(6) Expected growth (including extent, pattern and rate of growth),

(7) Meteorology (weather/transport patterns),

(8) Geography/topography (mountain ranges or other air basin boundaries),

(9) Jurisdictional boundaries (e.g., counties, air districts, existing 1-hour nonattainment areas, Reservations, etc.),

(10) Level of control of emission sources, and,

(11) Regional emissions reductions (e.g., NO<sub>x</sub> State Implementation Plan (SIP) Call or other enforceable regional strategies).

When evaluating the air quality factors for individual areas, we took into account our view that data recorded by an ozone air quality monitor in most cases represents air quality throughout the area in which it is located. In addition, we used the county (or in the case of parts of New England, the township) as the basic jurisdictional unit in determining the extent of the area reflected by the ozone monitor data. As a result, if an ozone monitor was violating the standard based on the 2001–2003 data, we designated the entire county as nonattainment. There were some exceptions to this rule: in cases where a county was extremely large as in the West; where a geographic feature bifurcated a county, leading to different air quality in different parts of the county; and where a mountain top monitor reflected the air quality data only on the mountain top and not in lower elevation areas.

After identifying the counties with violating monitors, we then determined which nearby counties were not monitoring violations but were nonetheless contributing to the nearby violation. We considered each of the 11 factors in making our contribution assessment, including emissions, traffic patterns, population density, and area

growth. In some cases, in considering these factors, as well as information and recommendations provided by the State, we determined that only part of a county was contributing to the nearby nonattainment area. In addition, in certain cases, we determined that a county without an ozone monitor should be designated nonattainment because contiguous counties have monitors that are violating the standard. In at least two instances, we determined that a part of a county with no monitor, but with a large emission source that did not have state-of-the-art controls, contributes to a nearby violation. In some instances, if a State had requested that we continue to use the 1-hour ozone nonattainment boundary for an area, we continued to use that boundary in determining the size of the 8-hour nonattainment area.

The EPA cannot rely on planned ozone reduction strategies in making decisions regarding nonattainment designations, even if those strategies predict that an area may attain in the future. We recognize that some areas with a violating monitor may come into attainment in the future without additional local emission controls because of State and/or national programs that will reduce ozone transport. While we cannot consider these analyses in determining designations, we intend to expedite the redesignation of the areas to attainment once they monitor clean air. We also intend to apply our policy which streamlines the planning process for nonattainment areas that are meeting the NAAQS.<sup>5</sup>

We believe that area-to-area variations must be considered in determining whether to include a county as contributing to a particular nonattainment problem. Thus, our guidance does not establish cut-points for how a particular factor is applied, e.g., it does not identify a set amount of VOC or NO<sub>x</sub> emissions or a specific level of commuting population that would result in including a county in the designated nonattainment area. For example, a county with a large source or sources of NO<sub>x</sub> emissions may be considered as a contributing county if it is upwind, rather than downwind, of a violating monitor. Additionally, a county with VOC emissions of 5,000 tons per year (tpy) might be viewed differently if the total VOC emissions of the area are 15,000 tpy rather than 30,000 tpy. We analyzed the

information provided by each State or Tribe in its recommendation letter, or subsequently submitted, along with any other pertinent information available to EPA, to determine whether a county should be designated nonattainment. We evaluated each State or Tribal designation recommendation in light of the 11 factors, bringing to bear our best technical and policy judgement. If the result of the evaluation is that a county, whether inside or outside of the CMSA or MSA, is contributing to the violation, we designated the area as nonattainment.

#### **VII. What Are the CAA Requirements for Air Quality Designations and What Actions Has EPA Taken To Meet the Requirements?**

In this part, we summarize the provisions of section 107(d)(1) of the CAA that govern the process States and EPA must undertake to recommend and promulgate designations. Following promulgation of a standard, each State Governor or Tribal leader has an opportunity to recommend air quality designations, including appropriate boundaries, to EPA. No later than 120 days prior to promulgating designations, we must notify States or Tribes if we intend to make modifications to their recommendations and boundaries as we deem necessary. States and Tribes then have an opportunity to provide a demonstration as to why the proposed modification is inappropriate. Whether or not a State or Tribe provides a recommendation, EPA must promulgate the designation it deems appropriate.

In June 2000, we asked each State and Tribal Governor or Tribal leader to submit their designation recommendations and supporting documentation to EPA. Because of the uncertainties due to the ongoing litigation on the ozone standard, we did not notify States and Tribes of any intended modifications and did not designate areas at that time. After the legal challenges to the ozone NAAQS were resolved, we requested that States and Tribes provide updated recommendations and any additional supporting documentation by July 15, 2003. EPA published a Notice of Availability (NOA) announcing the availability of the State and Tribal recommendations in the FR on September 8, 2003 (68 FR 52933). After carefully evaluating each recommendation and the supporting documentation, on December 3, 2003, we wrote a letter to each State and Tribe notifying them if we intended to make a modification to their recommendation and indicating the area with which we agreed with their recommendation. We

<sup>5</sup> Memorandum of May 10, 1995, from John S. Seitz, "Reasonable Further Progress, Attainment Demonstration, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard."

provided an opportunity until February 6, 2004, for a demonstration as to why our modification was not appropriate. A NOA announcing the availability of our letters was published in the FR on December 10, 2003 (68 FR 68805). In response to our December 3, 2003 letters, we received letters and demonstrations from many States and Tribes on why our modifications were not appropriate. We evaluated each letter and all of the timely technical information provided to us before arriving at the final decisions reflected in today's rule. Some of the designations reflect our modifications to the State or Tribes' recommendations. Throughout the designation process, we have received letters from other interested parties. We have placed these letters and our responses to the substantive issues raised by them in the docket. Responses to significant comments received on EAC areas are summarized in this document.

Tribal designation activities are covered under the authority of section 301(d) of the CAA. This provision of the Act authorizes us to treat eligible Indian Tribes in the same manner as States. Pursuant to section 301(d)(2), we promulgated regulations known as the Tribal Authority Rule (TAR) on February 12, 1999, that specify those provisions of the CAA for which it is appropriate to treat Tribes as States. (63 FR 7254), codified at 40 CFR part 49 (1999). Under the TAR, Tribes may choose to develop and implement their own CAA programs, but are not required to do so. The TAR also establishes procedures and criteria by which Tribes may request from EPA a determination of eligibility for such treatment. The designations process contained in section 107(d) of the CAA is included among those provisions determined appropriate by us for treatment of Tribes in the same manner as States. As authorized by the TAR, Tribes may request an opportunity to submit designation recommendations to us. In cases where Tribes do not make their own recommendations, EPA, in consultation with the Tribes, will promulgate the designation we deem appropriate on their behalf. We invited all Tribes to submit recommendations to us. We worked with the Tribes that requested an opportunity to submit designation recommendations. Eligible Tribes could choose to submit their own recommendations and supporting

documentation. We reviewed the recommendations made by Tribes and, in consultation with the Tribes, made modifications as deemed necessary. Under the TAR, Tribes generally are not subject to the same submission schedules imposed by the CAA on States. However, we worked with Tribes in scheduling interim activities and final designation actions because of the consent decree obligating us to have a signed rule designating areas by April 15, 2004.

Today's designation action is a final rule establishing designations for all areas of the country. Today's action also sets forth the classifications for subpart 2 ozone nonattainment areas. Section 181(a) provides that areas will be classified at the time of designation. This rulemaking fulfills those requirements. Classifications are discussed below.

#### *A. Where Can I Find Information Forming the Basis for This Rule and Exchanges Between EPA, States, and Tribes Related to This Rule?*

Discussions concerning the basis for today's actions and decisions are provided in the technical support document (TSD). The TSD, along with copies of all of the above mentioned correspondence, other correspondence between the States, Tribes, interested parties, and EPA regarding this process and guidance memoranda are available for review in the EPA Docket Center listed above in the addresses section of this document and on our designation Web site at: <http://www.epa.gov/oar/oaqps/glo/designations>. State specific information is available at the EPA Regional Offices.

#### **VIII. What Are the CAA Requirements for Air Quality Classifications?**

The CAA contains two sets of provisions—subpart 1 and subpart 2—that address planning and control requirements for nonattainment areas. (Both are found in title I, part D.) Subpart 1 (which we refer to as “basic” nonattainment contains general, less prescriptive, requirements for nonattainment areas for any pollutant—including ozone—governed by a NAAQS. Subpart 2 (which we refer to as “classified” nonattainment) provides more specific requirements for ozone nonattainment areas.<sup>6</sup> Some areas will be subject only to the provisions of subpart 1. Other areas will be subject to

the provisions of subpart 2. Section 172(a)(1) provides that EPA has the discretion to classify areas subject only to subpart 1. Under subpart 2, areas will be classified based on each area's design value. Control requirements are linked to each classification. Areas with more serious ozone pollution are subject to more prescribed requirements. The requirements are designed to bring areas into attainment by their specified attainment dates.

Under our 8-hour ozone implementation rule, signed on April 15, 2004, an area will be classified under subpart 2 based on its 8-hour design value<sup>7</sup> if it has a 1-hour design value at or above 0.121 ppm (the lowest 1-hour design value in Table 1 of subpart 2). All other areas will be covered under subpart 1. Section 172(a)(1) provides EPA with discretion whether to classify areas under subpart 1 and we are not classifying subpart 1 areas, with one exception. As noted in EPA's final rule on implementing the 8-hour ozone standard (Phase 1 implementation rule), we are creating an overwhelming transport classification that will be available to subpart 1 areas that demonstrate they are affected by overwhelming transport of ozone and its precursors and demonstrate they meet the definition of a rural transport area in section 182(h). No subpart 1 areas are being classified in today's action; however, for informational purposes, 8-hour ozone nonattainment areas covered under subpart 1 are identified as such in the classification column in 40 CFR part 81.

Any area with a 1-hour ozone design value (based on the most recent 3 years of data) that meets or exceeds the statutory level of 0.121 ppm that Congress specified in Table 1 of section 181 is classified under subpart 2 and is subject to the control obligations associated with its classification.<sup>8</sup> Subpart 2 areas are classified as marginal, moderate, serious, or severe based on the area's 8-hour design value calculated using the most recent 3 years of data.<sup>9</sup> As described in the Phase 1 implementation rule, since Table 1 is based on 1-hour design values, we promulgated in that rule a regulation translating the thresholds in Table 1 of section 181 from 1-hour values to 8-hour values. (See Table 1, below, “Classification for 8-Hour NAAQS” from 40 CFR 51.903.)

<sup>6</sup> State Implementation Plans; General Preamble for the Implementation of Title I of the CAA Amendments of 1990; Proposed Rule.” April 16, 1992 (57 FR 13498 at 13501 and 13510).

<sup>7</sup> For the 1-hour ozone NAAQS, design value is defined at 40 CFR 51.900(c). For the 8-hour ozone

NAAQS, design value is defined at 40 CFR 51.900(d).

<sup>8</sup> In the Phase 2 implementation rule, we will address the control obligations that apply to areas under both subpart 1 and subpart 2.

<sup>9</sup> At this time, there are no areas with design values in the extreme classification for the 8-hour ozone standard.

TABLE 1.—CLASSIFICATION FOR 8-HOUR OZONE NAAQS

Area class		8-hour design value ppm ozone)	Maximum period for Attainment dates in State plans (years after effective date of nonattainment designation for 8-hour NAAQS)
Marginal .....	from .....	0.085	3
	up to* .....	0.092	
Moderate .....	from .....	0.092	6
	up to* .....	0.107	
Serious .....	from .....	0.107	9
	up to* .....	0.120	
Severe-15 .....	from .....	0.120	15
	up to* .....	0.127	
Severe-17 .....	from .....	0.127	17
	up to* .....	0.187	
Extreme .....	equal to or above .....	0.187	20

\*But not including.

#### Five Percent Bump Down

Under section 181(a)(4), an ozone nonattainment area may be reclassified “if an area classified under paragraph (1) (Table 1) would have been classified in another category if the design value in the area were 5 percent greater or 5 percent less than the level on which such classification was based.” The section also states that “In making such adjustment, the Administrator may consider the number of exceedances of the national primary ambient air quality standard for ozone in the area, the level of pollution transport between the area and other affected areas, including both intrastate and interstate transport, and the mix of sources and air pollutants in the area.

As noted in the November 6, 1991, FR on designating and classifying areas, the section 181(a)(4) provisions grant the Administrator broad discretion in making or determining not to make, a reclassification (56 FR 56698). As part of the 1991 action, EPA developed criteria (see list below) to evaluate whether it is appropriate to reclassify a particular area. In 1991, EPA approved reclassifications when the area met the first requirement (a request by the State to EPA) and at least some of the other criteria and did not violate any of the criteria (emissions, reductions, trends, etc.). We intend to use this method and these criteria once again to evaluate reclassification requests under section 181(a)(4), with the minor changes noted below. Because section 181(b)(3) provides that an area may request a higher classification and EPA must grant it, these criteria primarily focus on how we will assess requests for a lower classification. We further discuss bump ups below.

*Request by State:* The EPA does not intend to exercise its authority to bump down areas on EPA’s own initiative. Rather, EPA intends to rely on the State to submit a request for a bump down. A Tribe may also submit such a request and, in the case of a multi-state nonattainment area, all affected States must submit the reclassification request.

*Discontinuity:* A five percent reclassification must not result in an illogical or excessive discontinuity relative to surrounding areas. In particular, in light of the area-wide nature of ozone formation, a reclassification should not create a “donut hole” where an area of one classification is surrounded by areas of higher classification.

*Attainment:* Evidence should be available that the proposed area would be able to attain by the earlier date specified by the lower classification in the case of a bump down.

*Emissions reductions:* Evidence should be available that the area would be very likely to achieve the appropriate total percent emission reduction necessary in order to attain in the shorter time period for a bump down.

*Trends:* Near- and long-term trends in emissions and air quality should support a reclassification. Historical air quality data should indicate substantial air quality improvement for a bump down. Growth projections and emission trends should support a bump down. In addition, we will consider whether vehicle miles traveled and other indicators of emissions are increasing at higher than normal rates.

*Years of data:* For the 8-hour ozone standard, the 2001–2003 period is central to determining classification. This criterion has been updated to reflect the latest air quality data

available to make the determinations within the statute’s 90 day limitation.

#### Limitations on Bump Downs

An area may only be reclassified to the next lower classification. An area cannot present data from other years as justification to be reclassified to an even lower classification. In addition, section 181(a)(4) does not permit moving areas from subpart 2 into subpart 1.

The EPA applied these criteria in 1991. For example, our action to bump down one area from severe to serious considered trends in population and emissions data, similarities to a nearby serious area, disparity with a nearby moderate area, the logical gradation of attainment deadlines proceeding outward from large metropolitan areas upwind, and the likelihood that the area would be able to attain the NAAQS in the shorter time frame. In approving a bump down to marginal, we noted that air quality trends showed improvement and recent air quality data indicated a marginal status. In denying a bump down, we analyzed local air quality trends and emission sources and considered long range transport from an area with a much later attainment deadline, which together made it unlikely the candidate area could attain the standard in the shorter time frame associated with the lower classification. Requests to bump down areas were also denied due, in part, to concern that transport of emissions from these areas would make it less likely that downwind nonattainment areas could attain the standards in a timely fashion. For additional information, see section 5, “Areas requesting a 5% downshift per § 181(a)(4) and EPA’s response to those requests,” of the Technical Support Document, October 1991 for the 1991 rule. [Docket A–90–42A.]

### *Five Percent Bump Up*

An ozone nonattainment area may also be reclassified under section 181(a)(4) to the next higher classification. For the reasons described below ("Other Reasons to Consider Bump Ups"), we believe some areas with design values close to the next higher classification may not be able to attain within the period allowed by their classification. We encourage States to request reclassification upward where the State finds that an area may need more time to attain than their classification would permit. In addition, EPA will consider bumping up areas subject to the five percent provision on our own initiative where there is evidence that an area is unlikely to attain within the period allowed by their classification. In making this determination, EPA would consider criteria similar to that listed above (adjusted to consider bump ups rather than bump downs) regarding discontinuity, attainment, emissions reduction and trends. The following areas have design values based on 2001–2003 data that fall within five percent of the next higher classification:

Marginal areas within five percent of Moderate

Portland, ME; Atlanta, GA; Beaumont-Port Arthur, TX; and Norfolk, VA

Moderate areas within five percent of Serious

New York-New Jersey-Long Island, NY-NJ-CT; Los Angeles-San Bernardino Counties (W. Mojave), CA; Baltimore, MD; Cleveland-Akron-Lorain, OH; and Houston-Galveston-Brazoria, TX

Serious areas within five percent of Severe-15

San Joaquin Valley, CA

### *Calculation of Five Percent*

For an area to be eligible for a bump down (or bump up) under section 181(a)(4), the area's design value must be within five percent of the next lower (or higher) classification. For example, an area with a moderate design value of 0.096 ppm (or less) would be eligible to request a bump down because five percent less than 0.096 ppm is 0.091 ppm, a marginal design value.<sup>10</sup> An area with a moderate design value of 0.102 ppm (or more) would be eligible for a bump up because five percent more than 0.102 ppm is 0.107 ppm, a serious design value. As a result, the following areas may be eligible to request a bump down: moderate areas with a design value of 0.096 ppm or less; serious areas

with a design value of 0.112 ppm or less; and severe-17 areas with a design value of 0.133 ppm or less. Similarly, for bump ups, the following areas may be eligible: marginal areas with a design value of 0.088 ppm or more; moderate areas with a design value of 0.102 ppm or more; and serious areas with a design value of 0.115 ppm or more.

### *Timing of the Five Percent Reclassifications*

The notice of availability for this rule permits States to submit five percent reclassification requests within 30 days of the effective date of the designations and classifications. The effective date is June 15 which means that reclassification requests must be submitted by July 15, 2004. This relatively short time frame is necessary because section 181(a)(4) only authorizes the Administrator to make such reclassifications within 90 days after the initial classification. Thus, the Governor or eligible Tribal governing body of any area that wishes to pursue a reclassification should submit all requests and supporting documentation to the EPA Regional office by July 15, 2004. We will make a decision by September 15, 2004.

### *Other Reasons To Consider Bump Ups*

We encourage States to consider a voluntary bump up in cases where the State finds that an area may need more time to attain the 8-hour NAAQS than its classification would permit. In addition to the reclassification provision of section 181(a)(4), a State can request a higher classification under section 181(b)(3) of the CAA. This provision directs EPA to grant a State's request for a higher classification and to publish notice of the request and EPA's approval. In addition, we are interpreting section 181(b)(3) to allow a State with an area covered under subpart 1 to request a reclassification to a subpart 2 classification.

We note that it is difficult to determine when an area will be able to attain the NAAQS in advance of State development of attainment plans. These plans are based on high-resolution local air quality modeling, refined emissions inventories, use of later air quality data, and detailed analyses of the impacts and costs of potential local control measures. As noted earlier, we are classifying nonattainment areas subject to subpart 2 based on the most recent ozone design values at the time of designation, the 2001–2003 period. Because of year-to-year variations in meteorology, this snapshot in time may not be representative of the normal

magnitude of problems that some areas may face.

The EPA's analysis in the proposed Interstate Air Quality Rule (IAQR) uses design values taken from the 2000–2002 period, rather than the 2001–2003 data used in the classification process. At the time the IAQR modeling was completed, 2000–2002 was the latest period which was available for determining designation compliance with the NAAQS. Concentrations of ozone in 2010 were estimated by applying the relative change in model predicted ozone from 2001 to 2010 with the 8-hour ozone design values (2000–2002). The IAQR base case analysis (which assumes existing control requirements only) projects ozone values in 2010 for several areas—for example, Baltimore, Houston, New York and Philadelphia—that are high enough to suggest that the areas may be unable to attain by 2010, given our current information on the potential for additional controls. Yet, as a result of their classification, these areas are required to adopt a plan to attain the 8-hour ozone standard earlier than the 2010 ozone season. Atlanta has a projected 2010 ozone value much closer to the standard, but has an attainment date prior to the 2007 ozone season. Thus, the IAQR analysis, based on the 2000–2002 period, suggests that States should evaluate whether certain areas may need more time to attain. States should consider in their local air quality modeling whether an area's projected air quality level would be higher if the projection were based on different three-year base periods. While we recognize that future local analyses for specific nonattainment areas may show different results than the regional IAQR analysis, we encourage States to consider requesting a higher classification for areas that the State believes need more time to attain, especially in cases where existing modeling analysis and information on potential controls suggests more time is needed than their classification would permit.

### **IX. What Action Is EPA Taking To Defer the Effective Date of Nonattainment Designations for EAC Areas?**

This section discusses EPA's final action with respect to deferring the effective date of nonattainment designations for areas of the country that do not meet the 8-hour ozone NAAQS and are participating in the EAC program. By December 31, 2002, we entered into compacts with 33 communities. To receive this deferral, these EAC areas have agreed to reduce ground-level ozone pollution earlier

<sup>10</sup> See EPA's "Guideline on Data Handling Conventions for the 8-Hour Ozone NAAQS" (12–98) and appendix I to 40 CFR part 50.



than the CAA would require. This final rule for compact areas addresses several key aspects of the proposed rule, including deferral of the effective date of nonattainment designation for certain compact areas; progress of compact areas toward completing their milestones; final action for compact areas; EPA's schedule for taking further action to continue to defer the effective date of nonattainment designations, if appropriate; and consequences for compact areas that do not meet a milestone. In this action, we have added regulatory text to clarify specific requirements in part 81 for compact

areas and to identify actions that we will take to address any failed milestones. Finally, we have responded to the significant comments on the proposed rule.

*A. When Did EPA Propose the First Deferred Effective Date of Nonattainment Designations?*

On December 16, 2003 (68 FR 70108), we published a proposed rule to defer the effective date of air quality nonattainment designations for EAC areas that do not meet the 8-hour ozone NAAQS. The proposal also described the compact approach, the requirements for areas participating in the program,

and the impacts of the program on these areas. Compact areas have agreed to reduce ground-level ozone pollution earlier than the CAA would require. Please refer to the proposed rule for a detailed discussion and background information on the development of the compact program, what compact areas are required to do, and the impacts of the program.

Table 2 describes the milestones and submissions that compact areas are required to complete to continue eligibility for a deferred effective date of nonattainment designation for the 8-hour ozone standard.

TABLE 2.—EARLY ACTION COMPACT MILESTONES

Submittal date	Compact milestone
December 31, 2002 .....	Submit Compact for EPA signature.
June 16, 2003 .....	Submit preliminary list and description of potential local control measures under consideration.
March 31, 2004 .....	Submit complete local plan to State (includes specific, quantified and permanent control measures to be adopted).
December 31, 2004 .....	State submits adopted local measures to EPA as a SIP revision that, when approved, will be federally enforceable.
2005 Ozone Season (or no later than December 31, 2005).	Implement SIP control measures.
June 30, 2006 .....	State reports on implementation of measures and assessment of air quality improvement and reductions in NO <sub>x</sub> and VOC emissions to date
December 31, 2007 .....	Area attains 8-hour ozone NAAQS.

*B. What Progress Are Compact Areas Making Toward Completing Their Milestones?*

In this section we describe the status of the compact areas' progress toward meeting their compact milestones. In general, these areas have made satisfactory progress toward timely completion of their milestones. As reported in the December 16, 2003 proposal, all 33 communities met the June 16, 2003 milestone, which required areas to submit a list and description of local control measures each area considered for adoption and implementation. A compiled list, as well as highlights, of these local measures is found on EPA's Web site for compact areas at <http://www.epa.gov/ttn/naaqs/ozone/eac/index.htm#EACsummary>. By December 31, 2003, compact areas reported the status of these measures by identifying the local measures still under consideration at that time, the estimated emissions reductions expected from these measures, and the schedule for implementation. A summary of the local measures as reported in December 2003 is presented on EPA's EAC Web site at [http://www.epa.gov/ttn/naaqs/ozone/eac/20031231\\_eac\\_measures\\_full\\_list.pdf](http://www.epa.gov/ttn/naaqs/ozone/eac/20031231_eac_measures_full_list.pdf).

By March 31, 2004, compact areas submitted local plans, which included measures for adoption that are specific, quantified, and permanent, and if approved by EPA, will be federally enforceable as part of the SIP. These plans also included specific implementation dates for the local controls, as well as a technical assessment of whether the area could attain the 8-hour ozone NAAQS by the December 31, 2007 milestone, which is described in Table 2. The local plans for all compact areas are posted on the EAC Web site at: <http://www.epa.gov/ttn/naaqs/ozone/eac/#List>.

The EPA reviewed all of the local plans submitted by March 31, 2004 and determined that most of the plans were acceptable. With respect to control strategies, a number of areas are relying on measures to be adopted by the State, and are committed to implement these measures by 2005. In many cases, particularly in the southeast, the MAC areas demonstrated that they can attain the 8-hour ozone standard by December 2007 without implementation of local controls. In general, the technical demonstrations of attainment were acceptable; however, some of the 33 communities did not project attainment in 2007 (the attainment test) based on modeling, unless they considered additional factors to supplement their

analysis (*i.e.*, weight of evidence). In evaluating a State's weight of evidence determination for an area, we consider the results of the modeled, attainment test—for all EAC areas, a demonstration of attainment in 2007—along with additional information, such as predicted air quality improvement, meteorological influences, and additional measures not modeled. Our modeling guidance indicates that the farther an area is from the level of the standard, the more compelling the additional information needs to be in order to demonstrate that the area will attain the standard. Based on our analysis of the technical information provided, we believe that some areas did not present as strong a case as other areas to demonstrate attainment by December 2007. Three areas in Tennessee, Knoxville, Memphis and Chattanooga each developed attainment demonstrations that generally conform to our modeling guidance. However, in reviewing and analyzing the local plans for these areas, we determined that Knoxville, Memphis and Chattanooga did not pass the modeled attainment test and the predicted air quality improvement test. In addition, our review of meteorological influences for the three areas was inconclusive; and these areas did not provide additional measures not already modeled. In

addition to the technical analysis, we reviewed the strength of the control strategies each EAC area proposed in their March 31, 2004 plans. We determined that the control measures submitted by these three areas could have been strengthened, and the Agency expected more local measures. Therefore, EPA determined that the States' technical assessments for each of these areas and their suite of measures were not acceptable. The only other two compact areas that did not pass the modeled attainment test, the Denver, Colorado area and the Triad (Greensboro-Winston-Salem-High Point), North Carolina area, provided more meaningful local control measures than the three Tennessee compact areas.

Based on our review and evaluation of these local plans, we have determined that Knoxville, Memphis and Chattanooga do not meet the March 31, 2004 milestone. In accordance with the Early Action Protocol and agency guidance, all EAC areas must meet all compact milestones, including this most recent one, to be eligible for the deferred effective date of designation. Consequently, today, these three areas are being designated nonattainment, effective June 15, 2004, and are subject to full planning requirements of title I, part D of the CAA. For the other EAC areas not meeting the 8-hour ozone standard, which we determined have complied with the March 2004 milestone, are being designated nonattainment with a deferred effective

date of September 30, 2005. By that date, we intend to take notice and comment rulemaking and promulgate approval or disapproval of these plans as SIP revisions. The local plans that are approved at that time will be eligible for an extension of the deferred effective date. If EPA disapproves any local plans at that time, the nonattainment designation will become effective immediately. Our evaluations of all local plans submitted by March 31, 2004, are included in the TSD for this rulemaking.

Table 3 lists the EAC areas and their air quality designation for the 8-hour ozone standard by county. The table in Part 81 lists 8-hour ozone designations for all areas of the country.

TABLE 3.—DESIGNATION OF COUNTIES PARTICIPATING IN EARLY ACTION COMPACTS

State	Compact area (designated area)	County	Designation	Effective date	
<b>EPA Region 3</b>					
VA .....	Northern Shenandoah Valley Region (Frederick County, VA), adjacent to Washington, DC-MD-VA.	Winchester City .....	Nonattainment-deferred .....	9/30/2005	
VA .....		Frederick County .....	Nonattainment-deferred .....	9/30/2005	
VA .....	Roanoke Area (Roanoke, VA) .....	Roanoke County .....	Nonattainment-deferred .....	9/30/2005	
		Botetourt County .....	Nonattainment-deferred .....	9/30/2005	
		Roanoke City .....	Nonattainment-deferred .....	9/30/2005	
		Salem City .....	Nonattainment-deferred .....	9/30/2005	
		Washington County .....	Nonattainment-deferred .....	9/30/2005	
MD .....	Washington County (Washington County (Hagerstown), MD), adjacent to Washington, DC-MD-VA.	Washington County .....	Nonattainment-deferred .....	9/30/2005	
WV .....	The Eastern Pan Handle Region (Berkeley & Jefferson Counties, WV), Martinsburg area.	Berkeley County .....	Nonattainment-deferred .....	9/30/2005	
		Jefferson County .....	Nonattainment-deferred .....	9/30/2005	
<b>EPA Region 4</b>					
NC .....	Mountain Area of Western NC (includes Asheville).	Buncombe County .....	Unclassifiable/Attainment .....	6/15/2004	
		Haywood County (part) .....	Unclassifiable/Attainment .....	6/15/2004	
		Henderson County (opt out) <sup>1</sup> ..	Unclassifiable/Attainment .....	6/15/2004	
		Madison County .....	Unclassifiable/Attainment .....	6/15/2004	
		Transylvania County (opt out) <sup>1</sup>	Unclassifiable/Attainment .....	6/15/2004	
NC .....	Unifour (Hickory-Morganton-Lenoir, NC) .....	Catawba County .....	Nonattainment-deferred .....	9/30/2005	
		Alexander County .....	Nonattainment-deferred .....	9/30/2005	
		Burke County (part) .....	Nonattainment-deferred .....	9/30/2005	
		Caldwell County (part) .....	Nonattainment-deferred .....	9/30/2005	
NC .....	Triad (Greensboro-Winston-Salem-High Point, NC).	Surry County .....	Unclassifiable/Attainment .....	6/15/2004	
		Yadkin County .....	Unclassifiable/Attainment .....	6/15/2004	
		Randolph County .....	Nonattainment-deferred .....	9/30/2005	
		Forsyth County .....	Nonattainment-deferred .....	9/30/2005	
		Davie County .....	Nonattainment-deferred .....	9/30/2005	
		Alamance County .....	Nonattainment-deferred .....	9/30/2005	
		Caswell County .....	Nonattainment-deferred .....	9/30/2005	
		Davidson County .....	Nonattainment-deferred .....	9/30/2005	
		Stokes County .....	Unclassifiable/Attainment .....	6/15/2004	
		Guilford County .....	Nonattainment-deferred .....	9/30/2005	
		Rockingham County .....	Nonattainment-deferred .....	9/30/2005	
NC .....		Fayetteville (Fayetteville, NC) .....	Cumberland County .....	Nonattainment-deferred .....	9/30/2005
SC .....		Appalachian—A (Greenville-Spartanburg-Anderson, SC).	Cherokee County .....	Unclassifiable/Attainment .....	6/15/2004
			Spartanburg County .....	Nonattainment-deferred .....	9/30/2005
			Greenville County .....	Nonattainment-deferred .....	9/30/2005
	Pickens County .....		Unclassifiable/Attainment .....	6/15/2004	
		Anderson County .....	Nonattainment-deferred .....	9/30/2005	

TABLE 3.—DESIGNATION OF COUNTIES PARTICIPATING IN EARLY ACTION COMPACTS—Continued

State	Compact area (designated area)	County	Designation	Effective date
SC	Catawba—B Part of York County, SC is in the Charlotte-Gastonia-Rock Hill, NC-SC non-attainment area.	Oconee County	Unclassifiable/Attainment	6/15/2004
		York County (part) <sup>2</sup>	Nonattainment	6/15/2004
SC	Pee Dee—C Florence area	Chester County	Unclassifiable/Attainment	6/15/2004
		Lancaster County	Unclassifiable/Attainment	6/15/2004
		Union County	Unclassifiable/Attainment	6/15/2004
		Florence County	Unclassifiable/Attainment	6/15/2004
		Chesterfield County	Unclassifiable/Attainment	6/15/2004
		Darlington County	Unclassifiable/Attainment	6/15/2004
		Dillon County	Unclassifiable/Attainment	6/15/2004
SC	Waccamaw—D Myrtle Beach area	Marion County	Unclassifiable/Attainment	6/15/2004
		Marlboro County	Unclassifiable/Attainment	6/15/2004
		Williamsburg County	Unclassifiable/Attainment	6/15/2004
SC	Santee Lynches—E Sumter area	Georgetown County	Unclassifiable/Attainment	6/15/2004
		Horry County	Unclassifiable/Attainment	6/15/2004
		Clarendon County	Unclassifiable/Attainment	6/15/2004
SC	Berkeley-Charleston-Dorchester—F Charleston-North Charleston area.	Lee County	Unclassifiable/Attainment	6/15/2004
		Sumter County	Unclassifiable/Attainment	6/15/2004
		Kershaw County	Unclassifiable/Attainment	6/15/2004
SC	Low Country—G Beaufort area	Dorchester County	Unclassifiable/Attainment	6/15/2004
		Berkeley County	Unclassifiable/Attainment	6/15/2004
		Charleston County	Unclassifiable/Attainment	6/15/2004
SC/GA	Lower Savannah-Augusta part of Augusta-Aiken, GA-SC area.	Beaufort County	Unclassifiable/Attainment	6/15/2004
		Colleton County	Unclassifiable/Attainment	6/15/2004
		Hampton County	Unclassifiable/Attainment	6/15/2004
SC	Central Midlands—I Columbia area	Jasper County	Unclassifiable/Attainment	6/15/2004
		Aiken County, SC	Unclassifiable/Attainment	6/15/2004
		Orangeburg County, SC	Unclassifiable/Attainment	6/15/2004
		Barnwell County, SC	Unclassifiable/Attainment	6/15/2004
		Calhoun County, SC	Unclassifiable/Attainment	6/15/2004
		Allendale County, SC	Unclassifiable/Attainment	6/15/2004
		Bamberg County, SC	Unclassifiable/Attainment	6/15/2004
		Richmond County, GA	Unclassifiable/Attainment	6/15/2004
		Columbia County, GA	Unclassifiable/Attainment	6/15/2004
		Richland County (part)	Nonattainment-deferred	9/30/2005
SC	Upper Savannah Abbeville-Greenwood area	Lexington County (part)	Nonattainment-deferred	9/30/2005
		Newberry County	Unclassifiable/Attainment	6/15/2004
		Fairfield County	Unclassifiable/Attainment	6/15/2004
		Abbeville County	Unclassifiable/Attainment	6/15/2004
		Edgefield County	Unclassifiable/Attainment	6/15/2004
TN/GA	Chattanooga (Chattanooga, TN-GA) County, TN.	Laurens County	Unclassifiable/Attainment	6/15/2004
		Saluda County	Unclassifiable/Attainment	6/15/2004
		Greenwood County	Unclassifiable/Attainment	6/15/2004
		Hamilton County, TN	Nonattainment	6/15/2004
		Meigs County, TN	Nonattainment	6/15/2004
TN	Knoxville (Knoxville, TN)	Marion County, TN	Unclassifiable/Attainment	6/15/2004
		Walker County, GA	Unclassifiable/Attainment	6/15/2004
		Catoosa County, GA	Nonattainment	6/15/2004
		Knox County	Nonattainment	6/15/2004
		Anderson County	Nonattainment	6/15/2004
		Union County	Unclassifiable/Attainment	6/15/2004
		Loudon County	Nonattainment	6/15/2004
TN	Nashville (Nashville, TN)	Blount County	Nonattainment	6/15/2004
		Sevier County	Nonattainment	6/15/2004
		Jefferson County	Nonattainment	6/15/2004
		Davidson County	Nonattainment-deferred	9/30/2005
		Rutherford County	Nonattainment-deferred	9/30/2005
		Williamson County	Nonattainment-deferred	9/30/2005
		Wilson County	Nonattainment-deferred	9/30/2005
		Sumner County	Nonattainment-deferred	9/30/2005
		Robertson County	Attainment	6/15/2004
		Cheatham County	Attainment	6/15/2004
TN/AR/MS	Memphis, (Memphis, TN-AR-MS)	Dickson County	Attainment	6/15/2004
		Shelby County, TN	Nonattainment	6/15/2004
		Tipton County, TN	Unclassifiable/Attainment	6/15/2004
		Fayette County, TN	Unclassifiable/Attainment	6/15/2004

TABLE 3.—DESIGNATION OF COUNTIES PARTICIPATING IN EARLY ACTION COMPACTS—Continued

State	Compact area (designated area)	County	Designation	Effective date	
TN	Haywood County adjacent to Memphis & Jackson areas.	DeSoto County, MS	Unclassifiable/Attainment	6/15/2004	
		Crittenden County, AR	Nonattainment	6/15/2004	
		Haywood County	Unclassifiable/Attainment	6/15/2004	
TN	Putnam County central TN, between Nashville and Knoxville.	Putnam County	Unclassifiable/Attainment	6/15/2004	
TN	Johnson City-Kingsport-Bristol Area (TN portion only).	Sullivan Co, TN	Nonattainment-deferred	9/30/2005	
		Hawkins County, TN	Nonattainment-deferred	9/30/2005	
		Washington Co, TN	Unclassifiable/Attainment	6/15/2004	
		Unicoi County, TN	Unclassifiable/Attainment	6/15/2004	
		Carter County, TN	Unclassifiable/Attainment	6/15/2004	
		Johnson County, TN	Unclassifiable/Attainment	6/15/2004	
<b>EPA Region 6</b>					
TX	Austin/San Marcos	Travis County	Unclassifiable/Attainment	6/15/2004	
		Williamson County	Unclassifiable/Attainment	6/15/2004	
		Hays County	Unclassifiable/Attainment	6/15/2004	
TX	Northeast Texas Longview-Marshall-Tyler area	Bastrop County	Unclassifiable/Attainment	6/15/2004	
		Caldwell County	Unclassifiable/Attainment	6/15/2004	
		Gregg County	Unclassifiable/Attainment	6/15/2004	
		Harrison County	Unclassifiable/Attainment	6/15/2004	
		Rusk County	Unclassifiable/Attainment	6/15/2004	
		Smith County	Unclassifiable/Attainment	6/15/2004	
TX	San Antonio	Upshur County	Unclassifiable/Attainment	6/15/2004	
		Bexar County	Nonattainment-deferred	9/30/2005	
		Wilson County	Unclassifiable/Attainment	6/15/2004	
OK	Oklahoma City	Comal County	Nonattainment-deferred	9/30/2005	
		Guadalupe County	Nonattainment-deferred	9/30/2005	
		Canadian County	Unclassifiable/Attainment	6/15/2004	
OK	Tulsa	Cleveland County	Unclassifiable/Attainment	6/15/2004	
		Logan County	Unclassifiable/Attainment	6/15/2004	
		McClain County	Unclassifiable/Attainment	6/15/2004	
		Oklahoma County	Unclassifiable/Attainment	6/15/2004	
		Pottawatomie Co	Unclassifiable/Attainment	6/15/2004	
		Tulsa County	Unclassifiable/Attainment	6/15/2004	
LA	Shreveport-Bossier City	Creek County	Unclassifiable/Attainment	6/15/2004	
		Osage County	Unclassifiable/Attainment	6/15/2004	
		Rogers County	Unclassifiable/Attainment	6/15/2004	
NM	San Juan County Farmington area	Wagoner County	Unclassifiable/Attainment	6/15/2004	
		Bossier Parish	Unclassifiable/Attainment	6/15/2004	
LA	Shreveport-Bossier City	Caddo Parish	Unclassifiable/Attainment	6/15/2004	
		Webster Parish	Unclassifiable/Attainment	6/15/2004	
CO	(Denver-Boulder-Greeley-Ft. Collins-Love, CO)	San Juan County	Unclassifiable/Attainment	6/15/2004	
		<b>EPA Region 8</b>			
		Denver County	Nonattainment-deferred	9/30/2005	
		Boulder County (includes part of Rocky Mtn National Park).	Nonattainment-deferred	9/30/2005	
		Jefferson County	Nonattainment-deferred	9/30/2005	
		Douglas County	Nonattainment-deferred	9/30/2005	
		Broomfield	Nonattainment-deferred	9/30/2005	
		Adams County	Nonattainment-deferred	9/30/2005	
		Arapahoe County	Nonattainment-deferred	9/30/2005	
		Larimer County (part)	Nonattainment-deferred	9/30/2005	
Weld County (part)	Nonattainment-deferred	9/30/2005			

<sup>1</sup> Henderson and Transylvania Counties opted out of the Mountain Area of Western NC compact and are no longer participating.

<sup>2</sup> The part of York County, SC that includes the portion within the Metropolitan Planning Organization (MPO) is designated nonattainment and is part of the Charlotte-Gastonia-Rock Hill, NC-SC nonattainment area, effective June 15, 2004. The remaining part of York County, SC is designated unclassifiable/attainment.

**Note:** Ozone designations for EAC counties are either “Unclassifiable/Attainment” (effective June 15, 2004); “Nonattainment” (effective June 15, 2004, if EAC area fails to meet the March 31, 2004 milestone); or “Nonattainment” (effective date deferred

until September 30, 2005). Name of designated 8-hour ozone nonattainment area is in parentheses.

*C. What Is Today’s Final Action for Compact Areas?*

Today, we are issuing the first of three deferrals of the effective date of the nonattainment designation for any

compact area that does not meet the 8-hour ozone NAAQS and would otherwise be designated nonattainment, but has met all compact milestones through the March 31, 2004 submission.<sup>11</sup> We are deferring until September 30, 2005, the effective date of the 8-hour ozone nonattainment designation for these compact area counties which are listed in 40 CFR part 81 (included at the end of this document).

As described earlier in this notice, we analyzed information provided by the States to determine whether a county should be included as part of a designated nonattainment area. This information included such factors as population density, traffic congestion, meteorological conditions, and pollution transport. We analyzed the factors for each county participating in an EAC to determine whether a county should be included in the nonattainment area. Therefore, some portions of compact areas are designated unclassifiable/attainment and some are designated nonattainment.

The EAC areas that EPA is designating in today's rule as attainment for the 8-hour ozone NAAQS have agreed to continue participating in their compacts and meet their obligations on a voluntary basis. However, two of the five counties in the compact for the Mountain Area of Western North Carolina have decided to withdraw because the area is monitoring attainment. The remaining three counties are continuing to participate in the agreement.

#### *D. What Is EPA's Schedule for Taking Further Action To Continue To Defer the Effective Date of Nonattainment Designation for Compact Areas?*

As discussed in the proposed rule, prior to the time the first deferral expires, we intend to take further action to propose and, as appropriate, promulgate a second deferred effective date of the nonattainment designation for those areas that continue to fulfill all compact obligations. Prior to the time the second deferral expires, we would propose and, as appropriate, promulgate a third deferral for those areas that continue to meet all compact milestones. Before the third deferral expires shortly after December 31, 2007, we intend to determine whether the compact areas have attained the 8-hour ozone NAAQS and have met all compact milestones. By April 2008, we

will issue our determination. If the area has not attained the standard, the nonattainment designation will take effect. If it has attained the standard, EPA will issue an attainment designation for the area. Any compact area that has not attained the NAAQS and has an effective nonattainment designation will be subject to full planning requirements of title I, part D of the CAA, and the area will be required to submit a revised attainment demonstration SIP within 1 year of the effective date of the designation.

#### *E. What Action Will EPA Take if a Compact Area Does Not Meet a Milestone?*

As described in the December 16, 2003 proposed rule (68 FR 70111), the compact program was based on a number of principles as described in the EAC protocol.<sup>12</sup> One of these principles is to provide safeguards to return areas to traditional SIP requirements for nonattainment areas should an area fail to comply with the terms of the compact. For example, if a compact area with a deferred effective date fails to meet one of the milestones, we would take steps immediately to remove the deferred effective date of its nonattainment designation.

Today, we are promulgating regulatory text, which specifies the milestones that EAC areas are required to complete to be eligible for the deferred effective date, as well as certain actions that the Administrator will take when EAC areas either comply, or do not comply, with the terms of the compact.

#### *F. What Comments Did EPA Receive on the December 16, 2003 Proposal and on the June 2, 2003 Proposed Implementation Rule Specific to Compacts?*

We received a number of comments on the proposed rule for compact areas. We have responded to the significant comments in this section. Our responses address various aspects of the compact program: (1) Legal concerns; (2) the designations process for EAC areas, including the anticipated schedule for removal of the deferred effective date of the nonattainment designation for any compact area that fails to meet a milestone; (3) concerns about the compact process; (4) transportation/

fuels-related comments; and (5) need for regulatory language. Other compact-related comments not addressed in this document are included in the RTC document, which is located in the docket for this rulemaking (OAR-2003-0090) and on EPA's technical Web site for early action compacts at: <http://www.epa.gov/ttn/naaqs/ozone/eac/#RMNotices>.

In addition, we received a number of EAC-related comments on the June 2, 2003 proposal for implementing the 8-hour ozone standard. We have addressed these comments in the same EAC RTC document, which may be found at the location noted above.

#### 1. Support for and Opposition to Early Action Compacts

*Comment:* Many commenters expressed support for the compact process, the goal of clean air sooner, the incentives and flexibility the program provides for encouraging early reductions of ozone-forming pollution, and the deferred effective date of nonattainment designation. However, a number of commenters opposed the EAC program. Several of these commenters expressed concern about the legality of the program and primarily about the deferral of the effective date of the nonattainment designation for these areas. Although all of these commenters were supportive of the goal of addressing proactively the public health concerns associated with ozone pollution, the commenters state that the EAC program is not authorized by the CAA. All of these commenters indicated that EPA lacks authority under the CAA to defer the effective date of a nonattainment designation. In addition, these commenters state that EPA lacks authority to enter into EACs areas and lacks authority to allow areas to be relieved of obligations under title I, part D of the CAA while these areas are violating the 8-hour ozone standard or are designated nonattainment for that standard.

*Response:* We continue to believe that the compact program, as designed, gives local areas the flexibility to develop their own approach to meeting the 8-hour ozone standard, provided the participating communities are serious in their commitment to control emissions from local sources earlier than the CAA would otherwise require. By involving diverse stakeholders, including representatives from industry, local and State governments, and local environmental and citizens' groups, a number of communities are discussing for the first time the need for regional cooperation in solving air quality problems that affect the health and

<sup>11</sup> In a few instances, some of the counties participating in EACs were determined not to be part of the nonattainment area and were designated attainment. In such cases, the effective date of the attainment designation is not deferred.

<sup>12</sup> "Protocol for Early Action Compacts Designed to Achieve and Maintain the 8-hour Ozone Standard", Texas Commission on Environmental Quality (TCEQ), March 2002 (Protocol). The EPA endorsed the Protocol in a letter dated June 19, 2002, from Gregg Cooke, Administrator, EPA Region VI, to Robert Huston, TCEQ. The Protocol was revised December 11, 2002 based on comments from EPA.

welfare of its citizens. People living in these areas that realize reductions in pollution levels sooner will enjoy the health benefits of cleaner air sooner than might otherwise occur. In today's rule we are codifying the specific requirements in part 81 of the CFR to clarify what is required of compact areas to be eligible for deferral of the effective date of their nonattainment designation and what actions EPA intends to take in response to areas that meet the milestones and areas that do not meet the milestones.

As discussed earlier in this notice, EPA and nine environmental organizations entered into a Consent Decree on March 13, 2003, which requires EPA to issue the designations by April 15, 2004. Related to that agreement, we have been discussing with these parties the actions that compact areas have committed to take to implement measures on an accelerated schedule to attain the 8-hour ozone standard by December 31, 2007. On April 5, 2004, these environmental organizations and EPA entered into a joint stipulation to modify the deadline in the consent decree. The parties agreed to extend the deadline for the effective date of designations with respect to each area which EPA determines meets the requirements of the Protocol and EPA guidance.

*Comment:* One commenter expressed concern about the health impact and the effect on air quality of delaying the effectiveness of nonattainment.

*Response:* The compact areas that are violating the standard are designated nonattainment (with deferred effective date), which means EPA is acknowledging the air quality problem of the area and the health impact on the community. However, these areas are committed to early reductions and early implementation of control measures that make sense for the local area. The Agency believes this proactive approach involving multiple, diverse stakeholders is beneficial to the citizens of the area by raising awareness of the need to adopt and implement measures that will reduce emissions and improve air quality.

## 2. Designations Process for Compact Areas

*Comment:* Several commenters expressed concern about EPA's process for designating areas that are participating in a compact. In addition, a number of commenters also were confused about the following statement in the June 2, 2003 proposed 8-hour implementation rule: "States are advised that if EPA determines that any portion of a compact area should

become part of an 8-hour ozone nonattainment area, that portion would no longer be eligible for participation in the Early Action Compact, and the effective date of the nonattainment designation would not be deferred" (68 FR 32860, June 2, 2003). Some of these commenters noted that the language, as written, could be interpreted to mean if any EAC area becomes designated as nonattainment for the 8-hour ozone standard, the EAC is no longer valid. A number of commenters submitted recommendations to EPA for either including or excluding certain participating EAC counties from the designated area.

*Response:* In determining the boundary for the designated area, we applied the same procedure as we did for areas that are not participating in an EAC, as described elsewhere in this document. The commenters are referring to language in section VIII.A.3 of the June 2, 2003 proposed rule for implementing the 8-hour ozone standard at 68 FR 32860. At the time we entered into compact agreements with the local communities by December 2002, and at the time we proposed the 8-hour implementation rule, we had not made a decision as to which participating counties would be included in a nonattainment area. Therefore, at that time we were not able to determine the appropriate boundary for the area that would be eligible for a deferral of the effective date of nonattainment designation. We agree with the commenters that the preamble language in the proposed 8-hour implementation rule is not clear. The language was intended to be applied to a portion of a compact area that is adjacent to or part of an area that is violating the 1-hour ozone standard (or otherwise did not qualify for participation in a compact), and subsequently is designated nonattainment for the 8-hour ozone standard.

An example is the Catawba EAC, which includes York County, SC, as well as Chester, Lancaster and Union Counties, SC. York County, which has one monitor that is attaining the 8-hour standard, is in the Charlotte-Gastonia-Rock Hill MSA. We have examined all applicable air quality-related factors in our guidance and concluded that part of the county is contributing to a violation in the MSA. Based on our analysis, therefore, we are designating this county as a partial county nonattainment area, in the 8-hour ozone nonattainment area for Charlotte-Gastonia-Rock Hill. As we noted earlier, nonattainment is defined in the CAA as an area that is violating the NAAQS or is contributing to a

nearby area that is violating the NAAQS. York County ranks high in population growth (25 percent) and the predicted growth from 2000 to 2010 is 12 percent, approximately 20,000 additional population. York County ranks second and third for VOC and NO<sub>x</sub> emissions in the CMSA, and 94 percent of its population of workers drives to work within the CMSA. York County may continue in the Catawba compact along with the other three counties as a voluntary participant; however, the nonattainment portion of York County is not eligible for a deferred effective date. Moreover, because the other counties in the Charlotte-Gastonia-Rock Hill nonattainment area are not participating in the EAC process, the Charlotte area, which includes York County, is not eligible for a deferred effective date. In no way does EPA intend for the Catawba compact to be revoked. For EPA's responses to comments regarding designation and boundary issues for specific EAC areas, see the RTC document and the TSD for this rulemaking.

*Comment:* A number of commenters recommended that EPA clarify exactly when a compact area would be designated nonattainment if it fails to meet a milestone.

*Response:* Today, we have determined that a number of compact areas have met the March 31, 2004 milestone (plan of local measures); therefore, the effective date of nonattainment designation for these areas is deferred until September 30, 2005. In Table 3 we have listed the air quality designations and the effective dates for all counties participating in EACs. In addition, today, we have determined that some compact areas have not met the March 31, 2004 milestone. A discussion of our assessment of these local plans is provided elsewhere in this document. We are designating these areas as nonattainment, which is effective June 15, 2004.

In another section of this document, we are promulgating regulatory text that clarifies the actions we would take in the event a compact area does not meet subsequent milestones. We have summarized those actions below.

If an EAC area fails to meet a milestone, in accordance with our guidance, we intend to take action as soon as practicable to remove the deferral, which would trigger the effective date of the nonattainment designation. If a State fails to submit a SIP revision for a compact area, consisting of the adopted local plan and the demonstration of attainment by December 31, 2004, we intend to take

action as soon as practicable (e.g., January 2005) to remove the deferral for that area, which would trigger the effective date of the nonattainment designation and, thus, also the classification, rather than letting the designation take effect automatically on September 30, 2005. The State would be required to submit a revised attainment demonstration within 1 year of the effective date of the nonattainment designation.

Assuming EPA takes rulemaking action to continue to defer the effective date of the nonattainment designation for compact areas, if a compact area fails the December 31, 2005 milestone (complete implementation of local measures), we would take action as soon as practicable (e.g., by March 31, 2006) to remove the deferral which would trigger the effective date of their nonattainment designation and, thus, also their classification, rather than letting the designation take effect automatically at the next deferred date. The State would be required to submit a revised attainment demonstration within 1 year of the effective date of the nonattainment designation.

Similarly, for any area that does not meet the June 30, 2006 milestone (assessment of air quality improvement and emissions reductions from implementation of measures), we would take action as soon as practicable (e.g., by September 30, 2006) to remove the deferral which would trigger the effective date of their nonattainment designation and, thus, also their classification. If the area, based on the most recent 3 years of quality-assured monitoring data, is not attaining the 8-hour ozone standard by December 31, 2007, we would take action by April 15, 2008, to remove the deferral which would trigger the effective date of their nonattainment designation and, where applicable, classification.

*Comment:* Some commenters strongly recommended that if the compact measures fail to be implemented or fail to achieve targeted emissions reductions, the compact area should immediately be designated as nonattainment with a subpart 2 classification and be required to comply with all applicable obligations within the original timeframe.

*Response:* In another section of this document, we are promulgating regulatory text that clarifies the actions we intend to take in the event a compact area does not meet subsequent milestones. Compact areas are designated as nonattainment and the effective date of that designation is deferred. The deferral for any areas that do not meet or fail any milestone will

be removed as soon as practicable which would trigger the effective date of their nonattainment designation and, thus, also the classification consistent with the final 8-hour implementation rule. If called for by the area's classification, these areas will be required to submit a revised attainment demonstration within 1 year of the effective date of designation and will be subject to all applicable requirements of title I, part D of the CAA, to be implemented within a time frame consistent with the area's classification.

*Comment:* One commenter believes the second rolling deferred effective date is not necessary and should be eliminated. According to the commenter, there should be only two separate deferral dates promulgated for nonattainment designations for areas where controls would be implemented by September 30, 2005, and no other milestones (the June 2006 progress assessment) would be needed between implementation of controls and attainment.

*Response:* The June 2006 milestone, which is one of the compact requirements that would be subject to the second deferred effective date (December 31, 2006), provides that States report progress of EAC areas in implementing adopted measures and assess improvements in air quality and reductions in NO<sub>x</sub> and VOC emissions. The second deferral is a checkpoint that is needed to ensure that areas are making progress toward attainment. This milestone can be one of the progress reports, but it is considered a milestone because EPA believes it is important to have a checkpoint between implementation of measures by December 2005 and attainment in December 2007.

*Comment:* A number of commenters were concerned about EPA's statement in the proposal that the Agency would commit to not redesignate areas that subsequently violate the 8-hour ozone NAAQS to nonattainment, provided the area continues to meet all compact milestones and requirements.

*Response:* In the proposed rule at FR 68 70113, EPA did state its intention to commit to not redesignate EAC areas to nonattainment that are designated attainment in April 2004. We realize that our shorthand phrasing did not properly convey our intent. To clarify, in deciding whether to redesignate an EAC area to nonattainment, EPA will consider the factors in section 107(d)(3)(a) of the CAA. If an EAC area continues to meet its compact milestones, EPA believes those factors should weigh in favor of not redesignating the area to nonattainment

immediately, but rather waiting to see if the programs the area puts in place will bring it back into attainment.

### 3. Transportation/Fuels-Related Comments

*Comment:* The EPA received a number of comments expressing concern that lack of transportation conformity in EAC areas will negatively impact air quality in these areas. In addition, several commented that since EAC areas are not eligible to receive Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding, projects to reduce congestion and, thereby, reduce mobile source emissions, would not occur. Another commenter suggested that EPA work with the U.S. Department of Transportation (DOT) to revise the TEA-21 so that EAC areas are eligible to receive CMAQ funding.

*Response:* The commenters are correct that EAC areas violating the 8-hour ozone standard, which would otherwise have a nonattainment date effective June 1, 2004, will not be subject to transportation or general conformity requirements for the 8-hour standard in 2005. The EAC protocol does not require EAC areas to meet CAA transportation conformity requirements, since, as noted, these requirements apply one year after the 8-hour nonattainment designation becomes effective.

However, continuing to defer 8-hour conformity requirements is contingent upon the area's ability to demonstrate adherence to the compact. Consistent with 40 CFR 93.102(d) and CAA section 176(c)(6), conformity for the 8-hour ozone standard will not apply, provided the area meets all of the terms and milestones of its compact between 2004 and 2007. At any point, if a milestone is missed, the nonattainment designation becomes effective and conformity for the 8-hour standard will be required one year after the effective date of EPA's nonattainment designation.

The EAC areas that are maintenance areas for the 1-hour standard will be subject to conformity until 1 year after the effective date of designation of the 8-hour standard. At that time the 1-hour standard will be revoked. Thus, for an EAC area that meets all of its milestones and whose deferral is lifted in April 2008, the 8-hour attainment designation would become effective in April 2008, and the 1-hour standard would be revoked 1 year later or, April 2009. For an EAC area that is also a 1-hour maintenance area under § 175A, the area would be subject to both its 1-hour maintenance plan and 1-hour

transportation conformity until April 2009.

Finally, EPA would like to clarify that transportation conformity is not a control measure similar to voluntary control programs funded through CMAQ dollars. Rather, it establishes a process for state and local governments to consider the broader emissions impacts of planned highway and transit activities to ensure that Federal funding and approval goes to those transportation activities that are consistent with air quality goals.

*Comment:* One commenter stated that they were reluctant to enter into a compact agreement knowing that they would not receive CMAQ funds. Several commenters also suggested that EPA provide EAC areas with tangible financial incentives to proactively improve their air quality, as well as work with the DOT to revise the Transportation Efficiency Act (TEA) so that it allows EAC areas to receive CMAQ funding.

*Response:* The commenters are correct that EAC areas are not eligible to receive CMAQ funding under current law. The CMAQ apportionment formula in TEA-21 contains no provisions to allow inclusion of EAC areas into the formula and thus into the authorized CMAQ levels for each state. Thus, until and unless the 8-hour ozone nonattainment designation is effective, areas cannot be eligible for CMAQ funding, absent a change in the law.

The primary incentive for many areas entering into an EAC is deferral of a nonattainment designation and major requirements, such as transportation conformity and NSR. It is true that compact areas are subject to SIP requirements, but not to other such major requirements. The EPA's interpretation is that Congress intended to link the obligations that come with a nonattainment designation to CMAQ funding. The purpose of the CMAQ program is to help those areas burdened with the significant obligations of the CAA attain the NAAQS as expeditiously as possible. Under the current CMAQ program, an EAC area would not be able to receive CMAQ funds because it would not be designated as a nonattainment or maintenance area.

Since TEA-21 has not been reauthorized as of this writing, EPA cannot postulate on whether it will contain a new provision allowing compact areas to receive CMAQ funding. The reauthorization bills passed by the Senate and House contain no such provision.

*Comment:* A number of EAC areas are considering the addition of cetane additives to fuel for increased fuel

efficiency. Several commenters expressed concern about the focus on diesel cetane. They have expressed these concerns in detail in earlier correspondence with both the Agency and the Ozone Transport Commission.

*Response:* Clean fuel programs have been an integral part of the nation's strategy to reduce smog-forming emissions and other harmful pollutants, including air toxics from our nation's air. For example, the Federal reformulated gasoline program (RFG) and lower volatility fuels have been cost effective and have provided significant and immediate reductions in air pollution levels throughout the nation.

The CAA also allows States, under specified circumstances, to design and implement their own clean fuel programs. Several EAC areas are considering such programs including cetane improvement programs. Cetane improvement programs have the potential to contribute emission reductions needed for progress toward attainment and maintenance of the NAAQS. (See EPA Technical Report entitled, "The Effect of Cetane Number Increase Due to Additives on NO<sub>x</sub> Emissions from Heavy-Duty Highway Engines", EPA-420-R-03-002, February 2003. This document can be downloaded from: <http://www.epa.gov/otaq/models/analysis.htm>. The EPA is now in the process of developing guidance to help States properly quantify the benefits of cetane improvement programs for their areas.

In selecting possible clean fuel programs and other potential ozone control measures, states will engage in a careful and extensive process. It is during this process that States should properly consider and evaluate their air quality needs, the air quality benefits of specific measures, costs, ease of implementation, enforceability and other issues and factors like those the commenter raises with respect to cetane programs. In addition, the States must involve the public in the selection of control measures, through hearings and opportunities to comment.

#### 4. Regulatory Text

*Comment:* Several commenters strongly recommended that EPA include regulatory text in the final rule. One commenter, in particular, suggested that EPA do the following:

1. Codify the rolling deferred effective date so that it is enforceable and that areas are held accountable if they miss a milestone;

2. include in the final rule all deadlines and milestones specified in our EAC guidance;

3. codify the September 30, 2005 deadline for EPA action to approve/disapprove SIP submittals;

4. codify the December 31, 2008 deadline for States to submit a revised attainment demonstration SIP for EAC areas that fail to attain by December 31, 2007.

*Response:* Based on the recommendations of several commenters, we have added regulatory text to the final rule. This language codifies the EAC program into part 81 of the CFR. In addition, the regulatory text clarifies what is required of compact areas and the consequences to these areas if they do not meet a milestone.

#### X. How Do Designations Affect Indian Country?

All counties, partial counties or Air Quality Control Regions listed in the table at the end of this document are designated as indicated, and include Indian country geographically located within such areas, except as otherwise indicated.

As mentioned earlier in this document, EPA's guidance for determining nonattainment area boundaries presumes that the larger of the 1-hour nonattainment area, CMSA or MSA with a violating monitor forms the bounds of the nonattainment area but that the size of the area can be larger or smaller depending on contribution to the violation from nearby areas and other air quality-related technical factors. In general, and consistent with relevant air quality information, EPA intends to include Indian country encompassed within these areas as within the boundaries of the area for designation purposes to best protect public health and welfare. The EPA anticipates that in most cases relevant air quality information will indicate that areas of Indian country located within CMSAs or MSAs should have the same designation as the surrounding area. However, based on the factors outlined in our guidance, there may be instances where a different designation is appropriate.

A state recommendation for a designation of an area that surrounds Indian country does not dictate the designation for Indian county. However, the conditions that support a State's designation recommendation, such as air quality data and the location of sources, may indicate the likelihood that similar conditions exist for the Indian county located in that area. States generally have neither the responsibility nor the authority for planning and regulatory activities under the CAA in Indian country.



## XI. Statutory and Executive Order Reviews

Upon promulgation of a new or revised NAAQS, the CAA requires EPA to designate areas as attaining or not attaining that NAAQS. The CAA then specifies requirements for areas based on whether such areas are attaining or not attaining the NAAQS. In this final rule, we assign designations to areas as required. We also indicate the classifications that apply as a matter of law for areas designated nonattainment. This rule also provides flexibility for areas that have entered into a compact and take early action to achieve emissions reductions necessary to attain the 8-hour ozone standard. This action defers the effective date of the nonattainment designation for these areas and establishes regulations governing future actions with respect to these areas.

### A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is "significant" and, therefore, subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;
- (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is not a "significant regulatory action" because none of the above factors applies. As such, this final rule was not formally submitted to OMB for review.

### B. Paperwork Reduction Act

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* This rule responds to the requirement to

promulgate air quality designations after promulgation of a NAAQS. This requirement is prescribed in the CAA section 107 of Title 1. The present final rule does not establish any new information collection burden apart from that required by law. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

### C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedures Act or any other statute unless the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's final rule on small entities, small entity is defined as: (1) A small business that is a small industrial entity as defined in the U.S. Small Business Administration (SBA) size standards. (*See* 13 CFR 121.); (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

The portion of this rule designating areas for the 8-hour ozone NAAQS indicating the classification for each subpart 2 area designated nonattainment, is not subject to the RFA

because it was not subject to notice and comment rulemaking requirements. *See* CAA section 107(d)(2)(B). This rule also defers the effective date of the nonattainment designation for areas that implement control measures and achieve emissions reductions earlier than otherwise required by the CAA in order to attain the 8-hour ozone NAAQS. The deferral of the effective date will not impose any requirements on small entities. States and local areas that have entered into compacts with EPA have the flexibility to decide which sources to regulate in their communities.

After considering the economic impacts of today's final rule on small entities, I certify that this rule will not have a significant economic impact on a substantial number of small entities.

### D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and

informing, educating, and advising small governments on compliance with the regulatory requirements.

Today's final action does not include a Federal mandate within the meaning of UMRA that may result in expenditures of \$100 million or more in any one year by either State, local, or Tribal governments in the aggregate or to the private sector, and therefore, is not subject to the requirements of sections 202 and 205 of the UMRA. It does not create any additional requirements beyond those of the 8-hour National Ambient Air Quality Standards (NAAQS) for Ozone (62 FR 38894; July 18, 1997), therefore, no UMRA analysis is needed. This rule establishes the application of the 8-hour ozone standard and the designation for each area of the country for the 8-hour NAAQS for Ozone. The CAA requires States to develop plans, including control measures, based on their designations and classifications. In this rule, EPA is also deferring the effective date of nonattainment designations for certain areas that have entered into compacts with us and is promulgating regulations governing future actions with respect to these areas.

One mandate that may apply as a consequence of this action to all designated nonattainment areas is the requirement under CAA section 176(c) and associated regulations to demonstrate conformity of Federal actions to SIPs. These rules apply to Federal agencies and Metropolitan Planning Organizations (MPOs) making conformity determinations. The EPA concludes that such conformity determinations will not cost \$100 million or more in the aggregate.

The EPA believes that any new controls imposed as a result of this action will not cost in the aggregate \$100 million or more annually. Thus, this Federal action will not impose mandates that will require expenditures of \$100 million or more in the aggregate in any one year.

Nonetheless, EPA carried out consultations with governmental entities affected by this rule, including States, Tribal governments, and local air pollution control agencies.

#### *E. Executive Order 13132: Federalism*

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include

regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This final rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The CAA establishes the scheme whereby States take the lead in developing plans to meet the NAAQS. This rule will not modify the relationship of the States and EPA for purposes of developing programs to implement the NAAQS. Thus, Executive Order 13132 does not apply to this rule.

Although Executive Order 13132 does not apply to this rule, EPA discussed the designation process and compact program with representatives of State and local air pollution control agencies, and Tribal governments, as well as the Clean Air Act Advisory Committee, which is also composed of State and local representatives. In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicited comment on the proposed rule for deferring the effective date of nonattainment designations from State and local officials. The portion of this rule that assigns designations is not subject to notice and comment under section 107(d)(2)(B) of the CAA and, therefore, no proposed rulemaking was prepared which specifically solicited comment on the designations. However, section 107(d)(1)(A) establishes a process whereby States first recommends the designations for areas in their States. In addition, the Agency has consulted extensively with representatives of State, Tribal and local governments, including elected officials regarding the designations. The EPA also notified national organizations of State and local officials and made EPA staff available to discuss the action with the organization staff and their members.

#### *F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by

tribal officials in the development of regulatory policies that have tribal implications." This final rule does not have "Tribal implications" as specified in Executive Order 13175. This rule concerns the classification and designation of areas as attainment or nonattainment of areas for the 8-hour ozone standard and deferral of the effective date of the nonattainment designation for areas participating in the early action compact process and that have met all milestones. The CAA provides for States to develop plans to regulate emissions of air pollutants within their jurisdictions. The TAR gives Tribes the opportunity to develop and implement CAA programs such as programs to attain and maintain the 8-hour ozone NAAQS, but it leaves to the discretion of the Tribe whether to develop these programs and which programs, or appropriate elements of a program, they will adopt. Early Action Compact areas that would be affected by this final rule would be required to develop and submit local plans for adoption and implementation of the 8-hour ozone standard earlier than the CAA requires. These plans would be submitted to EPA as SIP revisions in December 2004. No early action compact areas include Tribal land.

This final rule does not have Tribal implications as defined by Executive Order 13175. It does not have a substantial direct effect on one or more Indian Tribes, since no Tribe has implemented a CAA program to attain the 8-hour ozone NAAQS at this time or has participated in a compact. Furthermore, this rule does not affect the relationship or distribution of power and responsibilities between the Federal government and Indian Tribes. The CAA and the TAR establish the relationship of the Federal government and Tribes in developing plans to attain the NAAQS, and this rule does nothing to modify that relationship. Because this rule does not have Tribal implications, Executive Order 13175 does not apply.

Although Executive Order 13175 does not apply to this rule, EPA did outreach to Tribal representatives regarding the designations and to inform them about the compact program and its impact on designations. The EPA supports a national "Tribal Designations and Implementation Work Group" which provides an open forum for all Tribes to voice concerns to EPA about the designation and implementation process for the NAAQS, including the 8-hour ozone standard. These discussions informed EPA about key Tribal concerns regarding designations as the rule was under development.

*G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks*

Executive Order 13045: "Protection of Children From Environmental Health and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

The final rule is not subject to Executive Order 13045 because it is not economically significant as defined in E.O. 12866, and because the Agency does not have reason to believe the environmental health risks or safety risks addressed by this rule present a disproportionate risk to children. Nonetheless, we have evaluated the environmental health or safety effects of the 8-hour ozone NAAQS on children. The results of this risk assessment are contained in the National Ambient Air Quality Standards for Ozone, Final Rule (62 FR 38855-38896; specifically, 62 FR 38854, 62 FR 38860 and 62 FR 38865).

*H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use*

This rule is not subject to Executive Order 13211, "Actions That Significantly Affect Energy Supply, Distribution, or Use," (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

Information on the methodology and data regarding the assessment of potential energy impacts is found in Chapter 6 of U.S. EPA 2002, *Cost, Emission Reduction, Energy, and Economic Impact Assessment of the Proposed Rule Establishing the Implementation Framework for the 8-Hour, 0.08 ppm Ozone National Ambient Air Quality Standard*, prepared by the Innovative Strategies and Economics Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC April 24, 2003.

*I. National Technology Transfer Advancement Act*

Section 12(d) of the National Technology Transfer Advancement Act of 1995 (NTTAA), Public Law No. 104-

113, section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards (VCS) in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by VCS bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable VCS.

This action does not involve technical standards. Therefore, EPA did not consider the use of any VCS.

*J. Congressional Review Act*

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective June 15, 2004.

*K. Judicial Review*

Section 307(b)(1) of the CAA indicates which Federal Courts of Appeal have venue for petitions of review of final actions by EPA. This Section provides, in part, that petitions for review must be filed in the Court of Appeals for the District of Columbia Circuit (i) when the agency action consists of "nationally applicable regulations promulgated, or final actions taken, by the Administrator," or (ii) when such action is locally or regionally applicable, if "such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination."

This rule designating areas for the 8-hour ozone standard is "nationally applicable" within the meaning of section 307(b)(1). This rule establishes designations for all areas of the United States for the 8-hour ozone NAAQS. At the core of this rulemaking is EPA's

interpretation of the definition of nonattainment under section 107(d)(1) of the Clean Air Act. In determining which areas should be designated nonattainment (or conversely, should be designated unclassifiable/attainment), EPA used a set of 11 factors that it applied consistently across the United States.

For the same reasons, the Administrator also is determining that the final designations are of nationwide scope and effect for purposes of section 307(b)(1). This is particularly appropriate because in the report on the 1977 Amendments that revised section 307(b)(1) of the CAA, Congress noted that the Administrator's determination that an action is of "nationwide scope or effect" would be appropriate for any action that has "scope or effect beyond a single judicial circuit." H.R. Rep. No. 95-294 at 323, 324, *reprinted in* 1977 U.S.C.C.A.N. 1402-03. Here, the scope and effect of this rulemaking extend to numerous judicial circuits since the designations apply to all areas of the country. In these circumstances, section 307(b)(1) and its legislative history calls for the Administrator to find the rule to be of "nationwide scope or effect" and for venue to be in the D.C. Circuit.

Thus, any petitions for review of final designations must be filed in the Court of Appeals for the District of Columbia Circuit within 60 days from the date final action is published in the **Federal Register**.

**List of Subjects in 40 CFR Part 81**

Environmental protection, Air pollution control, National parks, Wilderness areas.

Dated: April 15, 2004.

**Michael O. Leavitt,**  
Administrator.

■ For the reasons set forth in the preamble, 40 CFR part 81, subpart C is amended as follows:

**PART 81—DESIGNATIONS OF AREAS FOR AIR QUALITY PLANNING PURPOSES**

■ 1. The authority citation for part 81 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

**Subpart C—Section 107 Attainment Status Designations**

■ 2. Section 81.300 is amended by adding paragraph (e) to read as follows:

**§ 81.300 Scope.**

\* \* \* \* \*

(e) Provisions for Early Action Compact Areas with Deferred Effective Date of Nonattainment Designation.

(1) *Definitions.* The following definitions apply for purposes of this subpart. Any term not defined herein shall have the meaning as defined in 40 CFR 51.100 and § 81.1

(i) *Early Action Compact.* The term "early action compact" ("compact") means an agreement entered into on or before December 31, 2002, by—

(A) The Administrator;

(B) A State;

(C) An official of a county, parish, or town that—

(1) Is designated attainment for the 1-hour national ambient air quality standard for ozone;

(2) Has monitored data representing the most recent 3 years of quality-assured data that meets the 1-hour national ambient air quality standard for ozone; and

(3) May or may not be meeting the 8-hour national ambient air quality standard for ozone.

(ii) *State.* The term "State" has the meaning given the term in section 302 of the Clean Air Act (42 U.S.C. 7602).

(iii) *Area.* The term "area" means one or more counties, parishes, or towns that are participating in an early action compact.

(iv) *State Implementation Plan.* The term "State implementation plan" ("SIP") means a plan required to be submitted to the Administrator by a State under section 110 of the Clean Air Act (42 U.S.C. 7410).

(v) *8-hour National Ambient Air Quality Standard* means the air quality standards under the Clean Air Act (42 U.S.C. 7401 *et seq.*) codified at 40 CFR 50.10.

(2) *What Are Early Action Compact Areas Required To Do?*

(i) Not later than June 16, 2003, the local area shall—

(A) Submit to the Administrator a list identifying and describing the local control measures that are being considered for adoption during the local planning process; and

(B) Provide to the public clear information on the measures under consideration;

(ii) Not later than March 31, 2004, the local plan shall be completed and submitted to the State (with a copy of the local plan provided to the Administrator), which shall include—

(A) One or more locally adopted measures that are specific, quantified, and permanent and that, if approved by the Administrator, will be enforceable as part of the State implementation plan;

(B) Specific implementation dates for the adopted control measures;

(C) Sufficient documentation to ensure that the Administrator will be

able to make a preliminary technical assessment based on control measures demonstrating attainment of the 8-hour ozone national ambient air quality standard under the Clean Air Act not later than December 31, 2007;

(iii) Not later than December 31, 2004, the State shall submit to the Administrator a revision to the SIP consisting of the local plan, including all adopted control measures, and a demonstration that the applicable area will attain the 8-hour ozone national ambient air quality standard not later than December 31, 2007;

(iv) The area subject to the early action compact shall implement expeditiously, but not later than December 31, 2005, the local control measures that are incorporated in the SIP;

(v) Not later than June 30, 2006, the State shall submit to the Administrator a report describing the progress of the local area since December 31, 2005, that includes—

(A) A description of whether the area continues to implement its control measures, the emissions reductions being achieved by the control measures, and the improvements in air quality that are being made; and

(B) Sufficient information to ensure that the Administrator will be able to make a comprehensive assessment of air quality progress in the area; and

(vi) Not later than December 31, 2007, the area subject to a compact shall attain the 8-hour ozone national ambient air quality standard.

(3) *What Action Shall the Administrator Take To Promulgate Designations for an Early Action Compact Area That Does Not Meet (or That Contributes to Ambient Air Quality in a Nearby Area That Does Not Meet) the 8-Hour Ozone National Ambient Air Quality Standard?*

(i) *General.* Notwithstanding clauses (i) through (iv) of section 107(d)(1)(B) of the Clean Air Act (42 U.S.C.

7407(d)(1)(B)), the Administrator shall defer until September 30, 2005, the effective date of a nonattainment designation of any area subject to a compact that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the 8-hour ozone national ambient air quality standard if the Administrator determines that the area subject to a compact has met the requirements in paragraphs (e)(2)(i) and (ii) of this section.

(ii) *Requirements not met.*

(A) If the Administrator determines that an area subject to a compact has not met the requirements in paragraphs (e)(2)(i) and (ii) of this section, the

nonattainment designation will become effective June 15, 2004.

(B) Prior to expiration of the deferred effective date on September 30, 2005, if the Administrator determines that an area or the State subject to a compact has not met either requirement in paragraphs (e)(2)(ii) and (iii) of this section, the nonattainment designation shall become effective as of the deferred effective date, unless EPA takes affirmative rulemaking action to further extend the deadline.

(C) If the Administrator determines that an area subject to a compact and/or State has not met any requirement in paragraphs (e)(2)(iii)–(vi) of this section, the nonattainment designation shall become effective as of the deferred effective date, unless EPA takes affirmative rulemaking action to further extend the deadline.

(D) Not later than 1 year after the effective date of the nonattainment designation, the State shall submit to the Administrator a revised attainment demonstration SIP.

(iii) *All Requirements Met.* If the Administrator determines that an area subject to a compact has met all of the requirements under subparagraph (e)(2) of this section—

(A) The Administrator shall designate the area as attainment under section 107(d)(1)(B) of the Clean Air Act; and

(B) The designation shall become effective no later than April 15, 2008.

(4) *What Action Shall the Administrator Take To Approve or Disapprove a Revision to the SIP Submitted by a Compact Area on or Before December 31, 2004?*

(i) Not later than September 30, 2005, the Administrator shall take final action to approve or disapprove a revision to the SIP, in accordance with paragraph (e)(2)(iii) of this section, that is submitted by a compact area on or before December 31, 2004.

(ii) If the Administrator approves the SIP revision, the area will continue to be eligible for a deferral of the effective date of nonattainment designation.

(iii) If the Administrator disapproves the SIP revision, the nonattainment designation shall become effective on September 30, 2005.

(iv) If the area's nonattainment designation applies, the State shall comply with paragraph (e)(3)(ii)(D) of this section.

## PART 81—[AMENDED]

■ 2a. In § 81.301, the table entitled "Alabama—Ozone (8-Hour Standard)" is added to read as follows:

### § 81.301 Alabama.

\* \* \* \* \*

## ALABAMA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Birmingham, AL:				
Jefferson County .....	.....	Nonattainment .....	.....	Subpart 1.
Shelby County .....	.....	Nonattainment .....	.....	Subpart 1.
Rest of State .....	.....	Unclassifiable/Attainment.		
Autauga County				
Baldwin County				
Barbour County				
Bibb County				
Blount County				
Bullock County				
Butler County				
Calhoun County				
Chambers County				
Cherokee County				
Chilton County				
Choctaw County				
Clarke County				
Clay County				
Cleburne County				
Coffee County				
Colbert County				
Conecuh County				
Coosa County				
Covington County				
Crenshaw County				
Cullman County				
Dale County				
Dallas County				
DeKalb County				
Elmore County				
Escambia County				
Etowah County				
Fayette County				
Franklin County				
Geneva County				
Greene County				
Hale County				
Henry County				
Houston County				
Jackson County				
Lamar County				
Lauderdale County				
Lawrence County				
Lee County				
Limestone County				
Lowndes County				
Macon County				
Madison County				
Marengo County				
Marion County				
Marshall County				
Mobile County				
Monroe County				
Montgomery County				
Morgan County				
Perry County				
Pickens County				
Pike County				
Randolph County				
Russell County				
St. Clair County				
Sumter County				
Talladega County				
Tallapoosa County				
Tuscaloosa County				
Walker County				
Washington County				
Wilcox County				
Winston County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 3. In § 81.302, the table entitled **§ 81.302 Alaska.** “Alaska—Ozone (8-Hour Standard)” is added to read as follows: \* \* \* \* \*

ALASKA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 08 Cook Inlet Intrastate .....	.....	Unclassifiable/Attainment.		
Anchorage Borough				
Kenai Peninsula Borough				
Matanuska-Susitna Borough				
AQCR 09 Northern Alaska Intrastate .....	.....	Unclassifiable/Attainment.		
Denali Borough				
Fairbanks North Star Borough				
Nome Census Area				
North Slope Borough				
Northwest Arctic Borough				
Southeast Fairbanks Census Area				
Yukon-Koyukuk Census Area				
AQCR 10 South Central Alaska Intrastate .....	.....	Unclassifiable/Attainment.		
Aleutians East Borough				
Aleutians West Census Area				
Bethel Census Area				
Bristol Bay Borough				
Dillingham Census Area				
Kodiak Island Borough				
Lake and Peninsula Borough				
Valdez-Cordova Census Area				
Wade Hampton Census Area				
AQCR 11 Southeastern Alaska Intrastate .....	.....	Unclassifiable/Attainment.		
Haines Borough				
Juneau Borough				
Ketchikan Gateway Borough				
Prince of Wales-Outer Ketchikan Census Area				
Sitka Borough				
Skagway-Hoonah-Angoon Census Area				
Wrangell-Petersburg Census Area				
Yakutat Borough				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 4. In § 81.303, the table entitled **§ 81.303 Arizona.** “Arizona—Ozone (8-Hour Standard)” is added to read as follows: \* \* \* \* \*

ARIZONA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Phoenix-Mesa, AZ:				
Maricopa County (part)		Nonattainment		Subpart 1
T1N, R1E (except that portion in Indian Country);				
T1N, R2E; T1N, R3E; T1N, R4E; T1N, R5E;				
T1N, R6E; T1N, R7E; T1N, R1W; T1N, R2W;				
T1N, R3W; T1N, R4W; T1N, R5W; T1N, R6W;				
T2N, R1E; T2N, R2E; T2N, R3E; T2N, R4E;				
T2N, R5E; T2N, R6E; T2N, R7E; T2N, R8E;				
T2N, R9E; T2N, R10E; T2N, R11E; T2N, R12E				
(except that portion in Gila County); T2N, R13E				
(except that portion in Gila County); T2N, R1W;				
T2N, R2W; T2N, R3W; T2N, R4W; T2N, R5W;				
T2N, R6W; T2N, R7W; T3N, R1E; T3N, R2E;				
T3N,				
R3E; T3N, R4E; T3N, R5E; T3N, R6E; T3N, R7E;				
T3N, R8E; T3N, R9E; T3N, R10E (except that				
portion in Gila County);.				

ARIZONA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>T3N, R11E (except that portion in Gila County); T3N, R12E (except that portion in Gila County); T3N, R1W; T3N, R2W; T3N, R3W; T3N, R4W; T3N, R5W; T3N, R6W; T4N, R1E; T4N, R2E; T4N, R3E; T4N, R4E; T4N, R5E; T4N, R6E; T4N, R7E; T4N, R8E; T4N, R9E; T4N, R10E (except that portion in Gila County); T4N, R11E (except that portion in Gila County); T4N, R12E (except that portion in Gila County); T4N, R1W; T4N, R2W; T4N, R3W; T4N, R4W; T4N, R5W; T4N, R6W; T5N, R1E; T5N, R2E; T5N, R3E; T5N, R4E; T5N, R5E; T5N, R6E; T5N, R7E; T5N, R8E; T5N, R9E (except that portion in Gila County); T5N, R10E (except that portion in Gila County); T5N, R1W; T5N, R2W; T5N, R3W; T5N, R4W; T5N, R5W; T6N, R1E (except that portion in Yavapai County); T6N, R2E; T6N, R3E; T6N, R4E; T6N, R5E; T6N, R6E; T6N, R7E; T6N, R8E; T6N, R9E (except that portion in Gila County); T6N, R10E (except that portion in Gila County); T6N, R1W (except that portion in Yavapai County); T6N, R2W; T6N, R3W; T6N, R4W; T6N, R5W; T7N, R1E (except that portion in Yavapai County); T7N, R2E; (except that portion in Yavapai County); T7N, R3E; T7N, R4E; T7N, R5E; T7N, R6E; T7N, R7E; T7N, R8E; T7N, R9E (except that portion in Gila County); T7N, R1W (except that portion in Yavapai County); T7N, R2W (except that portion in Yavapai County); T8N, R2E (except that portion in Yavapai County); T8N, R3E (except that portion in Yavapai County); T8N, R4E (except that portion in Yavapai County); T8N, R5E (except that portion in Yavapai County); T8N, R6E (except that portion in Yavapai County); T8N, R7E (except that portion in Yavapai County); T8N, R8E (except that portion in Yavapai and Gila Counties); T8N, R9E (except that portion in Yavapai and Gila Counties); T1S, R1E (except that portion in Indian Country); T1S, R2E (except that portion in Pinal County and in Indian Country); T1S, R3E; T1S, R4E; T1S, R5E; T1S, R6E; T1S, R7E; T1S, R1W; T1S, R2W; T1S, R3W; T1S, R4W; T1S, R5W; T1S, R6W; T2S, R1E (except that portion in Indian Country); T2S, R5E; T2S, R6E; T2S, R7E; T2S, R1W; T2S, R2W; T2S, R3W; T2S, R4W; T2S, R5W; T3S, R1E; T3S, R1W; T3S, R2W; T3S, R3W; T3S, R4W; T3S, R5W; T4S, R1E; T4S, R1W; T4S, R2W; T4S, R3W; T4S, R4W; T4S, R5W.</p> <p>Pinal County (part)                      Apache Junction: T1N, R8E; T1S, R8E (Sections 1 through 12)                      Rest of State</p>		<p>Nonattainment</p> <p>Unclassifiable/Attainment</p>		<p>Subpart 1</p>

ARIZONA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Apache County Cochise County Coconino County Gila County Graham County Greenlee County La Paz County Maricopa County (part) remainder Mohave County Navajo County Pima County Pinal County (part) remainder Santa Cruz County Yavapai County Yuma County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 5. In § 81.304, the table entitled **§ 81.304 Arkansas.** “Arkansas-Ozone (8-Hour Standard)” is \* \* \* \* \* added to read as follows:

ARKANSAS—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Memphis, TN—AR: (AQCR 018 Metropolitan Memphis Interstate) Crittenden County .....		Nonattainment .....		Subpart 2/Moderate.
AQCR 016 Central Arkansas Intrastate (part) ..... Pulaski County .....		Unclassifiable/Attainment.		
AQCR 016 Central Arkansas Intrastate (remainder of) .... Chicot County Clark County Cleveland County Conway County Dallas County Desha County Drew County Faulkner County Garland County Grant County Hot Spring County Jefferson County Lincoln County Lonoke County Perry County Pope County Saline County Yell County		Unclassifiable/Attainment.		
AQCR 017 Metropolitan Fort Smith Interstate ..... Benton County Crawford County Sebastian County Washington County		Unclassifiable/Attainment.		
AQCR 019 Monroe-El Dorado Interstate ..... Ashley County Bradley County Calhoun County Nevada County Ouachita County Union County		Unclassifiable/Attainment.		
AQCR 020 Northeast Arkansas Intrastate ..... Arkansas County Clay County Craighead County Cross County		Unclassifiable/Attainment.		



ARKANSAS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Greene County				
Independence County				
Jackson County				
Lawrence County				
Lee County				
Mississippi County				
Monroe County				
Phillips County				
Poinsett County				
Prairie County				
Randolph County				
St. Francis County				
Sharp County				
White County				
Woodruff County				
AQCR 021 Northwest Arkansas Intrastate .....	.....	Unclassifiable/Attainment.		
Baxter County				
Boone County				
Carroll County				
Cleburne County				
Franklin County				
Fulton County				
Izard County				
Johnson County				
Logan County				
Madison County				
Marion County				
Montgomery County				
Newton County				
Pike County				
Polk County				
Scott County				
Searcy County				
Stone County				
Van Buren County				
AQCR 022 Shreveport-Texarkana-Tyler Interstate. ....	.....	Unclassifiable/Attainment.		
Columbia County				
Hempstead County				
Howard County				
Lafayette County				
Little River County				
Miller County				
Sevier County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 6. In § 81.305, the table entitled **§ 81.305 California.** “California—Ozone (8-Hour Standard)” \* \* \* \* \* is added to read as follows:

CALIFORNIA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Amador and Calaveras Cos., CA: (Central Mountain Cos.)				
Amador County .....	.....	Nonattainment .....	.....	Subpart 1.
Calaveras County .....	.....	Nonattainment .....	.....	Subpart 1.
Chico, CA:				
Butte County .....	.....	Nonattainment .....	.....	Subpart 1.
Kern County (Eastern Kern), CA .....	.....	Nonattainment .....	.....	Subpart 1.

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>Kern County (part)                      That portion of Kern County (with the exception of that portion in Hydrologic Unit Number 18090205—the Indian Wells Valley) east and south of a line described as follows: Beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Liebre Land Grant to the point of intersection with the range line common to Range 16 West and Range 17 West, San Bernardino Base and Meridian; north along the range line to the point of intersection with the Rancho El Tejon Land Grant boundary; then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Grant to the northwest corner of Section 3, Township 11 North, Range 17 West; then west 1.2 miles; then north to the Rancho El Tejon Land Grant boundary; then northwest along the Rancho El Tejon line to the southeast corner of Section 34, Township 32 South, Range 30 East, Mount Diablo Base and Meridian; then north to the northwest corner of Section 35, Township 31 South, Range 30 East; then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of Section 18, Township 31 South, Range 31 East; then east to the southeast corner of Section 13, Township 31 South, Range 31 East; then north along the range line common to Range 31 East and Range 32 East, Mount Diablo Base and Meridian, to the northwest corner of Section 6, Township 29 South, Range 32 East; then east to the southwest corner of Section 31, Township 28 South, Range 32 East; then north along the range line common to Range 31 East and Range 32 East to the northwest corner of Section 6, Township 28 South, Range 32 East, then west to the southeast corner of Section 36, Township 27 South, Range 31 East, then north along the range line common to Range 31 East and Range 32 East to the Kern-Tulare County boundary.</p>				
Imperial Co., CA:				
Imperial County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Los Angeles—South Coast Air Basin, CA: .....	.....	Nonattainment .....	.....	Subpart 2/Severe 17.
Los Angeles County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Severe 17.

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
That portion of Los Angeles County which lies south and west of a line described as follows: Beginning at the Los Angeles-San Bernardino County boundary and running west along the Township line common to Township 3 North and Township 2 North, San Bernardino Base and Meridian; then north along the range line common to Range 8 West and Range 9 West; then west along the Township line common to Township 4 North and Township 3 North; then north along the range line common to Range 12 West and Range 13 West to the southeast corner of Section 12, Township 5 North and Range 13 West; then west along the south boundaries of Sections 12, 11, 10, 9, 8, and 7, Township 5 North and Range 13 West to the boundary of the Angeles National Forest which is collinear with the range line common to Range 13 West and Range 14 West; then north and west along the Angeles National Forest boundary to the point of intersection with the Township line common to Township 7 North and Township 6 North (point is at the northwest corner of Section 4 in Township 6 North and Range 14 West); then west along the Township line common to Township 7 North and Township 6 North; then north along the range line common to Range 15 West and Range 16 West to the southeast corner of Section 13, Township 7 North and Range 16 West; then along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 7 North and Range 16 West; then north along the range line common to Range 16 West and Range 17 West to the north boundary of the Angeles National Forest (collinear with the Township line common to Township 8 North and Township 7 North); then west and north along the Angeles National Forest boundary to the point of intersection with the south boundary of the Rancho La Liebre Land Grant; then west and north along this land grant boundary to the Los Angeles-Kern County boundary.				
Orange County .....	.....	Nonattainment .....	.....	Subpart 2/Severe 17.
Riverside County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Severe 17.

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
That portion of Riverside County which lies to the west of a line described as follows: Beginning at the Riverside-San Diego County boundary and running north along the range line common to Range 4 East and Range 3 East, San Bernardino Base and Meridian; then east along the Township line common to Township 8 South and Township 7 South; then north along the range line common to Range 5 East and Range 4 East; then west along the Township line common to Township 6 South and Township 7 South to the southwest corner of Section 34, Township 6 South, Range 4 East; then north along the west boundaries of Sections 34, 27, 22, 15, 10, and 3, Township 6 South, Range 4 East; then west along the Township line common to Township 5 South and Township 6 South; then north along the range line common to Range 4 East and Range 3 East; then west along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 5 South, Range 3 East; then north along the range line common to Range 2 East and Range 3 East; to the Riverside-San Bernardino County line.				
San Bernardino County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Severe 17.
That portion of San Bernardino County which lies south and west of a line described as follows: Beginning at the San Bernardino-Riverside County boundary and running north along the range line common to Range 3 East and Range 2 East, San Bernardino Base and Meridian; then west along the Township line common to Township 3 North and Township 2 North to the San Bernardino-Los Angeles County boundary.				
Los Angeles-San Bernardino Cos.(W Mojave Desert), CA: .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Los Angeles County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
That portion of Los Angeles County which lies north and east of a line described as follows: Beginning at the Los Angeles—San Bernardino County boundary and running west along the Township line common to Township 3 North and Township 2 North, San Bernardino Base and Meridian; then north along the range line common to Range 8 West and Range 9 West; then west along the Township line common to Township 4 North and Township 3 North; then north along the range line common to Range 12 West and Range 13 West to the southeast corner of Section 12, Township 5 North and Range 13 West; then west along the south boundaries of Sections 12, 11, 10, 9, 8, and 7, Township 5 North and Range 13 West to the boundary of the Angeles National Forest which is collinear with the range line common to Range 13 West and Range 14 West; then north and west along the Angeles National Forest boundary to the point of intersection with the Township line common to Township 7 North and Township 6 North (point is at the northwest corner of Section 4 in Township 6 North and Range 14 West); then west along the Township line common to Township 7 North and Township 6 North; then north along the range line common to Range 15 West and Range 16 West to the southeast corner of Section 13, Township 7 North and Range 16 West; then along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 7 North and Range 16 West; then north along the range line common to Range 16 West and Range 17 West to the north boundary of the Angeles National Forest (collinear with the Township line common to Township 8 North and Township 7 North); then west and north along the Angeles National Forest boundary to the point of intersection with the south boundary of the Rancho La Liebre Land Grant; then west and north along this land grant boundary to the Los Angeles—Kern County boundary.				
San Bernardino County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
That portion of San Bernardino County which lies north and east of a line described as follows: Beginning at the San Bernardino—Riverside County boundary and running north along the range line common to Range 3 East and Range 2 East, San Bernardino Base and Meridian; then west along the Township line common to Township 3 North and Township 2 North to the San Bernardino— Los Angeles County boundary; And that portion of San Bernardino County which lies south and west of a line described as follows: latitude 35 degrees, 10 minutes north and longitude 115 degrees, 45 minutes west.				
Mariposa and Tuolumne Cos., CA: (Southern Mountain Counties)				
Mariposa County .....	.....	Nonattainment .....	.....	Subpart 1.
Tuolumne County .....	.....	Nonattainment .....	.....	Subpart 1.
Riverside Co. (Coachella Valley), CA; .....	.....	Nonattainment .....	.....	Subpart 2/Serious.

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>Riverside County (part)</p> <p>That portion of Riverside County which lies to the east of a line described as follows: Beginning at the Riverside—San Diego County boundary and running north along the range line common to Range 4 East and Range 3 East, San Bernardino Base and Meridian; then east along the Township line common to Township 8 South and Township 7 South; then north along the range line common to Range 5 East and Range 4 East; then west along the Township line common to Township 6 South and Township 7 South to the southwest corner of Section 34, Township 6 South, Range 4 East; then north along the west boundaries of Sections 34, 27, 22, 15, 10, and 3, Township 6 South, Range 4 East; then west along the Township line common to Township 5 South and Township 6 South; then north along the range line common to Range 4 East and Range 3 East; then west along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 5 South, Range 3 East; then north along the range line common to Range 2 East and Range 3 East; to the Riverside-San Bernardino County line. And that portion of Riverside County which lies to the west of a line described as follows: That segment of the southwestern boundary line of Hydrologic Unit Number 18100100 within Riverside County, further described as follows: Beginning at the Riverside—Imperial County boundary and running north along the range line common to Range 17 East and Range 16 East, San Bernardino Base and Meridian; then northwest along the ridge line of the Chuckwalla Mountains, through Township 8 South, Range 16 East and Township 7 South, Range 16 East, until the Black Butte Mountain, elevation 4504'; then west and northwest along the ridge line to the southwest corner of Township 5 South, Range 14 East; then north along the range line common to Range 14 East and Range 13 East; then west and northwest along the ridge line to Monument Mountain, elevation 4834'; then southwest and then northwest along the ridge line of the Little San Bernardino Mountains to Quail Mountain, elev. 5814'; then northwest along the ridge line to the Riverside—San Bernardino County line.</p>				
<p>Sacramento Metro, CA .....</p> <p>El Dorado County (part)</p> <p>All portions of the county except that portion of El Dorado County within the drainage area naturally tributary to Lake Tahoe including said Lake.</p> <p>Placer County (part) .....</p>	.....	Nonattainment .....	.....	Subpart 2/Serious.
	.....	Nonattainment .....	.....	Subpart 2/Serious.

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
All portions of the county except that portion of Placer County within the drainage area naturally tributary to Lake Tahoe including said Lake, plus that area in the vicinity of the head of the Truckee River described as follows: Commencing at the point common to the aforementioned drainage area crestline and the line common to Townships 15 North and 16 North, Mount Diablo Base and Meridian, and following that line in a westerly direction to the northwest corner of Section 3, Township 15 North, Range 16 East, Mount Diablo Base and Meridian, thence south along the west line of Sections 3 and 10, Township 15 North, Range 16 East, Mount Diablo Base and Meridian, to the intersection with the said drainage area crestline, thence following the said drainage area boundary in a southeasterly, then northeasterly direction to and along the Lake Tahoe Dam, thence following the said drainage area crestline in a northeasterly, then northwesterly direction to the point of beginning.				
Sacramento County .....	.....	Nonattainment .....	.....	Subpart 2/Serious.
Solano County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Serious.
That portion of Solano County which lies north and east of a line described as follows: Beginning at the intersection of the westerly boundary of Solano County and the ¼ section line running east and west through the center of Section 34; Township 6 North, Range 2 West, Mount Diablo Base and Meridian, thence east along said ¼ section line to the east boundary of Section 36, Township 6 North, Range 2 West, thence south ½ mile and east 2.0 miles, more or less, along the west and south boundary of Los Putos Rancho to the northwest corner of Section 4, Township 5 North, Range 1 West, thence east along a line common to Township 5 North and Township 6 North to the northeast corner of Section 3, Township 5 North, Range 1 East, thence south along section lines to the southeast corner of Section 10, Township 3 North, Range 1 East, thence east along section lines to the south ¼ corner of Section 8, Township 3 North, Range 2 East, thence east to the boundary between Solano and Sacramento Counties.				
Sutter County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Serious.
Portion south of a line connecting the northern border of Yolo County to the SW tip of Yuba County and continuing along the southern Yuba County border to Placer County.				
Yolo County .....	.....	Nonattainment .....	.....	Subpart 2/Serious.
San Diego, CA .....	.....	Nonattainment .....	.....	Subpart 1.
San Diego County (part)				
That portion of San Diego County that excludes the areas listed below: La Posta Areas #1 and #2 <sup>b</sup> , Cuyapaipe Area <sup>b</sup> , Manzanita Area <sup>b</sup> , Campo Areas #1 and #2 <sup>b</sup>				
San Francisco Bay Area, CA .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Alameda County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Contra Costa County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Marin County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Napa County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
San Francisco County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
San Mateo County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Santa Clara County .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Solano County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>Portion of Solano County which lies south and west of a line described as follows: Beginning at the intersection of the westerly boundary of Solano County and the ¼ section line running east and west through the center of Section 34, T6N, R2W, M.D.B. &amp; M., thence east along said ¼ section line to the east boundary of Section 36, T6N, R2W, thence south ½ mile and east 2.0 miles, more or less, along the west and south boundary of Los Putos Rancho to the northwest corner of Section 4, T5N, R1W, thence east along a line common to T5N and T6N to the northeast corner of Section 3, T5N, R1E, thence south along section lines to the southeast corner of Section 10, T3N, R1E, thence east along section lines to the south ¼ corner of Section 8, T3N, R2E, thence east to the boundary between Solano and Sacramento Counties.</p>				
<p>Sonoma County (part) .....</p> <p>That portion of Sonoma County which lies south and east of a line described as follows: Beginning at the southeasterly corner of the Rancho Estero Americano, being on the boundary line between Marin and Sonoma Counties, California; thence running northerly along the easterly boundary line of said Rancho Estero Americano to the northeasterly corner thereof, being an angle corner in the westerly boundary line of Rancho Canada de Jonive; thence running along said boundary of Rancho Canada de Jonive westerly, northerly and easterly to its intersection with the easterly line of Graton Road; thence running along the easterly and southerly line of Graton Road, northerly and easterly to its intersection with the easterly line of Sullivan Road; thence running northerly along said easterly line of Sullivan Road to the southerly line of Green Valley Road; thence running easterly along the said southerly line of Green Valley Road and easterly along the southerly line of State Highway 116, to the westerly line of Vine Hill Road; thence running along the westerly and northerly line of Vine Hill Road, northerly and easterly to its intersection with the westerly line of Laguna Road; thence running northerly along the westerly line of Laguna Road and the northerly projection thereof to the northerly line of Trenton Road; thence running westerly along the northerly line of said Trenton Road to the easterly line of Trenton-Healdsburg Road; thence running northerly along said easterly line of Trenton-Healdsburg Road to the easterly line of Eastside Road; thence running northerly along said easterly line of Eastside Road to its intersection with the southerly line of Rancho Sotoyome; thence running easterly along said southerly line of Rancho Sotoyome to its intersection with the Township line common to Townships 8 and 9 North, M.D.M.; thence running easterly along said township line to its intersection with the boundary line between Sonoma and Napa Counties.</p>	.....	Nonattainment .....	.....	Subpart 2/Marginal.
<p>San Joaquin Valley, CA:</p> <p>Fresno County .....</p> <p>Kern County (part) .....</p>	.....	Nonattainment .....	.....	Subpart 2/Serious. Subpart 2/Serious.



CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
That portion of Kern County which lies west and north of a line described as follows: Beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Libre Land Grant to the point of intersection with the range line common to R. 16 W. and R. 17 W., San Bernardino Base and Meridian; north along the range line to the point of intersection with the Rancho El Tejon Land Grant boundary; then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Land Grant to the northwest corner of S. 3, T. 11 N., R. 17 W.; then west 1.2 miles; then north to the Rancho El Tejon Land Grant boundary; then northwest along the Rancho El Tejon line to the southeast corner of S. 34, T. 32 S., R. 30 E., Mount Diablo Base and Meridian; then north to the northwest corner of S. 35, T. 31 S., R. 30 E.; then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of S. 18, T. 31 S., R. 31 E.; then east to the southeast corner of S. 13, T. 31 S., R. 31 E.; then north along the range line common to R. 31 E. and R. 32 E., Mount Diablo Base and Meridian, to the northwest corner of S. 6, T. 29 S., R. 32 E.; then east to the southwest corner of S. 31, T. 28 S., R. 32 E.; then north along the range line common to R. 31 E. and R. 32 E. to the northwest corner of S. 6, T. 28 S., R. 32 E., then west to the southeast corner of S. 36, T. 27 S., R. 31 E., then north along the range line common to R. 31 E. and R. 32 E. to the Kern-Tulare County boundary.				
Kings County .....		Nonattainment .....		Subpart 2/Serious.
Madera County .....		Nonattainment .....		Subpart 2/Serious.
Merced County .....		Nonattainment .....		Subpart 2/Serious.
San Joaquin County .....		Nonattainment .....		Subpart 2/Serious.
Stanislaus County .....		Nonattainment .....		Subpart 2/Serious.
Tulare County .....		Nonattainment .....		Subpart 2/Serious.
Sutter County (part), CA:				
Sutter County (part) .....		Nonattainment .....		Subpart 1.
(Sutter Buttes) That portion of the Sutter Buttes mountain range at or above 2,000 feet in elevation.				
Remainder of County .....		Unclassifiable/Attainment.		
Ventura County, CA:				
Ventura County (part) .....		Nonattainment .....		Subpart 2/Moderate.
That part of Ventura County excluding the Channel Islands of Anacapa and San Nicolas Islands.				
Remainder of County .....		Unclassifiable/Attainment.		
Nevada County (Western part), CA .....		Nonattainment .....		Subpart 1.
Nevada County (part)				
That portion of Nevada County, which lies west of a line, described as follows: beginning at the Nevada-Placer County boundary and running north along the western boundaries of Sections 24, 13, 12, 1, Township 17 North, Range 14 East, Mount Diablo Base and Meridian, and Sections 36, 25, 24, 13, 12, Township 18 North, Range 14 East to the Nevada-Sierra County boundary.				
Santa Barbara-Santa Maria-Lompoc, CA:				
Santa Barbara County .....		Unclassifiable/Attainment.		
Mohave Desert Air Basin:				
Riverside County (part) remainder .....		Unclassifiable/Attainment.		
San Bernardino County (part) remainder .....		Unclassifiable/Attainment.		
Great Basin Valleys Air Basin .....		Unclassifiable/Attainment.		

CALIFORNIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Alpine County				
Inyo County				
Mono County				
Lake County Air Basin .....		Unclassifiable/Attainment.		
Lake County				
Lake Tahoe Air Basin .....		Unclassifiable/Attainment.		
El Dorado County (part)				
Lake Tahoe Area: As described under 40 CFR 81.275.				
Placer County (part)				
Lake Tahoe Area: As described under 40 CFR 81.275.				
Monterey Bay Area .....		Unclassifiable/Attainment.		
Monterey County				
San Benito County				
Santa Cruz County				
Mountain Counties Air Basin (remainder of):				
Nevada County (part) remainder .....		Unclassifiable/Attainment.		
Plumas County .....		Unclassifiable/Attainment.		
Sierra County .....		Unclassifiable/Attainment.		
North Coast Air Basin .....		Unclassifiable/Attainment.		
Del Norte County				
Humboldt County				
Mendocino County				
Sonoma County (part) remainder				
Trinity County				
Northeast Plateau Air Basin .....		Unclassifiable/Attainment.		
Lassen County				
Modoc County				
Siskiyou County				
Sacramento Valley Air Basin (remainder of):				
Colusa County .....		Unclassifiable/Attainment.		
Glenn County .....		Unclassifiable/Attainment.		
Shasta County .....		Unclassifiable/Attainment.		
Tehama County .....		Unclassifiable/Attainment.		
Yuba County .....		Unclassifiable/Attainment.		
South Central Coast Air Basin:				
(remainder of)				
Channel Islands .....		Unclassifiable/Attainment.		
San Luis Obispo County .....		Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>b</sup> The boundaries for these designated areas are based on coordinates of latitude and longitude derived from EPA Region 9's GIS database and are illustrated in a map entitled "Eastern San Diego County Attainment Areas for the 8-Hour Ozone NAAQS," dated March 9, 2004, including an attached set of coordinates. The map and attached set of coordinates are available at EPA's Region 9 Air Division office. The designated areas roughly approximate the boundaries of the reservations for these tribes, but their inclusion in this table is intended for CAA planning purposes only and is not intended to be a federal determination of the exact boundaries of the reservations. Also, the specific listing of these tribes in this table does not confer, deny, or withdraw Federal recognition of any of the tribes so listed nor any of the tribes not listed.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 7. In § 81.306, the table entitled **§ 81.306 Colorado.** "Colorado-Ozone (8-Hour Standard)" is added to read as follows:

COLORADO—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Denver-Boulder-Greeley-Ft.Collins-Love., CO:				
Adams County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Arapahoe County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Boulder County (includes part of Rocky Mtn. Nat. Park).	(2)	Nonattainment .....	(2)	Subpart 1.
Broomfield County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Denver County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Douglas County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Jefferson County .....	(2)	Nonattainment .....	(2)	Subpart 1.

COLORADO—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Larimer County (part) (includes part of Rocky Mtn. Nat. Park). That portion of the county that lies south of a line described as follows: Beginning at a point on Larimer County's eastern boundary and Weld County's western boundary intersected by 40 degrees, 42 minutes, and 47.1 seconds north latitude, proceed west to a point defined by the intersection of 40 degrees, 42 minutes, 47.1 seconds north latitude and 105 degrees, 29 minutes, and 40.0 seconds west longitude, thence proceed south on 105 degrees, 29 minutes, and 40.0 seconds west longitude to the intersection with 40 degrees, 33 minutes and 17.4 seconds north latitude, thence proceed west on 40 degrees, 33 minutes, 17.4 seconds north latitude until this line intersects Larimer County's western boundary and Grand County's eastern boundary.	(2)	Nonattainment .....	(2)	Subpart 1.
Weld County (part) ..... That portion of the county that lies south of a line described as follows: Beginning at a point on Weld County's eastern boundary and Logan County's western boundary intersected by 40 degrees, 42 minutes, 47.1 seconds north latitude, proceed west on 40 degrees, 42 minutes, 47.1 seconds north latitude until this line intersects Weld County's western boundary and Larimer County's eastern boundary.	(2)	Nonattainment .....	(2)	Subpart 1.
State AQCR 01 ..... Logan County Phillips County Sedgwick County Washington County Yuma County	.....	Unclassifiable/Attainment	.....	
State AQCR 03 (remainder of) ..... Clear Creek County Gilpin County	.....	Unclassifiable/Attainment	.....	
State AQCR 11 ..... Garfield County Mesa County Moffat County Rio Blanco County	.....	Unclassifiable/Attainment	.....	
Rest of State ..... Alamosa County Archuleta County Baca County Bent County Chaffee County Cheyenne County Conejos County Costilla County Crowley County Custer County Delta County Dolores County Eagle County El Paso County Elbert County Fremont County Grand County (includes portion of W. Rocky Mtn. Nat. Park) Gunnison County Hinsdale County Huerfano County Jackson County Kiowa County Kit Carson County La Plata County Lake County	.....	Unclassifiable/Attainment	.....	

COLORADO—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Larimer County (part) remainder				
Las Animas County				
Lincoln County				
Mineral County				
Montezuma County				
Montrose County				
Morgan County				
Otero County				
Ouray County				
Park County				
Pitkin County				
Prowers County				
Pueblo County				
Rio Grande County				
Routt County				
Saguache County				
San Juan County				
San Miguel County				
Summit County				
Teller County				
Weld County (part) remainder				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

■ 8. In § 81.307, the table entitled **§ 81.307 Connecticut.**  
 “Connecticut—Ozone (8-Hour Standard)” is added to read as follows:

CONNECTICUT—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Greater Connecticut, CT:				
Hartford County .....		Nonattainment .....		Subpart 2/Moderate.
Litchfield County .....		Nonattainment .....		Subpart 2/Moderate.
New London County .....		Nonattainment .....		Subpart 2/Moderate.
Tolland County .....		Nonattainment .....		Subpart 2/Moderate.
Windham County .....		Nonattainment .....		Subpart 2/Moderate.
New York–N. New Jersey–Long Island, NY–NJ–CT:				
Fairfield County .....		Nonattainment .....		Subpart 2/Moderate.
Middlesex County .....		Nonattainment .....		Subpart 2/Moderate.
New Haven County .....		Nonattainment .....		Subpart 2/Moderate.

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 9. In § 81.308, the table entitled **§ 81.308 Delaware.**  
 “Delaware—Ozone (8-Hour Standard)” is added to read as follows:

DELAWARE—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Philadelphia–Wilmington–Atlantic Ci, PA–NJ–MD–DE:				
Kent County .....		Nonattainment .....		Subpart 2/Moderate.
New Castle County .....		Nonattainment .....		Subpart 2/Moderate.
Sussex County .....		Nonattainment .....		Subpart 2/Moderate.

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 10. In § 81.309, the table entitled **§ 81.309 District of Columbia.**  
 “District of Columbia—Ozone (8-Hour Standard)” is added to read as follows:

DISTRICT OF COLUMBIA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Washington, DC—MD—VA: District of Columbia .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 11. In § 81.310, the table entitled **§ 81.310 Florida.**  
 “Florida—Ozone (8-Hour Standard)” is added to read as follows:

FLORIDA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide .....	.....	Unclassifiable/Attainment		
Alachua County				
Baker County				
Bay County				
Bradford County				
Brevard County				
Broward County				
Calhoun County				
Charlotte County				
Citrus County				
Clay County				
Collier County				
Columbia County				
DeSoto County				
Dixie County				
Duval County				
Escambia County				
Flagler County				
Franklin County				
Gadsden County				
Gilchrist County				
Glades County				
Gulf County				
Hamilton County				
Hardee County				
Hendry County				
Hernando County				
Highlands County				
Hillsborough County				
Holmes County				
Indian River County				
Jackson County				
Jefferson County				
Lafayette County				
Lake County				
Lee County				
Leon County				
Levy County				
Liberty County				
Madison County				
Manatee County				
Marion County				
Martin County				
Miami-Dade County				
Monroe County				
Nassau County				
Okaloosa County				
Okeechobee County				
Orange County				

FLORIDA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Osceola County				
Palm Beach County				
Pasco County				
Pinellas County				
Polk County				
Putnam County				
St. Johns County				
St. Lucie County				
Santa Rosa County				
Sarasota County				
Seminole County				
Sumter County				
Suwannee County				
Taylor County				
Union County				
Volusia County				
Wakulla County				
Walton County				
Washington County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 12. In § 81.311, the table entitled **§ 81.311 Georgia.** “Georgia—Ozone (8-Hour Standard)” is \* \* \* \* \* added to read as follows:

GEORGIA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Atlanta, GA:				
Barrow County .....		Nonattainment .....		Subpart 2/Marginal.
Bartow County .....		Nonattainment .....		Subpart 2/Marginal.
Carroll County .....		Nonattainment .....		Subpart 2/Marginal.
Cherokee County .....		Nonattainment .....		Subpart 2/Marginal.
Clayton County .....		Nonattainment .....		Subpart 2/Marginal.
Cobb County .....		Nonattainment .....		Subpart 2/Marginal.
Coweta County .....		Nonattainment .....		Subpart 2/Marginal.
DeKalb County .....		Nonattainment .....		Subpart 2/Marginal.
Douglas County .....		Nonattainment .....		Subpart 2/Marginal.
Fayette County .....		Nonattainment .....		Subpart 2/Marginal.
Forsyth County .....		Nonattainment .....		Subpart 2/Marginal.
Fulton County .....		Nonattainment .....		Subpart 2/Marginal.
Gwinnett County .....		Nonattainment .....		Subpart 2/Marginal.
Hall County .....		Nonattainment .....		Subpart 2/Marginal.
Henry County .....		Nonattainment .....		Subpart 2/Marginal.
Newton County .....		Nonattainment .....		Subpart 2/Marginal.
Paulding County .....		Nonattainment .....		Subpart 2/Marginal.
Rockdale County .....		Nonattainment .....		Subpart 2/Marginal.
Spalding County .....		Nonattainment .....		Subpart 2/Marginal.
Walton County .....		Nonattainment .....		Subpart 2/Marginal.
Macon, GA:				
Bibb County .....		Nonattainment .....		Subpart 1.
Monroe County (part) .....		Nonattainment .....		Subpart 1.
From the point where Bibb and Monroe Counties meet at the Ocmulgee River, follow the Ocmulgee River boundary north to 33 degrees, 05 minutes, due west to 83 degrees, 50 minutes, due south to the intersection with Georgia Hwy 18, east along Georgia Hwy 18 to US Hwy 23/ Georgia Hwy 87, south on US Hwy 23/ Georgia Hwy 87 to the Monro/Bibb County line, and east to the intersection with the Ocmulgee River				
Chattanooga, TN-GA:				
Catoosa County .....		Nonattainment .....		Subpart 1.

## GEORGIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Murray Co (Chattahoochee Nat Forest), GA:				
Murray County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
Rest of State .....	.....	Unclassifiable/Attainment		
Appling County.				
Atkinson County				
Bacon County				
Baker County				
Baldwin County				
Banks County				
Ben Hill County				
Berrien County				
Bleckley County				
Brantley County				
Brooks County				
Bryan County				
Bulloch County				
Burke County				
Butts County				
Calhoun County				
Camden County				
Candler County				
Charlton County				
Chatham County				
Chattahoochee County				
Chattooga County				
Clarke County				
Clay County				
Clinch County				
Coffee County				
Colquitt County				
Columbia County				
Cook County				
Crawford County				
Crisp County				
Dade County				
Dawson County				
Decatur County				
Dodge County				
Dooly County				
Dougherty County				
Early County				
Echols County				
Effingham County				
Elbert County				
Emanuel County				
Evans County				
Fannin County				
Floyd County				
Franklin County				
Gilmer County				
Glascock County				
Glynn County				
Gordon County				
Grady County				
Greene County				
Habersham County				
Hancock County				
Haralson County				
Harris County				
Hart County				
Heard County				
Houston County				
Irwin County				
Jackson County				
Jasper County				
Jeff Davis County				
Jefferson County				
Jenkins County				
Johnson County				
Jones County				

## GEORGIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Lamar County				
Lanier County				
Laurens County				
Lee County				
Liberty County				
Lincoln County				
Long County				
Lowndes County				
Lumpkin County				
Macon County				
Madison County				
Marion County				
McDuffie County				
McIntosh County				
Meriwether County				
Miller County				
Mitchell County				
Monroe County (part) remainder				
Montgomery County				
Morgan County				
Murray County (part) remainder				
Muscogee County				
Oconee County				
Oglethorpe County				
Peach County				
Pickens County				
Pierce County				
Pike County				
Polk County				
Pulaski County				
Putnam County				
Quitman County				
Rabun County				
Randolph County				
Richmond County				
Schley County				
Screven County				
Seminole County				
Stephens County				
Stewart County				
Sumter County				
Talbot County				
Taliaferro County				
Tattnall County				
Taylor County				
Telfair County				
Terrell County				
Thomas County				
Tift County				
Toombs County				
Towns County				
Treutlen County				
Troup County				
Turner County				
Twiggs County				
Union County				
Upson County				
Walker County				
Ware County				
Warren County				
Washington County				
Wayne County				
Webster County				
Wheeler County				
White County				
Whitfield County				
Wilcox County				
Wilkes County				
Wilkinson County				



GEORGIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Worth County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 13. In § 81.312, the table entitled **§ 81.312 Hawaii.**  
 “Hawaii—Ozone (8-Hour Standard)” is \* \* \* \* \*  
 added to read as follows:

HAWAII—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide .....	.....	Unclassifiable Attainment		
Hawaii County				
Honolulu County				
Kalawao County				
Kauai County				
Maui County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 14. In § 81.313, the table entitled **§ 81.313 Idaho.**  
 “Idaho—Ozone (8-Hour Standard)” is \* \* \* \* \*  
 added to read as follows:

IDAHO—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 61 Eastern Idaho Intrastate .....	.....	Unclassifiable/Attainment		
Bannock County				
Bear Lake County				
Bingham County				
Bonneville County				
Butte County				
Caribou County				
Clark County				
Franklin County				
Fremont County				
Jefferson County				
Madison County				
Oneida County				
Power County				
Teton County				
AQCR 62 E Washington-N Idaho Interstate .....	.....	Unclassifiable/Attainment		
Benewah County				
Kootenai County				
Latah County				
Nez Perce County				
Shoshone County				
AQCR 63 Idaho Intrastate .....	.....	Unclassifiable/Attainment		
Adams County				
Blaine County				
Boise County				
Bonner County				
Boundary County				
Camas County				
Cassia County				
Clearwater County				
Custer County				
Elmore County				
Gem County				
Gooding County				

IDAHO—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Idaho County				
Jerome County				
Lemhi County				
Lewis County				
Lincoln County				
Minidoka County				
Owyhee County				
Payette County				
Twin Falls County				
Valley County				
Washington County				
AQCR 64 Metropolitan Boise Interstate .....	.....	Unclassifiable/Attainment		
Ada County				
Canyon County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 15. In § 81.314, the table entitled **§ 81.314 Illinois.**  
 “Illinois—Ozone (8-Hour Standard)” is \* \* \* \* \*  
 added to read as follows:

ILLINOIS—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Chicago-Gary-Lake County, IL-IN:				
Cook County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
DuPage County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Grundy County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Aux Sable Township				
Goose Lake Township				
Kane County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Kendall County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Oswego Township				
Lake County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
McHenry County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Will County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
St. Louis, MO-IL:				
Jersey County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Madison County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Monroe County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
St. Clair County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Rest of State				
Adams County .....	.....	Unclassifiable/Attainment.		
Alexander County .....	.....	Unclassifiable/Attainment.		
Bond County .....	.....	Unclassifiable/Attainment.		
Boone County .....	.....	Unclassifiable/Attainment.		
Brown County .....	.....	Unclassifiable/Attainment.		
Bureau County .....	.....	Unclassifiable/Attainment.		
Calhoun County .....	.....	Unclassifiable/Attainment.		
Carroll County .....	.....	Unclassifiable/Attainment.		
Cass County .....	.....	Unclassifiable/Attainment.		
Champaign County .....	.....	Unclassifiable/Attainment.		
Christian County .....	.....	Unclassifiable/Attainment.		
Clark County .....	.....	Unclassifiable/Attainment.		
Clay County .....	.....	Unclassifiable/Attainment.		
Clinton County .....	.....	Unclassifiable/Attainment.		
Coles County .....	.....	Unclassifiable/Attainment.		
Crawford County .....	.....	Unclassifiable/Attainment.		
Cumberland County .....	.....	Unclassifiable/Attainment.		
De Witt County .....	.....	Unclassifiable/Attainment.		
DeKalb County .....	.....	Unclassifiable/Attainment.		
Douglas County .....	.....	Unclassifiable/Attainment.		
Edgar County .....	.....	Unclassifiable/Attainment.		
Edwards County .....	.....	Unclassifiable/Attainment.		
Effingham County .....	.....	Unclassifiable/Attainment.		
Fayette County .....	.....	Unclassifiable/Attainment.		
Ford County .....	.....	Unclassifiable/Attainment.		

## ILLINOIS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Franklin County .....	.....	Unclassifiable/Attainment.		
Fulton County .....	.....	Unclassifiable/Attainment.		
Gallatin County .....	.....	Unclassifiable/Attainment.		
Greene County .....	.....	Unclassifiable/Attainment.		
Grundy County (part) .....	.....	Unclassifiable/Attainment.		
All townships except Aux Sable and Goose Lake.				
Hamilton County .....	.....	Unclassifiable/Attainment.		
Hancock County .....	.....	Unclassifiable/Attainment.		
Hardin County .....	.....	Unclassifiable/Attainment.		
Henderson County .....	.....	Unclassifiable/Attainment.		
Henry County .....	.....	Unclassifiable/Attainment.		
Iroquois County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jasper County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Jo Daviess County .....	.....	Unclassifiable/Attainment.		
Johnson County .....	.....	Unclassifiable/Attainment.		
Kankakee County .....	.....	Unclassifiable/Attainment.		
Kendall County (part) .....	.....	Unclassifiable/Attainment.		
All townships except Oswego				
Knox County .....	.....	Unclassifiable/Attainment.		
La Salle County .....	.....	Unclassifiable/Attainment.		
Lawrence County .....	.....	Unclassifiable/Attainment.		
Lee County .....	.....	Unclassifiable/Attainment.		
Livingston County .....	.....	Unclassifiable/Attainment.		
Logan County .....	.....	Unclassifiable/Attainment.		
Macon County .....	.....	Unclassifiable/Attainment.		
Macoupin County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
Mason County .....	.....	Unclassifiable/Attainment.		
Massac County .....	.....	Unclassifiable/Attainment.		
McDonough County .....	.....	Unclassifiable/Attainment.		
McLean County .....	.....	Unclassifiable/Attainment.		
Menard County .....	.....	Unclassifiable/Attainment.		
Mercer County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Morgan County .....	.....	Unclassifiable/Attainment.		
Moultrie County .....	.....	Unclassifiable/Attainment.		
Ogle County .....	.....	Unclassifiable/Attainment.		
Peoria County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Piatt County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Pope County .....	.....	Unclassifiable/Attainment.		
Pulaski County .....	.....	Unclassifiable/Attainment.		
Putnam County .....	.....	Unclassifiable/Attainment.		
Randolph County .....	.....	Unclassifiable/Attainment.		
Richland County .....	.....	Unclassifiable/Attainment.		
Rock Island County .....	.....	Unclassifiable/Attainment.		
Saline County .....	.....	Unclassifiable/Attainment.		
Sangamon County .....	.....	Unclassifiable/Attainment.		
Schuyler County .....	.....	Unclassifiable/Attainment.		
Scott County .....	.....	Unclassifiable/Attainment.		
Shelby County .....	.....	Unclassifiable/Attainment.		
Stark County .....	.....	Unclassifiable/Attainment.		
Stephenson County .....	.....	Unclassifiable/Attainment.		
Tazewell County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Vermilion County .....	.....	Unclassifiable/Attainment.		
Wabash County .....	.....	Unclassifiable/Attainment.		
Warren County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
White County .....	.....	Unclassifiable/Attainment.		
Whiteside County .....	.....	Unclassifiable/Attainment.		
Williamson County .....	.....	Unclassifiable/Attainment.		
Winnebago County .....	.....	Unclassifiable/Attainment.		
Woodford County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 16. In § 81.315, the table entitled **§ 81.315 Indiana.** “Indiana—Ozone (8-Hour Standard)” is added to read as follows:

INDIANA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Chicago-Gary-Lake County, IL-IN:				
Lake County .....		Nonattainment .....		Subpart 2/Moderate.
Porter County .....		Nonattainment .....		Subpart 2/Moderate.
Cincinnati-Hamilton, OH-KY-IN:				
Dearborn County (part) .....		Nonattainment .....		Subpart 1.
Lawrenceburg Township				
Evansville, IN:				
Vanderburgh County .....		Nonattainment .....		Subpart 1.
Warrick County .....		Nonattainment .....		Subpart 1.
Fort Wayne, IN:				
Allen County .....		Nonattainment .....		Subpart 1.
Greene Co., IN:				
Greene County .....		Nonattainment .....		Subpart 1.
Indianapolis, IN:				
Boone County .....		Nonattainment .....		Subpart 1.
Hamilton County .....		Nonattainment .....		Subpart 1.
Hancock County .....		Nonattainment .....		Subpart 1.
Hendricks County .....		Nonattainment .....		Subpart 1.
Johnson County .....		Nonattainment .....		Subpart 1.
Madison County .....		Nonattainment .....		Subpart 1.
Marion County .....		Nonattainment .....		Subpart 1.
Morgan County .....		Nonattainment .....		Subpart 1.
Shelby County .....		Nonattainment .....		Subpart 1.
Jackson Co., IN:				
Jackson County .....		Nonattainment .....		Subpart 1.
La Porte Co., IN:				
La Porte County .....		Nonattainment .....		Subpart 2/Moderate.
Louisville, KY-IN:				
Clark County .....		Nonattainment .....		Subpart 1.
Floyd County .....		Nonattainment .....		Subpart 1.
Muncie, IN:				
Delaware County .....		Nonattainment .....		Subpart 1.
South Bend-Elkhart, IN:				
Elkhart County .....		Nonattainment .....		Subpart 1.
St. Joseph County .....		Nonattainment .....		Subpart 1.
Terre Haute, IN:				
Vigo County .....		Nonattainment .....		Subpart 1.
Rest of State				
Adams County .....		Unclassifiable/Attainment.		
Bartholomew County .....		Unclassifiable/Attainment.		
Benton County .....		Unclassifiable/Attainment.		
Blackford County .....		Unclassifiable/Attainment.		
Brown County .....		Unclassifiable/Attainment.		
Carroll County .....		Unclassifiable/Attainment.		
Cass County .....		Unclassifiable/Attainment.		
Clay County .....		Unclassifiable/Attainment.		
Clinton County .....		Unclassifiable/Attainment.		
Crawford County .....		Unclassifiable/Attainment.		
Daviess County .....		Unclassifiable/Attainment.		
De Kalb County .....		Unclassifiable/Attainment.		
Dearborn County (part) remainder .....		Unclassifiable/Attainment.		
Decatur County .....		Unclassifiable/Attainment.		
Dubois County .....		Unclassifiable/Attainment.		
Fayette County .....		Unclassifiable/Attainment.		
Fountain County .....		Unclassifiable/Attainment.		
Franklin County .....		Unclassifiable/Attainment.		
Fulton County .....		Unclassifiable/Attainment.		
Gibson County .....		Unclassifiable/Attainment.		
Grant County .....		Unclassifiable/Attainment.		
Harrison County .....		Unclassifiable/Attainment.		
Henry County .....		Unclassifiable/Attainment.		
Howard County .....		Unclassifiable/Attainment.		
Huntington County .....		Unclassifiable/Attainment.		

INDIANA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Jasper County .....	.....	Unclassifiable/Attainment.		
Jay County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Jennings County .....	.....	Unclassifiable/Attainment.		
Knox County .....	.....	Unclassifiable/Attainment.		
Kosciusko County .....	.....	Unclassifiable/Attainment.		
LaGrange County .....	.....	Unclassifiable/Attainment.		
Lawrence County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
Martin County .....	.....	Unclassifiable/Attainment.		
Miami County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Newton County .....	.....	Unclassifiable/Attainment.		
Noble County .....	.....	Unclassifiable/Attainment.		
Ohio County .....	.....	Unclassifiable/Attainment.		
Orange County .....	.....	Unclassifiable/Attainment.		
Owen County .....	.....	Unclassifiable/Attainment.		
Parke County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Posey County .....	.....	Unclassifiable/Attainment.		
Pulaski County .....	.....	Unclassifiable/Attainment.		
Putnam County .....	.....	Unclassifiable/Attainment.		
Randolph County .....	.....	Unclassifiable/Attainment.		
Ripley County .....	.....	Unclassifiable/Attainment.		
Rush County .....	.....	Unclassifiable/Attainment.		
Scott County .....	.....	Unclassifiable/Attainment.		
Spencer County .....	.....	Unclassifiable/Attainment.		
Starke County .....	.....	Unclassifiable/Attainment.		
Steuben County .....	.....	Unclassifiable/Attainment.		
Sullivan County .....	.....	Unclassifiable/Attainment.		
Switzerland County .....	.....	Unclassifiable/Attainment.		
Tippecanoe County .....	.....	Unclassifiable/Attainment.		
Tipton County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Vermillion County .....	.....	Unclassifiable/Attainment.		
Wabash County .....	.....	Unclassifiable/Attainment.		
Warren County .....	.....	Unclassifiable/Attainment.		
Warrick County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Wells County .....	.....	Unclassifiable/Attainment.		
White County .....	.....	Unclassifiable/Attainment.		
Whitley County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 17. In § 81.316, the table entitled “Iowa—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.316 Iowa.

\* \* \* \* \*

IOWA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide .....	.....	Unclassifiable/Attainment.		
Adair County				
Adams County				
Allamakee County				
Appanoose County				
Audubon County				
Benton County				
Black Hawk County				
Boone County				
Bremer County				

## IOWA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Buchanan County				
Buena Vista County				
Butler County				
Calhoun County				
Carroll County				
Cass County				
Cedar County				
Cerro Gordo County				
Cherokee County				
Chickasaw County				
Clarke County				
Clay County				
Clayton County				
Clinton County				
Crawford County				
Dallas County				
Davis County				
Decatur County				
Delaware County				
Des Moines County				
Dickinson County				
Dubuque County				
Emmet County				
Fayette County				
Floyd County				
Franklin County				
Fremont County				
Greene County				
Grundy County				
Guthrie County				
Hamilton County				
Hancock County				
Hardin County				
Harrison County				
Henry County				
Howard County				
Humboldt County				
Ida County				
Iowa County				
Jackson County				
Jasper County				
Jefferson County				
Johnson County				
Jones County				
Keokuk County				
Kossuth County				
Lee County				
Linn County				
Louisa County				
Lucas County				
Lyon County				
Madison County				
Mahaska County				
Marion County				
Marshall County				
Mills County				
Mitchell County				
Monona County				
Monroe County				
Montgomery County				
Muscatine County				
O'Brien County				
Osceola County				
Page County				
Palo Alto County				
Plymouth County				
Pocahontas County				
Polk County				
Pottawattamie County				
Poweshiek County				

IOWA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Ringgold County				
Sac County				
Scott County				
Shelby County				
Sioux County				
Story County				
Tama County				
Taylor County				
Union County				
Van Buren County				
Wapello County				
Warren County				
Washington County				
Wayne County				
Webster County				
Winnebago County				
Winneshiek County				
Woodbury County				
Worth County				
Wright County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 18. In § 81.317, the table entitled “Kansas—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.317 Kansas.

\* \* \* \* \*

KANSAS—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Kansas City, KS—MO:				
Johnson County .....		Unclassifiable <sup>b</sup> .		
Linn County .....		Unclassifiable <sup>b</sup> .		
Miami County .....		Unclassifiable <sup>b</sup> .		
Wyandotte County .....		Unclassifiable <sup>b</sup> .		
Rest of State:				
Allen County .....		Unclassifiable/Attainment.		
Anderson County .....		Unclassifiable/Attainment.		
Atchison County .....		Unclassifiable/Attainment.		
Barber County .....		Unclassifiable/Attainment.		
Barton County .....		Unclassifiable/Attainment.		
Bourbon County .....		Unclassifiable/Attainment.		
Brown County .....		Unclassifiable/Attainment.		
Butler County .....		Unclassifiable/Attainment.		
Chase County .....		Unclassifiable/Attainment.		
Chautauqua County .....		Unclassifiable/Attainment.		
Cherokee County .....		Unclassifiable/Attainment.		
Cheyenne County .....		Unclassifiable/Attainment.		
Clark County .....		Unclassifiable/Attainment.		
Clay County .....		Unclassifiable/Attainment.		
Cloud County .....		Unclassifiable/Attainment.		
Coffey County .....		Unclassifiable/Attainment.		
Comanche County .....		Unclassifiable/Attainment.		
Cowley County .....		Unclassifiable/Attainment.		
Crawford County .....		Unclassifiable/Attainment.		
Decatur County .....		Unclassifiable/Attainment.		
Dickinson County .....		Unclassifiable/Attainment.		
Doniphan County .....		Unclassifiable/Attainment.		
Douglas County .....		Unclassifiable/Attainment.		
Edwards County .....		Unclassifiable/Attainment.		
Elk County .....		Unclassifiable/Attainment.		
Ellis County .....		Unclassifiable/Attainment.		
Ellsworth County .....		Unclassifiable/Attainment.		
Finney County .....		Unclassifiable/Attainment.		
Ford County .....		Unclassifiable/Attainment.		

KANSAS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Franklin County .....	.....	Unclassifiable/Attainment.		
Geary County .....	.....	Unclassifiable/Attainment.		
Gove County .....	.....	Unclassifiable/Attainment.		
Graham County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Gray County .....	.....	Unclassifiable/Attainment.		
Greeley County .....	.....	Unclassifiable/Attainment.		
Greenwood County .....	.....	Unclassifiable/Attainment.		
Hamilton County .....	.....	Unclassifiable/Attainment.		
Harper County .....	.....	Unclassifiable/Attainment.		
Harvey County .....	.....	Unclassifiable/Attainment.		
Haskell County .....	.....	Unclassifiable/Attainment.		
Hodgeman County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Jewell County .....	.....	Unclassifiable/Attainment.		
Kearny County .....	.....	Unclassifiable/Attainment.		
Kingman County .....	.....	Unclassifiable/Attainment.		
Kiowa County .....	.....	Unclassifiable/Attainment.		
Labette County .....	.....	Unclassifiable/Attainment.		
Lane County .....	.....	Unclassifiable/Attainment.		
Leavenworth County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Logan County .....	.....	Unclassifiable/Attainment.		
Lyon County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
McPherson County .....	.....	Unclassifiable/Attainment.		
Meade County .....	.....	Unclassifiable/Attainment.		
Mitchell County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Morris County .....	.....	Unclassifiable/Attainment.		
Morton County .....	.....	Unclassifiable/Attainment.		
Nemaha County .....	.....	Unclassifiable/Attainment.		
Neosho County .....	.....	Unclassifiable/Attainment.		
Ness County .....	.....	Unclassifiable/Attainment.		
Norton County .....	.....	Unclassifiable/Attainment.		
Osage County .....	.....	Unclassifiable/Attainment.		
Osborne County .....	.....	Unclassifiable/Attainment.		
Ottawa County .....	.....	Unclassifiable/Attainment.		
Pawnee County .....	.....	Unclassifiable/Attainment.		
Phillips County .....	.....	Unclassifiable/Attainment.		
Pottawatomie County .....	.....	Unclassifiable/Attainment.		
Pratt County .....	.....	Unclassifiable/Attainment.		
Rawlins County .....	.....	Unclassifiable/Attainment.		
Reno County .....	.....	Unclassifiable/Attainment.		
Republic County .....	.....	Unclassifiable/Attainment.		
Rice County .....	.....	Unclassifiable/Attainment.		
Riley County .....	.....	Unclassifiable/Attainment.		
Rooks County .....	.....	Unclassifiable/Attainment.		
Rush County .....	.....	Unclassifiable/Attainment.		
Russell County .....	.....	Unclassifiable/Attainment.		
Saline County .....	.....	Unclassifiable/Attainment.		
Scott County .....	.....	Unclassifiable/Attainment.		
Sedgwick County .....	.....	Unclassifiable/Attainment.		
Seward County .....	.....	Unclassifiable/Attainment.		
Shawnee County .....	.....	Unclassifiable/Attainment.		
Sheridan County .....	.....	Unclassifiable/Attainment.		
Sherman County .....	.....	Unclassifiable/Attainment.		
Smith County .....	.....	Unclassifiable/Attainment.		
Stafford County .....	.....	Unclassifiable/Attainment.		
Stanton County .....	.....	Unclassifiable/Attainment.		
Stevens County .....	.....	Unclassifiable/Attainment.		
Sumner County .....	.....	Unclassifiable/Attainment.		
Thomas County .....	.....	Unclassifiable/Attainment.		
Trego County .....	.....	Unclassifiable/Attainment.		
Wabaunsee County .....	.....	Unclassifiable/Attainment.		
Wallace County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wichita County .....	.....	Unclassifiable/Attainment.		



KANSAS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Wilson County .....	.....	Unclassifiable/Attainment.		
Woodson County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>b</sup> This area is given an "Unclassifiable" designation. EPA will review all available information and make an attainment or nonattainment decision after reviewing the 2004 data.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 19. In § 81.318, the table entitled **§ 81.318 Kentucky.**  
 "Kentucky—Ozone (8-Hour Standard)" \* \* \* \* \*  
 is added to read as follows:

KENTUCKY—OZONE (8-HOUR STANDARD)

Designation	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Cincinnati-Hamilton, OH-KY-IN:				
Boone County .....	.....	Nonattainment .....	.....	Subpart 1.
Campbell County .....	.....	Nonattainment .....	.....	Subpart 1.
Kenton County .....	.....	Nonattainment .....	.....	Subpart 1.
Clarkesville-Hopkinsville, TN-KY:				
Christian County .....	.....	Nonattainment .....	.....	Subpart 1.
Louisville, KY-IN:				
Bullitt County .....	.....	Nonattainment .....	.....	Subpart 1.
Jefferson County .....	.....	Nonattainment .....	.....	Subpart 1.
Oldham County .....	.....	Nonattainment .....	.....	Subpart 1.
Huntington-Ashland, WV-KY:				
Boyd County .....	.....	Nonattainment .....	.....	Subpart 1.
Rest of State				
Adair County .....	.....	Unclassifiable/Attainment.		
Allen County .....	.....	Unclassifiable/Attainment.		
Anderson County .....	.....	Unclassifiable/Attainment.		
Ballard County .....	.....	Unclassifiable/Attainment.		
Barren County .....	.....	Unclassifiable/Attainment.		
Bath County .....	.....	Unclassifiable/Attainment.		
Bell County .....	.....	Unclassifiable/Attainment.		
Bourbon County .....	.....	Unclassifiable/Attainment.		
Boyle County .....	.....	Unclassifiable/Attainment.		
Bracken County .....	.....	Unclassifiable/Attainment.		
Breathitt County .....	.....	Unclassifiable/Attainment.		
Breckinridge County .....	.....	Unclassifiable/Attainment.		
Butler County .....	.....	Unclassifiable/Attainment.		
Caldwell County .....	.....	Unclassifiable/Attainment.		
Calloway County .....	.....	Unclassifiable/Attainment.		
Carlisle County .....	.....	Unclassifiable/Attainment.		
Carroll County .....	.....	Unclassifiable/Attainment.		
Carter County .....	.....	Unclassifiable/Attainment.		
Casey County .....	.....	Unclassifiable/Attainment.		
Clark County .....	.....	Unclassifiable/Attainment.		
Clay County .....	.....	Unclassifiable/Attainment.		
Clinton County .....	.....	Unclassifiable/Attainment.		
Crittenden County .....	.....	Unclassifiable/Attainment.		
Cumberland County .....	.....	Unclassifiable/Attainment.		
Daviess County .....	.....	Unclassifiable/Attainment.		
Edmonson County .....	.....	Unclassifiable/Attainment.		
Elliott County .....	.....	Unclassifiable/Attainment.		
Estill County .....	.....	Unclassifiable/Attainment.		
Fayette County .....	.....	Unclassifiable/Attainment.		
Fleming County .....	.....	Unclassifiable/Attainment.		
Floyd County .....	.....	Unclassifiable/Attainment.		
Franklin County .....	.....	Unclassifiable/Attainment.		
Fulton County .....	.....	Unclassifiable/Attainment.		
Gallatin County .....	.....	Unclassifiable/Attainment.		
Garrard County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Graves County .....	.....	Unclassifiable/Attainment.		
Grayson County .....	.....	Unclassifiable/Attainment.		
Green County .....	.....	Unclassifiable/Attainment.		

KENTUCKY—OZONE (8-HOUR STANDARD)—Continued

Designation	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Greenup County .....	.....	Unclassifiable/Attainment.		
Hancock County .....	.....	Unclassifiable/Attainment.		
Hardin County .....	.....	Unclassifiable/Attainment.		
Harlan County .....	.....	Unclassifiable/Attainment.		
Harrison County .....	.....	Unclassifiable/Attainment.		
Hart County .....	.....	Unclassifiable/Attainment.		
Henderson County .....	.....	Unclassifiable/Attainment.		
Henry County .....	.....	Unclassifiable/Attainment.		
Hickman County .....	.....	Unclassifiable/Attainment.		
Hopkins County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jessamine County .....	.....	Unclassifiable/Attainment.		
Johnson County .....	.....	Unclassifiable/Attainment.		
Knott County .....	.....	Unclassifiable/Attainment.		
Knox County .....	.....	Unclassifiable/Attainment.		
Larue County .....	.....	Unclassifiable/Attainment.		
Laurel County .....	.....	Unclassifiable/Attainment.		
Lawrence County .....	.....	Unclassifiable/Attainment.		
Lee County .....	.....	Unclassifiable/Attainment.		
Leslie County .....	.....	Unclassifiable/Attainment.		
Letcher County .....	.....	Unclassifiable/Attainment.		
Lewis County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Livingston County .....	.....	Unclassifiable/Attainment.		
Logan County .....	.....	Unclassifiable/Attainment.		
Lyon County .....	.....	Unclassifiable/Attainment.		
Madison County .....	.....	Unclassifiable/Attainment.		
Magoffin County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
Martin County .....	.....	Unclassifiable/Attainment.		
Mason County .....	.....	Unclassifiable/Attainment.		
McCracken County .....	.....	Unclassifiable/Attainment.		
McCreary County .....	.....	Unclassifiable/Attainment.		
McLean County .....	.....	Unclassifiable/Attainment.		
Meade County .....	.....	Unclassifiable/Attainment.		
Menifee County .....	.....	Unclassifiable/Attainment.		
Mercer County .....	.....	Unclassifiable/Attainment.		
Metcalfe County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Morgan County .....	.....	Unclassifiable/Attainment.		
Muhlenberg County .....	.....	Unclassifiable/Attainment.		
Nelson County .....	.....	Unclassifiable/Attainment.		
Nicholas County .....	.....	Unclassifiable/Attainment.		
Ohio County .....	.....	Unclassifiable/Attainment.		
Owen County .....	.....	Unclassifiable/Attainment.		
Owsley County .....	.....	Unclassifiable/Attainment.		
Pendleton County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Powell County .....	.....	Unclassifiable/Attainment.		
Pulaski County .....	.....	Unclassifiable/Attainment.		
Robertson County .....	.....	Unclassifiable/Attainment.		
Rockcastle County .....	.....	Unclassifiable/Attainment.		
Rowan County .....	.....	Unclassifiable/Attainment.		
Russell County .....	.....	Unclassifiable/Attainment.		
Scott County .....	.....	Unclassifiable/Attainment.		
Shelby County .....	.....	Unclassifiable/Attainment.		
Simpson County .....	.....	Unclassifiable/Attainment.		
Spencer County .....	.....	Unclassifiable/Attainment.		
Taylor County .....	.....	Unclassifiable/Attainment.		
Todd County .....	.....	Unclassifiable/Attainment.		
Trigg County .....	.....	Unclassifiable/Attainment.		
Trimble County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Warren County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Webster County .....	.....	Unclassifiable/Attainment.		

KENTUCKY—OZONE (8-HOUR STANDARD)—Continued

Designation	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Whitley County .....	.....	Unclassifiable/Attainment.		
Wolfe County .....	.....	Unclassifiable/Attainment.		
Woodford County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 20. In § 81.319, the table entitled **§ 81.319 Louisiana.**  
 “Louisiana—Ozone (8-Hour Standard)” \* \* \* \* \*  
 is added to read as follows:

LOUISIANA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Baton Rouge, LA:				
Ascension Parish .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
East Baton Rouge Parish .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Iberville Parish .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Livingston Parish .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
West Baton Rouge Parish .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
Beauregard Parish Area, LA:				
Beauregard Parish .....	.....	Unclassifiable/Attainment.		
Grant Parish Area:				
Grant Parish .....	.....	Unclassifiable/Attainment.		
Lafayette Area:				
Lafayette Parish .....	.....	Unclassifiable/Attainment.		
Lafourche Parish Area:				
Lafourche Parish .....	.....	Unclassifiable/Attainment.		
Lake Charles Area:				
Calcasieu Parish .....	.....	Unclassifiable/Attainment.		
New Orleans Area:				
Jefferson Parish .....	.....	Unclassifiable/Attainment.		
Orleans Parish .....	.....	Unclassifiable/Attainment.		
St. Bernard Parish .....	.....	Unclassifiable/Attainment.		
St. Charles Parish .....	.....	Unclassifiable/Attainment.		
Pointe Coupee Area:				
Pointe Coupee Parish .....	.....	Unclassifiable/Attainment.		
St. James Parish Area:				
St. James Parish .....	.....	Unclassifiable/Attainment.		
St. Mary Parish Area:				
St. Mary Parish .....	.....	Unclassifiable/Attainment.		
AQCR 019 Monroe-El Dorado Interstate .....	.....	Unclassifiable/Attainment.		
Caldwell Parish				
Catahoula Parish				
Concordia Parish				
East Carroll Parish				
Franklin Parish				
La Salle Parish				
Madison Parish				
Morehouse Parish				
Ouachita Parish				
Richland Parish				
Tensas Parish				
Union Parish				
West Carroll Parish				
AQCR 022 Shreveport-Texarkana-Tyler Interstate .....	.....	Unclassifiable/Attainment.		
Bienville Parish				
Bossier Parish				
Caddo Parish				
Claiborne Parish				
De Soto Parish				
Jackson Parish				
Lincoln Parish				
Natchitoches Parish				
Red River Parish				
Sabine Parish				
Webster Parish				

LOUISIANA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Winn Parish				
AQCR 106 S. Louisiana-S.E. Texas Interstate:				
St. John the Baptist Parish .....	.....	Unclassifiable/Attainment.		
AQCR 106 S. Louisiana-S.E. Texas Interstate .....	.....	Unclassifiable/Attainment.		
Acadia Parish				
Allen Parish				
Assumption Parish				
Avoyelles Parish				
Cameron Parish				
East Feliciana Parish				
Evangeline Parish				
Iberia Parish				
Jefferson Davis Parish				
Plaquemines Parish				
Rapides Parish				
St. Helena Parish				
St. Landry Parish				
St. Martin Parish				
St. Tammany Parish				
Tangipahoa Parish				
Terrebonne Parish				
Vermilion Parish				
Vernon Parish				
Washington Parish				
West Feliciana Parish				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 21. In § 81.320, the table entitled **§ 81.320 Maine.** “Maine—Ozone (8-Hour Standard)” is \* \* \* \* \* added to read as follows:

MAINE—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Hancock, Knox, Lincoln and Waldo Cos., ME:				
Hancock County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
(includes only the following cities and towns): Bar Harbor, Blue Hill, Brooklin, Brooksville, Cranberry Isle, Deer Isle, Frenchboro, Gouldsboro, Hancock, Lamoine, Mount Desert, Sedgwick, Sorrento, Southwest Harbor, Stonington, Sullivan, Surry, Swans Island, Tremont, Trenton, and Winter Harbor				
Knox County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
(includes only the following cities and towns): Camden, Criehaven, Cushing, Friendship, Isle au Haut, Matinicus Isle, Muscle Ridge Shoals, North Haven, Owls Head, Rockland, Rockport, St. George, South Thomaston, Thomaston, Vinalhaven, and Warren				
Lincoln County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
(includes only the following cities and towns): Alna, Boothbay, Boothbay Harbor, Breman, Bristol, Damariscotta, Dresden, Edgecomb, Monhegan, Newcastle, Nobleboro, South Bristol, Southport, Waldoboro, Westport, and Wiscasset				
Waldo County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
(includes only the following town): Islesboro				
Portland, ME:				
Androscoggin County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.
(includes only the following town): Durham				
Cumberland County (part) .....	.....	Nonattainment .....	.....	Subpart 2/Marginal.

MAINE—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
(includes only the following cities and towns): Brunswick, Cape Elizabeth, Casco, Cumberland, Falmouth, Freeport, Frye Island, Gorham, Gray, Harpswell, Long Island, New Gloucester, North Yarmouth, Portland, Pownal, Raymond, Scarborough, South Portland, Standish, Westbrook, Windham, and Yarmouth				
Sagadahoc County .....		Nonattainment .....		Subpart 2/Marginal.
(includes all cities & towns)				
York County (part) .....		Nonattainment .....		Subpart 2/Marginal.
(includes only the following cities and towns): Alfred, Arundel, Berwick, Biddeford, Buxton, Dayton, Elliot, Hollis, Kennebunk, Kennebunkport, Kittery, Limington, Lyman, North Berwick, Ogunquit, Old Orchard Beach, Saco, Sanford, South Berwick, Wells, and York				
Rest of State .....		Unclassifiable Attainment.		
Androscoggin County (part) remainder				
Aroostook County				
Cumberland County (part) remainder				
Franklin County				
Hancock County (part) remainder				
Kennebec County				
Knox County (part) remainder				
Lincoln County (part) remainder				
Oxford County				
Penobscot County				
Piscataquis County				
Somerset County				
Waldo County (part) remainder				
Washington County				
York County (part) remainder				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 22. In § 81.321, the table entitled “Maryland—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.321 Maryland.

\* \* \* \* \*

MARYLAND—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Baltimore, MD:				
Anne Arundel County .....		Nonattainment .....		Subpart 2/Moderate.
City of Baltimore .....		Nonattainment .....		Subpart 2/Moderate.
Baltimore County .....		Nonattainment .....		Subpart 2/Moderate.
Carroll County .....		Nonattainment .....		Subpart 2/Moderate.
Harford County .....		Nonattainment .....		Subpart 2/Moderate.
Howard County .....		Nonattainment .....		Subpart 2/Moderate.
Kent and Queen Anne’s Cos., MD:				
Kent County .....		Nonattainment .....		Subpart 2/Moderate.
Queen Anne’s County .....		Nonattainment .....		Subpart 2/Moderate.
Washington Co. (Hagerstown), MD:				
Washington County .....	( <sup>2</sup> )	Nonattainment .....	( <sup>2</sup> )	Subpart 1.
Philadelphia-Wilmin-Atlantic Ci, PA-NJ-MD-DE:				
Cecil County .....		Nonattainment .....		Subpart 2/Moderate.
Washington, DC-MD-VA:				
Calvert County .....		Nonattainment .....		Subpart 2/Moderate.
Charles County .....		Nonattainment .....		Subpart 2/Moderate.
Frederick County .....		Nonattainment .....		Subpart 2/Moderate.
Montgomery County .....		Nonattainment .....		Subpart 2/Moderate.
Prince George’s County .....		Nonattainment .....		Subpart 2/Moderate.
AOCR 113 Cumberland-Keyser Interstate .....		Unclassifiable/Attainment.		
Allegany County.				
Garrett County.				

MARYLAND—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 114 Eastern Shore Interstate (remainder of) .....	.....	Unclassifiable/Attainment.		
Caroline County.				
Dorchester County.				
Somerset County.				
Talbot County.				
Wicomico County.				
Worcester County.				
AQCR 116 Southern Maryland Intrastate (remainder of) ....	.....	Unclassifiable/Attainment.		
St. Mary's County.				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.  
<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

■ 23. In § 81.322, the table entitled **§ 81.322 Massachusetts.**  
 “Massachusetts—Ozone (8-Hour Standard)” is added to read as follows:

MASSACHUSETTS—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Boston-Lawrence-Worcester (E. Mass), MA:				
Barnstable County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Bristol County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Dukes County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Essex County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Middlesex County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Nantucket County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Norfolk County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Plymouth County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Suffolk County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Worcester County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Springfield (W. Mass), MA:				
Berkshire County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Franklin County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Hampden County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Hampshire County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 24. In § 81.323, the table entitled **§ 81.323 Michigan.**  
 “Michigan—Ozone (8-Hour Standard)” is added to read as follows:

MICHIGAN—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Allegan Co., MI:				
Allegan County .....	.....	Nonattainment .....	.....	Subpart 1.
Barry County Area:				
Barry County .....	.....	Unclassifiable/Attainment.		
Benton Harbor, MI:				
Berrien County .....	.....	Nonattainment .....	.....	Subpart 1.
Benzie Co., MI:				
Benzie County .....	.....	Nonattainment .....	.....	Subpart 1.
Branch County Area:				
Branch County .....	.....	Unclassifiable/Attainment.		
Cass County, MI:				
Cass County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Detroit-Ann Arbor, MI:				
Lenawee County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.

## MICHIGAN—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Livingston County .....		Nonattainment .....		Subpart 2/Moderate.
Macomb County .....		Nonattainment .....		Subpart 2/Moderate.
Monroe County .....		Nonattainment .....		Subpart 2/Moderate.
Oakland County .....		Nonattainment .....		Subpart 2/Moderate.
St Clair County .....		Nonattainment .....		Subpart 2/Moderate.
Washtenaw County .....		Nonattainment .....		Subpart 2/Moderate.
Wayne County .....		Nonattainment .....		Subpart 2/Moderate.
Flint, MI:				
Genesee County .....		Nonattainment .....		Subpart 1.
Lapeer County .....		Nonattainment .....		Subpart 1.
Grand Rapids, MI:				
Kent County .....		Nonattainment .....		Subpart 1.
Ottawa County .....		Nonattainment .....		Subpart 1.
Gratiot County Area:				
Gratiot County .....		Unclassifiable/Attainment.		
Hillsdale County Area:				
Hillsdale County .....		Unclassifiable/Attainment.		
Huron Co, MI:				
Huron County .....		Nonattainment .....		Subpart 1.
Ionia County Area:				
Ionia County .....		Unclassifiable/Attainment.		
Jackson Area:				
Jackson County .....		Unclassifiable/Attainment.		
Kalamazoo-Battle Creek, MI:				
Calhoun County .....		Nonattainment .....		Subpart 1.
Kalamazoo County .....		Nonattainment .....		Subpart 1.
Van Buren County .....		Nonattainment .....		Subpart 1.
Lansing-East Lansing, MI:				
Clinton County .....		Nonattainment .....		Subpart 1.
Eaton County .....		Nonattainment .....		Subpart 1.
Ingham County .....		Nonattainment .....		Subpart 1.
Mason Co, MI:				
Mason County .....		Nonattainment .....		Subpart 1.
Montcalm Area:				
Montcalm County .....		Unclassifiable/Attainment.		
Muskegon, MI:				
Muskegon County .....		Nonattainment .....		Subpart 2/Moderate.
Saginaw-Bay City-Midland Area:				
Bay County .....		Unclassifiable/Attainment.		
Midland County .....		Unclassifiable/Attainment.		
Saginaw County .....		Unclassifiable/Attainment.		
Sanilac County Area:				
Sanilac County .....		Unclassifiable/Attainment.		
Shiawassee County Area:				
Shiawassee County .....		Unclassifiable/Attainment.		
St Joseph County Area:				
St Joseph County .....		Unclassifiable/Attainment.		
Tuscola County Area:				
Tuscola County .....		Unclassifiable/Attainment.		
AQCR 122 Central Michigan Intrastate (remainder of) .....		Unclassifiable/Attainment.		
Arenac County				
Clare County				
Gladwin County				
Iosco County				
Isabella County				
Lake County				
Mecosta County				
Newaygo County				
Oceana County				
Ogemaw County				
Osceola County				
Roscommon County				
AQCR 126 Upper Michigan Intrastate (part) .....		Unclassifiable/Attainment.		
Marquette County				
AQCR 126 Upper Michigan Intrastate (remainder of) .....		Unclassifiable/Attainment.		
Alcona County				
Alger County				
Alpena County				
Antrim County				
Baraga County				

MICHIGAN—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Charlevoix County				
Cheboygan County				
Chippewa County				
Crawford County				
Delta County				
Dickinson County				
Emmet County				
Gogebic County				
Grand Traverse County				
Houghton County				
Iron County				
Kalkaska County				
Keweenaw County				
Leelanau County				
Luce County				
Mackinac County				
Manistee County				
Menominee County				
Missaukee County				
Montmorency County				
Ontonagon County				
Oscoda County				
Otsego County				
Presque Isle County				
Schoolcraft County				
Wexford County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 25. In § 81.324, the table entitled **§ 81.324 Minnesota.**  
 “Minnesota—Ozone (8-Hour Standard)” \* \* \* \* \*  
 is added to read as follows:

MINNESOTA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Minneapolis-Saint Paul Area:				
Anoka County .....		Unclassifiable/Attainment.		
Carver County .....		Unclassifiable/Attainment.		
Dakota County .....		Unclassifiable/Attainment.		
Hennepin County .....		Unclassifiable/Attainment.		
Ramsey County .....		Unclassifiable/Attainment.		
Scott County .....		Unclassifiable/Attainment.		
Washington County .....		Unclassifiable/Attainment.		
Rest of State .....		Unclassifiable/Attainment.		
Aitkin County .....		Unclassifiable/Attainment.		
Becker County .....		Unclassifiable/Attainment.		
Beltrami County .....		Unclassifiable/Attainment.		
Benton County .....		Unclassifiable/Attainment.		
Big Stone County .....		Unclassifiable/Attainment.		
Blue Earth County .....		Unclassifiable/Attainment.		
Brown County .....		Unclassifiable/Attainment.		
Carlton County .....		Unclassifiable/Attainment.		
Cass County .....		Unclassifiable/Attainment.		
Chippewa County .....		Unclassifiable/Attainment.		
Chisago County .....		Unclassifiable/Attainment.		
Clay County .....		Unclassifiable/Attainment.		
Clearwater County .....		Unclassifiable/Attainment.		
Cook County .....		Unclassifiable/Attainment.		
Cottonwood County .....		Unclassifiable/Attainment.		
Crow Wing County .....		Unclassifiable/Attainment.		
Dodge County .....		Unclassifiable/Attainment.		
Douglas County .....		Unclassifiable/Attainment.		
Faribault County .....		Unclassifiable/Attainment.		
Fillmore County .....		Unclassifiable/Attainment.		



MINNESOTA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Freeborn County .....	.....	Unclassifiable/Attainment.		
Goodhue County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Houston County .....	.....	Unclassifiable/Attainment.		
Hubbard County .....	.....	Unclassifiable/Attainment.		
Isanti County .....	.....	Unclassifiable/Attainment.		
Itasca County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Kanabec County .....	.....	Unclassifiable/Attainment.		
Kandiyohi County .....	.....	Unclassifiable/Attainment.		
Kittson County .....	.....	Unclassifiable/Attainment.		
Koochiching County .....	.....	Unclassifiable/Attainment.		
Lac qui Parle County .....	.....	Unclassifiable/Attainment.		
Lake County .....	.....	Unclassifiable/Attainment.		
Lake of the Woods County .....	.....	Unclassifiable/Attainment.		
Le Sueur County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Lyon County .....	.....	Unclassifiable/Attainment.		
Mahnomen County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
Martin County .....	.....	Unclassifiable/Attainment.		
McLeod County .....	.....	Unclassifiable/Attainment.		
Meeker County .....	.....	Unclassifiable/Attainment.		
Mille Lacs County .....	.....	Unclassifiable/Attainment.		
Morrison County .....	.....	Unclassifiable/Attainment.		
Mower County .....	.....	Unclassifiable/Attainment.		
Murray County .....	.....	Unclassifiable/Attainment.		
Nicollet County .....	.....	Unclassifiable/Attainment.		
Nobles County .....	.....	Unclassifiable/Attainment.		
Norman County .....	.....	Unclassifiable/Attainment.		
Olmsted County .....	.....	Unclassifiable/Attainment.		
Otter Tail County .....	.....	Unclassifiable/Attainment.		
Pennington County .....	.....	Unclassifiable/Attainment.		
Pine County .....	.....	Unclassifiable/Attainment.		
Pipestone County .....	.....	Unclassifiable/Attainment.		
Polk County .....	.....	Unclassifiable/Attainment.		
Pope County .....	.....	Unclassifiable/Attainment.		
Red Lake County .....	.....	Unclassifiable/Attainment.		
Redwood County .....	.....	Unclassifiable/Attainment.		
Renville County .....	.....	Unclassifiable/Attainment.		
Rice County .....	.....	Unclassifiable/Attainment.		
Rock County .....	.....	Unclassifiable/Attainment.		
Roseau County .....	.....	Unclassifiable/Attainment.		
St. Louis County .....	.....	Unclassifiable/Attainment.		
Sherburne County .....	.....	Unclassifiable/Attainment.		
Sibley County .....	.....	Unclassifiable/Attainment.		
Stearns County .....	.....	Unclassifiable/Attainment.		
Steele County .....	.....	Unclassifiable/Attainment.		
Stevens County .....	.....	Unclassifiable/Attainment.		
Swift County .....	.....	Unclassifiable/Attainment.		
Todd County .....	.....	Unclassifiable/Attainment.		
Traverse County .....	.....	Unclassifiable/Attainment.		
Wabasha County .....	.....	Unclassifiable/Attainment.		
Wadena County .....	.....	Unclassifiable/Attainment.		
Waseca County .....	.....	Unclassifiable/Attainment.		
Watonwan County .....	.....	Unclassifiable/Attainment.		
Wilkin County .....	.....	Unclassifiable/Attainment.		
Winona County .....	.....	Unclassifiable/Attainment.		
Wright County .....	.....	Unclassifiable/Attainment.		
Yellow Medicine County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 26. In § 81.325, the table entitled “Mississippi—Ozone (8-Hour Standard)” is added to read as follows:

**§ 81.325 Mississippi.**

\* \* \* \* \*

MISSISSIPPI—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide .....	.....	Unclassifiable/Attainment.		
Adams County				
Alcorn County				
Amite County				
Attala County				
Benton County				
Bolivar County				
Calhoun County				
Carroll County				
Chickasaw County				
Choctaw County				
Claiborne County				
Clarke County				
Clay County				
Coahoma County				
Copiah County				
Covington County				
DeSoto County				
Forrest County				
Franklin County				
George County				
Greene County				
Grenada County				
Hancock County				
Harrison County				
Hinds County				
Holmes County				
Humphreys County				
Issaquena County				
Itawamba County				
Jackson County				
Jasper County				
Jefferson County				
Jefferson Davis County				
Jones County				
Kemper County				
Lafayette County				
Lamar County				
Lauderdale County				
Lawrence County				
Leake County				
Lee County				
Leflore County				
Lincoln County				
Lowndes County				
Madison County				
Marion County				
Marshall County				
Monroe County				
Montgomery County				
Neshoba County				
Newton County				
Noxubee County				
Oktibbeha County				
Panola County				
Pearl River County				
Perry County				
Pike County				
Pontotoc County				
Prentiss County				
Quitman County				
Rankin County				
Scott County				
Sharkey County				
Simpson County				
Smith County				
Stone County				
Sunflower County				
Tallahatchie County				
Tate County				

MISSISSIPPI—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Tippah County				
Tishomingo County				
Tunica County				
Union County				
Walthall County				
Warren County				
Washington County				
Wayne County				
Webster County				
Wilkinson County				
Winston County				
Yalobusha County				
Yazoo County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 27. In § 81.326, the table entitled **§ 81.326 Missouri.** “Missouri—Ozone (8-Hour Standard)” is \* \* \* \* \* added to read as follows:

MISSOURI—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Kansas City, MO—KS:				
Cass County .....		Unclassifiable <sup>b</sup> .		
Clay County .....		Unclassifiable <sup>b</sup> .		
Jackson County .....		Unclassifiable <sup>b</sup> .		
Platte County .....		Unclassifiable <sup>b</sup> .		
St. Louis, MO—IL:				
Franklin County .....		Nonattainment .....		Subpart 2/Moderate.
Jefferson County .....		Nonattainment .....		Subpart 2/Moderate.
St. Charles County .....		Nonattainment .....		Subpart 2/Moderate.
St. Louis City .....		Nonattainment .....		Subpart 2/Moderate.
St. Louis County .....		Nonattainment .....		Subpart 2/Moderate.
AQCR 094 Metro Kansas City Interstate		Unclassifiable/Attainment.		
Buchanan County				
Ray County				
AQCR 137 N. Missouri Intrastate (part)				
Pike County .....		Unclassifiable/Attainment.		
Ralls County .....		Unclassifiable/Attainment.		
AQCR 137 N. Missouri Intrastate (remainder of) .....		Unclassifiable/Attainment.		
Adair County				
Andrew County				
Atchison County				
Audrain County				
Boone County				
Caldwell County				
Callaway County				
Carroll County				
Chariton County				
Clark County				
Clinton County				
Cole County				
Cooper County				
Davie County				
DeKalb County				
Gentry County				
Grundy County				
Harrison County				
Holt County				
Howard County				
Knox County				
Lewis County				
Lincoln County				
Linn County				
Livingston County				

MISSOURI—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Macon County				
Marion County				
Mercer County				
Moniteau County				
Monroe County				
Montgomery County				
Nodaway County				
Osage County				
Putnam County				
Randolph County				
Saline County				
Schuyler County				
Scotland County				
Shelby County				
Sullivan County				
Warren County				
Worth County				
Rest of State: .....		Unclassifiable/Attainment		
Barry County				
Barton County				
Bates County				
Benton County				
Bollinger County				
Butler County				
Camden County				
Cape Girardeau County				
Carter County				
Cedar County				
Christian County				
Crawford County				
Dade County				
Dallas County				
Dent County				
Douglas County				
Dunklin County				
Gasconade County				
Greene County				
Henry County				
Hickory County				
Howell County				
Iron County				
Jasper County				
Johnson County				
Laclede County				
Lafayette County				
Lawrence County				
Madison County				
Maries County				
McDonald County				
Miller County				
Mississippi County				
Morgan County				
New Madrid County				
Newton County				
Oregon County				
Ozark County				
Pemiscot County				
Perry County				
Pettis County				
Phelps County				
Polk County				
Pulaski County				
Reynolds County				
Ripley County				
St. Clair County				
St. Francois County				
Ste. Genevieve County				
Scott County				
Shannon County				
Stoddard County				

MISSOURI—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Stone County				
Taney County				
Texas County				
Vernon County				
Washington County				
Wayne County				
Webster County				
Wright County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>b</sup> This area is given an "Unclassifiable" designation. EPA will review all available information and make an attainment or nonattainment decision after reviewing the 2004 data.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 28. In § 81.327, the table entitled **§ 81.327 Montana.** "Montana—Ozone(8-Hour Standard)" is \* \* \* \* \* added to read as follows:

MONTANA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide:				
Beaverhead County .....		Unclassifiable/Attainment.		
Big Horn County .....		Unclassifiable/Attainment.		
Blaine County .....		Unclassifiable/Attainment.		
Broadwater County .....		Unclassifiable/Attainment.		
Carbon County .....		Unclassifiable/Attainment.		
Carter County .....		Unclassifiable/Attainment.		
Cascade County .....		Unclassifiable/Attainment.		
Chouteau County .....		Unclassifiable/Attainment.		
Custer County .....		Unclassifiable/Attainment.		
Daniels County .....		Unclassifiable/Attainment.		
Dawson County .....		Unclassifiable/Attainment.		
Deer Lodge County .....		Unclassifiable/Attainment.		
Fallon County .....		Unclassifiable/Attainment.		
Fergus County .....		Unclassifiable/Attainment.		
Flathead County .....		Unclassifiable/Attainment.		
Gallatin County .....		Unclassifiable/Attainment.		
Garfield County .....		Unclassifiable/Attainment.		
Glacier County .....		Unclassifiable/Attainment.		
Golden Valley County .....		Unclassifiable/Attainment.		
Granite County .....		Unclassifiable/Attainment.		
Hill County .....		Unclassifiable/Attainment.		
Jefferson County .....		Unclassifiable/Attainment.		
Judith Basin County .....		Unclassifiable/Attainment.		
Lake County .....		Unclassifiable/Attainment.		
Lewis and Clark County .....		Unclassifiable/Attainment.		
Liberty County .....		Unclassifiable/Attainment.		
Lincoln County .....		Unclassifiable/Attainment.		
Madison County .....		Unclassifiable/Attainment.		
McCone County .....		Unclassifiable/Attainment.		
Meagher County .....		Unclassifiable/Attainment.		
Mineral County .....		Unclassifiable/Attainment.		
Missoula County .....		Unclassifiable/Attainment.		
Musselshell County .....		Unclassifiable/Attainment.		
Park County .....		Unclassifiable/Attainment.		
Petroleum County .....		Unclassifiable/Attainment.		
Phillips County .....		Unclassifiable/Attainment.		
Pondera County .....		Unclassifiable/Attainment.		
Powder River County .....		Unclassifiable/Attainment.		
Powell County .....		Unclassifiable/Attainment.		
Prairie County .....		Unclassifiable/Attainment.		
Ravalli County .....		Unclassifiable/Attainment.		
Richland County .....		Unclassifiable/Attainment.		
Roosevelt County .....		Unclassifiable/Attainment.		
Rosebud County .....		Unclassifiable/Attainment.		
Sanders County .....		Unclassifiable/Attainment.		

MONTANA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Sheridan County .....	.....	Unclassifiable/Attainment.		
Silver Bow County .....	.....	Unclassifiable/Attainment.		
Stillwater County .....	.....	Unclassifiable/Attainment.		
Sweet Grass County .....	.....	Unclassifiable/Attainment.		
Teton County .....	.....	Unclassifiable/Attainment.		
Toole County .....	.....	Unclassifiable/Attainment.		
Treasure County .....	.....	Unclassifiable/Attainment.		
Valley County .....	.....	Unclassifiable/Attainment.		
Wheatland County .....	.....	Unclassifiable/Attainment.		
Wibaux County .....	.....	Unclassifiable/Attainment.		
Yellowstone County .....	.....	Unclassifiable/Attainment.		
Yellowstone Natl Park .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 29. In § 81.328, the table entitled **§ 81.328 Nebraska.**  
 “Nebraska—Ozone (8-Hour Standard)” \* \* \* \* \*  
 is added to read as follows:

NEBRASKA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide: .....	.....	Unclassifiable/Attainment.		
Adams County				
Antelope County				
Arthur County				
Banner County				
Blaine County				
Boone County				
Box Butte County				
Boyd County				
Brown County				
Buffalo County				
Burt County				
Butler County				
Cass County				
Cedar County				
Chase County				
Cherry County				
Cheyenne County				
Clay County				
Colfax County				
Cuming County				
Custer County				
Dakota County				
Dawes County				
Dawson County				
Deuel County				
Dixon County				
Dodge County				
Douglas County				
Dundy County				
Fillmore County				
Franklin County				
Frontier County				
Furnas County				
Gage County				
Garden County				
Garfield County				
Gosper County				
Grant County				
Greeley County				
Hall County				
Hamilton County				
Harlan County				
Hayes County				

NEBRASKA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Hitchcock County				
Holt County				
Hooker County				
Howard County				
Jefferson County				
Johnson County				
Kearney County				
Keith County				
Keya Paha County				
Kimball County				
Knox County				
Lancaster County				
Lincoln County				
Logan County				
Loup County				
Madison County				
McPherson County				
Merrick County				
Morrill County				
Nance County				
Nemaha County				
Nuckolls County				
Otoe County				
Pawnee County				
Perkins County				
Phelps County				
Pierce County				
Platte County				
Polk County				
Red Willow County				
Richardson County				
Rock County				
Saline County				
Sarpy County				
Saunders County				
Scotts Bluff County				
Seward County				
Sheridan County				
Sherman County				
Sioux County				
Stanton County				
Thayer County				
Thomas County				
Thurston County				
Valley County				
Washington County				
Wayne County				
Webster County				
Wheeler County				
York County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 30. In § 81.329, the table entitled “Nevada—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.329 Nevada.

\* \* \* \* \*

NEVADA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Las Vegas, NV:				
Clark County .....	.....	Nonattainment .....	.....	Subpart 1
Rest of State: .....	.....	Unclassifiable/Attainment.		
Carson City				
Churchill County				

NEVADA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Douglas County Elko County Esmeralda County Eureka County Humboldt County Lander County Lincoln County Lyon County Mineral County Nye County Pershing County Storey County Washoe County (Reno Area) White Pine County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 31. In § 81.330, the table entitled “New Hampshire—Ozone (8-Hour Standard)” is added to read as follows:

NEW HAMPSHIRE—OZONE (8-HOUR STANDARD)

Designated area	Designated <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Boston-Manchester-Portsmouth (SE), NH:				
Hillsborough County (part) ..... Amherst Town, Bedford Town, Brookline Town, Goffstown Town, Hollis Town, Hudson Town, Litchfield Town, Manchester City, Merrimack Town, Milford Town, Nashua City, Pelham Town	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Merrimack County (part) ..... Hooksett Town	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Rockingham County (part) ..... Atkinson Town, Auburn Town, Brentwood Town, Candia Town, Chester Town, Danville Town, Derry Town, E. Kingston Town, Epping Town, Exeter Town, Fremont Town, Greenland Town, Hampstead Town, Hampton Town, Hampton Falls Town, Kensington Town, Kingston Town, Londonderry Town, New Castle Town, Newfields Town, Newington Town, Newmarket Town, Newton Town, North Hampton Town, Plaistow Town, Portsmouth City, Raymond Town, Rye Town, Salem Town, Sandown Town, Seabrook Town, South Hampton Town, Stratham Town, Windham Town	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Strafford County (part) ..... Dover City, Durham Town, Rochester City, Rollinsford Town, and Somersworth City	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Rest of State: ..... Belknap County Carroll County Cheshire County Coos County Grafton County Hillsborough County (part) remainder Merrimack County (part) remainder Rockingham County (part) remainder Strafford County (part) remainder Sullivan County	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.



■ 32. In § 81.331, the table entitled “New Jersey—Ozone (8-Hour Standard)” is added to read as follows:

**NEW JERSEY—OZONE (8-HOUR STANDARD)**

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
New York-N. New Jersey-Long Island, NY-NJ-CT:				
Bergen County .....		Nonattainment .....		Subpart 2/Moderate.
Essex County .....		Nonattainment .....		Subpart 2/Moderate.
Hudson County .....		Nonattainment .....		Subpart 2/Moderate.
Hunterdon County .....		Nonattainment .....		Subpart 2/Moderate.
Middlesex County .....		Nonattainment .....		Subpart 2/Moderate.
Monmouth County .....		Nonattainment .....		Subpart 2/Moderate.
Morris County .....		Nonattainment .....		Subpart 2/Moderate.
Passaic County .....		Nonattainment .....		Subpart 2/Moderate.
Somerset County .....		Nonattainment .....		Subpart 2/Moderate.
Sussex County .....		Nonattainment .....		Subpart 2/Moderate.
Union County .....		Nonattainment .....		Subpart 2/Moderate.
Warren County .....		Nonattainment .....		Subpart 2/Moderate.
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE:				
Atlantic County .....		Nonattainment .....		Subpart 2/Moderate.
Burlington County .....		Nonattainment .....		Subpart 2/Moderate.
Camden County .....		Nonattainment .....		Subpart 2/Moderate.
Cape May County .....		Nonattainment .....		Subpart 2/Moderate.
Cumberland County .....		Nonattainment .....		Subpart 2/Moderate.
Gloucester County .....		Nonattainment .....		Subpart 2/Moderate.
Mercer County .....		Nonattainment .....		Subpart 2/Moderate.
Ocean County .....		Nonattainment .....		Subpart 2/Moderate.
Salem County .....		Nonattainment .....		Subpart 2/Moderate.

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 33. In § 81.332, the table entitled “New Mexico—Ozone (8-Hour Standard)” is added to read as follows:

**NEW MEXICO—OZONE (8-HOUR STANDARD)**

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 012 New Mexico-Southern Border Intrastate .....		Unclassifiable/Attainment.		
Grant County				
Hidalgo County				
Luna County				
AQCR 014 Four Corners Interstate (see 40 CFR 81.121) .....		Unclassifiable/Attainment.		
McKinley County (part)				
Río Arriba County (part)				
San Juan County				
Sandoval County (part)				
Valencia County (part)				
AQCR 152 Albuquerque-Mid Rio Grande Intrastate .....		Unclassifiable/Attainment.		
Bernalillo County (part)				
AQCR 152 Albuquerque-Mid Rio Grande .....		Unclassifiable/Attainment.		
Sandoval County (part) see 40 CFR 81.83				
Valencia County (part) see 40 CFR 81.83				
AQCR 153 El Paso-Las Cruces-Alamogordo .....		Unclassifiable/Attainment.		
Doña Ana County (part) (Sunland Park Area) The Area bounded by the New Mexico-Texas State line on the east, the New Mexico-Mexico international line on the south, the Range 3E-Range 2E line on the west, and the N3200 latitude line on the north.				
Doña Ana County (part) remainder .....		Unclassifiable/Attainment.		
Lincoln County .....		Unclassifiable/Attainment.		
Otero County .....		Unclassifiable/Attainment.		
Sierra County .....		Unclassifiable/Attainment.		
AQCR 154 Northeastern Plains Intrastate .....		Unclassifiable/Attainment.		
Colfax County				
Guadalupe County				

NEW MEXICO—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Harding County Mora County San Miguel County Torrance County Union County				
AQCR 155 Pecos-Permian Basin Intrastate .....		Unclassifiable/Attainment.		
Chaves County Curry County De Baca County Eddy County Lea County Quay County Roosevelt County				
AQCR 156 SW Mountains-Augustine Plains .....		Unclassifiable/Attainment.		
Catron County Cibola County McKinley County (part) <i>see</i> 40 CFR 81.241 Socorro County Valencia County (part) <i>see</i> 40 CFR 81.241				
AQCR 157 Upper Rio Grande Valley Intrastate .....		Unclassifiable/Attainment.		
Los Alamos County Río Arriba County (part) <i>see</i> 40 CFR 81.239 Santa Fe County Taos County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 34. In § 81.333, the table entitled “New York—Ozone (8-Hour Standard)” is added to read as follows:

NEW YORK—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Albany-Schenectady-Troy, NY:				
Albany County .....		Nonattainment .....		Subpart 1.
Greene County .....		Nonattainment .....		Subpart 1.
Montgomery County .....		Nonattainment .....		Subpart 1.
Rensselaer County .....		Nonattainment .....		Subpart 1.
Saratoga County .....		Nonattainment .....		Subpart 1.
Schenectady County .....		Nonattainment .....		Subpart 1.
Schoharie County .....		Nonattainment .....		Subpart 1.
Buffalo-Niagara Falls, NY:				
Erie County .....		Nonattainment .....		Subpart 1.
Niagara County .....		Nonattainment .....		Subpart 1.
Essex County (Whiteface Mtn.), NY:				
Essex County (part) The portion of Whiteface Mountain above 1,900 feet in elevation in Essex County.		Nonattainment .....		Subpart 1.
Essex County (remainder) .....		Unclassifiable/Attainment.		
Jamestown, NY:				
Chautauqua County .....		Nonattainment .....		Subpart 1.
Jefferson County, NY:				
Jefferson County .....		Nonattainment .....		Subpart 2/Moderate.
New York-N. New Jersey-Long Island, NY-NJ-CT:				
Bronx County .....		Nonattainment .....		Subpart 2/Moderate.
Kings County .....		Nonattainment .....		Subpart 2/Moderate.
Nassau County .....		Nonattainment .....		Subpart 2/Moderate.
New York County .....		Nonattainment .....		Subpart 2/Moderate.
Queens County .....		Nonattainment .....		Subpart 2/Moderate.
Richmond County .....		Nonattainment .....		Subpart 2/Moderate.
Rockland County .....		Nonattainment .....		Subpart 2/Moderate.
Suffolk County .....		Nonattainment .....		Subpart 2/Moderate.
Westchester County .....		Nonattainment .....		Subpart 2/Moderate.
Poughkeepsie, NY:				
Dutchess County .....		Nonattainment .....		Subpart 2/Moderate.

NEW YORK—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Orange County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Putnam County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Syracuse, NY:				
Cayuga County .....	.....	Unclassifiable <sup>b</sup> .		
Madison County .....	.....	Unclassifiable <sup>b</sup> .		
Onondaga County .....	.....	Unclassifiable <sup>b</sup> .		
Oswego County .....	.....	Unclassifiable <sup>b</sup> .		
Rochester, NY:				
Genesee County .....	.....	Nonattainment .....	.....	Subpart 1.
Livingston County .....	.....	Nonattainment .....	.....	Subpart 1.
Monroe County .....	.....	Nonattainment .....	.....	Subpart 1.
Ontario County .....	.....	Nonattainment .....	.....	Subpart 1.
Orleans County .....	.....	Nonattainment .....	.....	Subpart 1.
Wayne County .....	.....	Nonattainment .....	.....	Subpart 1.
AQCR 158 Central New York Intrastate (remainder of) ....	.....	Unclassifiable/Attainment.		
Cortland County				
Herkimer County				
Lewis County				
Oneida County				
AQCR 159 Champlain Valley Interstate (remainder of) ....	.....	Unclassifiable/Attainment.		
Clinton County				
Franklin County				
Hamilton County				
St. Lawrence County				
Warren County				
Washington County				
AQCR 160 Finger Lake Intrastate .....	.....	Unclassifiable/Attainment.		
Seneca County				
Wyoming County				
Yates County				
AQCR 161 Hudson Valley Intrastate (remainder of) .....	.....	Unclassifiable/Attainment.		
Columbia County.				
Fulton County				
Ulster County				
AQCR 163 Southern Tier East Intrastate .....	.....	Unclassifiable/Attainment.		
Broome County				
Chenango County				
Delaware County				
Otsego County				
Sullivan County				
Tioga County				
AQCR 164 Southern Tier West Intrastate .....	.....	Unclassifiable/Attainment.		
Allegany County				
Cattaraugus County				
Chemung County				
Schuyler County				
Steuben County				
Tompkins County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>b</sup> This area is given an "Unclassifiable" designation. EPA will review all available information and make an attainment or nonattainment decision after reviewing the 2004 data.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 35. In § 81.334, the table entitled **§ 81.334 North Carolina.**  
 "North Carolina—Ozone (8-Hour Standard)" is added to read as follows:

NORTH CAROLINA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Charlotte-Gastonia-Rock Hill, NC-SC .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Cabarrus County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Gaston County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Iredell County (part).				

NORTH CAROLINA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Davidson Township, Coddle Creek Township	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Lincoln County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Mecklenburg County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Rowan County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Union County .....	.....	Nonattainment .....	.....	Subpart 2/Moderate.
Fayetteville, NC: Cumberland County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Greensboro-Winston-Salem-High Point, NC:				
Alamance County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Caswell County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Davidson County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Davie County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Forsyth County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Guilford County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Randolph County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Rockingham County .....	(2)	Nonattainment .....	(2)	Subpart 2/Moderate.
Haywood and Swain Cos. (Great Smoky NP), NC:				
Haywood County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
Swain County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
Hickory-Morganton-Lenoir, NC:				
Alexander County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Burke County (part) .....	(2)	Nonattainment .....	(2)	Subpart 1.
Unifour Metropolitan Planning Organization Boundary				
Caldwell County (part) .....	(2)	Nonattainment .....	(2)	Subpart 1.
Unifour Metropolitan Planning Organization Boundary				
Catawba County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Raleigh-Durham-Chapel Hill, NC:				
Chatham County (part) .....	.....	Nonattainment .....	.....	Subpart 1.
Baldwin Township, Center Township, New Hope Township, Williams Township				
Durham County .....	.....	Nonattainment .....	.....	Subpart 1.
Franklin County .....	.....	Nonattainment .....	.....	Subpart 1.
Granville County .....	.....	Nonattainment .....	.....	Subpart 1.
Johnston County .....	.....	Nonattainment .....	.....	Subpart 1.
Orange County .....	.....	Nonattainment .....	.....	Subpart 1.
Person County .....	.....	Nonattainment .....	.....	Subpart 1.
Wake County .....	.....	Nonattainment .....	.....	Subpart 1.
Rocky Mount, NC:				
Edgecombe County .....	.....	Nonattainment .....	.....	Subpart 1.
Nash County .....	.....	Nonattainment .....	.....	Subpart 1.
Rest of State: .....	.....	Unclassifiable/Attainment.	.....	
Alleghany County				
Anson County				
Ashe County				
Avery County				
Beaufort County				
Bertie County				
Bladen County				
Brunswick County				
Buncombe County				
Burke County (part) remainder				
Caldwell County (part) remainder				
Camden County				
Carteret County				
Chatham County (part) remainder				
Cherokee County				
Chowan County				
Clay County				
Cleveland County				
Columbus County				
Craven County				
Currituck County				
Dare County				
Duplin County				
Gates County				
Graham County				
Greene County				
Halifax County				
Harnett County				

NORTH CAROLINA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Haywood County (part) remainder				
Henderson County				
Hertford County				
Hoke County				
Hyde County				
Iredell County (part) remainder				
Jackson County				
Jones County				
Lee County				
Lenoir County				
Macon County				
Madison County				
Martin County				
McDowell County				
Mitchell County				
Montgomery County				
Moore County				
New Hanover County				
Northampton County				
Onslow County				
Pamlico County				
Pasquotank County				
Pender County				
Perquimans County				
Pitt County				
Polk County				
Richmond County				
Robeson County				
Rutherford County				
Sampson County				
Scotland County				
Stanly County				
Stokes County				
Surry County				
Swain County (part) remainder				
Transylvania County				
Tyrrell County				
Vance County				
Warren County				
Washington County				
Watauga County				
Wayne County				
Wilkes County				
Wilson County				
Yadkin County				
Yancey County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

■ 36. In § 81.335, the table entitled **§ 81.335 North Dakota.**  
 “North Dakota—Ozone(8-Hour Standard)” is added to read as follows:

NORTH DAKOTA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 130 Metropolitan Fargo-Moorhead Interstate:				
Cass County .....	.....	Unclassifiable/Attainment.		
Rest of State, AQCR 172 .....	.....	Unclassifiable/Attainment.		
Adams County				
Barnes County				
Benson County				
Billings County				
Bottineau County				

NORTH DAKOTA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Bowman County				
Burke County				
Burleigh County				
Cavalier County				
Dickey County				
Divide County				
Dunn County				
Eddy County				
Emmons County				
Foster County				
Golden Valley County				
Grand Forks County				
Grant County				
Griggs County				
Hettinger County				
Kidder County				
LaMoure County				
Logan County				
McHenry County				
McIntosh County				
McKenzie County				
McLean County				
Mercer County				
Morton County				
Mountrail County				
Nelson County				
Oliver County				
Pembina County				
Pierce County				
Ramsey County				
Ransom County				
Renville County				
Richland County				
Rolette County				
Sargent County				
Sheridan County				
Sioux County				
Slope County				
Stark County				
Steele County				
Stutsman County				
Towner County				
Traill County				
Walsh County				
Ward County				
Wells County				
Williams County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 37. In § 81.336, the table entitled “Ohio—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.336 Ohio.

\* \* \* \* \*

OHIO—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Canton-Massillon, OH: Stark County .....	.....	Nonattainment .....	.....	Subpart 1.
Cincinnati-Hamilton, OH-KY-IN:				
Butler County .....	.....	Nonattainment .....	.....	Subpart 1.
Clermont County .....	.....	Nonattainment .....	.....	Subpart 1.
Clinton County .....	.....	Nonattainment .....	.....	Subpart 1.
Hamilton County .....	.....	Nonattainment .....	.....	Subpart 1.
Warren County .....	.....	Nonattainment .....	.....	Subpart 1.
Cleveland-Akron-Lorain, OH	.....	Nonattainment .....	.....	Subpart 2/Moderate.

## OHIO—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Ashtabula County				
Cuyahoga County				
Geauga County				
Lake County				
Lorain County				
Medina County				
Portage County				
Summit County				
Columbus, OH:				
Delaware County .....		Nonattainment .....		Subpart 1.
Fairfield County .....		Nonattainment .....		Subpart 1.
Franklin County .....		Nonattainment .....		Subpart 1.
Knox County .....		Nonattainment .....		Subpart 1.
Licking County .....		Nonattainment .....		Subpart 1.
Madison County .....		Nonattainment .....	Subpart 1.	
Dayton-Springfield, OH:				
Clark County .....		Nonattainment .....		Subpart 1.
Greene County .....		Nonattainment .....		Subpart 1.
Miami County .....		Nonattainment .....		Subpart 1.
Montgomery County .....		Nonattainment .....		Subpart 1.
Lima, OH: Allen County .....		Nonattainment .....		Subpart 1.
Parkersburg-Marietta, WV—OH: Washington County.		Nonattainment .....		Subpart 1.
Steubenville-Weirton, OH—WV: Jefferson County.		Nonattainment .....		Subpart 1.
Toledo, OH:				
Lucas County .....		Nonattainment .....		Subpart 1.
Wood County .....		Nonattainment .....		Subpart 1.
Wheeling, WV—OH: Belmont County .....		Nonattainment .....		Subpart 1.
Youngstown-Warren-Sharon, PA—OH:				
Columbiana County .....		Nonattainment .....		Subpart 1.
Mahoning County .....		Nonattainment .....		Subpart 1.
Trumbull County .....		Nonattainment .....		Subpart 1.
Rest of State:				
Adams County .....		Unclassifiable/Attainment.		
Ashland County .....		Unclassifiable/Attainment.		
Athens County.				
Auglaize County .....		Unclassifiable/Attainment.		
Brown County .....		Unclassifiable/Attainment.		
Carroll County .....		Unclassifiable/Attainment.		
Champaign County .....		Unclassifiable/Attainment.		
Coshocton County .....		Unclassifiable/Attainment.		
Crawford County .....		Unclassifiable/Attainment.		
Darke County .....		Unclassifiable/Attainment.		
Defiance County .....		Unclassifiable/Attainment.		
Erie County .....		Unclassifiable/Attainment.		
Fayette County .....		Unclassifiable/Attainment.		
Fulton County .....		Unclassifiable/Attainment.		
Gallia County .....		Unclassifiable/Attainment.		
Guernsey County .....		Unclassifiable/Attainment.		
Hancock County .....		Unclassifiable/Attainment.		
Hardin County .....		Unclassifiable/Attainment.		
Harrison County .....		Unclassifiable/Attainment.		
Henry County .....		Unclassifiable/Attainment.		
Highland County .....		Unclassifiable/Attainment.		
Hocking County .....		Unclassifiable/Attainment.		
Holmes County .....		Unclassifiable/Attainment.		
Huron County .....		Unclassifiable/Attainment.		
Jackson County .....		Unclassifiable/Attainment.		
Lawrence County .....		Unclassifiable/Attainment.		
Logan County .....		Unclassifiable/Attainment.		
Marion County .....		Unclassifiable/Attainment.		
Meigs County .....		Unclassifiable/Attainment.		
Mercer County .....		Unclassifiable/Attainment.		
Monroe County .....		Unclassifiable/Attainment.		
Morgan County .....		Unclassifiable/Attainment.		
Morrow County .....		Unclassifiable/Attainment.		
Muskingum County .....		Unclassifiable/Attainment.		
Noble County .....		Unclassifiable/Attainment.		
Ottawa County .....		Unclassifiable/Attainment.		

OHIO—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Paulding County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Pickaway County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Preble County .....	.....	Unclassifiable/Attainment.		
Putnam County .....	.....	Unclassifiable/Attainment.		
Richland County .....	.....	Unclassifiable/Attainment.		
Ross County .....	.....	Unclassifiable/Attainment.		
Sandusky County .....	.....	Unclassifiable/Attainment.		
Scioto County .....	.....	Unclassifiable/Attainment.		
Seneca County .....	.....	Unclassifiable/Attainment.		
Shelby County .....	.....	Unclassifiable/Attainment.		
Tuscarawas County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Van Wert County .....	.....	Unclassifiable/Attainment.		
Vinton County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Williams County .....	.....	Unclassifiable/Attainment.		
Wyandot County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 38. In § 81.337, the table entitled **§ 81.337 Oklahoma.**  
 “Oklahoma—Ozone (8-Hour Standard)” \* \* \* \* \*  
 is added to read as follows:

OKLAHOMA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 017 Metropolitan Fort Smith Interstate .....	.....	Unclassifiable/Attainment.		
Adair County				
Cherokee County				
Le Flore County				
Sequoyah County				
AQCR 022 Shreveport-Texarkana-Tyler Intrastate:	.....	Unclassifiable/Attainment		
McCurtain County.				
AQCR 184 Central Oklahoma Intrastate (part):				
Cleveland County	.....	Unclassifiable/Attainment.		
Oklahoma County	.....	Unclassifiable/Attainment.		
AQCR 184 Central Oklahoma Intrastate (remainder of) ...	.....	Unclassifiable/Attainment.		
Canadian County				
Grady County				
Kingfisher County				
Lincoln County				
Logan County				
McClain County				
Pottawatomie County				
AQCR 185 North Central Oklahoma Intrastate .....	.....	Unclassifiable/Attainment.		
Garfield County				
Grant County				
Kay County				
Noble County				
Payne County				
AQCR 186 Northeastern Oklahoma Intrastate .....	.....	Unclassifiable/Attainment.		
Craig County				
Creek County				
Delaware County				
Mayes County				
Muskogee County				
Nowata County				
Okmulgee County				
Osage County				
Ottawa County				
Pawnee County				
Rogers County				



OKLAHOMA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 187 Tulsa County Wagoner County Washington County Northwestern Oklahoma Intrastate .....	.....	Unclassifiable/Attainment.		
AQCR 188 Alfalfa County Beaver County Blaine County Cimarron County Custer County Dewey County Ellis County Harper County Major County Roger Mills County Texas County Woods County Woodward County Southeastern Oklahoma Intrastate .....	.....	Unclassifiable/Attainment.		
AQCR 189 Atoka County Bryan County Carter County Choctaw County Coal County Garvin County Haskell County Hughes County Johnston County Latimer County Love County Marshall County McIntosh County Murray County Okfuskee County Pittsburg County Pontotoc County Pushmataha County Seminole County Southwestern Oklahoma Intrastate .....	.....	Unclassifiable/Attainment.		
Beckham County Caddo County Comanche County Cotton County Greer County Harmon County Jackson County Jefferson County Kiowa County Stephens County Tillman County Washita County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 39. In § 81.338, the table entitled “Oregon—Ozone (8-Hour Standard)” is added to read as follows:

OREGON—OZONE (8-HOUR STANDARD)

Designated area	Designation area <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Portland-Vancouver AQMA: (Air Quality Maintenance Area)		Unclassifiable/Attainment..		

OREGON—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation area <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Clackamas County (part) Multnomah County (part) Washington County (part) Salem Area: (Salem Area Transportation Study) Marion County (part) .....		Unclassifiable/Attainment..		
Polk County .....		Unclassifiable/Attainment..		
AQCR 190 Central Oregon Intrastate (remainder of) .....		Unclassifiable/Attainment..		
Crook County Deschutes County Hood River County Jefferson County Klamath County Lake County Sherman County Wasco County				
AQCR 191 Eastern Oregon Intrastate .....		Unclassifiable/Attainment..		
Baker County Gilliam County Grant County Harney County Malheur County Morrow County Umatilla County Union County Wallowa County Wheeler County				
AQCR 192 Northwest Oregon Intrastate .....		Unclassifiable/Attainment..		
Clatsop County Lincoln County Tillamook County				
AQCR 193 Portland Interstate (part) .....		Unclassifiable/Attainment..		
Lane County (part) Eugene Springfield Air Quality Maintenance Area				
AQCR 193 Portland Interstate (remainder of) .....		Unclassifiable/Attainment..		
Benton County Clackamas County (part) remainder Columbia County Lane County (part) remainder Linn County Marion County (part) The area outside the Salem Area Transportation Study Multnomah County (part) remainder Polk County (part) The area outside the Salem Area Transportation Study Washington County (part) remainder Yamhill County				
AQCR 194 Southwest Oregon Intrastate (part) Jackson County (part) Medford-Ashland Air Quality Maintenance Area.		Unclassifiable/Attainment..		
AQCR 194 Southwest Oregon Intrastate (remainder of) .....		Unclassifiable/Attainment..		
Coos County Curry County Douglas County Jackson County (part) remainder Josephine County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 40. In § 81.339, the table entitled “Pennsylvania—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.339 Pennsylvania.

\* \* \* \* \*

PENNSYLVANIA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Allentown-Bethlehem-Easton, PA:				
Carbon County .....		Nonattainment .....		Subpart 1.
Lehigh County .....		Nonattainment .....		Subpart 1.
Northampton County .....		Nonattainment .....		Subpart 1.
Altoona, PA: Blair County .....		Nonattainment .....		Subpart 1.
Clearfield & Indiana Cos., PA:				
Clearfield County .....		Nonattainment .....		Subpart 1.
Indiana County .....		Nonattainment .....		Subpart 1.
Erie, PA: Erie County .....		Nonattainment .....		Subpart 1.
Franklin Co., PA: Franklin County .....		Nonattainment .....		Subpart 1.
Greene Co., PA: Greene County .....		Nonattainment .....		Subpart 1.
Harrisburg-Lebanon-Carlisle, PA:				
Cumberland County .....		Nonattainment .....		Subpart 1.
Dauphin County .....		Nonattainment .....		Subpart 1.
Lebanon County .....		Nonattainment .....		Subpart 1.
Perry County .....		Nonattainment .....		Subpart 1.
Johnstown, PA: Cambria County .....		Nonattainment .....		Subpart 1.
Lancaster, PA: Lancaster County .....		Nonattainment .....		Subpart 2/Moderate.
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE:				
Bucks County .....		Nonattainment .....		Subpart 2/Moderate.
Chester County .....		Nonattainment .....		Subpart 2/Moderate.
Delaware County .....		Nonattainment .....		Subpart 2/Moderate.
Montgomery County .....		Nonattainment .....		Subpart 2/Moderate.
Philadelphia County .....		Nonattainment .....		Subpart 2/Moderate.
Pittsburgh-Beaver Valley, PA:				
Allegheny County .....		Nonattainment .....		Subpart 1.
Armstrong County .....		Nonattainment .....		Subpart 1.
Beaver County .....		Nonattainment .....		Subpart 1.
Butler County .....		Nonattainment .....		Subpart 1.
Fayette County .....		Nonattainment .....		Subpart 1.
Washington County .....		Nonattainment .....		Subpart 1.
Westmoreland County .....		Nonattainment .....		Subpart 1.
Reading, PA: Berks County .....		Nonattainment .....		Subpart 1.
Scranton-Wilkes-Barre, PA:				
Lackawanna County .....		Nonattainment .....		Subpart 1.
Luzerne County .....		Nonattainment .....		Subpart 1.
Monroe County .....		Nonattainment .....		Subpart 1.
Wyoming County .....		Nonattainment .....		Subpart 1.
State College, PA: Centre County .....		Nonattainment .....		Subpart 1.
Tioga Co., PA: Tioga County .....		Nonattainment .....		Subpart 1.
Williamsport, PA: Lycoming County .....		Unclassifiable/Attainment.		
York, PA:				
Adams County .....		Nonattainment .....		Subpart 1.
York County .....		Nonattainment .....		Subpart 1.
Youngstown-Warren-Sharon, PA-OH: Mercer County .....		Nonattainment .....		Subpart 1.
AQCR 151 NE Pennsylvania Intrastate (remainder of):				
Bradford County .....		Unclassifiable/Attainment.		
Sullivan County .....		Unclassifiable/Attainment.		
AQCR 178 NW Pennsylvania Interstate (remainder of):				
Cameron County .....		Unclassifiable/Attainment.		
Clarion County .....		Unclassifiable/Attainment.		
Elk County .....		Unclassifiable/Attainment.		
Forest County .....		Unclassifiable/Attainment.		
Jefferson County .....		Unclassifiable/Attainment.		
McKean County .....		Unclassifiable/Attainment.		
Potter County .....		Unclassifiable/Attainment.		
Venango County .....		Unclassifiable/Attainment.		
AQCR 195 Central Pennsylvania Intrastate (remainder of):				
Bedford County .....		Unclassifiable/Attainment.		
Clinton County .....		Unclassifiable/Attainment.		
Fulton County .....		Unclassifiable/Attainment.		
Huntingdon County .....		Unclassifiable/Attainment.		
Mifflin County .....		Unclassifiable/Attainment.		
Montour County .....		Unclassifiable/Attainment.		
Union County .....		Unclassifiable/Attainment.		

PENNSYLVANIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Rest of State .....		Unclassifiable/Attainment.		
Columbia County .....		Unclassifiable/Attainment.		
Crawford County .....		Unclassifiable/Attainment.		
Juniata County .....		Unclassifiable/Attainment.		
Lawrence County .....		Unclassifiable/Attainment.		
Northumberland County .....		Unclassifiable/Attainment.		
Pike County .....		Unclassifiable/Attainment.		
Schuylkill County .....		Unclassifiable/Attainment.		
Snyder County .....		Unclassifiable/Attainment.		
Somerset County .....		Unclassifiable/Attainment.		
Susquehanna County .....		Unclassifiable/Attainment.		
Warren County .....		Unclassifiable/Attainment.		
Wayne County .....		Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 41. In § 81.340, the table entitled **§ 81.340 Rhode Island.**  
 “Rhode Island—Ozone (8-Hour Standard)” is added to read as follows:

RHODE ISLAND—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Providence (all of RI), RI:				
Bristol County .....		Nonattainment .....		Subpart 2/Moderate.
Kent County .....		Nonattainment .....		Subpart 2/Moderate.
Newport County .....		Nonattainment .....		Subpart 2/Moderate.
Providence County .....		Nonattainment .....		Subpart 2/Moderate.
Washington County .....		Nonattainment .....		Subpart 2/Moderate.

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 42. In § 81.341, the table entitled **§ 81.341 South Carolina.**  
 “South Carolina—Ozone (8-Hour Standard)” is added to read as follows:

SOUTH CAROLINA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Columbia, SC:				
Lexington County (part) .....	(2)	Nonattainment .....	(2)	Subpart 1.
Portion along MPO lines				
Richland County (part) .....	(2)	Nonattainment .....	(2)	Subpart 1.
Portion along MPO lines				
Greenville-Spartanburg-Anderson, SC:				
Anderson County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Greenville County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Spartanburg County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Charlotte-Gastonia-Rock Hill, NC-SC:				
York County (part) .....		Nonattainment .....		Subpart 2/Moderate.
Portion along MPO lines				
Rest of State: .....		Unclassifiable/Attainment.		
Abbeville County				
Aiken County				
Allendale County				
Bamberg County				
Barnwell County				
Beaufort County				
Berkeley County				
Calhoun County				
Charleston County				

SOUTH CAROLINA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Cherokee County				
Chester County				
Chesterfield County				
Clarendon County				
Colleton County				
Darlington County				
Dillon County				
Dorchester County				
Edgefield County				
Fairfield County				
Florence County				
Georgetown County				
Greenwood County				
Hampton County				
Horry County				
Jasper County				
Kershaw County				
Lancaster County				
Laurens County				
Lee County				
Lexington County (part) remainder				
Marion County				
Marlboro County				
McCormick County				
Newberry County				
Oconee County				
Orangeburg County				
Pickens County				
Richland County (part) remainder				
Saluda County				
Sumter County				
Union County				
Williamsburg County				
York County (part) remainder				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

■ 43. In § 81.342, the table entitled **§ 81.342 South Dakota.** “South Dakota—Ozone (8-Hour Standard)” is added to read as follows:

SOUTH DAKOTA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide .....		Unclassifiable/Attainment.		
Aurora County .....		Unclassifiable/Attainment.		
Beadle County .....		Unclassifiable/Attainment.		
Bennett County .....		Unclassifiable/Attainment.		
Bon Homme County .....		Unclassifiable/Attainment.		
Brookings County .....		Unclassifiable/Attainment.		
Brown County .....		Unclassifiable/Attainment.		
Brule County .....		Unclassifiable/Attainment.		
Buffalo County .....		Unclassifiable/Attainment.		
Butte County .....		Unclassifiable/Attainment.		
Campbell County .....		Unclassifiable/Attainment.		
Charles Mix County .....		Unclassifiable/Attainment.		
Clark County .....		Unclassifiable/Attainment.		
Clay County .....		Unclassifiable/Attainment.		
Codington County .....		Unclassifiable/Attainment.		
Corson County .....		Unclassifiable/Attainment.		
Custer County .....		Unclassifiable/Attainment.		
Davison County .....		Unclassifiable/Attainment.		
Day County .....		Unclassifiable/Attainment.		
Deuel County .....		Unclassifiable/Attainment.		

SOUTH DAKOTA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Dewey County .....	.....	Unclassifiable/Attainment.		
Douglas County .....	.....	Unclassifiable/Attainment.		
Edmunds County .....	.....	Unclassifiable/Attainment.		
Fall River County .....	.....	Unclassifiable/Attainment.		
Faulk County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Gregory County .....	.....	Unclassifiable/Attainment.		
Haakon County .....	.....	Unclassifiable/Attainment.		
Hamlin County .....	.....	Unclassifiable/Attainment.		
Hand County .....	.....	Unclassifiable/Attainment.		
Hanson County .....	.....	Unclassifiable/Attainment.		
Harding County .....	.....	Unclassifiable/Attainment.		
Hughes County .....	.....	Unclassifiable/Attainment.		
Hutchinson County .....	.....	Unclassifiable/Attainment.		
Hyde County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jerauld County .....	.....	Unclassifiable/Attainment.		
Jones County .....	.....	Unclassifiable/Attainment.		
Kingsbury County .....	.....	Unclassifiable/Attainment.		
Lake County .....	.....	Unclassifiable/Attainment.		
Lawrence County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Lyman County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
McCook County .....	.....	Unclassifiable/Attainment.		
McPherson County .....	.....	Unclassifiable/Attainment.		
Meade County .....	.....	Unclassifiable/Attainment.		
Mellette County .....	.....	Unclassifiable/Attainment.		
Miner County .....	.....	Unclassifiable/Attainment.		
Minnehaha County .....	.....	Unclassifiable/Attainment.		
Moody County .....	.....	Unclassifiable/Attainment.		
Pennington County .....	.....	Unclassifiable/Attainment.		
Perkins County .....	.....	Unclassifiable/Attainment.		
Potter County .....	.....	Unclassifiable/Attainment.		
Roberts County .....	.....	Unclassifiable/Attainment.		
Sanborn County .....	.....	Unclassifiable/Attainment.		
Shannon County .....	.....	Unclassifiable/Attainment.		
Spink County .....	.....	Unclassifiable/Attainment.		
Stanley County .....	.....	Unclassifiable/Attainment.		
Sully County .....	.....	Unclassifiable/Attainment.		
Todd County .....	.....	Unclassifiable/Attainment.		
Tripp County .....	.....	Unclassifiable/Attainment.		
Turner County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Walworth County .....	.....	Unclassifiable/Attainment.		
Yankton County .....	.....	Unclassifiable/Attainment.		
Ziebach County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 44. In § 81.343, the table entitled **§ 81.343 Tennessee.** “Tennessee—Ozone (8-Hour Standard)” \* \* \* \* \* is added to read as follows:

TENNESSEE—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Chattanooga, TN-GA:				
Hamilton County .....	.....	Nonattainment .....	.....	Subpart 1.
Meigs County .....	.....	Nonattainment .....	.....	Subpart 1.
Clarkesville-Hopkinsville, TN-KY:				
Montgomery County .....	.....	Nonattainment .....	.....	Subpart 1.
Johnson City-Kingsport-Bristol, TN:				
Hawkins County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Sullivan County .....	(2)	Nonattainment .....	(2)	Subpart 1.

## TENNESSEE—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Knoxville, TN:				
Anderson County .....		Nonattainment .....		Subpart 1.
Blount County .....		Nonattainment .....		Subpart 1.
Cocke County (part) .....		Nonattainment .....		Subpart 1.
(Great Smoky Mtn Park)				
Jefferson County .....		Nonattainment .....		Subpart 1.
Knox County .....		Nonattainment .....		Subpart 1.
Loudon County .....		Nonattainment .....		Subpart 1.
Sevier County .....		Nonattainment .....		Subpart 1.
Memphis, TN-AR:				
Shelby County .....		Nonattainment .....		Subpart 2/Moderate.
Nashville, TN:				
Davidson County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Rutherford County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Sumner County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Williamson County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Wilson County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Rest of State .....		Unclassifiable/Attainment.		
Bedford County				
Benton County				
Bledsoe County				
Bradley County				
Campbell County				
Cannon County				
Carroll County				
Carter County				
Cheatham County				
Chester County				
Claiborne County				
Clay County				
Cocke County (part) remainder				
Coffee County				
Crockett County				
Cumberland County				
Decatur County				
DeKalb County				
Dickson County				
Dyer County				
Fayette County				
Fentress County				
Franklin County				
Gibson County				
Giles County				
Grainger County				
Greene County				
Grundy County				
Hamblen County				
Hancock County				
Hardeman County				
Hardin County				
Haywood County				
Henderson County				
Henry County				
Hickman County				
Houston County				
Humphreys County				
Jackson County				
Johnson County				
Lake County				
Lauderdale County				
Lawrence County				
Lewis County				
Lincoln County				
Macon County				
Madison County				
Marion County				
Marshall County				
Maury County				
McMinn County				
McNairy County				

TENNESSEE—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Monroe County				
Moore County				
Morgan County				
Obion County				
Overton County				
Perry County				
Pickett County				
Polk County				
Putnam County				
Rhea County				
Roane County				
Robertson County				
Scott County				
Sequatchie County				
Smith County				
Stewart County				
Tipton County				
Trousdale County				
Unicoi County				
Union County				
Van Buren County				
Warren County				
Washington County				
Wayne County				
Weakley County				
White County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

45. In § 81.344, the table entitled “Texas—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.344 Texas.

\* \* \* \* \*

TEXAS—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Beaumont/Port Arthur, TX:				
Hardin County .....		Nonattainment .....		Subpart 2/Marginal.
Jefferson County .....		Nonattainment .....		Subpart 2/Marginal.
Orange County .....		Nonattainment .....		Subpart 2/Marginal.
Dallas-Fort Worth, TX:				
Collin County .....		Nonattainment .....		Subpart 2/Moderate.
Dallas County .....		Nonattainment .....		Subpart 2/Moderate.
Denton County .....		Nonattainment .....		Subpart 2/Moderate.
Ellis County .....		Nonattainment .....		Subpart 2/Moderate.
Johnson County .....		Nonattainment .....		Subpart 2/Moderate.
Kaufman County .....		Nonattainment .....		Subpart 2/Moderate.
Parker County .....		Nonattainment .....		Subpart 2/Moderate.
Rockwall County .....		Nonattainment .....		Subpart 2/Moderate.
Tarrant County .....		Nonattainment .....		Subpart 2/Moderate.
Houston-Galveston-Brazoria, TX:				
Brazoria County .....		Nonattainment .....		Subpart 2/Moderate.
Chambers County .....		Nonattainment .....		Subpart 2/Moderate.
Fort Bend County .....		Nonattainment .....		Subpart 2/Moderate.
Galveston County .....		Nonattainment .....		Subpart 2/Moderate.
Harris County .....		Nonattainment .....		Subpart 2/Moderate.
Liberty County .....		Nonattainment .....		Subpart 2/Moderate.
Montgomery County .....		Nonattainment .....		Subpart 2/Moderate.
Waller County .....		Nonattainment .....		Subpart 2/Moderate.
San Antonio, TX:				
Bexar County .....	( <sup>2</sup> )	Nonattainment .....	( <sup>2</sup> )	Subpart 1.
Comal County .....	( <sup>2</sup> )	Nonattainment .....	( <sup>2</sup> )	Subpart 1.
Guadalupe County .....	( <sup>2</sup> )	Nonattainment .....	( <sup>2</sup> )	Subpart 1.
Victoria Area:				



## TEXAS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Victoria County .....	.....	Unclassifiable/Attainment.		
AQCR 022 Shreveport-Texarkana-Tyler Interstate .....	.....	Unclassifiable/Attainment.		
Anderson County				
Bowie County				
Camp County				
Cass County				
Cherokee County				
Delta County				
Franklin County				
Gregg County				
Harrison County				
Hopkins County				
Lamar County				
Marion County				
Morris County				
Panola County				
Rains County				
Red River County				
Rusk County				
Smith County				
Titus County				
Upshur County				
Van Zandt County				
Wood County				
AQCR 106 S Louisiana-SE Texas Interstate (remainder of) .....	.....	Unclassifiable/Attainment.		
Angelina County				
Houston County				
Jasper County				
Nacogdoches County				
Newton County				
Polk County				
Sabine County				
San Augustine County				
San Jacinto County				
Shelby County				
Trinity County				
Tyler County				
AQCR 153 El Paso-Las Cruces-Alamogordo Interstate ....	.....	Unclassifiable/Attainment.		
Brewster County				
Culberson County				
El Paso County				
Hudspeth County				
Jeff Davis County				
Presidio County				
AQCR 210 Abilene-Wichita Falls Intrastate .....	.....	Unclassifiable/Attainment.		
Archer County				
Baylor County				
Brown County				
Callahan County				
Clay County				
Coleman County				
Comanche County				
Cottle County				
Eastland County				
Fisher County				
Foard County				
Hardeman County				
Haskell County				
Jack County				
Jones County				
Kent County				
Knox County				
Mitchell County				
Montague County				
Nolan County				
Runnels County				
Scurry County				
Shackelford County				
Stephens County				

TEXAS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Stonewall County				
Taylor County				
Throckmorton County				
Wichita County				
Wilbarger County				
Young County				
AQCR 211 Amarillo-Lubbock Intrastate .....	.....	Unclassifiable/Attainment.		
Armstrong County				
Bailey County				
Briscoe County				
Carson County				
Castro County				
Childress County				
Cochran County				
Collingsworth County				
Crosby County				
Dallam County				
Deaf Smith County				
Dickens County				
Donley County				
Floyd County				
Garza County				
Gray County				
Hale County				
Hall County				
Hansford County				
Hartley County				
Hemphill County				
Hockley County				
Hutchinson County				
King County				
Lamb County				
Lipscomb County				
Lubbock County				
Lynn County				
Moore County				
Motley County				
Ochiltree County				
Oldham County				
Parmer County				
Potter County				
Randall County				
Roberts County				
Sherman County				
Swisher County				
Terry County				
Wheeler County				
Yoakum County				
AQCR 212 Austin-Waco Intrastate .....	.....	Unclassifiable/Attainment.		
Bastrop County				
Bell County				
Blanco County				
Bosque County				
Brazos County				
Burleson County				
Burnet County				
Caldwell County				
Coryell County				
Falls County				
Fayette County				
Freestone County				
Grimes County				
Hamilton County				
Hays County				
Hill County				
Lampasas County				
Lee County				
Leon County				
Limestone County				
Llano County				

## TEXAS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Madison County				
McLennan County				
Milam County				
Mills County				
Robertson County				
San Saba County				
Travis County				
Washington County				
Williamson County				
AQCR 213 Brownsville-Laredo Intrastate .....	.....	Unclassifiable/Attainment.		
Cameron County				
Hidalgo County				
Jim Hogg County				
Starr County				
Webb County				
Willacy County				
Zapata County				
AQCR 214 Corpus Christi-Victoria Intrastate (remainder of).	.....	Unclassifiable/Attainment.		
Aransas County				
Bee County				
Brooks County				
Calhoun County				
DeWitt County				
Duval County				
Goliad County				
Gonzales County				
Jackson County				
Jim Wells County				
Kenedy County				
Kleberg County				
Lavaca County				
Live Oak County				
McMullen County				
Refugio County				
San Patricio County				
AQCR 214 Corpus Christi-Victoria Intrastate (part) .....	.....	Unclassifiable/Attainment.		
Nueces County				
AQCR 215 Metro Dallas-Fort Worth Intrastate (remainder of).	.....	Unclassifiable/Attainment.		
Cooke County				
Erath County				
Fannin County				
Grayson County				
Henderson County				
Hood County				
Hunt County				
Navarro County				
Palo Pinto County				
Somervell County				
Wise County				
AQCR 216 Metro Houston-Galveston Intrastate (remainder of).	.....	Unclassifiable/Attainment.		
Austin County				
Colorado County				
Matagorda County				
Walker County				
Wharton County				
AQCR 217 Metro San Antonio Intrastate (remainder of) ..	.....	Unclassifiable/Attainment.		
Atascosa County				
Bandera County				
Dimmit County				
Edwards County				
Frio County				
Gillespie County				
Karnes County				
Kendall County				
Kerr County				
Kinney County				
La Salle County				

TEXAS—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Maverick County				
Medina County				
Real County				
Uvalde County				
Val Verde County				
Wilson County				
Zavala County				
AQCR 218 Midland-Odessa-San Angelo Intrastate (part) Ector County	.....	Unclassifiable/Attainment.		
AQCR 218 Midland-Odessa-San Angelo Intrastate (re- mainder of).	.....	Unclassifiable/Attainment.		
Andrews County				
Borden County				
Coke County				
Concho County				
Crane County				
Crockett County				
Dawson County				
Gaines County				
Glasscock County				
Howard County				
Irion County				
Kimble County				
Loving County				
Martin County				
Mason County				
McCulloch County				
Menard County				
Midland County				
Pecos County				
Reagan County				
Reeves County				
Schleicher County				
Sterling County				
Sutton County				
Terrell County				
Tom Green County				
Upton County				
Ward County				
Winkler County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

■ 46. In § 81.345, the table entitled “Utah—Ozone (8-Hour Standard)” is added to read as follows:

§ 81.345 Utah.

\* \* \* \* \*

UTAH—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Salt Lake City Area:				
Davis County	.....	Unclassifiable/Attainment.		
Salt Lake County	.....	Unclassifiable/Attainment.		
Rest of State: .....	.....	Unclassifiable/Attainment.		
Beaver County				
Box Elder County				
Cache County				
Carbon County				
Daggett County				
Duchesne County				
Emery County				
Garfield County				
Grand County				
Iron County				

UTAH—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Juab County Kane County Millard County Morgan County Piute County Rich County San Juan County Sanpete County Sevier County Summit County Tooele County Uintah County Utah County Wasatch County Washington County Wayne County Weber County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 47. In § 81.346, the table entitled **§ 81.346 Vermont.**  
 “Vermont—Ozone (8-Hour Standard)” is \* \* \* \* \*  
 added to read as follows:

VERMONT—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
AQCR 159 Champlain Valley Interstate (part) Addison County ..... Chittenden County .....		Unclassifiable/Attainment.		
AQCR 159 Champlain Valley Interstate (remainder of) ... Franklin County Grand Isle County Rutland County		Unclassifiable/Attainment.		
AQCR 221 Vermont Intrastate (part) ..... Windsor County		Unclassifiable/Attainment.		
AQCR 221 Vermont Intrastate (remainder of) ..... Bennington County Caledonia County Essex County Lamoille County Orange County Orleans County Washington County Windham County		Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 48. In § 81.347, the table entitled **§ 81.347 Virginia.**  
 “Virginia—Ozone (8-Hour Standard)” is \* \* \* \* \*  
 added to read as follows:

VIRGINIA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Frederick Co., VA: Frederick County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Winchester City .....	(2)	Nonattainment .....	(2)	Subpart 1.
Fredericksburg, VA: City of Fredericksburg .....		Nonattainment .....		Subpart 2/Moderate.

VIRGINIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Spotsylvania County .....		Nonattainment .....		Subpart 2/Moderate.
Stafford County .....		Nonattainment .....		Subpart 2/Moderate.
Madison & Page Cos. (Shenandoah NP), VA:				
Madison County (part) .....		Nonattainment .....		Subpart 1.
Page County (part) .....		Nonattainment .....		Subpart 1.
Norfolk-Virginia Beach-Newport News (Hampton Roads), VA:				
Chesapeake City .....		Nonattainment .....		Subpart 2/Marginal.
Gloucester County .....		Nonattainment .....		Subpart 2/Marginal.
Hampton City .....		Nonattainment .....		Subpart 2/Marginal.
Isle of Wight County .....		Nonattainment .....		Subpart 2/Marginal.
James City County .....		Nonattainment .....		Subpart 2/Marginal.
Newport News City .....		Nonattainment .....		Subpart 2/Marginal.
Norfolk City .....		Nonattainment .....		Subpart 2/Marginal.
Poquoson City .....		Nonattainment .....		Subpart 2/Marginal.
Portsmouth City .....		Nonattainment .....		Subpart 2/Marginal.
Suffolk City .....		Nonattainment .....		Subpart 2/Marginal.
Virginia Beach City .....		Nonattainment .....		Subpart 2/Marginal.
Williamsburg City .....		Nonattainment .....		Subpart 2/Marginal.
York County .....		Nonattainment .....		Subpart 2/Marginal.
Richmond-Petersburg, VA:				
Charles City County .....		Nonattainment .....		Subpart 2/Moderate.
Chesterfield County .....		Nonattainment .....		Subpart 2/Moderate.
Colonial Heights City .....		Nonattainment .....		Subpart 2/Moderate.
Hanover County .....		Nonattainment .....		Subpart 2/Moderate.
Henrico County .....		Nonattainment .....		Subpart 2/Moderate.
Hopewell City .....		Nonattainment .....		Subpart 2/Moderate.
Petersburg City .....		Nonattainment .....		Subpart 2/Moderate.
Prince George County .....		Nonattainment .....		Subpart 2/Moderate.
Richmond City .....		Nonattainment .....		Subpart 2/Moderate.
Roanoke, VA:				
Botetourt County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Roanoke City .....	(2)	Nonattainment .....	(2)	Subpart 1.
Roanoke County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Salem City .....	(2)	Nonattainment .....	(2)	Subpart 1.
Washington, DC-MD-VA:				
Alexandria City .....		Nonattainment .....		Subpart 2/Moderate.
Arlington County .....		Nonattainment .....		Subpart 2/Moderate.
Fairfax City .....		Nonattainment .....		Subpart 2/Moderate.
Fairfax County .....		Nonattainment .....		Subpart 2/Moderate.
Falls Church City .....		Nonattainment .....		Subpart 2/Moderate.
Loudoun County .....		Nonattainment .....		Subpart 2/Moderate.
Manassas City .....		Nonattainment .....		Subpart 2/Moderate.
Manassas Park City .....		Nonattainment .....		Subpart 2/Moderate.
Prince William County .....		Unattainment .....		Subpart 2/Moderate.
AOCR 207 Eastern Tennessee-SW Virginia Interstate (remainder of).		Unclassifiable/Attainment.		
Bland County				
Bristol City				
Buchanan County				
Carroll County				
Dickenson County				
Galax City				
Grayson County				
Lee County				
Norton City				
Russell County				
Scott County				
Smyth County				
Tazewell County				
Washington County				
Wise County				
Wythe County				
AOCR 222 Central Virginia Intrastate .....		Unclassifiable/Attainment.		
Amelia County				
Amherst County				
Appomattox County				
Bedford City				
Bedford County				
Brunswick County				

## VIRGINIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Buckingham County				
Campbell County				
Charlotte County				
Cumberland County				
Danville City				
Franklin County				
Halifax County				
Henry County				
Lunenburg County				
Lynchburg City				
Martinsville City				
Mecklenburg County				
Nottoway County				
Patrick County				
Pittsylvania County				
Prince Edward County				
AQCR 223 Hampton Roads Intrastate (remainder of) .....	.....	Unclassifiable/Attainment.		
Franklin City				
Southampton County				
AQCR 224 NE Virginia Intrastate (remainder of) .....	.....	Unclassifiable/Attainment.		
Accomack County				
Albemarle County				
Caroline County				
Charlottesville City				
Culpeper County				
Essex County				
Fauquier County				
Fluvanna County				
Greene County				
King and Queen County				
King George County				
King William County				
Lancaster County				
Louisa County				
Madison County (part) remainder				
Mathews County				
Middlesex County				
Nelson County				
Northampton County				
Northumberland County				
Orange County				
Rappahannock County				
Richmond County				
Westmoreland County				
AQCR 225 State Capital Intrastate (remainder of) .....	.....	Unclassifiable/Attainment.		
Dinwiddie County				
Emporia City				
Goochland County				
Greensville County				
New Kent County				
Petersburg City				
Powhatan County				
Surry County				
Sussex County				
AQCR 226 Valley of Virginia Intrastate .....	.....	Unclassifiable/Attainment.		
Alleghany County				
Augusta County				
Bath County				
Buena Vista City				
Clarke County				
Covington City				
Craig County				
Floyd County				
Giles County				
Harrisonburg City				
Highland County				
Lexington City				
Montgomery County				
Page County (part) remainder				
Pulaski County				

VIRGINIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Radford City Rockbridge County Rockingham County Shenandoah County Staunton City Warren County Waynesboro City				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

■ 49. In § 81.348, the table entitled “Washington—Ozone (8-Hour Standard)” is added to read as follows:

**§ 81.348 Washington.**

\* \* \* \* \*

WASHINGTON—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Portland-Vancouver AQMA Area: Clark County (part) ..... Air Quality Maintenance Area	.....	Unclassifiable/Attainment.		
Seattle-Tacoma Area: .....	.....	Unclassifiable/Attainment.		



WASHINGTON—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
The following boundary includes all of Pierce County, and all of King County except a small portion on the north-east corner and the western portion of Snohomish County: Starting at the mouth of the Nisqually river extend northwesterly along the Pierce County line to the southernmost point of the west county line of King County; thence northerly along the county line to the southernmost point of the west county line of Snohomish County; thence northerly along the county line to the intersection with SR 532; thence easterly along the north line of SR 532 to the intersection of I-5, continuing east along the same road now identified as Henning Rd., to the intersection with SR 9 at Bryant; thence continuing easterly on Bryant East Rd. and Rock Creek Rd., also identified as Grandview Rd., approximately 3 miles to the point at which it is crossed by the existing BPA electrical transmission line; thence southeasterly along the BPA transmission line approximately 8 miles to point of the crossing of the south fork of the Stillaguamish River; thence continuing in a southeasterly direction in a meander line following the bed of the River to Jordan Road; southerly along Jordan Road to the north city limits of Granite Falls; thence following the north and east city limits to 92nd St. NE., and Menzel Lake Rd.; thence south-southeasterly along the Menzel Lake Rd., and the Lake Roesiger Rd., a distance of approximately 6 miles to the northernmost point of Lake Roesiger; thence southerly along a meander line following the middle of the Lake and Roesiger Creek to Woods Creek; thence southerly along a meander line following the bed of the Creek approximately 6 miles to the point the Creek is crossed by the existing BPA electrical transmission line; thence easterly along the BPA transmission line approximately 0.2 miles; thence southerly along the BPA Chief Joseph-Covington electrical transmission line approximately 3 miles to the north line of SR 2; thence southeasterly along SR 2 to the intersection with the east county line of King County; thence south along the county line to the northernmost point of the east county line of Pierce County; thence along the county line to the point of beginning at the mouth of the Nisqually River.				
AQCR 062 E Washington-N Idaho Interstate (part) .....	.....	Unclassifiable/Attainment.		
Spokane County .....	.....	Unclassifiable/Attainment.		
AQCR 062 E Washington-N Idaho Interstate (remainder of).	.....	Unclassifiable/Attainment.		
Adams County				
Asotin County				
Columbia County				
Garfield County				
Grant County				
Lincoln County				
Whitman County				
AQCR 193 Portland Interstate (remainder of) .....	.....	Unclassifiable/Attainment.		
Clark County (part) remainder				
Cowlitz County				
Lewis County				
Skamania County				
Wahkiakum County				
AQCR 227 Northern Washington Intrastate .....	.....	Unclassifiable/Attainment.		
Chelan County				
Douglas County				
Ferry County				
Okanogan County				
Pend Oreille County				
Stevens County				
AQCR 228 Olympic-Northwest Washington Intrastate .....	.....	Unclassifiable/Attainment.		

WASHINGTON—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Clallam County				
Grays Harbor County				
Island County				
Jefferson County				
Mason County				
Pacific County				
San Juan County				
Skagit County				
Thurston County				
Whatcom County				
AQCR 229 Puget Sound Intrastate (remainder of) .....	.....	Unclassifiable/Attainment.		
King County (part) remainder				
Kitsap County				
Snohomish County (part) remainder				
AQCR 230 South Central Washington Intrastate .....	.....	Unclassifiable/Attainment.		
Benton County				
Franklin County				
Kittitas County				
Klickitat County				
Walla Walla County				
Yakima County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 50. In § 81.349, the table entitled “West Virginia—Ozone (8-Hour Standard)” is added to read as follows:

WEST VIRGINIA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Berkeley & Jefferson Cos, WV:				
Berkeley County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Jefferson County .....	(2)	Nonattainment .....	(2)	Subpart 1.
Charleston, WV:				
Kanawha County .....		Nonattainment .....		Subpart 1.
Putnam County .....		Nonattainment .....		Subpart 1.
Huntington-Ashland, WV-KY:				
Cabell County .....		Nonattainment .....		Subpart 1.
Wayne County .....		Nonattainment .....		Subpart 1.
Parkersburg-Marietta, WV-OH:				
Wood County .....		Nonattainment .....		Subpart 1.
Wheeling, WV-OH:				
Marshall County .....		Nonattainment .....		Subpart 1.
Ohio County .....		Nonattainment .....		Subpart 1.
Steubenville-Weirton, OH-WV:				
Brooke County .....		Nonattainment .....		Subpart 1.
Hancock County .....		Nonattainment .....		Subpart 1.
Rest of State .....		Unclassifiable/Attainment.		
Barbour County				
Boone County				
Braxton County				
Calhoun County				
Clay County				
Doddridge County				
Fayette County				
Gilmer County				
Grant County				
Greenbrier County				
Hampshire County				
Hardy County				
Harrison County				
Jackson County				
Lewis County				
Lincoln County				

WEST VIRGINIA—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Logan County				
Marion County				
Mason County				
McDowell County				
Mercer County				
Mineral County				
Mingo County				
Monongalia County				
Monroe County				
Morgan County				
Nicholas County				
Pendleton County				
Pleasants County				
Pocahontas County				
Preston County				
Raleigh County				
Randolph County				
Ritchie County				
Roane County				
Summers County				
Taylor County				
Tucker County				
Tyler County				
Upshur County				
Webster County				
Wetzel County				
Wirt County				
Wyoming County				

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>2</sup> Early Action Compact Area, effective date deferred until September 30, 2005.

■ 51. In § 81.350, the table entitled **§ 81.350 Wisconsin.** “Wisconsin—Ozone (8-Hour Standard)” \* \* \* \* \* is added to read as follows:

WISCONSIN—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Door County, WI:				
Door County .....		Nonattainment .....		Subpart 1.
Kewaunee County, WI:				
Kewaunee County .....		Nonattainment .....		Subpart 1.
Manitowoc County, WI:				
Manitowoc County .....		Nonattainment .....		Subpart 1.
Milwaukee-Racine, WI:				
Kenosha County .....		Nonattainment .....		Subpart 2/Moderate.
Milwaukee County .....		Nonattainment .....		Subpart 2/Moderate.
Ozaukee County .....		Nonattainment .....		Subpart 2/Moderate.
Racine County .....		Nonattainment .....		Subpart 2/Moderate.
Washington County .....		Nonattainment .....		Subpart 2/Moderate.
Waukesha County .....		Nonattainment .....		Subpart 2/Moderate.
Sheboygan, WI:				
Sheboygan County .....		Nonattainment .....		Subpart 2/Moderate.
Rest of State:				
Adams County .....		Unclassifiable/Attainment.		
Ashland County .....		Unclassifiable/Attainment.		
Barron County .....		Unclassifiable/Attainment.		
Bayfield County .....		Unclassifiable/Attainment.		
Brown County .....		Unclassifiable/Attainment.		
Buffalo County .....		Unclassifiable/Attainment.		
Burnett County .....		Unclassifiable/Attainment.		
Calumet County .....		Unclassifiable/Attainment.		
Chippewa County .....		Unclassifiable/Attainment.		
Clark County .....		Unclassifiable/Attainment.		

WISCONSIN—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Columbia County .....	.....	Unclassifiable/Attainment.		
Crawford County .....	.....	Unclassifiable/Attainment.		
Dane County .....	.....	Unclassifiable/Attainment.		
Dodge County .....	.....	Unclassifiable/Attainment.		
Douglas County .....	.....	Unclassifiable/Attainment.		
Dunn County .....	.....	Unclassifiable/Attainment.		
Eau Claire County .....	.....	Unclassifiable/Attainment.		
Florence County .....	.....	Unclassifiable/Attainment.		
Fond du Lac County .....	.....	Unclassifiable/Attainment.		
Forest County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Green County .....	.....	Unclassifiable/Attainment.		
Green Lake County .....	.....	Unclassifiable/Attainment.		
Iowa County .....	.....	Unclassifiable/Attainment.		
Iron County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Juneau County .....	.....	Unclassifiable/Attainment.		
La Crosse County .....	.....	Unclassifiable/Attainment.		
Lafayette County .....	.....	Unclassifiable/Attainment.		
Langlade County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Marathon County .....	.....	Unclassifiable/Attainment.		
Marinette County .....	.....	Unclassifiable/Attainment.		
Marquette County .....	.....	Unclassifiable/Attainment.		
Menominee County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Oconto County .....	.....	Unclassifiable/Attainment.		
Oneida County .....	.....	Unclassifiable/Attainment.		
Outagamie County .....	.....	Unclassifiable/Attainment.		
Pepin County .....	.....	Unclassifiable/Attainment.		
Pierce County .....	.....	Unclassifiable/Attainment.		
Polk County .....	.....	Unclassifiable/Attainment.		
Portage County .....	.....	Unclassifiable/Attainment.		
Price County .....	.....	Unclassifiable/Attainment.		
Richland County .....	.....	Unclassifiable/Attainment.		
Rock County .....	.....	Unclassifiable/Attainment.		
Rusk County .....	.....	Unclassifiable/Attainment.		
St. Croix County .....	.....	Unclassifiable/Attainment.		
Sauk County .....	.....	Unclassifiable/Attainment.		
Sawyer County .....	.....	Unclassifiable/Attainment.		
Shawano County .....	.....	Unclassifiable/Attainment.		
Taylor County .....	.....	Unclassifiable/Attainment.		
Trempealeau County .....	.....	Unclassifiable/Attainment.		
Vernon County .....	.....	Unclassifiable/Attainment.		
Vilas County .....	.....	Unclassifiable/Attainment.		
Walworth County .....	.....	Unclassifiable/Attainment.		
Washburn County .....	.....	Unclassifiable/Attainment.		
Waupaca County .....	.....	Unclassifiable/Attainment.		
Waushara County .....	.....	Unclassifiable/Attainment.		
Winnebago County .....	.....	Unclassifiable/Attainment.		
Wood County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 52. In § 81.351, the table entitled “Wyoming—Ozone (8-Hour Standard)” is added to read as follows:

**§ 81.351 Wyoming.**  
\* \* \* \* \*

WYOMING—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide .....	.....	Unclassifiable/Attainment.		
Albany County .....	.....	Unclassifiable/Attainment.		
Big Horn County .....	.....	Unclassifiable/Attainment.		

WYOMING—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Campbell County .....	.....	Unclassifiable/Attainment.		
Carbon County .....	.....	Unclassifiable/Attainment.		
Converse County .....	.....	Unclassifiable/Attainment.		
Crook County .....	.....	Unclassifiable/Attainment.		
Fremont County .....	.....	Unclassifiable/Attainment.		
Goshen County .....	.....	Unclassifiable/Attainment.		
Hot Springs County .....	.....	Unclassifiable/Attainment.		
Johnson County .....	.....	Unclassifiable/Attainment.		
Laramie County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Natrona County .....	.....	Unclassifiable/Attainment.		
Niobrara County .....	.....	Unclassifiable/Attainment.		
Park County .....	.....	Unclassifiable/Attainment.		
Platte County .....	.....	Unclassifiable/Attainment.		
Sheridan County .....	.....	Unclassifiable/Attainment.		
Sublette County .....	.....	Unclassifiable/Attainment.		
Sweetwater County .....	.....	Unclassifiable/Attainment.		
Teton County .....	.....	Unclassifiable/Attainment.		
Uinta County .....	.....	Unclassifiable/Attainment.		
Washakie County .....	.....	Unclassifiable/Attainment.		
Weston County .....	.....	Unclassifiable/Attainment.		

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.  
<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 53. In § 81.352, the table entitled **§ 81.352 American Samoa.**  
 “American Samoa—Ozone (8-Hour Standard)” is added to read as follows:

AMERICAN SAMOA—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide: .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 54. In § 81.353, the table entitled **§ 81.353 Guam.**  
 “Guam—Ozone (8-Hour Standard)” is added to read as follows:

GUAM—OZONE (8-HOUR STANDARD)

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide: .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 55. In § 81.354, the table entitled **§ 81.354 Northern Mariana Islands.**  
 “Northern Mariana Islands—Ozone (8-Hour Standard)” is added to read as follows:

NORTHERN MARIANA ISLANDS—OZONE (8-HOUR STANDARD)

Designated area	Designation		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Whole State .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 56. In § 81.355, the table entitled **§ 81.355 Puerto Rico.**  
 “Puerto Rico—Ozone (8-Hour Standard)” is added to read as follows:  
 \* \* \* \* \*

PUERTO RICO—OZONE (8-HOUR STANDARD)

Designated area	Designation		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide .....	.....	Unclassifiable/Attainment.		
Adjuntas Municipio				
Aguada Municipio				
Aguadilla Municipio				
Aguas Buenas Municipio				
Aibonito Municipio				
Añasco Municipio				
Arecibo Municipio				
Arroyo Municipio				
Barceloneta Municipio				
Barranquitas Municipio				
Bayamón County				
Cabo Rojo Municipio				
Caguas Municipio				
Camuy Municipio				
Canóvanas Municipio				
Carolina Municipio				
Cataño County				
Cayey Municipio				
Ceiba Municipio				
Ciales Municipio				
Cidra Municipio				
Coamo Municipio				
Comerio Municipio				
Corozal Municipio				
Culebra Municipio				
Dorado Municipio				
Fajardo Municipio				
Florida Municipio				
Guánica Municipio				
Guayama Municipio				
Guayanilla Municipio				
Guaynabo County				
Gurabo Municipio				
Hatillo Municipio				
Hormigueros Municipio				
Humacao Municipio				
Isabela Municipio				
Jayuya Municipio				
Juana Díaz Municipio				
Juncos Municipio				
Lajas Municipio				
Lares Municipio				
Las Mariás Municipio				
Las Piedras Municipio				
Loíza Municipio				
Luquillo Municipio				
Manatí Municipio				
Maricao Municipio				
Maunabo Municipio				
Mayagüez Municipio				
Moca Municipio				
Morovis Municipio				
Naguabo Municipio				
Naranjito Municipio				
Orocovis Municipio				
Patillas Municipio				
Peñuelas Municipio				
Ponce Municipio				
Quebradillas Municipio				
Rincón Municipio				
Río Grande Municipio				
Sabana Grande Municipio				
Salinas Municipio				
San Germán Municipio				
San Juan Municipio				

PUERTO RICO—OZONE (8-HOUR STANDARD)—Continued

Designated area	Designation		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
San Lorenzo Municipio San Sebastián Municipio Santa Isabel Municipio Toa Alta Municipio Toa Baja County Trujillo Alto Municipio Utua Municipio Vega Alta Municipio Vega Baja Municipio Vieques Municipio Villalba Municipio Yabucoa Municipio Yauco Municipio				

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

■ 57. In § 81.356, the table entitled “Virgin Islands—Ozone (8-Hour Standard)” is added to read as follows:

**§ 81.356 Virgin Islands.**

\* \* \* \* \*

VIRGIN ISLANDS—OZONE (8-HOUR STANDARD)

Designated area	Designation		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide ..... St. Croix St. John St. Thomas	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

[FR Doc. 04-9152 Filed 4-29-04; 8:45 am]  
BILLING CODE 6560-50-P

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 50, 51 and 81**

[OAR 2003-0079, FRL-7651-7]

RIN 2060-AJ99

**Final Rule To Implement the 8-Hour Ozone National Ambient Air Quality Standard—Phase 1**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** In this document, EPA is taking final action on key elements of the program to implement the 8-hour ozone national ambient air quality standard (NAAQS or standard). This final rule addresses the following topics: classifications for the 8-hour NAAQS; revocation of the 1-hour NAAQS (*i.e.*, when the 1-hour NAAQS will no longer apply); how anti-backsliding principles will ensure continued progress toward attainment of the 8-hour ozone NAAQS; attainment dates; and the timing of

emissions reductions needed for attainment. We are issuing this rule so that States and Tribes will know how we plan to classify areas and transition from implementation of the 1-hour NAAQS to implementation of the 8-hour NAAQS. The intended effect of the rule is to provide certainty to States and Tribes regarding classifications for the 8-hour NAAQS and their continued obligations with respect to existing requirements. This document is Phase 1 of the program to implement the 8-hour ozone NAAQS. We plan to issue a second rule, Phase 2, within the next several months which will address the remaining 8-hour implementation issues, *e.g.*, requirements for reasonable further progress (RFP), requirements for modeling and attainment demonstrations, and requirements for reasonably available control measures (RACM) and reasonably available control technology (RACT).

**DATES:** Effective Date: This rule is effective on June 15, 2004.

**ADDRESSES:** The EPA has established a docket for this action under Docket ID No. OAR-2003-0079. All documents in the docket are listed in the EDOCKET index at <http://www.epa.gov/edocket>.

Although listed in the index, some information is not publicly available, *i.e.*, Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in EDOCKET or in hard copy at the EPA Docket Center (Air Docket), EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Office of Air and Radiation Docket and Information Center is (202) 566-1742.

In addition, we have placed a variety of earlier materials regarding implementation of the 8-hour ozone NAAQS on the Web site: <http://www.epa.gov/ttn/naaqs/ozone/o3imp8hr>.

**FOR FURTHER INFORMATION CONTACT:** Mr. John Silvasi, Office of Air Quality



# FEDERAL REGISTER

---

Vol. 77

Monday,

No. 98

May 21, 2012

---

Part III

## Environmental Protection Agency

---

40 CFR Parts 50, 51 and 81

Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards; Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes; Final Rules



**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 81**

[EPA-HQ-OAR-2008-0476; FRL-9668-2]

RIN 2060-AP37

**Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** This rule establishes initial air quality designations for most areas in the United States, including areas of Indian country, for the 2008 primary and secondary national ambient air quality standards (NAAQS) for ozone. The designations for several counties in Illinois, Indiana, and Wisconsin that the EPA is considering for inclusion in the Chicago nonattainment area will be designated in a subsequent action, no later than May 31, 2012. Areas designated as nonattainment are also being classified by operation of law according to the severity of their air quality problems. The classification categories are Marginal, Moderate, Serious, Severe, and Extreme. The EPA is establishing the air quality thresholds that define the classifications in a separate rule that the EPA is signing and publishing in the **Federal Register** on

the same schedule as these designations. In accordance with that separate rule, six nonattainment areas in California are being reclassified to a higher classification.

**DATES:** The effective date of this rule is July 20, 2012.

**ADDRESSES:** The EPA has established a docket for this action under Docket ID NO. EPA-HQ-OAR-2008-0476. All documents in the docket are listed in the index at <http://www.regulations.gov>. Although listed in the index, some information is not publicly available, i.e., Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in the docket or in hard copy at the Docket, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave. NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Office of Air and Radiation Docket and Information Center is (202) 566-1742.

In addition, the EPA has established a Web site for this rulemaking at: <http://www.epa.gov/ozonedesignations>.

The Web site includes the EPA's final state and tribal designations, as well as state initial recommendation letters, the EPA modification letters, technical support documents, responses to comments and other related technical information.

**FOR FURTHER INFORMATION CONTACT:** Carla Oldham, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail Code C539-04, Research Triangle Park, NC 27711, phone number (919) 541-3347 or by email at: [oldham.carla@epa.gov](mailto:oldham.carla@epa.gov).

**Regional Office Contacts**

- Region I—Richard Burkhart (617) 918-1664
- Region II—Bob Kelly (212) 637-3709
- Region III—Maria Pino (215) 814-2181
- Region IV—Jane Spann (404) 562-9029
- Region V—Edward Doty (312) 886-6057
- Region VI—Guy Donaldson (214) 665-7242
- Region VII—Lachala Kemp (913) 551-7214
- Region VIII—Scott Jackson (303) 312-6107
- Region IX—John J. Kelly (415) 947-4151
- Region X—Claudia Vaupel (206) 553-6121

**SUPPLEMENTARY INFORMATION:** The public may inspect the rule and state-specific technical support information at the following locations:

Regional offices	States
Dave Conroy, Chief, Air Programs Branch, EPA New England, 1 Congress Street, Suite 1100, Boston, MA 02114-2023, (617) 918-1661. Raymond Werner, Chief, Air Programs Branch, EPA Region 2, 290 Broadway, 25th Floor, New York, NY 10007-1866, (212) 637-3706. Cristina Fernandez, Branch Chief, Air Quality Planning Branch, EPA Region 3, 1650 Arch Street, Philadelphia, PA 19103-2187, (215) 814-2178. R. Scott Davis, Branch Chief, Air Planning Branch, EPA Region 4, Sam Nunn Atlanta Federal Center, 61 Forsyth, Street SW., 12th Floor, Atlanta, GA 30303, (404) 562-9127. John Mooney, Chief, Air Programs Branch, EPA Region 5, 77 West Jackson Street, Chicago, IL 60604, (312) 886-6043. Guy Donaldson, Chief, Air Planning Section, EPA Region 6, 1445 Ross Avenue, Dallas, TX 75202, (214) 665-7242. Joshua A. Tapp, Chief, Air Programs Branch, EPA Region 7, 901 North 5th Street, Kansas City, Kansas 66101-2907, (913) 551-7606. Monica Morales, Leader, Air Quality Planning Unit, EPA Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129, (303) 312-6936. Lisa Hanf, Air Planning Office, EPA Region 9, 75 Hawthorne Street, San Francisco, CA 94105, (415) 972-3854. Debra Suzuki, Manager, State and Tribal Air Programs, EPA Region 10, Office of Air, Waste, and Toxics, Mail Code OAQ-107, 1200 Sixth Avenue, Seattle, WA 98101, (206) 553-0985.	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. New Jersey, New York, Puerto Rico, and Virgin Islands. Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia. Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. Iowa, Kansas, Missouri, and Nebraska. Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. American Samoa, Arizona, California, Guam, Hawaii, Nevada, and Northern Mariana Islands. Alaska, Idaho, Oregon, and Washington.

**Table of Contents**

The following is an outline of the preamble.

- I. Preamble Glossary of Terms and Acronyms
- II. What is the purpose of this action?

- III. What is ozone and how is it formed?
- IV. What are the 2008 ozone NAAQS and the health and welfare concerns they address?
- V. What are the CAA requirements for air quality designations?

- VI. What is the chronology for this designations rule and what guidance did the EPA provide?
- VII. What air quality data has the EPA used to designate areas for the 2008 ozone NAAQS?

- VIII. What are the ozone air quality classifications?
- IX. What is the reclassification of six California nonattainment areas?
- X. Can states request that areas within 5 percent of the upper or lower limit of a classification threshold be reclassified?
- XI. How do designations affect Indian country?
- XII. Where can I find information forming the basis for this rule and exchanges between EPA, states, and tribes related to this rule?
- XIII. Statutory and Executive Order Reviews
- A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulations and Regulatory Review
- B. Paperwork Reduction Act
- C. Regulatory Flexibility Act
- D. Unfunded Mandates Reform Act
- E. Executive Order 13132: Federalism
- F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments
- G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks
- H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use
- I. National Technology Transfer and Advancement Act (NTTAA)
- J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations
- K. Congressional Review Act
- L. Judicial Review

## I. Preamble Glossary of Terms and Acronyms

The following are abbreviations of terms used in the preamble.

- APA Administrative Procedure Act
- CAA Clean Air Act
- CFR Code of Federal Regulations
- DC District of Columbia
- EPA Environmental Protection Agency
- FR **Federal Register**
- NAAQS National Ambient Air Quality Standards
- NO<sub>x</sub> Nitrogen Oxides
- NTTAA National Technology Transfer and Advancement Act
- PPM Parts per million
- RFA Regulatory Flexibility Act
- UMRA Unfunded Mandate Reform Act of 1995
- TAR Tribal Authority Rule
- U.S. United States
- U.S.C. United States Code
- VCS Voluntary Consensus Standards
- VOC Volatile Organic Compounds

## II. What is the purpose of this action?

The purpose of this action is to announce and promulgate initial area designations for most areas of the country with respect to the 2008 primary and secondary NAAQS for ozone, in accordance with the requirements of Clean Air Act (CAA) section 107(d). The EPA is designating areas as either nonattainment,

unclassifiable, or unclassifiable/attainment. In addition, the nonattainment areas are classified by operation of law according to the severity of their ozone air quality problems and six areas in California are being reclassified immediately to a higher classification. The classification categories are Marginal, Moderate, Serious, Severe, and Extreme. The EPA is establishing the air quality thresholds that define the classifications in a separate rule titled, "Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes" (Classifications Rule). In that separate rule, the EPA also codified the immediate reclassification of six areas in California. (See 40 CFR 51.1103(d).) The list of all areas being designated in each state and in areas of Indian country appear in the tables at the end of this final rule (amendments to 40 CFR 81.301–356). For areas designated as nonattainment, the tables include the area's classification by operation of law or the area's reclassification in accordance with 40 CFR 51.1103(d).

In this action, the EPA is designating 45 areas as nonattainment. Seven of the areas are multi-state areas. The EPA is designating one area, Uinta Basin, WY, as unclassifiable because there is existing non-regulatory monitoring in the area that detected levels of ozone that exceed the NAAQS. Regulatory monitoring has been conducted in that area since April 2011, and thus there are not yet three consecutive years of certified ozone monitoring data available that can be used to determine the area's attainment status. Consistent with previous initial area designations for ozone, the EPA is designating all the remaining state areas and Indian country as unclassifiable/attainment.

Consistent with the EPA's "Policy for Establishing Separate Air Quality Designations for Areas of Indian Country" (December 20, 2011), the EPA is designating four areas of Indian country separately from their adjacent/surrounding state areas.<sup>1</sup> The lands of the Pechanga Tribe and the Morongo Tribe in Southern California are being designated as separate nonattainment areas, while two additional areas in Indian country are being designated as separate unclassifiable/attainment areas.

The EPA is basing the designations on the most recent certified ozone air

quality monitoring data and an evaluation of factors to assess contributions to nonattainment in nearby areas. State areas designated as nonattainment are subject to planning and emission reduction requirements as specified in the CAA. Requirements vary according to an area's classification. The EPA will be proposing shortly an implementation rule to assist states in the development of state implementation plans for attaining the ozone standards.

## III. What is ozone and how is it formed?

Ground-level ozone, O<sub>3</sub>, is a gas that is formed by the reaction of volatile organic compounds (VOCs) and oxides of nitrogen (NO<sub>x</sub>) in the atmosphere in the presence of sunlight. These precursor emissions are emitted by many types of pollution sources, including power plants and industrial emissions sources, on-road and off-road motor vehicles and engines, and smaller sources, collectively referred to as area sources. Ozone is predominately a summertime air pollutant. However, high ozone concentrations have also been observed in cold months, where a few high elevation areas in the Western U.S. have experienced high levels of local VOC and NO<sub>x</sub> emissions that have formed ozone when snow is on the ground and temperatures are near or below freezing. Ozone and ozone precursors can be transported to an area from sources in nearby areas or from sources located hundreds of miles away. For purposes of determining ozone nonattainment area boundaries, the CAA requires the EPA to include areas that contribute to nearby violations of the NAAQS.

## IV. What are the 2008 ozone NAAQS and the health and welfare concerns they address?

On March 12, 2008, the EPA revised both the primary and secondary NAAQS for ozone to a level of 0.075 parts per million (ppm) (annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years) to provide increased protection of public health and the environment.<sup>2</sup> The 2008 ozone NAAQS retains the same general form and averaging time as the 0.08 ppm NAAQS set in 1997, but is set at a more protective level.

Ozone exposure also has been associated with increased susceptibility to respiratory infections, medication use by asthmatics, doctor visits, and emergency department visits and

<sup>1</sup> For more information, visit <http://www.epa.gov/ttncaaa1/t1/memoranda/20120117indiancountry.pdf>.

<sup>2</sup> See 73 FR 16436; March 27, 2008. For a detailed explanation of the calculation of the 3-year 8-hour average, see 40 CFR part 50, Appendix I.

hospital admissions for individuals with respiratory disease. Ozone exposure may also contribute to premature death, especially in people with heart and lung disease. The secondary ozone standard was revised to protect against adverse welfare effects including impacts to sensitive vegetation and forested ecosystems.

#### V. What are the CAA requirements for air quality designations?

When the EPA promulgates a new or revised NAAQS, the EPA is required to designate areas as nonattainment, attainment, or unclassifiable, pursuant to section 107(d)(1) of the CAA. The CAA requires the EPA to complete the initial area designation process within 2 years of promulgating the NAAQS. However, if the Administrator has insufficient information to make these designations within that time frame, the EPA has the authority to extend the deadline for designation decisions by up to 1 additional year.

By not later than 1 year after the promulgation of a new or revised NAAQS, each state governor is required to recommend air quality designations, including the appropriate boundaries for areas, to the EPA. The EPA reviews those state recommendations and is authorized to make any modifications the Administrator deems necessary. The statute does not define the term “necessary,” but the EPA interprets this to authorize the Administrator to modify designations that did not meet the statutory requirements or were otherwise inconsistent with the facts or analysis deemed appropriate by the EPA. If the EPA is considering modifications to a state’s initial recommendation, the EPA is required to notify the state of any such intended modifications to its recommendation not less than 120 days prior to the EPA’s promulgation of the final designation. These notifications are commonly known as the “120-day letters.” If the state does not agree with the EPA’s intended modification, it then has an opportunity to respond to the EPA to demonstrate why it believes the modification proposed by the EPA is inappropriate. Even if a state fails to provide any recommendation for an area, in whole or in part, the EPA still must promulgate a designation that the Administrator deems appropriate.

Section 107(d)(1)(A)(i) of the CAA defines a nonattainment area as, “any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.” If an area meets either prong of this

definition, then the EPA is obligated to designate the area as “nonattainment.” Section 107(d)(1)(A)(iii) provides that any area that the EPA cannot designate on the basis of available information as meeting or not meeting the standards should be designated as “unclassifiable.” Historically for ozone, the EPA designates the remaining areas as “unclassifiable/attainment” indicating that the areas either have attaining air quality monitoring data or that air quality information is not available because the areas are not monitored, and the EPA has not determined that the areas contribute to a violation in a nearby area.

The EPA believes that section 107(d) provides the agency with discretion to determine how best to interpret the terms “contributes to” and “nearby” in the definition of a nonattainment area for a new or revised NAAQS, given considerations such as the nature of a specific pollutant, the types of sources that may contribute to violations, the form of the standards for the pollutant, and other relevant information. In particular, the EPA believes that the statute does not require the agency to establish bright line tests or thresholds for what constitutes “contribution” or “nearby” for purposes of designations.<sup>3</sup> Similarly, the EPA believes that the statute permits the EPA to evaluate the appropriate application of the term “area” as may be appropriate for a particular NAAQS.

Section 301(d) of the CAA authorizes the EPA to approve eligible Indian tribes to implement provisions of the CAA on Indian reservations and other areas within the tribes’ jurisdiction. The Tribal Authority Rule (TAR) (40 CFR Part 49), which implements section 301(d) of the CAA, sets forth the criteria and process for tribes to apply to the EPA for eligibility to administer CAA programs. The designations process contained in section 107(d) of the CAA is included among those provisions determined to be appropriate by the EPA for treatment of tribes in the same manner as states. Under the TAR, tribes generally are not subject to the same submission schedules imposed by the CAA on states. As authorized by the TAR, tribes may seek eligibility to submit designation recommendations to the EPA.

#### VI. What is the chronology for this designations rule and what guidance did the EPA provide?

Within one year after a new or revised air quality standard is established, the

CAA requires the governor of each state to submit to the EPA a list of all areas in the state, with recommendations for whether each area meets the standard. On December 4, 2008, the EPA issued guidance for states and tribal agencies to use for this purpose. (See memorandum from Robert J. Meyers, Principal Deputy Assistant Administrator, to Regional Administrators, Regions I–X, titled, “Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards.”) The guidance provided the anticipated timeline for designations and identified important factors that the EPA recommended states and tribes consider in making their recommendations. These factors include air quality data, emissions data, traffic and commuting patterns, growth rates and patterns, meteorology, geography/topography, and jurisdictional boundaries. In the guidance, the EPA asked that states and tribes submit their designation recommendations, including appropriate area boundaries, to the EPA by March 12, 2009. Later in the process, the EPA issued 2 new guidance memoranda related to designating areas of Indian country. (See December 20, 2011, memorandum from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to Regional Air Directors, Regions I–X, titled, “Policy for Establishing Separate Air Quality Designations for Areas of Indian Country,” and December 20, 2011, memorandum from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to Regional Air Directors, Regions I–X, titled, “Guidance to Regions for Working with Tribes during the National Ambient Air Quality Standards (NAAQS) Designations Process.”)

Under the initial schedule, the EPA intended to complete the initial designations for the 2008 ozone NAAQS on a 2-year schedule, by March 12, 2010. On September 16, 2009, the EPA announced that it would initiate a rulemaking to reconsider the 2008 ozone NAAQS for various reasons, including the fact that the 0.075 ppm level fell outside of the range recommended by the Clean Air Scientific Advisory Committee, the independent group that provides advice to the EPA Administrator on the technical bases for the EPA’s NAAQS. The EPA signed the proposed reconsideration on January 6, 2010. (See 75 FR 2938; January 19, 2010.) Because of the significant uncertainty the ozone NAAQS reconsideration created regarding the continued applicability of the 2008 NAAQS, the EPA determined there was insufficient information to

<sup>3</sup>This view was confirmed in *Catawba County v. EPA*, 571 F.3d 20 (D.C. Cir. 2009).

designate areas within 2 years of promulgation of the NAAQS. Therefore, the EPA used its authority under CAA section 107(d)(1)(B) to extend the deadline for designating areas by 1 year, until March 12, 2011. (See 75 FR 2936; January 19, 2010.) The EPA has not taken final action on the proposed reconsideration; thus, the current NAAQS for ozone remains at 0.075 ppm, as established in 2008.

After the March 12, 2011, designation deadline passed, WildEarth Guardians and Elizabeth Crowe (WildEarth Guardians) filed a lawsuit seeking to compel the EPA to take action to designate areas for the 2008 ozone NAAQS. *WildEarth Guardians and Elizabeth Crowe v. Jackson* (D. Ariz. 11–CV–01661). The EPA and WildEarth Guardians settled the case by entering into a consent decree that requires the EPA Administrator to sign a final rule designating areas for the 2008 ozone NAAQS by May 31, 2012.

On September 22, 2011, the EPA issued a memorandum to clarify for state and local agencies the status of the 2008 ozone NAAQS and to outline plans for moving forward to implement them. The EPA indicated that it would proceed with initial area designations for the 2008 NAAQS, and planned to use the recommendations states made in 2009 as updated by the most current, certified air quality data from 2008–2010. While the EPA did not request that states submit updated designation recommendations, the EPA provided the opportunity for states to do so. Several states chose to update their recommendations, and some requested that the EPA base designations for their areas on certified air quality data from 2009–2011, and committed to certify the 2011 data earlier than the May 1 deadline for annual air monitoring certification under 40 CFR part 58.15(a)(2) so that the EPA would have sufficient time to consider the data in making decisions on designations and nonattainment area boundaries.

On or about December 9, 2011, the EPA sent letters to Governors and Tribal leaders notifying them of the EPA's preliminary response to their designation recommendations and to inform them of the EPA's approach for completing the designations for the 2008 ozone NAAQS. The EPA requested that states submit any additional information that they wanted the EPA to consider by February 29, 2011, including any certified 2011 air quality monitoring data. On January 31, 2011, the EPA sent revised 120-day letter responses to Illinois, Indiana, and Wisconsin based on updated ozone air quality data for 2009–2011, submitted

by the state of Illinois two days before the EPA sent the December 9, 2011, letters. Given the timing of Illinois' submission of certified data, EPA was not able to consider the information in the December 9, 2011, letters. After reviewing the new information, which indicated a violation of the ozone NAAQS at a monitor in the Chicago area, the EPA sent letters on January 31, 2012 notifying Illinois, Indiana, and Wisconsin that it intended to designate certain counties, identified in those letters, as nonattainment for the 2008 ozone NAAQS. The EPA cannot finalize a designation for those areas until 120 days following the letters. Therefore, the EPA will be designating the Illinois, Indiana, and Wisconsin counties identified in the January 31, 2011, letters in a separate rule that will be signed no later than May 31, 2012.

Although not required by section 107(d) of the CAA, the EPA also provided an opportunity for members of the public to comment on the EPA's 120-day response letters to states and tribes. The EPA announced a 30-day public comment period in the **Federal Register** on December 20, 2011 (76 FR 78872). The comment period was subsequently extended until February 3, 2012 (77 FR 2677; January 19, 2012). On February 14, 2012 (77 FR 8211), the EPA reopened the public comment period for the limited purpose of inviting comment on the EPA's revised responses to Illinois, Indiana, and Wisconsin. State and tribal recommendations and the EPA's preliminary responses were posted on EPA's Web site at <http://www.epa.gov/ozonedesignations> and are available in the docket for the designations action. Comments from the states, tribes and the public, and EPA's responses to significant comments, are also in the docket.

#### **VII. What air quality data has the EPA used to designate areas for the 2008 ozone NAAQS?**

The final ozone designations are based primarily on certified air quality monitoring data from calendar years 2008–2010, which was the most recent certified data available to the EPA at the time the EPA notified the states of its intended modifications to their recommendations. Under 40 CFR 58.16, states are required to report all monitored ozone air quality data and associated quality assurance data within 90 days after the end of each quarterly reporting period, and under 40 CFR part 58.15(a)(2) states are required to submit annual summary reports and a data certification letter to the EPA by May 1 for ozone air quality data collected in the previous calendar year. States

generally had not completed these requirements for calendar year 2011 ozone air quality data when the EPA notified states of our intended designations on December 9, 2011. In certain cases, states included as part of their designation recommendations a request that the EPA consider monitoring data from 2009–2011 in making final designation decisions. In these requests, they indicated to the EPA what they expected their certified ozone air quality data would show regarding whether an area was attaining the standard, and for designations purposes they committed to certifying their 2011 data no later than February 29, 2012, so that the EPA would have sufficient time to consider it. Thus, for those areas, the EPA considered the state's preliminary representation of 2011 data in sending the 120-day notification letter. We have verified these representations in making our final designations decisions.

#### **VIII. What are the ozone air quality classifications?**

In accordance with CAA section 181(a)(1), each area designated as nonattainment for the 2008 ozone NAAQS is classified by operation of law at the same time as the area is designated by the EPA. Under Subpart 2 of part D of title I of the CAA, state planning and emissions control requirements for ozone are determined, in part, by a nonattainment area's classification. The ozone nonattainment areas are classified based on the severity of their ozone levels (as determined based on the area's "design value," which represents air quality in the area for the most recent 3 years).<sup>4</sup> The possible classifications are Marginal, Moderate, Serious, Severe, and Extreme. Nonattainment areas with a "lower" classification have ozone levels that are closer to the standard than areas with a "higher" classification. Areas in the lower classification levels have fewer and/or less stringent mandatory air quality planning and control requirements than those in higher classifications. The final Classifications Rule, which is being signed at the same time as the designations rule and being published and effective at the same time or before the designations, establishes the classification thresholds for each classification category for purposes of the 2008 NAAQS and explains the EPA's methodology for calculating the thresholds. In addition, in the

<sup>4</sup> The air quality design value for the 8-hour ozone NAAQS is the 3-year average of the annual 4th highest daily maximum 8-hour average ozone concentration. See 40 CFR part 50, Appendix I.

Classifications Rule, the EPA promulgated a regulation, 40 CFR 51.1103(d), that immediately reclassifies 6 areas in California to higher classifications. The classification for each nonattainment area designated for the 2008 ozone NAAQS is shown in the 40 CFR part 81 tables at the end of this designations rule.

#### **IX. What is the reclassification of six California nonattainment areas?**

The final Classifications Rule addresses the reclassification for the 2008 ozone NAAQS of selected areas in California that had voluntarily reclassified under the 1997 ozone NAAQS. In accordance with the final Classifications Rule, the following areas are being voluntarily reclassified to a higher classification for purposes of the 2008 NAAQS pursuant to that rule: Serious—Ventura County, CA; Severe—Los Angeles-San Bernardino Counties (West Mojave Desert), Riverside County (Coachella Valley), and Sacramento Metro, CA; Extreme—Los Angeles-South Coast Air Basin, and San Joaquin Valley, CA. These classifications are reflected in the tables at the end of this final rule (amendments to 40 CFR 81.301–356).

#### **X. Can states request that areas within 5 percent of the upper or lower limit of a classification threshold be reclassified?**

Under CAA section 181(a)(4), an ozone nonattainment area may be reclassified to a higher or lower classification (also known as a classification bump up or a bump down) “if an area classified under paragraph (1) (Table 1) would have been classified in another category if the design value in the area were 5 percent greater or 5 percent less than the level on which such classification was based.” The section also states that “In making such adjustment, the Administrator may consider the number of exceedances of the national primary ambient air quality standard for ozone in the area, the level of pollution transport between the area and other affected areas, including both intrastate and interstate transport, and the mix of sources and air pollutants in the area.”

As noted in the preamble to the rule designating and classifying areas following enactment of the CAA Amendments of 1990, the section 181(a)(4) provisions grant the Administrator broad discretion in making or determining not to make, a reclassification. (See 56 FR 56698; November 6, 1991.) As part of the 1991 action, the EPA developed criteria to evaluate whether it is appropriate to reclassify a particular area. (See list

below and at 56 FR 56698.) Because section 181(b)(3) provides that the EPA must grant any state request to reclassify an area into a higher classification, the EPA focused these criteria primarily on how the EPA would assess requests for a lower classification. In 1991, EPA approved reclassifications when the area met the first requirement (a request by the state to EPA) and at least some of the other criteria, and did not violate any of the criteria (emissions reductions, trends, etc.). The EPA used the same method and criteria once again to evaluate reclassification requests under section 181(a)(4) for purposes of the 1997 ozone NAAQS. The EPA intends to continue to use this same approach for purposes of evaluating any request for a reclassification for the 2008 ozone NAAQS. For reclassifications downwards, states may only request a reclassification to the next lower classification, and air quality data from prior years cannot be used as justification to be reclassified to an even lower classification.

The criteria EPA intends to use to evaluate whether it is appropriate to reclassify a particular area include:

*Request by state:* The EPA does not intend to exercise its authority to reclassify areas on the EPA’s own initiative. Rather, the EPA intends to rely on the state to submit a request for a reclassification. A tribe may also submit such a request and, in the case of a multi-state nonattainment area, all affected states must submit the same reclassification request.

*Discontinuity:* A five percent reclassification must not result in an illogical or excessive discontinuity relative to surrounding areas. In particular, in light of the area-wide nature of ozone formation, a reclassification should not create a “donut hole” where an area of one classification is surrounded by areas of higher classification.

*Attainment:* Evidence should be available that the proposed area would be able to attain by the earlier date specified by the lower classification in the case of a reclassification downward.

*Emissions reductions:* Evidence should be available that the area would be very likely to achieve the appropriate total percent emission reduction necessary in order to attain in the shorter time period for a reclassification downward.

*Trends:* Near- and long-term trends in emissions and air quality should support a reclassification. Historical air quality data should indicate substantial air quality improvement for a reclassification downward. Growth projections and emission trends should

support a reclassification downward. In addition, we will consider whether vehicle miles traveled and other indicators of emissions are increasing at higher than normal rates.

*Years of data:* The same years of ozone air quality data used for the initial designation and classification should be used for reclassification requests.

#### *A. Five Percent Reclassifications to a Lower Classification*

For an area to be eligible to be reclassified to a lower classification under section 181(a)(4), the area’s design value must be within five percent of the upper limit for the next lower classification. For example, an area with a Moderate design value of 0.090 ppm (or less) would be eligible to request a reclassification to Marginal because 0.090 ppm is five percent more than the upper limit of 0.086 ppm for the Marginal classification. Accordingly, areas with the following design values may be eligible to request a reclassification to the next lower classification: Moderate areas with a design value of 0.090 ppm or less; Serious areas with a design value of 0.105 ppm or less; and Severe areas with a design value of 0.118 ppm or less.

#### *B. Five Percent Reclassifications to a Higher Classification*

An ozone nonattainment area may also be reclassified under section 181(a)(4) to the next higher classification. As with five percent reclassifications to a lower classification, the EPA does not intend to exercise its authority to reclassify areas to a higher classification on the EPA’s own initiative. Rather, the EPA intends to rely on the state to submit a request for such a reclassification. Areas with the following design values are eligible to request a reclassification to the next higher classification: Marginal areas with a design value of 0.082 ppm or more; Moderate areas with a design value of 0.095 ppm or more; and Serious areas with a design value of 0.108 ppm or more.

#### *C. Timing of the Five Percent Reclassifications*

A Governor or eligible Tribal governing body of any area that wishes to pursue a reclassification should submit all requests and supporting documentation to the EPA Regional Office by June 20, 2012. This relatively short time frame is necessary because section 181(a)(4) only authorizes the Administrator to make such

reclassifications within 90 days after the initial classification.

#### **XI. How do designations affect Indian country?**

All state areas listed in the tables at the end of this document are designated as indicated, and include Indian country geographically located within such areas, except as otherwise noted. In general, state recommendations for initial area designations do not apply to Indian country. Consistent with the "Policy for Establishing Separate Air Quality Designations for Areas of Indian Country" (December 20, 2011), in instances where the EPA did not receive an initial designation recommendation from a tribe, the EPA is designating their area of Indian country along with the adjacent/surrounding state area(s). Tribes whose areas of Indian country are designated as nonattainment for the 2008 ozone NAAQS are being affected by poor air quality. Where nonattainment areas include both Indian country and state land, it is important for states and tribes to work together to coordinate planning efforts. Coordinated planning will help ensure that the planning decisions made by the states and tribes complement each other and that the nonattainment area makes reasonable progress toward attainment and ultimately attains the 2008 ozone NAAQS.

#### **XII. Where can I find information forming the basis for this rule and exchanges between the EPA, states, and tribes related to this rule?**

Information providing the basis for this action are provided in the docket for this rulemaking. The applicable EPA guidance memoranda and copies of correspondence regarding this process between the EPA and the states, tribes, and other parties are available for review at the EPA Docket Center listed above in the addresses section of this document, and on the EPA's ozone designation Web site at <http://www.epa.gov/ozonedesignations>. State-specific information is available from the EPA Regional Offices.

#### **XIII. Statutory and Executive Order Reviews**

Upon promulgation of a new or revised NAAQS, the CAA requires the EPA to designate areas as attaining or not attaining the NAAQS. The CAA then specifies requirements for areas based on whether such areas are attaining or not attaining the NAAQS. In this final rule, the EPA assigns designations to areas as required.

#### *A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review*

This action responds to the CAA requirement to promulgate air quality designations after promulgation of a new or revised NAAQS. This type of action is exempt from review under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011).

#### *B. Paperwork Reduction Act*

This action does not impose an information collection burden under the provisions of the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq.* Burden is defined at 5 CFR 1320.3(b). This rule responds to the CAA requirement to promulgate air quality designations after promulgation of a new or revised NAAQS. This requirement is prescribed in the CAA section 107. The present final rule does not establish any new information collection requirements.

#### *C. Regulatory Flexibility Act*

This final rule is not subject to the Regulatory Flexibility Act (RFA), which generally requires an agency to prepare a regulatory flexibility analysis for any rule that will have a significant economic impact on a substantial number of small entities. The RFA applies only to rules subject to notice-and-comment rulemaking requirements under the Administrative Procedure Act (APA) or any other statute. This rule is not subject to notice-and-comment requirements as provided under CAA section 107(d)(2)(B).

#### *D. Unfunded Mandates Reform Act*

This action contains no federal mandate under the provisions of Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531–1538 for state, local, or tribal governments or the private sector. The action imposes no enforceable duty on any state, local or tribal governments or the private sector. Therefore, this action is not subject to the requirements of sections 202 and 205 of the UMRA.

This action is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments. It does not create any additional requirements beyond those of the CAA and ozone NAAQS (40 CFR 50.15). The CAA establishes the process whereby states take primary responsibility in developing plans to meet the ozone NAAQS.

#### *E. Executive Order 13132: Federalism*

This final rule does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The CAA establishes the process whereby states take primary responsibility in developing plans to meet the ozone NAAQS. This rule will not modify the relationship of the states and the EPA for purposes of developing programs to implement the ozone NAAQS. Thus, Executive Order 13132 does not apply to this rule.

#### *F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

Subject to the Executive Order 13175 (65 FR 67249, November 9, 2000) the EPA may not issue a regulation that has tribal implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by tribal governments, or the EPA consults with tribal officials early in the process of developing the proposed regulation and develops a tribal summary impact statement.

The EPA has concluded that this action may have tribal implications. However, it will neither impose substantial direct compliance costs on tribal governments, nor preempt tribal law. Tribes whose areas of Indian country are being designated as "nonattainment" for the 2008 ozone NAAQS are affected by poor air quality. Although tribes are not required to submit implementation plans under the Clean Air Act, for those tribes whose areas are being designated as part of surrounding state areas, it will be imperative that states and the tribes coordinate on air quality planning efforts to ensure that ozone levels are reduced. In addition, several tribes' areas of Indian country are being designated as "nonattainment" separately from their surrounding state areas. For these tribes, internal capacity for air quality planning will be important to enable their areas of Indian country to come into attainment.

The EPA consulted with tribal officials early in the process of developing this regulation to permit them to have meaningful and timely input into its development. At the beginning of the designations process,

letters were sent to all tribes who were expected to be impacted by designations for the 2008 ozone NAAQS. These letters not only informed the tribes of the overall designations process, but also offered the tribes consultation to ensure early communication and coordination. Additionally, letters were sent to potentially affected tribes indicating the EPA's intended designations for their areas of Indian country. These letters offered an additional opportunity for consultation. All consultations were completed in late February/early April 2012. During consultation, the primary concerns raised by tribes included the following: Impact of nonattainment designation on future economic development; appropriateness of using data from monitors not on tribal land; and ensuring final decisions are consistent with the EPA's "Policy for Establishing Separate Air Quality Designations for Areas of Indian Country." (December 20, 2011). During the consultations, the EPA's Regional Offices ensured that the tribes fully understood the reasoning for the EPA's preliminary designations decisions and how those decisions are aligned with a consideration of the most recent certified air quality data and all other relevant information, including the EPA's "Policy for Establishing Separate Air Quality Designations for Areas of Indian Country." To the extent possible, the EPA included the tribes' input into the final decision-making process for designations of their areas of Indian country for the 2008 ozone NAAQS.

*G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks*

The EPA interprets Executive Order 13045 (62 FR 19885, April 23, 1997) as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under section 5-501 of the Executive Order has the potential to influence the regulation. This action is not subject to Executive Order 13045 because it does not establish an environmental standard intended to mitigate health or safety risks.

*H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use*

This action is not subject to Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not a significant regulatory action under Executive Order 12866.

*I. National Technology Transfer and Advancement Act (NTTAA)*

Section 12(d) of the NTTAA of 1995, Public Law 104-113, section 12(d) (15 U.S.C. 272 note) directs the EPA to use voluntary consensus standards (VCS) in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impracticable. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by VCS bodies. The NTTAA directs the EPA to provide Congress, through the Office of Management and Budget, explanations when the Agency decides not to use available and applicable VCS.

This action does not involve technical standards. Therefore, the EPA did not consider the use of any VCS.

*J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations.*

Executive Order 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the U.S.

The CAA requires that the EPA designate as nonattainment "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant." By designating as nonattainment all areas where available information indicates a violation of the ozone NAAQS or a contribution to a nearby violation, this action protects all those residing, working, attending school, or otherwise present in those areas regardless of minority or economic status.

The EPA has determined that this final rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

*K. Congressional Review Act*

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the U.S. The EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the U.S. prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective July 20, 2012.

*L. Judicial Review*

Section 307(b)(1) of the CAA indicates which Federal Courts of Appeal have venue for petitions of review of final actions by the EPA. This section provides, in part, that petitions for review must be filed in the Court of Appeals for the District of Columbia Circuit: (i) When the agency action consists of "nationally applicable regulations promulgated, or final actions taken, by the Administrator," or (ii) when such action is locally or regionally applicable, if "such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination."

This rule designating areas for the 2008 ozone NAAQS is "nationally applicable" within the meaning of section 307(b)(1). This rule establishes designations for areas across the U.S. for the 2008 ozone NAAQS. At the core of this rulemaking is the EPA's interpretation of the definition of nonattainment under section 107(d)(1) of the CAA, and its application of that interpretation to areas across the country.

For the same reasons, the Administrator also is determining that the final designations are of nationwide scope and effect for the purposes of section 307(b)(1). This is particularly appropriate because, in the report on the 1977 Amendments that revised section 307(b)(1) of the CAA, Congress noted that the Administrator's determination that an action is of "nationwide scope or effect" would be appropriate for any action that has a scope or effect beyond a single judicial circuit. H.R. Rep. No. 95-294 at 323, 324, *reprinted* in 1977

U.S.C.A.N. 1402–03. Here, the scope and effect of this rulemaking extends to numerous judicial circuits since the designations apply to areas across the country. In these circumstances, section 307(b)(1) and its legislative history calls for the Administrator to find the rule to be of “nationwide scope or effect” and for venue to be in the D.C. Circuit.

Thus, any petitions for review of final designations must be filed in the Court of Appeals for the District of Columbia Circuit within 60 days from the date final action is published in the **Federal Register**.

**List of Subjects in 40 CFR Part 81**

Environmental protection, Air pollution control, National parks, Wilderness areas.

Dated: April 30, 2012.

**Lisa P. Jackson**,  
*Administrator.*

For the reasons set forth in the preamble, 40 CFR Part 81, is amended as follows:

**PART 81—DESIGNATIONS OF AREAS FOR AIR QUALITY PLANNING PURPOSES**

■ 1. The authority citation for part 81 continues to read as follows:

**Authority:** 42 U.S.C. 7401, *et seq.*

**Subpart C—Section 107 Attainment Status Designations**

■ 2. Section 81.301 is amended as follows:

■ a. By revising the table heading for “Alabama—Ozone (8-Hour Standard)” to read “Alabama—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Alabama—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Alabama—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.301 Alabama.**

\* \* \* \* \*

**ALABAMA—2008 8-HOUR OZONE NAAQS**

[Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Autauga County .....		Unclassifiable/Attainment.		
Baldwin County .....		Unclassifiable/Attainment.		
Barbour County .....		Unclassifiable/Attainment.		
Bibb County .....		Unclassifiable/Attainment.		
Blount County .....		Unclassifiable/Attainment.		
Bullock County .....		Unclassifiable/Attainment.		
Butler County .....		Unclassifiable/Attainment.		
Calhoun County .....		Unclassifiable/Attainment.		
Chambers County .....		Unclassifiable/Attainment.		
Cherokee County .....		Unclassifiable/Attainment.		
Chilton County .....		Unclassifiable/Attainment.		
Choctaw County .....		Unclassifiable/Attainment.		
Clarke County .....		Unclassifiable/Attainment.		
Clay County .....		Unclassifiable/Attainment.		
Cleburne County .....		Unclassifiable/Attainment.		
Coffee County .....		Unclassifiable/Attainment.		
Colbert County .....		Unclassifiable/Attainment.		
Conecuh County .....		Unclassifiable/Attainment.		
Coosa County .....		Unclassifiable/Attainment.		
Covington County .....		Unclassifiable/Attainment.		
Crenshaw County .....		Unclassifiable/Attainment.		
Cullman County .....		Unclassifiable/Attainment.		
Dale County .....		Unclassifiable/Attainment.		
Dallas County .....		Unclassifiable/Attainment.		
De Kalb County .....		Unclassifiable/Attainment.		
Elmore County .....		Unclassifiable/Attainment.		
Escambia County .....		Unclassifiable/Attainment.		
Fayette County .....		Unclassifiable/Attainment.		
Franklin County .....		Unclassifiable/Attainment.		
Geneva County .....		Unclassifiable/Attainment.		
Greene County .....		Unclassifiable/Attainment.		
Hale County .....		Unclassifiable/Attainment.		
Henry County .....		Unclassifiable/Attainment.		
Houston County .....		Unclassifiable/Attainment.		
Jackson County .....		Unclassifiable/Attainment.		
Jefferson County .....		Unclassifiable/Attainment.		
Lamar County .....		Unclassifiable/Attainment.		
Lauderdale County .....		Unclassifiable/Attainment.		
Lawrence County .....		Unclassifiable/Attainment.		
Lee County .....		Unclassifiable/Attainment.		
Limestone County .....		Unclassifiable/Attainment.		
Lowndes County .....		Unclassifiable/Attainment.		
Macon County .....		Unclassifiable/Attainment.		
Madison County .....		Unclassifiable/Attainment.		
Marengo County .....		Unclassifiable/Attainment.		
Marion County .....		Unclassifiable/Attainment.		
Marshall County .....		Unclassifiable/Attainment.		



ALABAMA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Mobile County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Morgan County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Pickens County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Randolph County .....	.....	Unclassifiable/Attainment.		
Russell County .....	.....	Unclassifiable/Attainment.		
Shelby County .....	.....	Unclassifiable/Attainment.		
St. Clair County .....	.....	Unclassifiable/Attainment.		
Sumter County .....	.....	Unclassifiable/Attainment.		
Talladega County .....	.....	Unclassifiable/Attainment.		
Tallapoosa County .....	.....	Unclassifiable/Attainment.		
Tuscaloosa County .....	.....	Unclassifiable/Attainment.		
Walker County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wilcox County .....	.....	Unclassifiable/Attainment.		
Winston County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified.

<sup>2</sup> This date is July 20, 2012, unless otherwise noted.

■ 3. Section 81.302 is amended as follows:

■ a. By revising the table heading for “Alaska—Ozone (8-Hour Standard)” to read “Alaska—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Alaska—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Alaska—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.302 Alaska.**

\* \* \* \* \*

ALASKA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country .....	.....	Unclassifiable/Attainment ...		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

■ 4. Section 81.303 is amended as follows:

■ a. By revising the table heading for “Arizona—Ozone (8-Hour Standard)” to read “Arizona—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Arizona—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Arizona—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.303 Arizona.**

\* \* \* \* \*

ARIZONA—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Phoenix-Mesa, AZ: <sup>2</sup> ..... Maricopa County (part). T1N, R1E (except that portion in Indian Country); T1N, R2E; T1N, R3E; T1N, R4E; T1N, R5E; T1N, R6E; T1N, R7E; T1N, R1W; T1N, R2W; T1N, R3W; T1N, R4W; T1N, R5W; T1N, R6W; T1N, R7W; T1N, R8W; T2N, R1E; T2N, R2E; T2N, R3E; T2N, R4E; T2N, R5E; T2N, R6E; T2N, R7E; T2N, R8E; T2N, R9E; T2N, R10E; T2N, R11E; T2N, R12E (except that portion in Gila County); T2N, R13E (except that portion in Gila County); T2N, R1W; T2N, R2W; T2N, R3W; T2N, R4W; T2N, R5W; T2N, R6W; T2N, R7W; T2N, R8W; T3N, R1E; T3N, R2E; T3N, R3E; T3N, R4E; T3N, R5E; T3N, R6E; T3N, R7E; T3N, R8E; T3N, R9E; T3N, R10E (except that portion in Gila County); T3N, R11E (except that portion in Gila County); T3N, R12E (except that portion in Gila County); T3N, R1W; T3N, R2W; T3N, R3W; T3N, R4W; T3N, R5W; T3N, R6W; T4N, R1E; T4N, R2E; T4N, R3E; T4N, R4E; T4N, R5E; T4N, R6E; T4N, R7E; T4N, R8E; T4N, R9E; T4N, R10E (except that portion in Gila County); T4N, R11E (except that portion in Gila County); T4N, R12E (except that portion in Gila County); T4N, R1W; T4N, R2W; T4N, R3W; T4N, R4W; T4N, R5W; T4N, R6W; T5N, R1E; T5N, R2E; T5N, R3E; T5N, R4E; T5N, R5E; T5N, R6E; T5N, R8E; T5N, R9E (except that portion in Gila County); T5N, R10E (except that portion in Gila County); T5N, R1W; T5N, R2W; T5N, R3W; T5N, R4W; T5N, R5W; T6N, R1E (except that portion in Yavapai County); T6N, R2E; T6N, R3E; T6N, R4E; T6N, R5E; T6N, R6E; T6N, R7E; T6N, R8E; T6N, R9E (except that portion in Gila County); T6N, R10E (except that portion in Gila County); T6N, R1W (except that portion in Yavapai County); T6N, R2W; T6N, R3W; T6N, R4W; T6N, R5W; T7N, R1E; (except that portion in Yavapai County); T7N, R2E (except that portion in Yavapai County); T7N, R3E; T7N, R4E; T7N, R5E; T7N, R6E; T7N, R7E; T7N, R8E; T7N, R9E (except that portion in Gila County); T7N, R1W (except that portion in Yavapai County); T7N, R2W (except that portion in Yavapai County); T8N, R2E (except that portion in Yavapai County); T8N, R3E (except that portion in Yavapai County); T8N, R4E (except that portion in Yavapai County); T8N, R5E (except that portion in Yavapai County); T8N, R6E (except that portion in Yavapai County); T8N, R7E (except that portion in Yavapai County); T8N, R8E (except that portion in Yavapai and Gila Counties); T8N, R9E (except that portion in Yavapai and Gila Counties); T1S, R1E (except that portion in Indian Country); T1S, R2E (except that portion in Pinal County and in Indian Country); T1S, R3E; T1S, R4E; T1S, R5E; T1S, R6E; T1S, R7E; T1S, R1W; T1S, R2W; T1S, R3W; T1S, R4W; T1S, R5W; T1S, R6W; T2S, R1E (except that portion in Indian Country); T2S, R5E; T2S, R6E; T2S, R7E; T2S, R1W; T2S, R2W; T2S, R3W; T2S, R4W; T2S, R5W; T3S, R1E; T3S, R1W; T3S, R2W; T3S, R3W; T3S, R4W; T3S, R5W; T4S, R1E; T4S, R1W; T4S, R2W; T4S, R3W; T4S, R4W; T4S, R5W; T5S, R4W (Sections 1 through 22 and 27 through 34) Pinal County (part) Apache Junction: T1N, R8E; T1S, R8E (Sections 1 through 12). Fort McDowell Yavapai Nation <sup>3</sup> . Salt River Pima-Maricopa Indian Community of the Salt River Reservation <sup>3</sup> . Tohono O'odham Nation of Arizona <sup>3</sup> .		Nonattainment .....		Marginal.
Rest of State: <sup>4</sup> ..... Apache County Cochise County Coconino County Gila County Graham County Greenlee County La Paz County Maricopa County (part) remainder Mohave County Navajo County		Unclassifiable/Attainment.		

ARIZONA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Pima County Pinal County (part) remainder Santa Cruz County Yavapai County Yuma County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

<sup>4</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 5. Section 81.304 is amended as follows:

■ a. By revising the table heading for “Arkansas—Ozone (8-Hour Standard)” to read “Arkansas—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Arkansas—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Arkansas—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.304 Arkansas.**

\* \* \* \* \*

ARKANSAS—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Memphis, TN-MS-AR <sup>2</sup> Crittenden County .....		Nonattainment .....		Marginal.
Rest of State: <sup>3</sup>				
Ashley County .....		Unclassifiable/Attainment.		
Arkansas County .....		Unclassifiable/Attainment.		
Baxter County .....		Unclassifiable/Attainment.		
Benton County .....		Unclassifiable/Attainment.		
Boone County .....		Unclassifiable/Attainment.		
Bradley County .....		Unclassifiable/Attainment.		
Calhoun County .....		Unclassifiable/Attainment.		
Carroll County .....		Unclassifiable/Attainment.		
Chicot County .....		Unclassifiable/Attainment.		
Clark County .....		Unclassifiable/Attainment.		
Clay County .....		Unclassifiable/Attainment.		
Cleburne County .....		Unclassifiable/Attainment.		
Cleveland County .....		Unclassifiable/Attainment.		
Columbia County .....		Unclassifiable/Attainment.		
Conway County .....		Unclassifiable/Attainment.		
Craighead County .....		Unclassifiable/Attainment.		
Crawford County .....		Unclassifiable/Attainment.		
Crittenden County .....		Unclassifiable/Attainment.		
Cross County .....		Unclassifiable/Attainment.		
Dallas County .....		Unclassifiable/Attainment.		
Desha County .....		Unclassifiable/Attainment.		
Drew County .....		Unclassifiable/Attainment.		
Faulkner County .....		Unclassifiable/Attainment.		
Franklin County .....		Unclassifiable/Attainment.		
Fulton County .....		Unclassifiable/Attainment.		
Garland County .....		Unclassifiable/Attainment.		
Grant County .....		Unclassifiable/Attainment.		
Greene County .....		Unclassifiable/Attainment.		
Hempstead County .....		Unclassifiable/Attainment.		
Hot Spring County .....		Unclassifiable/Attainment.		
Howard County .....		Unclassifiable/Attainment.		
Independence County .....		Unclassifiable/Attainment.		
Izard County .....		Unclassifiable/Attainment.		
Jackson County .....		Unclassifiable/Attainment.		
Jefferson County .....		Unclassifiable/Attainment.		
Johnson County .....		Unclassifiable/Attainment.		
Lafayette County .....		Unclassifiable/Attainment.		
Lawrence County .....		Unclassifiable/Attainment.		
Lee County .....		Unclassifiable/Attainment.		

ARKANSAS—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Lincoln County .....	.....	Unclassifiable/Attainment.		
Little River County .....	.....	Unclassifiable/Attainment.		
Logan County .....	.....	Unclassifiable/Attainment.		
Lonoke County .....	.....	Unclassifiable/Attainment.		
Madison County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Miller County .....	.....	Unclassifiable/Attainment.		
Mississippi County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Nevada County .....	.....	Unclassifiable/Attainment.		
Newton County .....	.....	Unclassifiable/Attainment.		
Ouachita County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Phillips County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Poinsett County .....	.....	Unclassifiable/Attainment.		
Polk County .....	.....	Unclassifiable/Attainment.		
Pope County .....	.....	Unclassifiable/Attainment.		
Prairie County .....	.....	Unclassifiable/Attainment.		
Pulaski County .....	.....	Unclassifiable/Attainment.		
Randolph County .....	.....	Unclassifiable/Attainment.		
St. Francis County .....	.....	Unclassifiable/Attainment.		
Saline County .....	.....	Unclassifiable/Attainment.		
Scott County .....	.....	Unclassifiable/Attainment.		
Searcy County .....	.....	Unclassifiable/Attainment.		
Sebastian County .....	.....	Unclassifiable/Attainment.		
Sevier County .....	.....	Unclassifiable/Attainment.		
Sharp County .....	.....	Unclassifiable/Attainment.		
Stone County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Van Buren County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
White County .....	.....	Unclassifiable/Attainment.		
Woodruff County .....	.....	Unclassifiable/Attainment.		
Yell County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 6. Section 81.305 is amended as follows:  
 ■ a. By revising the table heading for “California—Ozone (8-Hour Standard)” to read “California—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “California—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “California—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.305 California.**  
 \* \* \* \* \*

CALIFORNIA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Calaveras County, CA: <sup>2</sup> Calaveras County .....	.....	Nonattainment .....	.....	Marginal.
Chico (Butte County), CA: <sup>2</sup>	.....	Nonattainment .....	.....	Marginal.
Butte County				
Berry Creek Rancheria of Maidu Indians of California <sup>3</sup>				
Enterprise Rancheria of Maidu Indians of California <sup>3</sup> .				
Mechoopda Indian Tribe of Chico Rancheria <sup>3</sup> .				
Mooretown Rancheria of Maidu Indians of California <sup>3</sup> .				
Imperial County, CA: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Imperial County				

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Quechan Tribe of the Fort Yuma Indian Reservation <sup>3</sup> . Torres Martinez Desert Cahuilla Indians <sup>3</sup> . Kern County (Eastern Kern), CA: <sup>2</sup> Kern County (part) That portion of Kern County (with the exception of that portion in Hydrologic Unit Number 18090205—the Indian Wells Valley) east and south of a line described as follows: Beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Liebre Land Grant to the point of intersection with the range line common to Range 16 West and Range 17 West, San Bernardino Base and Meridian; north along the range line to the point of intersection with the Rancho El Tejon Land Grant boundary; then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Grant to the northwest corner of Section 3, Township 11 North, Range 17 West; then west 1.2 miles; then north to the Rancho El Tejon Land Grant boundary; then northwest along the Rancho El Tejon line to the southeast corner of Section 34, Township 32 South, Range 30 East, Mount Diablo Base and Meridian; then north to the northwest corner of Section 35, Township 31 South, Range 30 East; then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of Section 18, Township 31 South, Range 31 East; then east to the southeast corner of Section 13, Township 31 South, Range 31 East; then north along the range line common to Range 31 East and Range 32 East, Mount Diablo Base and Meridian, to the northwest corner of Section 6, Township 29 South, Range 32 East; then east to the southwest corner of Section 31, Township 28 South, Range 32 East; then north along the range line common to Range 31 East and Range 32 East to the northwest corner of Section 6, Township 28 South, Range 32 East, then west to the southeast corner of Section 36, Township 27 South, Range 31 East, then north along the range line common to Range 31 East and Range 32 East to the Kern-Tulare County boundary.	.....	Nonattainment .....	.....	Marginal.
Los Angeles-San Bernardino Counties (West Mojave Desert), CA: <sup>2</sup> . Los Angeles County (part)	.....	Nonattainment .....	.....	Severe 15.

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>That portion of Los Angeles County which lies north and east of a line described as follows: Beginning at the Los Angeles-San Bernardino County boundary and running west along the Township line common to Township 3 North and Township 2 North, San Bernardino Base and Meridian; then north along the range line common to Range 8 West and Range 9 West; then west along the Township line common to Township 4 North and Township 3 North; then north along the range line common to Range 12 West and Range 13 West to the southeast corner of Section 12, Township 5 North and Range 13 West; then west along the south boundaries of Sections 12, 11, 10, 9, 8, and 7, Township 5 North and Range 13 West to the boundary of the Angeles National Forest which is collinear with the range line common to Range 13 West and Range 14 West; then north and west along the Angeles National Forest boundary to the point of intersection with the Township line common to Township 7 North and Township 6 North (point is at the northwest corner of Section 4 in Township 6 North and Range 14 West); then west along the Township line common to Township 7 North and Township 6 North; then north along the range line common to Range 15 West and Range 16 West to the southeast corner of Section 13, Township 7 North and Range 16 West; then along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 7 North and Range 16 West; then north along the range line common to Range 16 West and Range 17 West to the north boundary of the Angeles National Forest (collinear with the Township line common to Township 8 North and Township 7 North); then west and north along the Angeles National Forest boundary to the point of intersection with the south boundary of the Rancho La Liebre Land Grant; then west and north along this land grant boundary to the Los Angeles-Kern County boundary.</p> <p>San Bernardino County (part)</p> <p>That portion of San Bernardino County which lies north and east of a line described as follows: Beginning at the San Bernardino-Riverside County boundary and running north along the range line common to Range 3 East and Range 2 East, San Bernardino Base and Meridian; then west along the Township line common to Township 3 North and Township 2 North to the San Bernardino-Los Angeles County boundary; and that portion of San Bernardino County which lies south and west of a line described as follows: latitude 35 degrees, 10 minutes north and longitude 115 degrees, 45 minutes west.</p> <p>Twenty-Nine Palms Band of Mission Indians of California<sup>3</sup>.</p>				
<p>Los Angeles-South Coast Air Basin, CA<sup>2</sup> .....                      Los Angeles County (part)</p>		Nonattainment .....		Extreme.

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>That portion of Los Angeles County which lies south and west of a line described as follows: Beginning at the Los Angeles-San Bernardino County boundary and running west along the Township line common to Township 3 North and Township 2 North San Bernardino Base and Meridian; then north along the range line common to Range 8 West and Range 9 West; then west along the Township line common to Township 4 North and Township 3 North; then north along the range line common to Range 12 West and Range 13 West to the southeast corner of Section 12, Township 5 North and Range 13 West; then west along the south boundaries of Sections 12, 11, 10, 9, 8, and 7, Township 5 North and Range 13 West to the boundary of the Angeles National Forest which is collinear with the range line common to Range 13 West and Range 14 West; then north and west along the Angeles National Forest boundary to the point of intersection with the Township line common to Township 7 North and Township 6 North (point is at the northwest corner of Section 4 in Township 6 North and Range 14 West); then west along the Township line common to Township 7 North and Township 6 North; then north along the range line common to Range 15 West and Range 16 West to the southeast corner of Section 13, Township 7 North and Range 16 West; then along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 7 North and Range 16 West; then north along the range line common to Range 16 West and Range 17 West to the north boundary of the Angeles National Forest (collinear with the Township line common to Township 8 North and Township 7 North); then west and north along the Angeles National Forest boundary to the point of intersection with the south boundary of the Rancho La Liebre Land Grant; then west and north along this land grant boundary to the Los Angeles-Kern County boundary.</p> <p>Orange County                      Riverside County (part)</p>				

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>That portion of Riverside County which lies to the west of a line described as follows: Beginning at the Riverside-San Diego County boundary and running north along the range line common to Range 4 East and Range 3 East, San Bernardino Base and Meridian; then east along the Township line common to Township 8 South and Township 7 South; then north along the range line common to Range 5 East and Range 4 East; then west along the southern boundaries of Sections 25, 26, and 27, Township 7 South, Range 4 East, then North along the west boundaries of Sections 27, 22, 15, 10, and 3 Township 7 South, Range 4 East, then East along the Township line common to Township 6 South and Township 7 South to the southwest corner of Section 34, Township 6 South, Range 4 East; then north along the west boundaries of Sections 34, 27, 22, 15, 10, and 3, Township 6 South, Range 4 East; then west along the Township line common to Township 5 South and Township 6 South; then north along the range line common to Range 4 East and Range 3 East; then west along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 5 South, Range 3 East; then north along the range line common to Range 2 East and Range 3 East; to the Riverside-San Bernardino County line.</p> <p>San Bernardino County (part)</p> <p>That portion of San Bernardino County which lies south and west of a line described as follows: Beginning at the San Bernardino-Riverside County boundary and running north along the range line common to Range 3 East and Range 2 East, San Bernardino Base and Meridian; then west along the Township line common to Township 3 North and Township 2 North to the San Bernardino-Los Angeles County boundary.</p> <p>Cahuilla Band of Mission Indians of the Cahuilla Reservation<sup>3</sup>.</p> <p>Ramona Band of Cahuilla<sup>3</sup>.</p> <p>San Manuel Band of Mission Indians<sup>3</sup>.</p> <p>Soboba Band of Luiseno Indians<sup>3</sup>.</p> <p>Mariposa County, CA:<sup>2</sup> Mariposa County .....</p> <p>Nevada County (Western part), CA:<sup>2</sup> .....</p> <p>Nevada County (part)</p> <p>That portion of Nevada County, which lies west of a line, described as follows: Beginning at the Nevada-Placer County boundary and running north along the western boundaries of Sections 24, 13, 12, 1, Township 17 North, Range 14 East, Mount Diablo Base and Meridian, and Sections 36, 25, 24, 13, 12, Township 18 North, Range 14 East to the Nevada-Sierra County boundary.</p> <p>Riverside County (Coachella Valley), CA:<sup>2</sup> .....</p> <p>Riverside County (part)</p>				
		Nonattainment .....		Marginal.
		Nonattainment .....		Marginal.
		Nonattainment .....		Severe 15.



CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>That portion of Riverside County which lies to the east of a line described as follows: Beginning at the Riverside-San Diego County boundary and running north along the range line common to Range 4 East and Range 3 East, San Bernardino Base and Meridian; then east along the Township line common to Township 8 South and Township 7 South; then north along the range line common to Range 5 East and Range 4 East; then west along the Township line common to Township 6 South and Township 7 South to the southwest corner of Section 34, Township 6 South, Range 4 East; then north along the west boundaries of Sections 34, 27, 22, 15, 10, and 3, Township 6 South, Range 4 East; then west along the Township line common to Township 5 South and Township 6 South; then north along the range line common to Range 4 East and Range 3 East; then west along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 5 South, Range 3 East; then north along the range line common to Range 2 East and Range 3 East; to the Riverside-San Bernardino County line. And that portion of Riverside County which lies to the west of a line described as follows: That segment of the southwestern boundary line of hydrologic Unit Number 18100100 within Riverside County.</p> <p>Agua Caliente Band of Cahuilla Indians of the Agua Caliente Indian Reservation<sup>3</sup>.                      Augustine Band of Cahuilla Indians<sup>3</sup>.                      Cabazon Band of Mission Indians<sup>3</sup>.                      Santa Rosa Band of Cahuilla Indians<sup>3</sup>.                      Torres Martinez Desert Cahuilla Indians<sup>3</sup>.                      Twenty-Nine Palms Band of Mission Indians of California<sup>3</sup>.</p>				
<p>Sacramento Metro, CA:<sup>2</sup> .....</p> <p>El Dorado County (part)                      All portions of the county except that portion of El Dorado County within the drainage area naturally tributary to Lake Tahoe including said Lake.</p> <p>Placer County (part)</p>	.....	Nonattainment .....	.....	Severe 15.

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>All portions of the county except that portion of Placer County within the drainage area naturally tributary to Lake Tahoe including said Lake, plus that area in the vicinity of the head of the Truckee River described as follows: Commencing at the point common to the aforementioned drainage area crestline and the line common to Townships 15 North and 16 North, Mount Diablo Base and Meridian, and following that line in a westerly direction to the northwest corner of Section 3, Township 15 North, Range 16 East Mount Diablo Base and Meridian, thence south along the west line of Sections 3 and 10, Township 15 North, Range 16 East, Mount Diablo Base and Meridian, to the intersection with the said drainage area crestline, thence following the said drainage area boundary in a southeasterly, then northeasterly direction to and along the Lake Tahoe Dam, thence following the said drainage area crestline in a northeasterly, then northwesterly direction to the point of beginning.</p> <p>Sacramento County                      Solano County (part)                      That portion of Solano County which lies north and east of a line described as follows: Beginning at the intersection of the westerly boundary of Solano County and the ¼ section line running east and west through the center of Section 34; Township 6 North, Range 2 West, Mount Diablo Base and Meridian, thence east along said ¼ section line to the east boundary of Section 36, Township 6 North, Range 2 West, thence south ½ mile and east 2.0 miles, more or less, along the west and south boundary of Los Putos Rancho to the northwest corner of Section 4, Township 5 North, Range 1 West, thence east along a line common to Township 5 North and Township 6 North to the northeast corner of Section 3, Township 5 North, Range 1 East, thence south along section lines to the southeast corner of Section 10, Township 3 North, Range 1 East, thence east along section lines to the south ¼ corner of Section 8, Township 3 North, Range 2 East, thence east to the boundary between Solano and Sacramento Counties.</p> <p>Sutter County (part)                      Portion south of a line connecting the northern border of Yolo County to the SW tip of Yuba County and continuing along the southern Yuba County border to Placer County.</p> <p>Yolo County                      Shingle Springs Band of Miwok Indians, Shingle Springs Rancheria (Verona Tract)<sup>3</sup>.                      United Auburn Indian Community of the Auburn Rancheria of California<sup>3</sup>.                      Yocha Dehe Wintun Nation<sup>3</sup>.</p> <p>San Diego County, CA:<sup>2</sup> .....                      San Diego County                      Barona Group of Capitan Grande Band of Mission Indians of the Barona Reservation<sup>3</sup>.</p>				
		Nonattainment		Marginal.

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Campo Band of Diegueno Mission Indians of the Campo Indian Reservation <sup>3</sup> .				
Capitan Grande Band of Diegueno Mission Indians of California <sup>3</sup> .				
Ewiiapaayp Band of Kumayaay Indians <sup>3</sup> .				
lipay Nation of Santa Ysabel <sup>3</sup> .				
Inaja Band of Diegueno Mission Indians of the Inaja and Cosmit Reservation <sup>3</sup> .				
Jamul Indian Village of California <sup>3</sup> .				
La Jolla Band of Luiseno Indians <sup>3</sup> .				
La Posta Band of Diegueno Mission Indians of the La Posta Indian Reservation <sup>3</sup> .				
Los Coyotes Band of Cahuilla and Cupeno Indians <sup>3</sup> .				
Manzanita Band of Diegueno Mission Indians of the Manzanita Reservation <sup>3</sup> .				
Mesa Grande Band of Diegueno Mission Indians of the Mesa Grande Reservation <sup>3</sup> .				
Pala Band of Luiseno Mission Indians of the Pala Reservation <sup>3</sup> .				
Pauma Band of Luiseno Mission Indians of the Pauma and Yuima Reservation <sup>3</sup> .				
Rincon Band of Luiseno Mission Indians of the Rincon Reservation <sup>3</sup> .				
San Pasqual Band of Diegueno Mission Indians of California <sup>3</sup> .				
Sycuan Band of the Kumeyaay Nation <sup>3</sup> .				
Viejas (Baron Long) Group of Capitan Grande Band of Mission Indians <sup>3</sup> .				
San Francisco Bay Area, CA: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Alameda County				
Contra Costa County				
Marin County				
Napa County				
San Francisco County				
San Mateo County				
Santa Clara County				
Solano County (part)				
Portion of Solano County which lies south and west of a line described as follows: Beginning at the intersection of the westerly boundary of Solano County and the 1/4 section line running east and west through the center of Section 34, T6N, R2W, M.D.B. & M., thence east along said 1/4 section line to the east boundary of Section 36, T6N, R2W, thence south 1/2 mile and east 2.0 miles, more or less, along the west and south boundary of Los Putos Rancho to the northwest corner of Section 4, T5N, R1W, thence east along a line common to T5N and T6N to the northeast corner of Section 3, T5N, R1E, thence south along section lines to the southeast corner of Section 10, T3N, R1E, thence east along section lines to the south 1/4 corner of Section 8, T3N, R2E, thence east to the boundary between Solano and Sacramento Counties.				
Sonoma County (part)				

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>That portion of Sonoma County which lies south and east of a line described as follows: Beginning at the southeasterly corner of the Rancho Estero Americano, being on the boundary line between Marin and Sonoma Counties, California; thence running northerly along the easterly boundary line of said Rancho Estero Americano to the northeasterly corner thereof, being an angle corner in the westerly boundary line of Rancho Canada de Jonive; thence running along said boundary of Rancho Canada de Jonive westerly, northerly and easterly to its intersection with the easterly line of Graton Road; thence running along the easterly and southerly line of Graton Road, northerly and easterly to its intersection with the easterly line of Sullivan Road; thence running northerly along said easterly line of Sullivan Road to the southerly line of Green Valley Road; thence running easterly along the said southerly line of Green Valley Road and easterly along the southerly line of State Highway 116, to the westerly line of Vine Hill Road; thence Running along the westerly and northerly line of Vine Hill Road, northerly and easterly to its intersection with the westerly line of Laguna Road; thence running northerly along the westerly line of Laguna Road and the northerly projection thereof to the northerly line of Trenton Road; thence running westerly along the northerly line of said Trenton Road to the easterly line of Trenton-Healdsburg Road; thence running northerly along said easterly line of Trenton-Healdsburg Road to the easterly line of Eastside Road; thence running northerly along said easterly line of Eastside Road to its intersection with the southerly line of Rancho Sotoyome; thence running easterly along said southerly line of Rancho Sotoyome to its intersection with the Township line common to Townships 8 and 9 North, M.D.M.; thence running easterly along said township line to its intersection with the boundary line between Sonoma and Napa Counties.</p> <p>Federated Indians of Graton Rancheria <sup>3</sup>                      Lytton Rancheria of California <sup>3</sup>.</p> <p>San Joaquin Valley, CA: <sup>2</sup> .....</p> <p>Fresno County                      Kern County (part)</p>				
		Nonattainment .....		Extreme.

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>That portion of Kern County which lies west and north of a line described as follows: Beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Libre Land Grant to the point of intersection with the range line common to R. 16 W. and R. 17 W., San Bernardino Base and Meridian; north along the range line to the point of intersection with the Rancho El Tejon Land Grant boundary; then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Land Grant to the northwest corner of S. 3, T. 11 N., R. 17 W.; then west 1.2 miles; then north to the Rancho El Tejon Land Grant boundary; then northwest along the Rancho El Tejon line to the southeast corner of S. 34, T. 32 S., R. 30 E., Mount Diablo Base and Meridian; then north to the northwest corner of S. 35, T. 31 S., R. 30 E.; then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of S. 18, T. 31 S., R. 31 E.; then east to the southeast corner of S. 13, T. 31 S., R. 31 E.; then north along the range line common to R. 31 E. and R. 32 E., Mount Diablo Base and Meridian, to the northwest corner of S. 6, T. 29 S., R. 32 E.; then east to the southwest corner of S. 31, T. 28 S., R. 32 E.; then north along the range line common to R. 31 E. and R. 32 E. to the northwest corner of S. 6, T. 28 S., R. 32 E., then west to the southeast corner of S. 36, T. 27 S., R. 31 E., then north along the range line common to R. 31 E. and R. 32 E. to the Kern-Tulare County boundary.</p> <p>Kings County                      Madera County                      Merced County                      San Joaquin County                      Stanislaus County                      Tulare County                      Big Sandy Rancheria of Mono Indians of California<sup>3</sup>.                      Cold Springs Rancheria of Mono Indians of California<sup>3</sup>.                      Northfork Rancheria of Mono Indians of California<sup>3</sup>.                      Picayune Rancheria of Chukchansi Indians of California<sup>3</sup>.                      Santa Rosa Indian Community of the Santa Rosa Rancheria<sup>3</sup>.                      Table Mountain Rancheria of California<sup>3</sup>.                      Tule River Indian Tribe of the Tule River Reservation<sup>3</sup>.</p> <p>San Luis Obispo (Eastern San Luis Obispo), CA:<sup>2</sup> .....                      San Luis Obispo County (part)</p>				
		Nonattainment .....		Marginal.

CALIFORNIA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
That portion of San Luis Obispo County that lies east of a line described as follows: Beginning at the San Luis Obispo County/Santa Barbara County boundary and running north along 120 degrees 24 minutes longitude to the intersection with 35 degrees 27 minutes latitude; east along 35 degrees 27 minutes latitude to the intersection with 120 degrees 18 minutes longitude; then north along 120 degrees 18 minutes longitude to the San Luis Obispo County/Monterey County boundary.				
Tuscan Buttes, CA: <sup>2</sup> .....		Nonattainment .....		Marginal.
Tehama County (part) Those portions of the immediate Tuscan Buttes area at or above 1,800 feet in elevation.				
Ventura County, CA: <sup>2</sup> .....		Nonattainment .....		Serious.
Ventura County (part) That part of Ventura County excluding the Channel Islands of Anacapa and San Nicolas Islands.				
Morongo Band of Mission Indians <sup>3</sup> .....		Nonattainment .....		Serious.
Pechanga Band of Luiseno Mission Indians of the Pechanga Reservation <sup>3</sup> .		Nonattainment .....		Moderate.
Rest of State: <sup>4</sup>				
Alpine, Inyo, and Mono Counties: .....		Unclassifiable/Attainment.		
Alpine County				
Inyo County				
Mono County				
Amador County .....		Unclassifiable/Attainment.		
Channel Islands (Ventura County) .....		Unclassifiable/Attainment.		
Ventura County (part) remainder.				
Colusa County .....		Unclassifiable/Attainment.		
Del Norte, Humboldt, and Trinity Counties): .....		Unclassifiable/Attainment.		
Del Norte County				
Humboldt County				
Trinity County				
Nevada County (part) remainder .....		Unclassifiable/Attainment.		
Glenn County .....		Unclassifiable/Attainment.		
Kern County (part) remainder .....		Unclassifiable/Attainment.		
Lake County .....		Unclassifiable/Attainment.		
Lake Tahoe (El Dorado County Portion): .....		Unclassifiable/Attainment.		
El Dorado County (part) remainder				
Lake Tahoe (Placer County Portion): .....		Unclassifiable/Attainment.		
Placer County (part) remainder.				
Lassen County .....		Unclassifiable/Attainment.		
Mendocino County .....		Unclassifiable/Attainment.		
Modoc County .....		Unclassifiable/Attainment.		
Monterey County .....		Unclassifiable/Attainment.		
Northeastern San Bernardino County and Eastern Riverside County.		Unclassifiable/Attainment.		
San Bernardino County (part) remainder				
Riverside County (part) remainder				
Sonoma County (part) remainder .....		Unclassifiable/Attainment.		
Sutter County and Yuba County .....		Unclassifiable/Attainment.		
Sutter County (part) remainder				
Yuba County				
Plumas and Sierra Counties .....		Unclassifiable/Attainment.		
San Benito County .....		Unclassifiable/Attainment.		
Santa Barbara County .....		Unclassifiable/Attainment.		
Santa Cruz County .....		Unclassifiable/Attainment.		
Shasta County .....		Unclassifiable/Attainment.		
Siskiyou County .....		Unclassifiable/Attainment.		
Tehama County (part) remainder .....		Unclassifiable/Attainment.		
Tuolumne County .....		Unclassifiable/Attainment.		
San Luis Obispo County (part) remainder .....		Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup>Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup>Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

<sup>4</sup>Includes any Indian country in each county or area, unless otherwise specified.

■ 7. Section 81.306 is amended as follows:  
 ■ a. By revising the table heading for “Colorado—Ozone (8-Hour Standard)” to read “Colorado—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Colorado—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Colorado—

1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.306 Colorado.**

\* \* \* \* \*

**COLORADO—2008 8-HOUR OZONE NAAQS**  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Denver-Boulder-Greeley-Ft. Collins-Loveland, CO: <sup>2</sup> .... Adams County Arapahoe County Boulder County Broomfield County Denver County Douglas County Jefferson County Larimer County (part) That portion of the county that lies south of a line described as follows: Beginning at a point on Larimer County’s eastern boundary and Weld County’s western boundary intersected by 40 degrees, 42 minutes, and 47.1 seconds north latitude, proceed west to a point defined by the intersection of 40 degrees, 42 minutes, 47.1 seconds north latitude and 105 degrees, 29 minutes, and 40.0 seconds west longitude, thence proceed south on 105 degrees, 29 minutes, 40.0 seconds west longitude to the intersection with 40 degrees, 33 minutes and 17.4 seconds north latitude, thence proceed west on 40 degrees, 33 minutes, 17.4 seconds north latitude until this line intersects Larimer County’s western boundary and Grand County’s eastern boundary. Weld County (part) That portion of the county that lies south of a line described as follows: Beginning at a point on Weld County’s eastern boundary and Logan County’s western boundary intersected by 40 degrees, 42 minutes, 47.1 seconds north latitude, proceed west on 40 degrees, 42 minutes, 47.1 seconds north latitude until this line intersects Weld County’s western boundary and Larimer County’s eastern boundary.	.....	Nonattainment .....	.....	Marginal.
Southern Ute Indian Tribe of the Southern Ute Reservation <sup>3</sup> .	.....	Unclassifiable/Attainment.		
Rest of State and Rest of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup>Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup>Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

■ 8. Section 81.307 is amended as follows:  
 ■ a. By revising the table heading for “Connecticut—Ozone (8-Hour Standard)” to read “Connecticut—1997

8-Hour Ozone NAAQS (Primary and Secondary)”  
 ■ b. By adding a new table entitled “Connecticut—2008 8-Hour Ozone NAAQS (Primary and Secondary)”

following the newly designated table “Connecticut—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.307 Connecticut.

\* \* \* \* \*

CONNECTICUT—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Greater Connecticut, CT: <sup>2</sup> Hartford County Litchfield County New London County Tolland County Windham County Mashantucket Pequot Tribe of Connecticut <sup>3</sup> Mohegan Indian Tribe of Connecticut <sup>3</sup>	.....	Nonattainment .....	.....	Marginal.
New York-N. New Jersey-Long Island NY-NJ-CT: <sup>2</sup> Fairfield County Middlesex County New Haven County	.....	Nonattainment .....	.....	Marginal.

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

■ 9. Section 81.308 is amended as follows:

■ a. By revising the table heading for “Delaware—Ozone (8-Hour Standard)” to read “Delaware—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Delaware—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Delaware—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

§ 81.308 Delaware.

\* \* \* \* \*

DELAWARE—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE: <sup>2</sup> New Castle County .....	.....	Nonattainment .....	.....	Marginal.
Seaford: <sup>2</sup> Sussex County .....	.....	Nonattainment .....	.....	Marginal.
Rest of State: <sup>3</sup> Southern Delaware Intrastate AQCR: (remainder) Kent County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 10. Section 81.309 is amended as follows:

■ a. By revising the table heading for “District of Columbia—Ozone (8-Hour Standard)” to read “District of

Columbia—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “District of Columbia—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly

designated table “District of Columbia—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.309 District of Columbia.

\* \* \* \* \*

DISTRICT OF COLUMBIA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Washington, DC-MD-VA: District of Columbia <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.



■ 11. Section 81.310 is amended as follows:  
 ■ a. By revising the table heading for “Florida—Ozone (8-Hour Standard)” to read “Florida—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Florida—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Florida—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.310 Florida.**

\* \* \* \* \*

**FLORIDA—2008 8-HOUR OZONE NAAQS**  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide: <sup>2</sup>	.....	Unclassifiable/Attainment.		
Alachua County				
Baker County				
Bay County				
Bradford County				
Brevard County				
Broward County				
Calhoun County				
Charlotte County				
Citrus County				
Clay County				
Collier County				
Columbia County				
DeSoto County				
Dixie County				
Duval County				
Escambia County				
Flagler County				
Franklin County				
Gadsden County				
Gilchrist County				
Glades County				
Gulf County				
Hamilton County				
Hardee County				
Hendry County				
Hernando County				
Highlands County				
Hillsborough County				
Holmes County				
Indian River County				
Jackson County				
Jefferson County				
Lafayette County				
Lake County				
Lee County				
Leon County				
Levy County				
Liberty County				
Madison County				
Manatee County				
Marion County				
Martin County				
Miami-Dade County				
Monroe County				
Nassau County				
Okaloosa County				
Okeechobee County				
Orange County				
Osceola County				
Palm Beach County				
Pasco County				
Pinellas County				
Polk County				
Putnam County				
St. Johns County				
St. Lucie County				
Santa Rosa County				
Sarasota County				
Seminole County				
Sumter County				
Suwannee County				

FLORIDA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Taylor County Union County Volusia County Wakulla County Walton County Washington County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Includes any Indian country located in each county or area, unless otherwise noted.

■ 12. Section 81.311 is amended as follows:

■ a. By revising the table heading for “Georgia—Ozone (8-Hour Standard)” to read “Georgia—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Georgia—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Georgia—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.311 Georgia.**

\* \* \* \* \*

GEORGIA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Atlanta, GA: <sup>2</sup> .....		Nonattainment .....		Marginal.
Bartow County				
Cherokee County				
Clayton County				
Cobb County				
Coweta County				
DeKalb County				
Douglas County				
Fayette County				
Forsyth County				
Fulton County				
Gwinnett County				
Henry County				
Newton County				
Paulding County				
Rockdale County				
Rest of State: <sup>3</sup>				
Appling County .....		Unclassifiable/Attainment.		
Atkinson County .....		Unclassifiable/Attainment.		
Bacon County .....		Unclassifiable/Attainment.		
Baker County .....		Unclassifiable/Attainment.		
Baldwin County .....		Unclassifiable/Attainment.		
Banks County .....		Unclassifiable/Attainment.		
Barrow County .....		Unclassifiable/Attainment.		
Ben Hill County .....		Unclassifiable/Attainment.		
Berrien County .....		Unclassifiable/Attainment.		
Bibb County .....		Unclassifiable/Attainment.		
Bleckley County .....		Unclassifiable/Attainment.		
Brantley County .....		Unclassifiable/Attainment.		
Brooks County .....		Unclassifiable/Attainment.		
Bryan County .....		Unclassifiable/Attainment.		
Bulloch County .....		Unclassifiable/Attainment.		
Burke County .....		Unclassifiable/Attainment.		
Butts County .....		Unclassifiable/Attainment.		
Calhoun County .....		Unclassifiable/Attainment.		
Camden County .....		Unclassifiable/Attainment.		
Candler County .....		Unclassifiable/Attainment.		
Carroll County .....		Unclassifiable/Attainment.		
Catoosa County .....		Unclassifiable/Attainment.		
Charlton County .....		Unclassifiable/Attainment.		
Chatham County .....		Unclassifiable/Attainment.		
Chattahoochee County .....		Unclassifiable/Attainment.		
Chattooga County .....		Unclassifiable/Attainment.		
Clarke County .....		Unclassifiable/Attainment.		

GEORGIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Clay County .....	.....	Unclassifiable/Attainment.		
Clinch County .....	.....	Unclassifiable/Attainment.		
Coffee County .....	.....	Unclassifiable/Attainment.		
Colquitt County .....	.....	Unclassifiable/Attainment.		
Columbia County .....	.....	Unclassifiable/Attainment.		
Cook County .....	.....	Unclassifiable/Attainment.		
Crawford County .....	.....	Unclassifiable/Attainment.		
Crisp County .....	.....	Unclassifiable/Attainment.		
Dade County .....	.....	Unclassifiable/Attainment.		
Dawson County .....	.....	Unclassifiable/Attainment.		
Decatur County .....	.....	Unclassifiable/Attainment.		
Dodge County .....	.....	Unclassifiable/Attainment.		
Dooly County .....	.....	Unclassifiable/Attainment.		
Dougherty County .....	.....	Unclassifiable/Attainment.		
Early County .....	.....	Unclassifiable/Attainment.		
Echols County .....	.....	Unclassifiable/Attainment.		
Effingham County .....	.....	Unclassifiable/Attainment.		
Elbert County .....	.....	Unclassifiable/Attainment.		
Emanuel County .....	.....	Unclassifiable/Attainment.		
Evans County .....	.....	Unclassifiable/Attainment.		
Fannin County .....	.....	Unclassifiable/Attainment.		
Floyd County .....	.....	Unclassifiable/Attainment.		
Franklin County .....	.....	Unclassifiable/Attainment.		
Gilmer County .....	.....	Unclassifiable/Attainment.		
Glascock County .....	.....	Unclassifiable/Attainment.		
Glynn County .....	.....	Unclassifiable/Attainment.		
Gordon County .....	.....	Unclassifiable/Attainment.		
Grady County .....	.....	Unclassifiable/Attainment.		
Greene County .....	.....	Unclassifiable/Attainment.		
Habersham County .....	.....	Unclassifiable/Attainment.		
Hall County .....	.....	Unclassifiable/Attainment.		
Hancock County .....	.....	Unclassifiable/Attainment.		
Haralson County .....	.....	Unclassifiable/Attainment.		
Harris County .....	.....	Unclassifiable/Attainment.		
Hart County .....	.....	Unclassifiable/Attainment.		
Heard County .....	.....	Unclassifiable/Attainment.		
Houston County .....	.....	Unclassifiable/Attainment.		
Irwin County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jasper County .....	.....	Unclassifiable/Attainment.		
Jeff Davis County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Jenkins County .....	.....	Unclassifiable/Attainment.		
Johnson County .....	.....	Unclassifiable/Attainment.		
Jones County .....	.....	Unclassifiable/Attainment.		
Lamar County .....	.....	Unclassifiable/Attainment.		
Lanier County .....	.....	Unclassifiable/Attainment.		
Laurens County .....	.....	Unclassifiable/Attainment.		
Lee County .....	.....	Unclassifiable/Attainment.		
Liberty County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Long County .....	.....	Unclassifiable/Attainment.		
Lowndes County .....	.....	Unclassifiable/Attainment.		
Lumpkin County .....	.....	Unclassifiable/Attainment.		
McDuffie County .....	.....	Unclassifiable/Attainment.		
McIntosh County .....	.....	Unclassifiable/Attainment.		
Macon County .....	.....	Unclassifiable/Attainment.		
Madison County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Meriwether County .....	.....	Unclassifiable/Attainment.		
Miller County .....	.....	Unclassifiable/Attainment.		
Mitchell County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Morgan County .....	.....	Unclassifiable/Attainment.		
Murray County .....	.....	Unclassifiable/Attainment.		
Muscogee County .....	.....	Unclassifiable/Attainment.		
Oconee County .....	.....	Unclassifiable/Attainment.		
Oglethorpe County .....	.....	Unclassifiable/Attainment.		

GEORGIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Peach County .....	.....	Unclassifiable/Attainment.		
Pickens County .....	.....	Unclassifiable/Attainment.		
Pierce County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Polk County .....	.....	Unclassifiable/Attainment.		
Pulaski County .....	.....	Unclassifiable/Attainment.		
Putnam County .....	.....	Unclassifiable/Attainment.		
Quitman County .....	.....	Unclassifiable/Attainment.		
Rabun County .....	.....	Unclassifiable/Attainment.		
Randolph County .....	.....	Unclassifiable/Attainment.		
Richmond County .....	.....	Unclassifiable/Attainment.		
Schley County .....	.....	Unclassifiable/Attainment.		
Screven County .....	.....	Unclassifiable/Attainment.		
Seminole County .....	.....	Unclassifiable/Attainment.		
Spalding County .....	.....	Unclassifiable/Attainment.		
Stephens County .....	.....	Unclassifiable/Attainment.		
Stewart County .....	.....	Unclassifiable/Attainment.		
Sumter County .....	.....	Unclassifiable/Attainment.		
Talbot County .....	.....	Unclassifiable/Attainment.		
Taliaferro County .....	.....	Unclassifiable/Attainment.		
Tattnall County .....	.....	Unclassifiable/Attainment.		
Taylor County .....	.....	Unclassifiable/Attainment.		
Telfair County .....	.....	Unclassifiable/Attainment.		
Terrell County .....	.....	Unclassifiable/Attainment.		
Thomas County .....	.....	Unclassifiable/Attainment.		
Tift County .....	.....	Unclassifiable/Attainment.		
Toombs County .....	.....	Unclassifiable/Attainment.		
Towns County .....	.....	Unclassifiable/Attainment.		
Treutlen County .....	.....	Unclassifiable/Attainment.		
Troup County .....	.....	Unclassifiable/Attainment.		
Turner County .....	.....	Unclassifiable/Attainment.		
Twiggs County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Upson County .....	.....	Unclassifiable/Attainment.		
Walker County .....	.....	Unclassifiable/Attainment.		
Walton County .....	.....	Unclassifiable/Attainment.		
Ware County .....	.....	Unclassifiable/Attainment.		
Warren County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Webster County .....	.....	Unclassifiable/Attainment.		
Wheeler County .....	.....	Unclassifiable/Attainment.		
White County .....	.....	Unclassifiable/Attainment.		
Whitfield County .....	.....	Unclassifiable/Attainment.		
Wilcox County .....	.....	Unclassifiable/Attainment.		
Wilkes County .....	.....	Unclassifiable/Attainment.		
Wilkinson County .....	.....	Unclassifiable/Attainment.		
Worth County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 13. Section 81.312 is amended as follows:  
 ■ a. By revising the table heading for “Hawaii—Ozone (8-Hour Standard)” to read “Hawaii—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Hawaii—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Hawaii—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.312 Hawaii.**  
 \* \* \* \* \*

HAWAII—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area <sup>2</sup>	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Hawaii County .....	.....	Unclassifiable/Attainment.		
Honolulu County .....	.....	Unclassifiable/Attainment.		
Kalawao County .....	.....	Unclassifiable/Attainment.		
Kauai County .....	.....	Unclassifiable/Attainment.		
Maui County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 14. Section 81.313 is amended as follows:  
■ a. By revising the table heading for “Idaho—Ozone (8-Hour Standard)” to read “Idaho—1997

8-Hour Ozone NAAQS (Primary and Secondary)”  
■ b. By adding a new table entitled “Idaho—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the

newly designated table “Idaho—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.313 Idaho.  
\* \* \* \* \*

IDAHO—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area <sup>2</sup>	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

■ 15. Section 81.314 is amended as follows:  
■ a. By revising the table heading for “Illinois—Ozone (8-Hour Standard)” to read “Illinois—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Illinois—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Illinois—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.314 Illinois.  
\* \* \* \* \*

ILLINOIS—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
St. Louis-St. Charles-Farmington, MO-IL: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Madison County				
Monroe County				
St. Clair County				
Adams County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Alexander County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Bond County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Boone County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Brown County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Bureau County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Calhoun County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Carroll County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Cass County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Champaign County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Christian County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Clark County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Clay County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Clinton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Coles County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Crawford County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Cumberland County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
DeKalb County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
De Witt County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Douglas County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Edgar County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

ILLINOIS—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Edwards County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Effingham County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Fayette County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Ford County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Franklin County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Fulton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Gallatin County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Greene County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Hamilton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Hancock County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Hardin County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Henderson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Henry County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Iroquois County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jackson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jasper County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jefferson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jersey County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jo Daviess County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Johnson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Kankakee County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Knox County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
La Salle County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Lawrence County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Lee County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Livingston County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Logan County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
McDonough County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
McLean County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Macon County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Macoupin County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Marion County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Marshall County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Mason County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Massac County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Menard County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Mercer County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Montgomery County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Morgan County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Moultrie County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Ogle County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Peoria County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Perry County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Piatt County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Pike County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Pope County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Pulaski County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Putnam County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Randolph County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Richland County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Rock Island County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Saline County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Sangamon County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Schuyler County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Scott County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Shelby County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Stark County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Stephenson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Tazewell County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Union County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Vermilion County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Wabash County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Warren County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Washington County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Wayne County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
White County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Whiteside County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Williamson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Winnebago County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

ILLINOIS—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Woodford County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 16. Section 81.315 is amended as follows:

■ a. By revising the table heading for “Indiana—Ozone (8-Hour Standard)” to read “Indiana—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Indiana—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Indiana—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.315 Indiana.**

\* \* \* \* \*

INDIANA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designation area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Cincinnati, OH-KY-IN: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Dearborn County (part)				
Lawrenceburg Township				
Adams County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Allen County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Bartholomew County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Benton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Blackford County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Boone County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Brown County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Carroll County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Cass County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Clark County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Clay County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Clinton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Crawford County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Daviess County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Dearborn County (remainder) <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Decatur County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
De Kalb County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Delaware County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Dubois County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Elkhart County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Fayette County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Floyd County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Fountain County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Franklin County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Fulton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Gibson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Grant County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Greene County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Hamilton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Hancock County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Harrison County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Hendricks County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Henry County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Howard County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Huntington County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jackson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jay County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jefferson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jennings County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Johnson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Knox County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Kosciusko County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
LaGrange County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
La Porte County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Lawrence County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

INDIANA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designation area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Madison County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Marion County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Marshall County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Martin County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Miami County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Monroe County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Montgomery County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Morgan County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Newton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Noble County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Ohio County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Orange County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Owen County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Parke County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Perry County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Pike County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Posey County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Pulaski County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Putnam County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Randolph County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Ripley County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Rush County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
St Joseph County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Scott County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Shelby County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Spencer County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Starke County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Steuben County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Sullivan County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Switzerland County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Tippecanoe County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Tipton County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Union County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Vanderburgh County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Vermillion County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Vigo County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Wabash County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Warren County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Warrick County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Washington County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Wayne County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Wells County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
White County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Whitley County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 17. Section 81.316 is amended as follows:  
 ■ a. By revising the table heading for “Iowa—Ozone (8-Hour Standard)” to read “Iowa—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Iowa—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Iowa—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.316 Iowa.**  
 \* \* \* \* \*

IOWA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country: Adair County Adams County Allamakee County	.....	Unclassifiable/Attainment.		



## IOWA—2008 8-HOUR OZONE NAAQS—Continued

[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Appanoose County				
Audubon County				
Benton County				
Black Hawk County				
Boone County				
Bremer County				
Buchanan County				
Buena Vista County				
Butler County				
Calhoun County				
Carroll County				
Cass County				
Cedar County				
Cerro Gordo County				
Cherokee County				
Chickasaw County				
Clarke County				
Clay County				
Clayton County				
Clinton County				
Crawford County				
Dallas County				
Davis County				
Decatur County				
Delaware County				
Des Moines County				
Dickinson County				
Dubuque County				
Emmet County				
Fayette County				
Floyd County				
Franklin County				
Fremont County				
Greene County				
Grundy County				
Guthrie County				
Hamilton County				
Hancock County				
Hardin County				
Harrison County				
Henry County				
Howard County				
Humboldt County				
Ida County				
Iowa County				
Jackson County				
Jasper County				
Jefferson County				
Johnson County				
Jones County				
Keokuk County				
Kossuth County				
Lee County				
Linn County				
Louisa County				
Lucas County				
Lyon County				
Madison County				
Mahaska County				
Marion County				
Marshall County				
Mills County				
Mitchell County				
Monona County				
Monroe County				
Montgomery County				
Muscatine County				
O'Brien County				
Osceola County				

IOWA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Page County				
Palo Alto County				
Plymouth County				
Pocahontas County				
Polk County				
Pottawattamie County				
Poweshiek County				
Ringgold County				
Sac County				
Scott County				
Shelby County				
Sioux County				
Story County				
Tama County				
Taylor County				
Union County				
Van Buren County				
Wapello County				
Warren County				
Washington County				
Wayne County				
Webster County				
Winnebago County				
Winneshiek County				
Woodbury County				
Worth County				
Wright County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

■ 18. Section 81.317 is amended as follows:

■ a. By revising the table heading for “Kansas—Ozone (8-Hour Standard)” to read “Kansas—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Kansas—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Kansas—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.317 Kansas.**

\* \* \* \* \*

KANSAS—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country: .....	.....	Unclassifiable/Attainment.		
Allen County				
Anderson County				
Atchison County				
Barber County				
Barton County				
Bourbon County				
Brown County				
Butler County				
Chase County				
Chautauqua County				
Cherokee County				
Cheyenne County				
Clark County				
Clay County				
Cloud County				
Coffey County				
Comanche County				
Cowley County				
Crawford County				
Decatur County				
Dickinson County				
Doniphan County				

## KANSAS—2008 8-HOUR OZONE NAAQS—Continued

[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Douglas County				
Edwards County				
Elk County				
Ellis County				
Ellsworth County				
Finney County				
Ford County				
Franklin County				
Geary County				
Gove County				
Graham County				
Grant County				
Gray County				
Greeley County				
Greenwood County				
Hamilton County				
Harper County				
Harvey County				
Haskell County				
Hodgeman County				
Jackson County				
Jefferson County				
Jewell County				
Johnson County				
Kearny County				
Kingman County				
Kiowa County				
Labette County				
Lane County				
Leavenworth County				
Lincoln County				
Linn County				
Logan County				
Lyon County				
McPherson County				
Marion County				
Marshall County				
Meade County				
Miami County				
Mitchell County				
Montgomery County				
Morris County				
Morton County				
Nemaha County				
Neosho County				
Ness County				
Norton County				
Osage County				
Osborne County				
Ottawa County				
Pawnee County				
Phillips County				
Pottawatomie County				
Pratt County				
Rawlins County				
Reno County				
Republic County				
Rice County				
Riley County				
Rooks County				
Rush County				
Russell County				
Saline County				
Scott County				
Sedgwick County				
Seward County				
Shawnee County				
Sheridan County				
Sherman County				

KANSAS—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Smith County Stafford County Stanton County Stevens County Sumner County Thomas County Trego County Wabaunsee County Wallace County Washington County Wichita County Wilson County Woodson County Wyandotte County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

■ 19. Section 81.318 is amended as follows:  
■ a. By revising the table heading for “Kentucky—Ozone (8-Hour Standard)” to read “Kentucky—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Kentucky—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Kentucky—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.318 Kentucky.**

\* \* \* \* \*

KENTUCKY—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Cincinnati, OH-KY-IN: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Boone County (part) 2000 Census tracts: 702, 703.01, 703.04, 703.05, 703.06, 703.07, 703.08, 703.09, 704.01, 704.02, 705.01, 705.02, 706.01, 706.03, 706.04				
Campbell County (part) 2000 Census tracts: 501, 502, 503, 504, 505, 506, 511.01, 511.02, 512, 513, 519.01, 519.03, 519.04, 520.01, 520.02, 521, 522, 523.01, 523.02, 524, 525, 526, 528, 529, 530, 531				
Kenton County (part) 2000 Census tracts: 603, 607, 609, 610, 611, 612, 613, 614, 616, 636.03, 636.04, 636.05, 636.06, 638, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655.01, 655.02, 656, 657, 658, 659, 668, 669, 670, 671				
Rest of State: <sup>3</sup>				
Adair County .....	.....	Unclassifiable/Attainment.		
Allen County .....	.....	Unclassifiable/Attainment.		
Anderson County .....	.....	Unclassifiable/Attainment.		
Ballard County .....	.....	Unclassifiable/Attainment.		
Barren County .....	.....	Unclassifiable/Attainment.		
Bath County .....	.....	Unclassifiable/Attainment.		
Bell County .....	.....	Unclassifiable/Attainment.		
Boone County (part) .....	.....	Unclassifiable/Attainment.		
2000 Census tracts: 706.01 and 706.04				
Bourbon County .....	.....	Unclassifiable/Attainment.		
Boyd County .....	.....	Unclassifiable/Attainment.		
Boyle County .....	.....	Unclassifiable/Attainment.		
Bracken County .....	.....	Unclassifiable/Attainment.		
Breathitt County .....	.....	Unclassifiable/Attainment.		
Breckinridge County .....	.....	Unclassifiable/Attainment.		

KENTUCKY—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Bullitt County .....	.....	Unclassifiable/Attainment O <sub>3</sub> ≥ x   ≥.		
Butler County .....	.....	Unclassifiable/Attainment.		
Caldwell County .....	.....	Unclassifiable/Attainment.		
Calloway County .....	.....	Unclassifiable/Attainment.		
Campbell County (part) .....	.....	Unclassifiable/Attainment.		
2000 Census tracts: 520.01 and 520.02				
Carlisle County .....	.....	Unclassifiable/Attainment.		
Carroll County .....	.....	Unclassifiable/Attainment.		
Carter County .....	.....	Unclassifiable/Attainment.		
Casey County .....	.....	Unclassifiable/Attainment.		
Christian County .....	.....	Unclassifiable/Attainment.		
Clark County .....	.....	Unclassifiable/Attainment.		
Clay County .....	.....	Unclassifiable/Attainment.		
Clinton County .....	.....	Unclassifiable/Attainment.		
Crittenden County .....	.....	Unclassifiable/Attainment.		
Cumberland County .....	.....	Unclassifiable/Attainment.		
Daviess County .....	.....	Unclassifiable/Attainment.		
Edmonson County .....	.....	Unclassifiable/Attainment.		
Elliott County .....	.....	Unclassifiable/Attainment.		
Estill County .....	.....	Unclassifiable/Attainment.		
Fayette County .....	.....	Unclassifiable/Attainment.		
Fleming County .....	.....	Unclassifiable/Attainment.		
Floyd County .....	.....	Unclassifiable/Attainment.		
Franklin County .....	.....	Unclassifiable/Attainment.		
Fulton County .....	.....	Unclassifiable/Attainment.		
Gallatin County .....	.....	Unclassifiable/Attainment.		
Garrard County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Graves County .....	.....	Unclassifiable/Attainment.		
Grayson County .....	.....	Unclassifiable/Attainment.		
Green County .....	.....	Unclassifiable/Attainment.		
Greenup County .....	.....	Unclassifiable/Attainment.		
Hancock County .....	.....	Unclassifiable/Attainment.		
Hardin County .....	.....	Unclassifiable/Attainment.		
Harlan County .....	.....	Unclassifiable/Attainment.		
Harrison County .....	.....	Unclassifiable/Attainment.		
Hart County .....	.....	Unclassifiable/Attainment.		
Henderson County .....	.....	Unclassifiable/Attainment.		
Henry County .....	.....	Unclassifiable/Attainment.		
Hickman County .....	.....	Unclassifiable/Attainment.		
Hopkins County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Jessamine County .....	.....	Unclassifiable/Attainment.		
Johnson County .....	.....	Unclassifiable/Attainment.		
Kenton County (part) .....	.....	Unclassifiable/Attainment.		
2000 Census tracts: 637.01 and 637.04				
Knott County .....	.....	Unclassifiable/Attainment.		
Knox County .....	.....	Unclassifiable/Attainment.		
Larue County .....	.....	Unclassifiable/Attainment.		
Laurel County .....	.....	Unclassifiable/Attainment.		
Lawrence County .....	.....	Unclassifiable/Attainment.		
Lee County .....	.....	Unclassifiable/Attainment.		
Leslie County .....	.....	Unclassifiable/Attainment.		
Letcher County .....	.....	Unclassifiable/Attainment.		
Lewis County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Livingston County .....	.....	Unclassifiable/Attainment.		
Logan County .....	.....	Unclassifiable/Attainment.		
Lyon County .....	.....	Unclassifiable/Attainment.		
McCracken County .....	.....	Unclassifiable/Attainment.		
McCreary County .....	.....	Unclassifiable/Attainment.		
McLean County .....	.....	Unclassifiable/Attainment.		
Madison County .....	.....	Unclassifiable/Attainment.		
Magoffin County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
Martin County .....	.....	Unclassifiable/Attainment.		

KENTUCKY—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Mason County .....	.....	Unclassifiable/Attainment.		
Meade County .....	.....	Unclassifiable/Attainment.		
Menifee County .....	.....	Unclassifiable/Attainment.		
Mercer County .....	.....	Unclassifiable/Attainment.		
Metcalfe County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Morgan County .....	.....	Unclassifiable/Attainment.		
Muhlenberg County .....	.....	Unclassifiable/Attainment.		
Nelson County .....	.....	Unclassifiable/Attainment.		
Nicholas County .....	.....	Unclassifiable/Attainment.		
Ohio County .....	.....	Unclassifiable/Attainment.		
Oldham County .....	.....	Unclassifiable/Attainment.		
Owen County .....	.....	Unclassifiable/Attainment.		
Owsley County .....	.....	Unclassifiable/Attainment.		
Pendleton County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Pike County .....	.....	Unclassifiable/Attainment.		
Powell County .....	.....	Unclassifiable/Attainment.		
Pulaski County .....	.....	Unclassifiable/Attainment.		
Robertson County .....	.....	Unclassifiable/Attainment.		
Rockcastle County .....	.....	Unclassifiable/Attainment.		
Rowan County .....	.....	Unclassifiable/Attainment.		
Russell County .....	.....	Unclassifiable/Attainment.		
Scott County .....	.....	Unclassifiable/Attainment.		
Shelby County .....	.....	Unclassifiable/Attainment.		
Simpson County .....	.....	Unclassifiable/Attainment.		
Spencer County .....	.....	Unclassifiable/Attainment.		
Taylor County .....	.....	Unclassifiable/Attainment.		
Todd County .....	.....	Unclassifiable/Attainment.		
Trigg County .....	.....	Unclassifiable/Attainment.		
Trimble County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Warren County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Webster County .....	.....	Unclassifiable/Attainment.		
Whitley County .....	.....	Unclassifiable/Attainment.		
Wolfe County .....	.....	Unclassifiable/Attainment.		
Woodford County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 20. Section 81.319 is amended as follows:  
 ■ a. By revising the table heading for “Louisiana—Ozone (8-Hour Standard)” to read “Louisiana—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Louisiana—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Louisiana—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.319 Louisiana.**  
 \* \* \* \* \*

LOUISIANA—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Baton Rouge, LA: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Ascension Parish				
East Baton Rouge Parish				
Iberville Parish				
Livingston Parish				
West Baton Rouge Parish				
AQCR 019 Monroe-El Dorado Interstate: <sup>3</sup>				
Caldwell Parish .....	.....	Unclassifiable/Attainment.		

LOUISIANA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Catahoula Parish .....	.....	Unclassifiable/Attainment.		
Concordia Parish .....	.....	Unclassifiable/Attainment.		
East Carroll Parish .....	.....	Unclassifiable/Attainment.		
Franklin Parish .....	.....	Unclassifiable/Attainment.		
La Salle Parish .....	.....	Unclassifiable/Attainment.		
Madison Parish .....	.....	Unclassifiable/Attainment.		
Morehouse Parish .....	.....	Unclassifiable/Attainment.		
Ouachita Parish .....	.....	Unclassifiable/Attainment.		
Richland Parish .....	.....	Unclassifiable/Attainment.		
Tensas Parish .....	.....	Unclassifiable/Attainment.		
Union Parish .....	.....	Unclassifiable/Attainment.		
West Carroll Parish .....	.....	Unclassifiable/Attainment.		
AQCR 022 Shreveport-Texarkana-Tyler Interstate: <sup>3</sup>				
Bienville Parish .....	.....	Unclassifiable/Attainment.		
Bossier Parish .....	.....	Unclassifiable/Attainment.		
Caddo Parish .....	.....	Unclassifiable/Attainment.		
Claiborne Parish .....	.....	Unclassifiable/Attainment.		
De Soto Parish .....	.....	Unclassifiable/Attainment.		
Jackson Parish .....	.....	Unclassifiable/Attainment.		
Lincoln Parish .....	.....	Unclassifiable/Attainment.		
Natchitoches Parish .....	.....	Unclassifiable/Attainment.		
Red River Parish .....	.....	Unclassifiable/Attainment.		
Sabine Parish .....	.....	Unclassifiable/Attainment.		
Webster Parish .....	.....	Unclassifiable/Attainment.		
Winn Parish .....	.....	Unclassifiable/Attainment.		
AQCR 106 S. Louisiana-SE. Texas Interstate: (remainder) <sup>3</sup>				
Acadia Parish .....	.....	Unclassifiable/Attainment.		
Allen Parish .....	.....	Unclassifiable/Attainment.		
Assumption Parish .....	.....	Unclassifiable/Attainment.		
Avoyelles Parish .....	.....	Unclassifiable/Attainment.		
Beauregard Parish .....	.....	Unclassifiable/Attainment.		
Calcasieu Parish .....	.....	Unclassifiable/Attainment.		
Cameron Parish .....	.....	Unclassifiable/Attainment.		
East Feliciana Parish .....	.....	Unclassifiable/Attainment.		
Evangeline Parish .....	.....	Unclassifiable/Attainment.		
Grant Parish .....	.....	Unclassifiable/Attainment.		
Iberia Parish .....	.....	Unclassifiable/Attainment.		
Jefferson Davis Parish .....	.....	Unclassifiable/Attainment.		
Jefferson Parish .....	.....	Unclassifiable/Attainment.		
Lafayette Parish .....	.....	Unclassifiable/Attainment.		
Lafourche Parish .....	.....	Unclassifiable/Attainment.		
Orleans Parish .....	.....	Unclassifiable/Attainment.		
Plaquemines Parish .....	.....	Unclassifiable/Attainment.		
Pointe Coupee Parish .....	.....	Unclassifiable/Attainment.		
Rapides Parish .....	.....	Unclassifiable/Attainment.		
St. Bernard Parish .....	.....	Unclassifiable/Attainment.		
St. Charles Parish .....	.....	Unclassifiable/Attainment.		
St. Helena Parish .....	.....	Unclassifiable/Attainment.		
St. James Parish .....	.....	Unclassifiable/Attainment.		
St. John the Baptist Parish .....	.....	Unclassifiable/Attainment.		
St. Landry Parish .....	.....	Unclassifiable/Attainment.		
St. Martin Parish .....	.....	Unclassifiable/Attainment.		
St. Mary Parish .....	.....	Unclassifiable/Attainment.		
St. Tammany Parish .....	.....	Unclassifiable/Attainment.		
Tangipahoa Parish .....	.....	Unclassifiable/Attainment.		
Terrebonne Parish .....	.....	Unclassifiable/Attainment.		
Vermilion Parish .....	.....	Unclassifiable/Attainment.		
Vernon Parish .....	.....	Unclassifiable/Attainment.		
Washington Parish .....	.....	Unclassifiable/Attainment.		
West Feliciana Parish .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 21. Section 81.320 is amended as follows:  
 ■ a. By revising the table heading for “Maine—Ozone (8-Hour Standard)” to read “Maine—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Maine—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Maine—1997 8-

Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.320 Maine.**  
 \* \* \* \* \*

**MAINE—2008 8-HOUR OZONE NAAQS**  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide: <sup>2</sup> .....	.....	Unclassifiable/Attainment.		
Androscoggin County				
Aroostook County				
Cumberland County				
Franklin County				
Hancock County				
Kennebec County				
Knox County				
Lincoln County				
Oxford County				
Penobscot County				
Piscataquis County				
Sagadahoc County				
Somerset County				
Waldo County				
Washington County				
York County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 22. Section 81.321 is amended as follows:  
 ■ a. By revising the table heading for “Maryland—Ozone (8-Hour Standard)” to read “Maryland—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Maryland—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Maryland—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.321 Maryland.**  
 \* \* \* \* \*

**MARYLAND—2008 8-HOUR OZONE NAAQS**  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Baltimore, MD: <sup>2</sup> .....	.....	Nonattainment .....	.....	Moderate.
Anne Arundel County				
Baltimore County				
Baltimore City				
Carroll County				
Harford County				
Howard County				
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Cecil County				
Washington, DC-MD-VA: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Calvert County				
Charles County				
Frederick County				
Montgomery County				
Prince George’s County				
AQCR 113 Cumberland-Keyser Interstate <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Allegany County				
Garrett County				
Washington County				
AQCR 114 Eastern Shore Interstate: (remainder) <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Caroline County				
Dorchester County				
Kent County				
Queen Anne’s County				
Somerset County				



MARYLAND—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Talbot County Wicomico County Worcester County AQCR 116 Southern Maryland Intrastate: (remainder) <sup>3</sup> St. Mary's County	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 23. Section 81.322 is amended as follows:  
 ■ a. By revising the table heading for “Massachusetts—Ozone (8-Hour Standard)” to read “Massachusetts—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”  
 ■ b. By adding a new table entitled “Massachusetts—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Massachusetts—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.322 Massachusetts.**  
 \* \* \* \* \*

MASSACHUSETTS—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Dukes County, MA: <sup>2</sup> ..... Dukes County Wampanoag Tribe of Gay Head (Aquinnah) of Massachusetts <sup>3</sup>	.....	Nonattainment .....	.....	Marginal.
Rest of State: <sup>4</sup> Barnstable County Berkshire County Bristol County Essex County Franklin County Hampden County Hampshire County Middlesex County Nantucket County Norfolk County Plymouth County Suffolk County Worcester County	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.  
<sup>4</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 24. Section 81.323 is amended as follows:  
 ■ a. By revising the table heading for “Michigan—Ozone (8-Hour Standard)” to read “Michigan—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Michigan—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Michigan—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.323 Michigan.**  
 \* \* \* \* \*

MICHIGAN—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

- 25. Section 81.324 is amended as follows:
- a. By revising the table heading for “Minnesota—Ozone (8-Hour Standard)” to read “Minnesota—1997 8-Hour

Ozone NAAQS (Primary and Secondary)”

- b. By adding a new table entitled “Minnesota—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Minnesota—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.324 Minnesota.**  
\* \* \* \* \*

**MINNESOTA—2008 8-HOUR OZONE NAAQS**  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

- 26. Section 81.325 is amended as follows:
- a. By revising the table heading for “Mississippi—Ozone (8-Hour Standard)” to read “Mississippi—1997

8-Hour Ozone NAAQS (Primary and Secondary)”

- b. By adding a new table entitled “Mississippi—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the existing table

“Mississippi—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.325 Mississippi.**  
\* \* \* \* \*

**MISSISSIPPI—2008 8-HOUR OZONE NAAQS**  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Memphis, TN-MS-AR: <sup>2</sup> DeSoto County (part) Portion along MPO Lines ....	.....	NonAttainment .....	Marginal.	
Rest of State: <sup>3</sup>				
Adams County	.....	Unclassifiable/Attainment.		
Alcorn County	.....	Unclassifiable/Attainment.		
Amite County	.....	Unclassifiable/Attainment.		
Attala County	.....	Unclassifiable/Attainment.		
Benton County	.....	Unclassifiable/Attainment.		
Bolivar County	.....	Unclassifiable/Attainment.		
Calhoun County	.....	Unclassifiable/Attainment.		
Carroll County	.....	Unclassifiable/Attainment.		
Chickasaw County	.....	Unclassifiable/Attainment.		
Choctaw County	.....	Unclassifiable/Attainment.		
Claiborne County	.....	Unclassifiable/Attainment.		
Clarke County	.....	Unclassifiable/Attainment.		
Clay County	.....	Unclassifiable/Attainment.		
Coahoma County	.....	Unclassifiable/Attainment.		
Copiah County	.....	Unclassifiable/Attainment.		
Covington County	.....	Unclassifiable/Attainment.		
DeSoto County (remainder)	.....	Unclassifiable/Attainment.		
Forrest County	.....	Unclassifiable/Attainment.		
Franklin County	.....	Unclassifiable/Attainment.		
George County	.....	Unclassifiable/Attainment.		
Greene County	.....	Unclassifiable/Attainment.		
Grenada County	.....	Unclassifiable/Attainment.		
Hancock County	.....	Unclassifiable/Attainment.		
Harrison County	.....	Unclassifiable/Attainment.		
Hinds County	.....	Unclassifiable/Attainment.		
Holmes County	.....	Unclassifiable/Attainment.		
Humphreys County	.....	Unclassifiable/Attainment.		
Issaquena County	.....	Unclassifiable/Attainment.		
Itawamba County	.....	Unclassifiable/Attainment.		
Jackson County	.....	Unclassifiable/Attainment.		
Jasper County	.....	Unclassifiable/Attainment.		
Jefferson County	.....	Unclassifiable/Attainment.		
Jefferson Davis County	.....	Unclassifiable/Attainment.		
Jones County	.....	Unclassifiable/Attainment.		
Kemper County	.....	Unclassifiable/Attainment.		
Lafayette County	.....	Unclassifiable/Attainment.		
Lamar County	.....	Unclassifiable/Attainment.		
Lauderdale County	.....	Unclassifiable/Attainment.		
Lawrence County	.....	Unclassifiable/Attainment.		

MISSISSIPPI—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Leake County	.....	Unclassifiable/Attainment.		
Lee County	.....	Unclassifiable/Attainment.		
Leflore County	.....	Unclassifiable/Attainment.		
Lincoln County	.....	Unclassifiable/Attainment.		
Lowndes County	.....	Unclassifiable/Attainment.		
Madison County	.....	Unclassifiable/Attainment.		
Marion County	.....	Unclassifiable/Attainment.		
Marshall County	.....	Unclassifiable/Attainment.		
Monroe County	.....	Unclassifiable/Attainment.		
Montgomery County	.....	Unclassifiable/Attainment.		
Neshoba County	.....	Unclassifiable/Attainment.		
Newton County	.....	Unclassifiable/Attainment.		
Noxubee County	.....	Unclassifiable/Attainment.		
Oktibbeha County	.....	Unclassifiable/Attainment.		
Panola County	.....	Unclassifiable/Attainment.		
Pearl River County	.....	Unclassifiable/Attainment.		
Perry County	.....	Unclassifiable/Attainment.		
Pike County	.....	Unclassifiable/Attainment.		
Pontotoc County	.....	Unclassifiable/Attainment.		
Prentiss County	.....	Unclassifiable/Attainment.		
Quitman County	.....	Unclassifiable/Attainment.		
Rankin County	.....	Unclassifiable/Attainment.		
Scott County	.....	Unclassifiable/Attainment.		
Sharkey County	.....	Unclassifiable/Attainment.		
Simpson County	.....	Unclassifiable/Attainment.		
Smith County	.....	Unclassifiable/Attainment.		
Stone County	.....	Unclassifiable/Attainment.		
Sunflower County	.....	Unclassifiable/Attainment.		
Tallahatchie County	.....	Unclassifiable/Attainment.		
Tate County.	.....	Unclassifiable/Attainment.		
Tippah County	.....	Unclassifiable/Attainment.		
Tishomingo County	.....	Unclassifiable/Attainment.		
Tunica County	.....	Unclassifiable/Attainment.		
Union County	.....	Unclassifiable/Attainment.		
Walthall County	.....	Unclassifiable/Attainment.		
Warren County	.....	Unclassifiable/Attainment.		
Washington County	.....	Unclassifiable/Attainment.		
Wayne County	.....	Unclassifiable/Attainment.		
Webster County	.....	Unclassifiable/Attainment.		
Wilkinson County	.....	Unclassifiable/Attainment.		
Winston County	.....	Unclassifiable/Attainment.		
Yalobusha County	.....	Unclassifiable/Attainment.		
Yazoo County	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 27. Section 81.326 is amended as follows:  
 ■ a. By revising the table heading for “Missouri—Ozone (8-Hour Standard)” to read “Missouri—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Missouri—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Missouri—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.326 Missouri.**  
 \* \* \* \* \*

MISSOURI—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
St. Louis-St. Charles-Farmington, MO-IL: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Franklin County				
Jefferson County				
St. Charles County				
St. Louis County				

MISSOURI—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
St. Louis City				
Rest of State: <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Adair County				
Andrew County				
Atchison County				
Audrain County				
Barry County				
Barton County				
Bates County				
Benton County				
Bollinger County				
Boone County				
Buchanan County				
Butler County				
Caldwell County				
Callaway County				
Camden County				
Cape Girardeau County				
Carter County				
Cass County				
Cedar County				
Chariton County				
Christian County				
Clark County				
Clay County				
Clinton County				
Cole County				
Cooper County				
Crawford County				
Dade County				
Dallas County				
Daviess County				
DeKalb County				
Dent County				
Douglas County				
Dunklin County				
Gasconade County				
Gentry County				
Greene County				
Grundy County				
Harrison County				
Henry County				
Hickory County				
Holt County				
Howard County				
Howell County				
Iron County				
Jackson County				
Jasper County				
Johnson County				
Knox County				
Laclede County				
Lafayette County				
Lawrence County				
Lewis County				
Lincoln County				
Linn County				
Livingston County				
McDonald County				
Macon County				
Madison County				
Maries County				
Marion County				
Mercer County				
Miller County				
Mississippi County				
Moniteau County				
Monroe County				
Montgomery County				

MISSOURI—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Morgan County				
New Madrid County				
Newton County				
Nodaway County				
Oregon County				
Osage County				
Ozark County				
Pemiscot County				
Perry County				
Pettis County				
Phelps County				
Pike County				
Platte County				
Polk County				
Pulaski County				
Putnam County				
Ralls County				
Randolph County				
Ray County				
Reynolds County				
Ripley County				
St. Clair County				
St. Genevieve County				
St. Francois County				
Saline County				
Schuyler County				
Scotland County				
Scott County				
Shannon County				
Shelby County				
Stoddard County				
Stone County				
Sullivan County				
Taney County				
Texas County				
Vernon County				
Warren County				
Washington County				
Wayne County				
Webster County				
Worth County				
Wright County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 28. Section 81.327 is amended as follows:  
 ■ a. By revising the table heading for “Montana—Ozone (8-Hour Standard)” to read “Montana—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Montana—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Montana—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.327 Montana.**  
 \* \* \* \* \*

MONTANA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

■ 29. Section 81.328 is amended as follows:  
 ■ a. By revising the table heading for “Nebraska—Ozone (8-Hour Standard)” to read “Nebraska—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Nebraska—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Nebraska—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.328 Nebraska.**  
 \* \* \* \* \*

**NEBRASKA—2008 8-HOUR OZONE NAAQS**  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide: <sup>2</sup> .....	.....	Unclassifiable/Attainment.		
Adams County				
Antelope County				
Arthur County				
Banner County				
Blaine County				
Boone County				
Box Butte County				
Boyd County				
Brown County				
Buffalo County				
Burt County				
Butler County				
Cass County				
Cedar County				
Chase County				
Cherry County				
Cheyenne County				
Clay County				
Colfax County				
Cuming County				
Custer County				
Dakota County				
Dawes County				
Dawson County				
Deuel County				
Dixon County				
Dodge County				
Douglas County				
Dundy County				
Fillmore County				
Franklin County				
Frontier County				
Furnas County				
Gage County				
Garden County				
Garfield County				
Gosper County				
Grant County				
Greeley County				
Hall County				
Hamilton County				
Harlan County				
Hayes County				
Hitchcock County				
Holt County				
Hooker County				
Howard County				
Jefferson County				
Johnson County				
Kearney County				
Keith County				
Keya Paha County				
Kimball County				
Knox County				
Lancaster County				
Lincoln County				
Logan County				
Loup County				
McPherson County				
Madison County				
Merrick County				

NEBRASKA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Morrill County				
Nance County				
Nemaha County				
Nuckolls County				
Otoe County				
Pawnee County				
Perkins County				
Phelps County				
Pierce County				
Platte County				
Polk County				
Red Willow County				
Richardson County				
Rock County				
Saline County				
Sarpy County				
Saunders County				
Scotts Bluff County				
Seward County				
Sheridan County				
Sherman County				
Sioux County				
Stanton County				
Thayer County				
Thomas County				
Thurston County				
Valley County				
Washington County				
Wayne County				
Webster County				
Wheeler County				
York County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 30. Section 81.329 is amended as follows:  
■ a. By revising the table heading for “Nevada—Ozone (8-Hour Standard)” to read “Nevada—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Nevada—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Nevada—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.329 Nevada.**  
\* \* \* \* \*

NEVADA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country: <sup>2</sup> .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Statewide refers to hydrographic areas as shown on the State of Nevada Division of Water Resources’ map titled “Water Resources and Inter-basin Flows” (September 1971), as revised to include a division of Carson Desert (area 101) into two areas, a smaller area 101 and area 101A, and a division of Boulder Flat (area 61) into an Upper Unit 61 and a Lower Unit 61. See also 67 FR 12474 (March 19, 2002).

■ 31. Section 81.330 is amended as follows:  
■ a. By revising the table heading for “New Hampshire—Ozone (8-Hour Standard)” to read “New Hampshire—

1997 8-Hour Ozone NAAQS (Primary and Secondary)  
■ b. By adding a new table entitled “New Hampshire—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“New Hampshire—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.330 New Hampshire.**  
\* \* \* \* \*

NEW HAMPSHIRE—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide: <sup>2</sup> .....	.....	Unclassifiable/Attainment.		
Belknap County				
Carroll County				
Cheshire County				
Coos County				
Grafton County				
Hillsborough County				
Merrimack County				
Rockingham County				
Strafford County				
Sullivan County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 32. Section 81.331 is amended as follows:  
■ a. By revising the table heading for “New Jersey—Ozone (8-Hour Standard)” to read “New Jersey—1997

8-Hour Ozone NAAQS (Primary and Secondary)”  
■ b. By adding a new table entitled “New Jersey—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“New Jersey—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.331 New Jersey.**  
\* \* \* \* \*

NEW JERSEY—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
New York-N. New Jersey-Long Island, NY-NJ-CT: <sup>2</sup> ....	.....	Nonattainment .....	.....	Marginal.
Bergen County				
Essex County				
Hudson County				
Hunterdon County				
Middlesex County				
Monmouth County				
Morris County				
Passaic County				
Somerset County				
Sussex County				
Union County				
Warren County				
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Atlantic County				
Burlington County				
Camden County				
Cape May County				
Cumberland County				
Gloucester County				
Mercer County				
Ocean County				
Salem County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

■ 33. Section 81.332 is amended as follows:  
■ a. By revising the table heading for “New Mexico—Ozone (8-Hour Standard)” to read “New Mexico—1997

8-Hour Ozone NAAQS (Primary and Secondary)”  
■ b. By adding a new table entitled “New Mexico—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“New Mexico—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.332 New Mexico.**  
\* \* \* \* \*



NEW MEXICO—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
AQCR 012 New Mexico—Southern Border Intrastate:				
Grant County .....		Unclassifiable/Attainment.		
Hidalgo County .....		Unclassifiable/Attainment.		
Luna County .....		Unclassifiable/Attainment.		
AQCR 014 Four Corners Interstate (see 40 CFR 81.121):				
McKinley County (part) .....		Unclassifiable/Attainment.		
Río Arriba County (part) .....		Unclassifiable/Attainment.		
Sandoval County (part) .....		Unclassifiable/Attainment.		
San Juan County .....		Unclassifiable/Attainment.		
Valencia County (part) .....		Unclassifiable/Attainment.		
AQCR 152 Albuquerque—Mid Rio Grande Intrastate (see 40 CFR 81.83):				
Bernalillo County .....		Unclassifiable/Attainment.		
Sandoval County (part) .....		Unclassifiable/Attainment.		
Valencia County (part) .....		Unclassifiable/Attainment.		
AQCR 153 El Paso—Las Cruces—Alamogordo Interstate:				
Doña Ana County .....		Unclassifiable/Attainment.		
Lincoln County .....		Unclassifiable/Attainment.		
Otero County .....		Unclassifiable/Attainment.		
Sierra County .....		Unclassifiable/Attainment.		
AQCR 154 Northeastern Plains Intrastate:				
Colfax County .....		Unclassifiable/Attainment.		
Guadalupe County .....		Unclassifiable/Attainment.		
Harding County .....		Unclassifiable/Attainment.		
Mora County .....		Unclassifiable/Attainment.		
San Miguel County .....		Unclassifiable/Attainment.		
Torrance County .....		Unclassifiable/Attainment.		
Union County .....		Unclassifiable/Attainment.		
AQCR 155 Pecos—Permian Basin Intrastate:				
Chaves County .....		Unclassifiable/Attainment.		
Curry County .....		Unclassifiable/Attainment.		
De Baca County .....		Unclassifiable/Attainment.		
Eddy County .....		Unclassifiable/Attainment.		
Lea County .....		Unclassifiable/Attainment.		
Quay County .....		Unclassifiable/Attainment.		
Roosevelt County .....		Unclassifiable/Attainment.		
AQCR 156 SW Mountains—Augustine Plains (see 40 CFR 81.241):				
Catron County .....		Unclassifiable/Attainment.		
Cibola County .....		Unclassifiable/Attainment.		
McKinley County (part) .....		Unclassifiable/Attainment.		
Socorro County .....		Unclassifiable/Attainment.		
Valencia County (part) .....		Unclassifiable/Attainment.		
AQCR 157 Upper Rio Grande Valley Intrastate (see 40 CFR 81.239):				
Los Alamos County .....		Unclassifiable/Attainment.		
Río Arriba County (part) .....		Unclassifiable/Attainment.		
Santa Fe County .....		Unclassifiable/Attainment.		
Taos County .....		Unclassifiable/Attainment.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified.

<sup>2</sup> This date is July 20, 2012, unless otherwise noted.

■ 34. Section 81.333 is amended as follows:

■ a. By revising the table heading for “New York—Ozone (8-Hour Standard)” to read “New York—1997

8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “New York—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“New York—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.333 New York.**

\* \* \* \* \*

NEW YORK—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Jamestown, NY: <sup>2</sup> N ..... Chautauqua County	.....	NonAttainment .....	Marginal.	
New York-N. New Jersey-Long Island, NY-NJ-CT: <sup>2</sup> ... Bronx County Kings County Nassau County New York County Queens County Richmond County Rockland County Suffolk County Westchester County Shinnecock Indian Nation <sup>3</sup>	.....	Nonattainment .....	.....	Marginal.
Albany-Schenectady-Troy Area, NY: <sup>4</sup> ..... Albany County Rensselaer County Saratoga County Schenectady County Schoharie County	.....	Unclassifiable/Attainment.		
Buffalo-Niagara Falls Area, NY: <sup>4</sup> ..... Erie County Niagara County	.....	Unclassifiable/Attainment.		
Jefferson County Area, NY: <sup>4</sup> ..... Jefferson County	.....	Unclassifiable/Attainment.		
Kingston Area, NY: <sup>4</sup> ..... Ulster County	.....	Unclassifiable/Attainment.		
Poughkeepsie Area, NY: <sup>4</sup> ..... Dutchess County Orange County Putnam County	.....	Unclassifiable/Attainment.		
Rochester Area, NY: <sup>4</sup> ..... Livingston County Monroe County Ontario County Orleans County Wayne County	.....	Unclassifiable/Attainment.		
Syracuse, NY: <sup>4</sup> ..... Madison County Onondaga County Oswego County	.....	Unclassifiable/Attainment.		
Whiteface Mountain: <sup>4</sup> ..... Essex County (part) The portion of Whiteface Mountain above 4500 feet in elevation in Essex County	.....	Unclassifiable/Attainment.		
Rest of State and Rest of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

<sup>4</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 35. Section 81.334 is amended as follows:

■ a. By revising the table heading for “North Carolina—Ozone (8-Hour Standard)” to read “North Carolina—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “North Carolina—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“North Carolina—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.334 North Carolina.**

\* \* \* \* \*

NORTH CAROLINA—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Charlotte-Rock Hill, NC-SC: <sup>2</sup>		Nonattainment		Marginal.
Cabarrus County (part)				
Central Cabarrus Township, Georgeville Township, Harrisburg Township, Kannapolis Township, Midland Township, Mount Pleasant Township, New Gilead Township, Odell Township, Poplar Tent Township, Rimertown Township				
Gaston County (part)				
Crowders Mountain Township, Dallas Township, Gastonia Township, Riverbend Township, South Point Township				
Iredell County (part)				
Davidson Township, Coddle Creek Township				
Lincoln County (part)				
Catawba Springs Township, Ironton Township, Lincolnton Township				
Mecklenburg County				
Rowan County (part)				
Atwell Township, China Grove Township, Franklin Township, Litaker Township, Locke Township, Providence Township, Salisbury Township, Steele Township, Unity Township				
Union County (part)				
Goose Creek Township, Marshville Township, Monroe Township, Sandy Ridge Township, Vance Township				
Rest of State: <sup>3</sup>				
Alamance County		Unclassifiable/Attainment.		
Alexander County		Unclassifiable/Attainment.		
Alleghany County		Unclassifiable/Attainment.		
Anson County		Unclassifiable/Attainment.		
Ashe County		Unclassifiable/Attainment.		
Avery County		Unclassifiable/Attainment.		
Beaufort County		Unclassifiable/Attainment.		
Bertie County		Unclassifiable/Attainment.		
Bladen County		Unclassifiable/Attainment.		
Brunswick County		Unclassifiable/Attainment.		
Buncombe County		Unclassifiable/Attainment.		
Burke County		Unclassifiable/Attainment.		
Cabarrus County (part)				
Gold Hill Township		Unclassifiable/Attainment.		
Caldwell County		Unclassifiable/Attainment.		
Camden County		Unclassifiable/Attainment.		
Carteret County		Unclassifiable/Attainment.		
Caswell County		Unclassifiable/Attainment.		
Catawba County		Unclassifiable/Attainment.		
Chatham County		Unclassifiable/Attainment.		
Cherokee County		Unclassifiable/Attainment.		
Chowan County		Unclassifiable/Attainment.		
Clay County		Unclassifiable/Attainment.		
Cleveland County		Unclassifiable/Attainment.		
Columbus County		Unclassifiable/Attainment.		
Craven County		Unclassifiable/Attainment.		
Cumberland County		Unclassifiable/Attainment.		
Currituck County		Unclassifiable/Attainment.		
Dare County		Unclassifiable/Attainment.		
Davidson County		Unclassifiable/Attainment.		
Davie County		Unclassifiable/Attainment.		
Duplin County		Unclassifiable/Attainment.		
Durham County		Unclassifiable/Attainment.		
Edgecombe County		Unclassifiable/Attainment.		
Forsyth County		Unclassifiable/Attainment.		
Franklin County		Unclassifiable/Attainment.		
Gaston County (part)				
Cherryville Township		Unclassifiable/Attainment.		
Gates County		Unclassifiable/Attainment.		
Graham County		Unclassifiable/Attainment.		

NORTH CAROLINA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Granville County .....	.....	Unclassifiable/Attainment.		
Greene County .....	.....	Unclassifiable/Attainment.		
Guilford County .....	.....	Unclassifiable/Attainment.		
Halifax County .....	.....	Unclassifiable/Attainment.		
Harnett County .....	.....	Unclassifiable/Attainment.		
Haywood County .....	.....	Unclassifiable/Attainment.		
Henderson County .....	.....	Unclassifiable/Attainment.		
Hertford County .....	.....	Unclassifiable/Attainment.		
Hoke County .....	.....	Unclassifiable/Attainment.		
Hyde County .....	.....	Unclassifiable/Attainment.		
Iredell County (part)				
Barringer Township .....	.....	Unclassifiable/Attainment.		
Bethany Township .....	.....	Unclassifiable/Attainment.		
Chambersburg Township .....	.....	Unclassifiable/Attainment.		
Concord Township .....	.....	Unclassifiable/Attainment.		
Cool Springs Township .....	.....	Unclassifiable/Attainment.		
Eagle Mills Township .....	.....	Unclassifiable/Attainment.		
Fallstown Township .....	.....	Unclassifiable/Attainment.		
New Hope Township .....	.....	Unclassifiable/Attainment.		
Olin Township .....	.....	Unclassifiable/Attainment.		
Sharpsburg Township .....	.....	Unclassifiable/Attainment.		
Shiloh Township .....	.....	Unclassifiable/Attainment.		
Statesville Township .....	.....	Unclassifiable/Attainment.		
Turnersburg Township .....	.....	Unclassifiable/Attainment.		
Union Grove Township .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Johnston County .....	.....	Unclassifiable/Attainment.		
Jones County .....	.....	Unclassifiable/Attainment.		
Lee County .....	.....	Unclassifiable/Attainment.		
Lenoir County .....	.....	Unclassifiable/Attainment.		
Lincoln County (part)				
Howard's Creek Township .....	.....	Unclassifiable/Attainment.		
North Brook Township .....	.....	Unclassifiable/Attainment.		
Macon County .....	.....	Unclassifiable/Attainment.		
Madison County .....	.....	Unclassifiable/Attainment.		
Martin County .....	.....	Unclassifiable/Attainment.		
McDowell County .....	.....	Unclassifiable/Attainment.		
Mitchell County .....	.....	Unclassifiable/Attainment.		
Montgomery County .....	.....	Unclassifiable/Attainment.		
Moore County .....	.....	Unclassifiable/Attainment.		
Nash County .....	.....	Unclassifiable/Attainment.		
New Hanover County .....	.....	Unclassifiable/Attainment.		
Northampton County .....	.....	Unclassifiable/Attainment.		
Onslow County .....	.....	Unclassifiable/Attainment.		
Orange County .....	.....	Unclassifiable/Attainment.		
Pamlico County .....	.....	Unclassifiable/Attainment.		
Pasquotank County .....	.....	Unclassifiable/Attainment.		
Pender County .....	.....	Unclassifiable/Attainment.		
Perquimans County .....	.....	Unclassifiable/Attainment.		
Person County .....	.....	Unclassifiable/Attainment.		
Pitt County .....	.....	Unclassifiable/Attainment.		
Polk County .....	.....	Unclassifiable/Attainment.		
Randolph County .....	.....	Unclassifiable/Attainment.		
Richmond County .....	.....	Unclassifiable/Attainment.		
Robeson County .....	.....	Unclassifiable/Attainment.		
Rockingham County .....	.....	Unclassifiable/Attainment.		
Rowan County (part)				
Cleveland Township .....	.....	Unclassifiable/Attainment.		
Morgan Township .....	.....	Unclassifiable/Attainment.		
Mount Ulla Township .....	.....	Unclassifiable/Attainment.		
Scotch Irish Township .....	.....	Unclassifiable/Attainment.		
Rutherford County .....	.....	Unclassifiable/Attainment.		
Sampson County .....	.....	Unclassifiable/Attainment.		
Scotland County .....	.....	Unclassifiable/Attainment.		
Stanly County .....	.....	Unclassifiable/Attainment.		
Stokes County .....	.....	Unclassifiable/Attainment.		
Surry County .....	.....	Unclassifiable/Attainment.		
Swain County .....	.....	Unclassifiable/Attainment.		
Transylvania County .....	.....	Unclassifiable/Attainment.		

NORTH CAROLINA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Tyrrell County .....	.....	Unclassifiable/Attainment.		
Union County (part).				
Buford Township .....	.....	Unclassifiable/Attainment.		
Jackson Township .....	.....	Unclassifiable/Attainment.		
Lanes Creek Township .....	.....	Unclassifiable/Attainment.		
New Salem Township .....	.....	Unclassifiable/Attainment.		
Vance County .....	.....	Unclassifiable/Attainment.		
Wake County .....	.....	Unclassifiable/Attainment.		
Warren County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Watauga County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Wilkes County .....	.....	Unclassifiable/Attainment.		
Wilson County .....	.....	Unclassifiable/Attainment.		
Yadkin County .....	.....	Unclassifiable/Attainment.		
Yancey County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

- 36. Section 81.335 is amended as follows:
- a. By revising the table heading for “North Dakota—Ozone (8-Hour Standard)” to read “North Dakota—1997

8-Hour Ozone NAAQS (Primary and Secondary)”  
 ■ b. By adding a new table entitled “North Dakota—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“North Dakota—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.335 North Dakota.**  
 \* \* \* \* \*

NORTH DAKOTA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Areas of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

- 37. Section 81.336 is amended as follows:
- a. By revising the table heading for “Ohio—Ozone (8-Hour Standard)” to read “Ohio—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Ohio—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Ohio—1997 8-

Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.336 Ohio.**  
 \* \* \* \* \*

OHIO—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Cincinnati, OH-KY-IN: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Butler County				
Clermont County				
Clinton County				
Hamilton County				
Warren County				
Cleveland-Akron-Lorain, OH: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Ashtabula County				
Cuyahoga County				
Geauga County				
Lake County				
Lorain County				
Medina County				

OHIO—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Portage County Summit County Columbus, OH: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Delaware County Fairfield County Franklin County Knox County Licking County Madison County Rest of State: <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 38. Section 81.337 is amended as follows:

■ a. By revising the table heading for “Oklahoma—Ozone (8-Hour Standard)” to read “Oklahoma—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Oklahoma—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Oklahoma—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.337 Oklahoma.**

\* \* \* \* \*

OKLAHOMA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Adair County .....	.....	Unclassifiable/Attainment.		
Alfalfa County .....	.....	Unclassifiable/Attainment.		
Atoka County .....	.....	Unclassifiable/Attainment.		
Beaver County .....	.....	Unclassifiable/Attainment.		
Beckham County .....	.....	Unclassifiable/Attainment.		
Blaine County .....	.....	Unclassifiable/Attainment.		
Bryan County .....	.....	Unclassifiable/Attainment.		
Caddo County .....	.....	Unclassifiable/Attainment.		
Canadian County .....	.....	Unclassifiable/Attainment.		
Carter County .....	.....	Unclassifiable/Attainment.		
Cherokee County .....	.....	Unclassifiable/Attainment.		
Choctaw County .....	.....	Unclassifiable/Attainment.		
Cimarron County .....	.....	Unclassifiable/Attainment.		
Cleveland County .....	.....	Unclassifiable/Attainment.		
Coal County .....	.....	Unclassifiable/Attainment.		
Comanche County .....	.....	Unclassifiable/Attainment.		
Cotton County .....	.....	Unclassifiable/Attainment.		
Craig County .....	.....	Unclassifiable/Attainment.		
Creek County .....	.....	Unclassifiable/Attainment.		
Custer County .....	.....	Unclassifiable/Attainment.		
Delaware County .....	.....	Unclassifiable/Attainment.		
Dewey County .....	.....	Unclassifiable/Attainment.		
Ellis County .....	.....	Unclassifiable/Attainment.		
Garfield County .....	.....	Unclassifiable/Attainment.		
Garvin County .....	.....	Unclassifiable/Attainment.		
Grady County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Greer County .....	.....	Unclassifiable/Attainment.		
Harmon County .....	.....	Unclassifiable/Attainment.		
Harper County .....	.....	Unclassifiable/Attainment.		
Haskell County .....	.....	Unclassifiable/Attainment.		
Hughes County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Johnston County .....	.....	Unclassifiable/Attainment.		
Kay County .....	.....	Unclassifiable/Attainment.		
Kingfisher County .....	.....	Unclassifiable/Attainment.		
Kiowa County .....	.....	Unclassifiable/Attainment.		
Latimer County .....	.....	Unclassifiable/Attainment.		

OKLAHOMA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Le Flore County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Logan County .....	.....	Unclassifiable/Attainment.		
Love County .....	.....	Unclassifiable/Attainment.		
Major County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
Mayes County .....	.....	Unclassifiable/Attainment.		
McClain County .....	.....	Unclassifiable/Attainment.		
McCurtain County .....	.....	Unclassifiable/Attainment.		
McIntosh County .....	.....	Unclassifiable/Attainment.		
Murray County .....	.....	Unclassifiable/Attainment.		
Muskogee County .....	.....	Unclassifiable/Attainment.		
Noble County .....	.....	Unclassifiable/Attainment.		
Nowata County .....	.....	Unclassifiable/Attainment.		
Okfuskee County .....	.....	Unclassifiable/Attainment.		
Oklahoma County .....	.....	Unclassifiable/Attainment.		
Okmulgee County .....	.....	Unclassifiable/Attainment.		
Osage County .....	.....	Unclassifiable/Attainment.		
Ottawa County .....	.....	Unclassifiable/Attainment.		
Pawnee County .....	.....	Unclassifiable/Attainment.		
Payne County .....	.....	Unclassifiable/Attainment.		
Pittsburg County .....	.....	Unclassifiable/Attainment.		
Pontotoc County .....	.....	Unclassifiable/Attainment.		
Pottawatomie County .....	.....	Unclassifiable/Attainment.		
Pushmataha County .....	.....	Unclassifiable/Attainment.		
Roger Mills County .....	.....	Unclassifiable/Attainment.		
Rogers County .....	.....	Unclassifiable/Attainment.		
Seminole County .....	.....	Unclassifiable/Attainment.		
Sequoyah County .....	.....	Unclassifiable/Attainment.		
Stephens County .....	.....	Unclassifiable/Attainment.		
Texas County .....	.....	Unclassifiable/Attainment.		
Tillman County .....	.....	Unclassifiable/Attainment.		
Tulsa County .....	.....	Unclassifiable/Attainment.		
Wagoner County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Washita County .....	.....	Unclassifiable/Attainment.		
Woods County .....	.....	Unclassifiable/Attainment.		
Woodward County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified.  
<sup>2</sup> This date is July 20, 2012, unless otherwise noted.

■ 39. Section 81.338 is amended as follows:  
■ a. By revising the table heading for “Oregon—Ozone (8-Hour Standard)” to read “Oregon—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Oregon—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Oregon—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.338 Oregon.**  
\* \* \* \* \*

OREGON—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

■ 40. Section 81.339 is amended as follows:  
■ a. By revising the table heading for “Pennsylvania—Ozone (8-Hour Standard)” to read “Pennsylvania—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”  
■ b. By adding a new table entitled “Pennsylvania—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Pennsylvania—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.339 Pennsylvania.**  
\* \* \* \* \*

PENNSYLVANIA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Allentown-Bethlehem-Easton, PA <sup>2</sup>		Nonattainment		Marginal.
Carbon County				
Lehigh County				
Northampton County				
Lancaster, PA <sup>2</sup>		Nonattainment		Marginal.
Lancaster County				
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE <sup>2</sup>		Nonattainment		Marginal.
Bucks County				
Chester County				
Delaware County				
Montgomery County				
Philadelphia County				
Pittsburgh-Beaver Valley, PA <sup>2</sup>		Nonattainment		Marginal.
Allegheny County				
Armstrong County				
Beaver County				
Butler County				
Fayette County				
Washington County				
Westmoreland County				
Reading, PA <sup>2</sup>		Nonattainment		Marginal.
Berks County				
AQCR 151 NE Pennsylvania Intrastate (remainder) <sup>3</sup>				
Bradford County		Unclassifiable/Attainment.		
Lackawanna County		Unclassifiable/Attainment.		
Luzerne County		Unclassifiable/Attainment.		
Monroe County		Unclassifiable/Attainment.		
Pike County		Unclassifiable/Attainment.		
Schuylkill County		Unclassifiable/Attainment.		
Sullivan County		Unclassifiable/Attainment.		
Susquehanna County		Unclassifiable/Attainment.		
Tioga County		Unclassifiable/Attainment.		
Wayne County		Unclassifiable/Attainment.		
Wyoming		Unclassifiable/Attainment.		
AQCR 178 NW Pennsylvania Intrastate <sup>3</sup>				
Cameron County		Unclassifiable/Attainment.		
Clarion County		Unclassifiable/Attainment.		
Clearfield County		Unclassifiable/Attainment.		
Crawford County		Unclassifiable/Attainment.		
Elk County		Unclassifiable/Attainment.		
Erie County		Unclassifiable/Attainment.		
Forest County		Unclassifiable/Attainment.		
Jefferson County		Unclassifiable/Attainment.		
Lawrence County		Unclassifiable/Attainment.		
McKean County		Unclassifiable/Attainment.		
Mercer County		Unclassifiable/Attainment.		
Potter County		Unclassifiable/Attainment.		
Venango County		Unclassifiable/Attainment.		
Warren County		Unclassifiable/Attainment.		
AQCR 195 Central Pennsylvania Intrastate <sup>3</sup>				
Bedford County		Unclassifiable/Attainment.		
Blair County		Unclassifiable/Attainment.		
Cambria County		Unclassifiable/Attainment.		
Centre County		Unclassifiable/Attainment.		
Clinton County		Unclassifiable/Attainment.		
Columbia County		Unclassifiable/Attainment.		
Fulton County		Unclassifiable/Attainment.		
Huntingdon County		Unclassifiable/Attainment.		
Juniata County		Unclassifiable/Attainment.		
Lycoming County		Unclassifiable/Attainment.		
Mifflin County		Unclassifiable/Attainment.		
Montour County		Unclassifiable/Attainment.		
Northumberland County		Unclassifiable/Attainment.		
Snyder County		Unclassifiable/Attainment.		
Somerset County		Unclassifiable/Attainment.		
Union County		Unclassifiable/Attainment.		
AQCR 196 South Central Pennsylvania (remainder) <sup>3</sup>				
Adams County		Unclassifiable/Attainment.		
Cumberland County		Unclassifiable/Attainment.		



PENNSYLVANIA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Dauphin County .....	.....	Unclassifiable/Attainment.		
Franklin County .....	.....	Unclassifiable/Attainment.		
Lebanon County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
York County .....	.....	Unclassifiable/Attainment.		
AQCR 197 Southwest Pennsylvania (remainder) <sup>3</sup>				
Green County .....	.....	Unclassifiable/Attainment.		
Indiana County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 41. Section 81.340 is amended as follows:  
 ■ a. By revising the table heading for “Rhode Island—Ozone (8-Hour Standard)” to read “Rhode Island—1997

8-Hour Ozone NAAQS (Primary and Secondary)”.  
 ■ b. By adding a new table entitled “Rhode Island—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Rhode Island—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.340 Rhode Island.**  
 \* \* \* \* \*

RHODE ISLAND—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Providence (all of RI), RI: <sup>2</sup> .....	.....	Unclassifiable/Attainment.		
Bristol County				
Kent County				
Newport County				
Providence County				
Washington County				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 42. Section 81.341 is amended as follows:  
 ■ a. By revising the table heading for “South Carolina—Ozone (8-Hour Standard)” to read “South Carolina—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”.  
 ■ b. By adding a new table entitled “South Carolina—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“South Carolina—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.341 South Carolina.**  
 \* \* \* \* \*

SOUTH CAROLINA—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Charlotte-Rock Hill, NC-SC: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
York County (part)				
Portion along MPO lines				
Catawba Indian Nation (aka Catawba Tribe of South Carolina) <sup>3</sup>	.....	Unclassifiable/Attainment.		
Rest of State: <sup>4</sup> .....	.....	Unclassifiable/Attainment.		
Abbeville County .....	.....	Unclassifiable/Attainment.		
Aiken County .....	.....	Unclassifiable/Attainment.		
Allendale County .....	.....	Unclassifiable/Attainment.		
Bamberg County .....	.....	Unclassifiable/Attainment.		
Barnwell County .....	.....	Unclassifiable/Attainment.		
Beaufort County .....	.....	Unclassifiable/Attainment.		
Berkeley County .....	.....	Unclassifiable/Attainment.		
Calhoun County .....	.....	Unclassifiable/Attainment.		
Charleston County .....	.....	Unclassifiable/Attainment.		

SOUTH CAROLINA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Cherokee County .....	.....	Unclassifiable/Attainment.		
Chester County .....	.....	Unclassifiable/Attainment.		
Chesterfield County .....	.....	Unclassifiable/Attainment.		
Clarendon County .....	.....	Unclassifiable/Attainment.		
Colleton County .....	.....	Unclassifiable/Attainment.		
Darlington County .....	.....	Unclassifiable/Attainment.		
Dillon County .....	.....	Unclassifiable/Attainment.		
Dorchester County .....	.....	Unclassifiable/Attainment.		
Edgefield County .....	.....	Unclassifiable/Attainment.		
Fairfield County .....	.....	Unclassifiable/Attainment.		
Florence County .....	.....	Unclassifiable/Attainment.		
Georgetown County .....	.....	Unclassifiable/Attainment.		
Greenwood County .....	.....	Unclassifiable/Attainment.		
Hampton County .....	.....	Unclassifiable/Attainment.		
Horry County .....	.....	Unclassifiable/Attainment.		
Jasper County .....	.....	Unclassifiable/Attainment.		
Kershaw County .....	.....	Unclassifiable/Attainment.		
Lancaster County .....	.....	Unclassifiable/Attainment.		
Laurens County .....	.....	Unclassifiable/Attainment.		
Lee County .....	.....	Unclassifiable/Attainment.		
Lexington County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Marlboro County .....	.....	Unclassifiable/Attainment.		
McCormick County .....	.....	Unclassifiable/Attainment.		
Newberry County .....	.....	Unclassifiable/Attainment.		
Oconee County .....	.....	Unclassifiable/Attainment.		
Orangeburg County .....	.....	Unclassifiable/Attainment.		
Pickens County .....	.....	Unclassifiable/Attainment.		
Richland County .....	.....	Unclassifiable/Attainment.		
Saluda County .....	.....	Unclassifiable/Attainment.		
Sumter County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Williamsburg County .....	.....	Unclassifiable/Attainment.		
York County (part) remainder .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

<sup>3</sup> Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

<sup>4</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 43. Section 81.342 is amended as follows:

■ a. By revising the table heading for “South Dakota—Ozone (8-Hour Standard)” to read “South Dakota—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “South Dakota—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“South Dakota—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.342 South Dakota.**  
 \* \* \* \* \*

SOUTH DAKOTA—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Statewide and Any Areas of Indian Country: .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

■ 44. Section 81.343 is amended as follows:

■ a. By revising the table heading for “Tennessee—Ozone (8-Hour Standard)” to read “Tennessee—1997 8-Hour

Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Tennessee—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Tennessee—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.343 Tennessee.**  
 \* \* \* \* \*

TENNESSEE—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Knoxville, TN: <sup>2</sup>		Nonattainment		Marginal.
Anderson County (part)				
2000 Census tracts: 202, 213.02				
Blount County				
Knox County				
Memphis, TN-MS-AR: <sup>2</sup>		Nonattainment		Marginal.
Shelby County				
Rest of State: <sup>3</sup>		Unclassifiable/Attainment.		
Anderson County (part) remainder		Unclassifiable/Attainment.		
Bedford County		Unclassifiable/Attainment.		
Benton County		Unclassifiable/Attainment.		
Bledsoe County		Unclassifiable/Attainment.		
Bradley County		Unclassifiable/Attainment.		
Campbell County		Unclassifiable/Attainment.		
Cannon County		Unclassifiable/Attainment.		
Carroll County		Unclassifiable/Attainment.		
Carter County		Unclassifiable/Attainment.		
Cheatham County		Unclassifiable/Attainment.		
Chester County		Unclassifiable/Attainment.		
Claiborne County		Unclassifiable/Attainment.		
Clay County		Unclassifiable/Attainment.		
Cocke County		Unclassifiable/Attainment.		
Coffee County		Unclassifiable/Attainment.		
Crockett County		Unclassifiable/Attainment.		
Cumberland County		Unclassifiable/Attainment.		
Davidson County		Unclassifiable/Attainment.		
Decatur County		Unclassifiable/Attainment.		
DeKalb County		Unclassifiable/Attainment.		
Dickson County		Unclassifiable/Attainment.		
Dyer County		Unclassifiable/Attainment.		
Fayette County		Unclassifiable/Attainment.		
Fentress County		Unclassifiable/Attainment.		
Franklin County		Unclassifiable/Attainment.		
Gibson County		Unclassifiable/Attainment.		
Giles County		Unclassifiable/Attainment.		
Grainger County		Unclassifiable/Attainment.		
Greene County		Unclassifiable/Attainment.		
Grundy County		Unclassifiable/Attainment.		
Hamblen County		Unclassifiable/Attainment.		
Hamilton County		Unclassifiable/Attainment.		
Hancock County		Unclassifiable/Attainment.		
Hardeman County		Unclassifiable/Attainment.		
Hardin County		Unclassifiable/Attainment.		
Hawkins County		Unclassifiable/Attainment.		
Haywood County		Unclassifiable/Attainment.		
Henderson County		Unclassifiable/Attainment.		
Henry County		Unclassifiable/Attainment.		
Hickman County		Unclassifiable/Attainment.		
Houston County		Unclassifiable/Attainment.		
Humphreys County		Unclassifiable/Attainment.		
Jackson County		Unclassifiable/Attainment.		
Jefferson County		Unclassifiable/Attainment.		
Johnson County		Unclassifiable/Attainment.		
Lake County		Unclassifiable/Attainment.		
Lauderdale County		Unclassifiable/Attainment.		
Lawrence County		Unclassifiable/Attainment.		
Lewis County		Unclassifiable/Attainment.		
Lincoln County		Unclassifiable/Attainment.		
Loudon County		Unclassifiable/Attainment.		
McMinn County		Unclassifiable/Attainment.		
McNairy County		Unclassifiable/Attainment.		
Macon County		Unclassifiable/Attainment.		
Madison County		Unclassifiable/Attainment.		
Marion County		Unclassifiable/Attainment.		
Marshall County		Unclassifiable/Attainment.		
Maury County		Unclassifiable/Attainment.		
Meigs County		Unclassifiable/Attainment.		
Monroe County		Unclassifiable/Attainment.		
Montgomery County		Unclassifiable/Attainment.		

TENNESSEE—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Moore County .....	.....	Unclassifiable/Attainment.		
Morgan County .....	.....	Unclassifiable/Attainment.		
Obion County .....	.....	Unclassifiable/Attainment.		
Overton County .....	.....	Unclassifiable/Attainment.		
Perry County .....	.....	Unclassifiable/Attainment.		
Pickett County .....	.....	Unclassifiable/Attainment.		
Polk County .....	.....	Unclassifiable/Attainment.		
Putnam County .....	.....	Unclassifiable/Attainment.		
Rhea County .....	.....	Unclassifiable/Attainment.		
Roane County .....	.....	Unclassifiable/Attainment.		
Robertson County .....	.....	Unclassifiable/Attainment.		
Rutherford County .....	.....	Unclassifiable/Attainment.		
Scott County .....	.....	Unclassifiable/Attainment.		
Sequatchie County .....	.....	Unclassifiable/Attainment.		
Sevier County .....	.....	Unclassifiable/Attainment.		
Smith County .....	.....	Unclassifiable/Attainment.		
Stewart County .....	.....	Unclassifiable/Attainment.		
Sullivan County .....	.....	Unclassifiable/Attainment.		
Sumner County .....	.....	Unclassifiable/Attainment.		
Tipton County .....	.....	Unclassifiable/Attainment.		
Trousdale County .....	.....	Unclassifiable/Attainment.		
Unicoi County .....	.....	Unclassifiable/Attainment.		
Union County .....	.....	Unclassifiable/Attainment.		
Van Buren County .....	.....	Unclassifiable/Attainment.		
Warren County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Weakley County .....	.....	Unclassifiable/Attainment.		
White County .....	.....	Unclassifiable/Attainment.		
Williamson County .....	.....	Unclassifiable/Attainment.		
Wilson County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 45. Section 81.344 is amended as follows:  
 ■ a. By revising the table heading for “Texas—Ozone (8-Hour Standard)” to read “Texas—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Texas—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Texas—1997

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.344 Texas.**  
 \* \* \* \* \*

TEXAS—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Dallas-Fort Worth, TX: <sup>2</sup> .....	.....	Nonattainment .....	.....	Moderate.
Collin County				
Dallas County				
Denton County				
Ellis County				
Johnson County				
Kaufman County				
Parker County				
Rockwall County				
Tarrant County				
Wise County				
Houston-Galveston-Brazoria, TX: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Brazoria County				
Chambers County				
Fort Bend County				
Galveston County				
Harris County				

TEXAS—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Liberty County				
Montgomery County				
Waller County				
Rest of State: <sup>3</sup>				
Anderson County .....		Unclassifiable/Attainment.		
Andrews County .....		Unclassifiable/Attainment.		
Angelina County .....		Unclassifiable/Attainment.		
Aransas County .....		Unclassifiable/Attainment.		
Archer County .....		Unclassifiable/Attainment.		
Armstrong County .....		Unclassifiable/Attainment.		
Atascosa County .....		Unclassifiable/Attainment.		
Austin County .....		Unclassifiable/Attainment.		
Bailey County .....		Unclassifiable/Attainment.		
Bandera County .....		Unclassifiable/Attainment.		
Bastrop County .....		Unclassifiable/Attainment.		
Baylor County .....		Unclassifiable/Attainment.		
Bee County .....		Unclassifiable/Attainment.		
Bell County .....		Unclassifiable/Attainment.		
Bexar County .....		Unclassifiable/Attainment.		
Blanco County .....		Unclassifiable/Attainment.		
Borden County .....		Unclassifiable/Attainment.		
Bosque County .....		Unclassifiable/Attainment.		
Bowie County .....		Unclassifiable/Attainment.		
Brazos County .....		Unclassifiable/Attainment.		
Brewster County .....		Unclassifiable/Attainment.		
Briscoe County .....		Unclassifiable/Attainment.		
Brooks County .....		Unclassifiable/Attainment.		
Brown County .....		Unclassifiable/Attainment.		
Burleson County .....		Unclassifiable/Attainment.		
Burnet County .....		Unclassifiable/Attainment.		
Caldwell County .....		Unclassifiable/Attainment.		
Calhoun County .....		Unclassifiable/Attainment.		
Callahan County .....		Unclassifiable/Attainment.		
Cameron County .....		Unclassifiable/Attainment.		
Camp County .....		Unclassifiable/Attainment.		
Carson County .....		Unclassifiable/Attainment.		
Cass County .....		Unclassifiable/Attainment.		
Castro County .....		Unclassifiable/Attainment.		
Cherokee County .....		Unclassifiable/Attainment.		
Childress County .....		Unclassifiable/Attainment.		
Clay County .....		Unclassifiable/Attainment.		
Cochran County .....		Unclassifiable/Attainment.		
Coke County .....		Unclassifiable/Attainment.		
Coleman County .....		Unclassifiable/Attainment.		
Collingsworth County .....		Unclassifiable/Attainment.		
Colorado County .....		Unclassifiable/Attainment.		
Comal County .....		Unclassifiable/Attainment.		
Comanche County .....		Unclassifiable/Attainment.		
Concho County .....		Unclassifiable/Attainment.		
Cooke County .....		Unclassifiable/Attainment.		
Coryell County .....		Unclassifiable/Attainment.		
Cottle County .....		Unclassifiable/Attainment.		
Crane County .....		Unclassifiable/Attainment.		
Crockett County .....		Unclassifiable/Attainment.		
Crosby County .....		Unclassifiable/Attainment.		
Culberson County .....		Unclassifiable/Attainment.		
Dallam County .....		Unclassifiable/Attainment.		
Dawson County .....		Unclassifiable/Attainment.		
Deaf Smith County .....		Unclassifiable/Attainment.		
Delta County .....		Unclassifiable/Attainment.		
DeWitt County .....		Unclassifiable/Attainment.		
Dickens County .....		Unclassifiable/Attainment.		
Dimmit County .....		Unclassifiable/Attainment.		
Donley County .....		Unclassifiable/Attainment.		
Duval County .....		Unclassifiable/Attainment.		
Eastland County .....		Unclassifiable/Attainment.		
Ector County .....		Unclassifiable/Attainment.		
Edwards County .....		Unclassifiable/Attainment.		
El Paso County .....		Unclassifiable/Attainment.		

TEXAS—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Erath County .....	.....	Unclassifiable/Attainment.		
Falls County .....	.....	Unclassifiable/Attainment.		
Fannin County .....	.....	Unclassifiable/Attainment.		
Fayette County .....	.....	Unclassifiable/Attainment.		
Fisher County .....	.....	Unclassifiable/Attainment.		
Floyd County .....	.....	Unclassifiable/Attainment.		
Foard County .....	.....	Unclassifiable/Attainment.		
Franklin County .....	.....	Unclassifiable/Attainment.		
Freestone County .....	.....	Unclassifiable/Attainment.		
Frio County .....	.....	Unclassifiable/Attainment.		
Gaines County .....	.....	Unclassifiable/Attainment.		
Garza County .....	.....	Unclassifiable/Attainment.		
Gillespie County .....	.....	Unclassifiable/Attainment.		
Glasscock County .....	.....	Unclassifiable/Attainment.		
Goliad County .....	.....	Unclassifiable/Attainment.		
Gonzales County .....	.....	Unclassifiable/Attainment.		
Gray County .....	.....	Unclassifiable/Attainment.		
Grayson County .....	.....	Unclassifiable/Attainment.		
Gregg County .....	.....	Unclassifiable/Attainment.		
Grimes County .....	.....	Unclassifiable/Attainment.		
Guadalupe County .....	.....	Unclassifiable/Attainment.		
Hale County .....	.....	Unclassifiable/Attainment.		
Hall County .....	.....	Unclassifiable/Attainment.		
Hamilton County .....	.....	Unclassifiable/Attainment.		
Hansford County .....	.....	Unclassifiable/Attainment.		
Hardeman County .....	.....	Unclassifiable/Attainment.		
Hardin County .....	.....	Unclassifiable/Attainment.		
Harrison County .....	.....	Unclassifiable/Attainment.		
Hartley County .....	.....	Unclassifiable/Attainment.		
Haskell County .....	.....	Unclassifiable/Attainment.		
Hays County .....	.....	Unclassifiable/Attainment.		
Hemphill County .....	.....	Unclassifiable/Attainment.		
Henderson County .....	.....	Unclassifiable/Attainment.		
Hidalgo County .....	.....	Unclassifiable/Attainment.		
Hill County .....	.....	Unclassifiable/Attainment.		
Hockley County .....	.....	Unclassifiable/Attainment.		
Hood County .....	.....	Unclassifiable/Attainment.		
Hopkins County .....	.....	Unclassifiable/Attainment.		
Houston County .....	.....	Unclassifiable/Attainment.		
Howard County .....	.....	Unclassifiable/Attainment.		
Hudspeth County .....	.....	Unclassifiable/Attainment.		
Hunt County .....	.....	Unclassifiable/Attainment.		
Hutchinson County .....	.....	Unclassifiable/Attainment.		
Irion County .....	.....	Unclassifiable/Attainment.		
Jack County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jasper County .....	.....	Unclassifiable/Attainment.		
Jeff Davis County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Jim Hogg County .....	.....	Unclassifiable/Attainment.		
Jim Wells County .....	.....	Unclassifiable/Attainment.		
Jones County .....	.....	Unclassifiable/Attainment.		
Karnes County .....	.....	Unclassifiable/Attainment.		
Kendall County .....	.....	Unclassifiable/Attainment.		
Kenedy County .....	.....	Unclassifiable/Attainment.		
Kent County .....	.....	Unclassifiable/Attainment.		
Kerr County .....	.....	Unclassifiable/Attainment.		
Kimble County .....	.....	Unclassifiable/Attainment.		
King County .....	.....	Unclassifiable/Attainment.		
Kinney County .....	.....	Unclassifiable/Attainment.		
Kleberg County .....	.....	Unclassifiable/Attainment.		
Knox County .....	.....	Unclassifiable/Attainment.		
La Salle County .....	.....	Unclassifiable/Attainment.		
Lamar County .....	.....	Unclassifiable/Attainment.		
Lamb County .....	.....	Unclassifiable/Attainment.		
Lampasas County .....	.....	Unclassifiable/Attainment.		
Lavaca County .....	.....	Unclassifiable/Attainment.		
Lee County .....	.....	Unclassifiable/Attainment.		
Leon County .....	.....	Unclassifiable/Attainment.		

TEXAS—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Limestone County .....	.....	Unclassifiable/Attainment.		
Lipscomb County .....	.....	Unclassifiable/Attainment.		
Live Oak County .....	.....	Unclassifiable/Attainment.		
Llano County .....	.....	Unclassifiable/Attainment.		
Loving County .....	.....	Unclassifiable/Attainment.		
Lubbock County .....	.....	Unclassifiable/Attainment.		
Lynn County .....	.....	Unclassifiable/Attainment.		
McCulloch County .....	.....	Unclassifiable/Attainment.		
McLennan County .....	.....	Unclassifiable/Attainment.		
McMullen County .....	.....	Unclassifiable/Attainment.		
Madison County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Martin County .....	.....	Unclassifiable/Attainment.		
Mason County .....	.....	Unclassifiable/Attainment.		
Matagorda County .....	.....	Unclassifiable/Attainment.		
Maverick County .....	.....	Unclassifiable/Attainment.		
Medina County .....	.....	Unclassifiable/Attainment.		
Menard County .....	.....	Unclassifiable/Attainment.		
Midland County .....	.....	Unclassifiable/Attainment.		
Milam County .....	.....	Unclassifiable/Attainment.		
Mills County .....	.....	Unclassifiable/Attainment.		
Mitchell County .....	.....	Unclassifiable/Attainment.		
Montague County .....	.....	Unclassifiable/Attainment.		
Moore County .....	.....	Unclassifiable/Attainment.		
Morris County .....	.....	Unclassifiable/Attainment.		
Motley County .....	.....	Unclassifiable/Attainment.		
Nacogdoches County .....	.....	Unclassifiable/Attainment.		
Navarro County .....	.....	Unclassifiable/Attainment.		
Newton County .....	.....	Unclassifiable/Attainment.		
Nolan County .....	.....	Unclassifiable/Attainment.		
Nueces County .....	.....	Unclassifiable/Attainment.		
Ochiltree County .....	.....	Unclassifiable/Attainment.		
Oldham County .....	.....	Unclassifiable/Attainment.		
Orange County .....	.....	Unclassifiable/Attainment.		
Palo Pinto County .....	.....	Unclassifiable/Attainment.		
Panola County .....	.....	Unclassifiable/Attainment.		
Parmer County .....	.....	Unclassifiable/Attainment.		
Pecos County .....	.....	Unclassifiable/Attainment.		
Polk County .....	.....	Unclassifiable/Attainment.		
Potter County .....	.....	Unclassifiable/Attainment.		
Presidio County .....	.....	Unclassifiable/Attainment.		
Rains County .....	.....	Unclassifiable/Attainment.		
Randall County .....	.....	Unclassifiable/Attainment.		
Reagan County .....	.....	Unclassifiable/Attainment.		
Real County .....	.....	Unclassifiable/Attainment.		
Red River County .....	.....	Unclassifiable/Attainment.		
Reeves County .....	.....	Unclassifiable/Attainment.		
Refugio County .....	.....	Unclassifiable/Attainment.		
Roberts County .....	.....	Unclassifiable/Attainment.		
Robertson County .....	.....	Unclassifiable/Attainment.		
Runnels County .....	.....	Unclassifiable/Attainment.		
Rusk County .....	.....	Unclassifiable/Attainment.		
Sabine County .....	.....	Unclassifiable/Attainment.		
San Augustine County .....	.....	Unclassifiable/Attainment.		
San Jacinto County .....	.....	Unclassifiable/Attainment.		
San Patricio County .....	.....	Unclassifiable/Attainment.		
San Saba County .....	.....	Unclassifiable/Attainment.		
Schleicher County .....	.....	Unclassifiable/Attainment.		
Scurry County .....	.....	Unclassifiable/Attainment.		
Shackelford County .....	.....	Unclassifiable/Attainment.		
Shelby County .....	.....	Unclassifiable/Attainment.		
Sherman County .....	.....	Unclassifiable/Attainment.		
Smith County .....	.....	Unclassifiable/Attainment.		
Somervell County .....	.....	Unclassifiable/Attainment.		
Starr County .....	.....	Unclassifiable/Attainment.		
Stephens County .....	.....	Unclassifiable/Attainment.		
Sterling County .....	.....	Unclassifiable/Attainment.		
Stonewall County .....	.....	Unclassifiable/Attainment.		
Sutton County .....	.....	Unclassifiable/Attainment.		

TEXAS—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Swisher County .....	.....	Unclassifiable/Attainment.		
Taylor County .....	.....	Unclassifiable/Attainment.		
Terrell County .....	.....	Unclassifiable/Attainment.		
Terry County .....	.....	Unclassifiable/Attainment.		
Throckmorton County .....	.....	Unclassifiable/Attainment.		
Titus County .....	.....	Unclassifiable/Attainment.		
Tom Green County .....	.....	Unclassifiable/Attainment.		
Travis County .....	.....	Unclassifiable/Attainment.		
Trinity County .....	.....	Unclassifiable/Attainment.		
Tyler County .....	.....	Unclassifiable/Attainment.		
Upshur County .....	.....	Unclassifiable/Attainment.		
Upton County .....	.....	Unclassifiable/Attainment.		
Uvalde County .....	.....	Unclassifiable/Attainment.		
Val Verde County .....	.....	Unclassifiable/Attainment.		
Van Zandt County .....	.....	Unclassifiable/Attainment.		
Victoria County .....	.....	Unclassifiable/Attainment.		
Walker County .....	.....	Unclassifiable/Attainment.		
Ward County .....	.....	Unclassifiable/Attainment.		
Washington County .....	.....	Unclassifiable/Attainment.		
Webb County .....	.....	Unclassifiable/Attainment.		
Wharton County .....	.....	Unclassifiable/Attainment.		
Wheeler County .....	.....	Unclassifiable/Attainment.		
Wichita County .....	.....	Unclassifiable/Attainment.		
Wilbarger County .....	.....	Unclassifiable/Attainment.		
Willacy County .....	.....	Unclassifiable/Attainment.		
Williamson County .....	.....	Unclassifiable/Attainment.		
Wilson County .....	.....	Unclassifiable/Attainment.		
Winkler County .....	.....	Unclassifiable/Attainment.		
Wood County .....	.....	Unclassifiable/Attainment.		
Yoakum County .....	.....	Unclassifiable/Attainment.		
Young County .....	.....	Unclassifiable/Attainment.		
Zapata County .....	.....	Unclassifiable/Attainment.		
Zavala County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 46. Section 81.345 is amended as follows:  
 ■ a. By revising the table heading for “Utah—Ozone (8-Hour Standard)” to read “Utah—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Utah—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Utah—1997 8-

Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.345 Utah.**  
 \* \* \* \* \*

UTAH—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Uinta Basin, UT: <sup>2</sup> .....	.....	Unclassifiable.		
Duchesne County				
Uintah County				
Ute Indian Tribe of the Uintah & Ouray Reservation <sup>3</sup>				
Rest of State and Rest of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes Indian country of the tribe listed in this table located in the identified area. Information pertaining to areas of Indian country in this table is intended for CAA planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

■ 47. Section 81.346 is amended as follows:

■ a. By revising the table heading for “Vermont—Ozone (8-Hour Standard)”

to read “Vermont—1997 8-Hour Ozone NAAQS (Primary and Secondary)”



■ b. By adding a new table entitled newly designated table “Vermont—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: § 81.346 Vermont.  
 “Vermont—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the 8-Hour Ozone NAAQS (Primary and Secondary)” \* \* \* \* \*

VERMONT—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
AQCR 159 Champlain Valley Interstate: ..... Addison County Chittenden County Franklin County Grand Isle County Rutland County	.....	Unclassifiable/Attainment.		
AQCR 221 Vermont Intrastate: ..... Bennington County Caledonia County Essex County Lamoille County Orange County Orleans County Washington County Windham County Windsor County	.....	Unclassifiable/Attainment.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified.  
<sup>2</sup> This date is July 20, 2012, unless otherwise noted.

■ 48. Section 81.347 is amended as follows:  
 ■ a. By revising the table heading for “Virginia—Ozone (8-Hour Standard)” to read “Virginia—1997 8-Hour Ozone NAAQS (Primary and Secondary)”  
 ■ b. By adding a new table entitled 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
 “Virginia—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Virginia—1997 8-Hour Ozone NAAQS (Primary and Secondary)” § 81.347 Virginia.  
 \* \* \* \* \*

VIRGINIA—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Washington, DC-MD-VA: <sup>2</sup> ..... Arlington County Fairfax County Loudoun County Prince William County Alexandria City Fairfax City Falls Church City Manassas City Manassas Park City	.....	Nonattainment .....	.....	Marginal.
AQCR 207 Eastern Tennessee—SW Virginia Interstate: <sup>3</sup> ..... Bland County Buchanan County Carroll County Dickenson County Grayson County Lee County Russell County Scott County Smyth County Tazewell County Washington County Wise County Wythe County Bristol City Galax City Norton City	.....	Unclassifiable/Attainment.		
AQCR 222 Central Virginia Intrastate: <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

VIRGINIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Amelia County				
Amherst County				
Appomattox County				
Bedford County				
Brunswick County				
Buckingham County				
Campbell County				
Charlotte County				
Cumberland County				
Franklin County				
Halifax County				
Henry County				
Lunenburg County				
Mecklenburg County				
Nottoway County				
Patrick County				
Pittsylvania County				
Prince Edward County				
Bedford City				
Danville City				
Lynchburg City				
Martinsville City				
South Boston City				
AQCR 223 Hampton Roads Intrastate: <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Isle of Wight County				
James City County				
Southampton County				
York County				
Chesapeake City				
Franklin City				
Hampton City				
Newport News City				
Norfolk City				
Poquoson City				
Portsmouth City				
Suffolk City				
Virginia Beach City				
Williamsburg City				
AQCR 224 NE Virginia Intrastate: <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Accomack County				
Albemarle County				
Caroline County				
Culpeper County				
Essex County				
Fauquier County				
Fluvanna County				
Gloucester County				
Greene County				
King and Queen County				
King George County				
King William County				
Lancaster County				
Louisa County				
Madison County				
Mathews County				
Middlesex County				
Nelson County				
Northampton County				
Northumberland County				
Orange County				
Rappahannock County				
Richmond County				
Spotsylvania County				
Stafford County				
Westmoreland County				
Charlottesville City				
City of Fredericksburg				
AQCR 225 State Capital Intrastate: <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Charles City County				

VIRGINIA—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Chesterfield County				
Dinwiddie County				
Goochland County				
Greensville County				
Hanover County				
Henrico County				
New Kent County				
Powhatan County				
Prince George County				
Surry County				
Sussex County				
Colonial Heights City				
Emporia City				
Hopewell City				
Petersburg City				
Richmond City				
AQCR 226 Valley of Virginia Intrastate: <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Alleghany County				
Augusta County				
Bath County				
Botetourt County				
Clarke County				
Craig County				
Floyd County				
Frederick County				
Giles County				
Highland County				
Montgomery County				
Page County				
Pulaski County				
Roanoke County				
Rockbridge County				
Rockingham County				
Shenandoah County				
Warren County				
Buena Vista City				
Clifton Forge City				
Covington City				
Harrisonburg City				
Lexington City				
Radford City				
Roanoke City				
Salem City				
Staunton City				
Waynesboro City				
Winchester City				

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 49. Section 81.348 is amended as follows:  
 ■ a. By revising the table heading for “Washington—Ozone (8-Hour Standard)” to read “Washington—1997

8-Hour Ozone NAAQS (Primary and Secondary)”  
 ■ b. By adding a new table entitled “Washington—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Washington—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:  
**§ 81.348 Washington.**  
 \* \* \* \* \*

WASHINGTON—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation <sup>1</sup>		Classification	
	Date <sup>2</sup>	Type	Date <sup>1</sup>	Type
Clark County .....	.....	Unclassifiable/Attainment.		
King County .....	.....	Unclassifiable/Attainment.		

WASHINGTON—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation <sup>1</sup>		Classification	
	Date <sup>2</sup>	Type	Date <sup>1</sup>	Type
Pierce County .....	.....	Unclassifiable/Attainment.		
Spokane County .....	.....	Unclassifiable/Attainment.		
Thurston County .....	.....	Unclassifiable/Attainment.		
Rest of state and rest of Indian country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified.

<sup>2</sup> This date is July 20, 2012, unless otherwise noted.

■ 50. Section 81.349 is amended as follows:

■ a. By revising the table heading for “West Virginia—Ozone (8-Hour Standard)” to read “West Virginia—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “West Virginia—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“West Virginia—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.349 West Virginia.**  
 \* \* \* \* \*

WEST VIRGINIA—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Barbour County .....	.....	Unclassifiable/Attainment.		
Berkeley County .....	.....	Unclassifiable/Attainment.		
Boone County .....	.....	Unclassifiable/Attainment.		
Braxton County .....	.....	Unclassifiable/Attainment.		
Brooke County .....	.....	Unclassifiable/Attainment.		
Cabell County .....	.....	Unclassifiable/Attainment.		
Calhoun County .....	.....	Unclassifiable/Attainment.		
Clay County .....	.....	Unclassifiable/Attainment.		
Doddridge County .....	.....	Unclassifiable/Attainment.		
Fayette County .....	.....	Unclassifiable/Attainment.		
Gilmer County .....	.....	Unclassifiable/Attainment.		
Grant County .....	.....	Unclassifiable/Attainment.		
Greenbrier County .....	.....	Unclassifiable/Attainment.		
Hampshire County .....	.....	Unclassifiable/Attainment.		
Hancock County .....	.....	Unclassifiable/Attainment.		
Hardy County .....	.....	Unclassifiable/Attainment.		
Harrison County .....	.....	Unclassifiable/Attainment.		
Jackson County .....	.....	Unclassifiable/Attainment.		
Jefferson County .....	.....	Unclassifiable/Attainment.		
Kanawha County .....	.....	Unclassifiable/Attainment.		
Lewis County .....	.....	Unclassifiable/Attainment.		
Lincoln County .....	.....	Unclassifiable/Attainment.		
Logan County .....	.....	Unclassifiable/Attainment.		
McDowell County .....	.....	Unclassifiable/Attainment.		
Marion County .....	.....	Unclassifiable/Attainment.		
Marshall County .....	.....	Unclassifiable/Attainment.		
Mason County .....	.....	Unclassifiable/Attainment.		
Mercer County .....	.....	Unclassifiable/Attainment.		
Mineral County .....	.....	Unclassifiable/Attainment.		
Mingo County .....	.....	Unclassifiable/Attainment.		
Monongalia County .....	.....	Unclassifiable/Attainment.		
Monroe County .....	.....	Unclassifiable/Attainment.		
Morgan County .....	.....	Unclassifiable/Attainment.		
Nicholas County .....	.....	Unclassifiable/Attainment.		
Ohio County .....	.....	Unclassifiable/Attainment.		
Pendleton County .....	.....	Unclassifiable/Attainment.		
Pleasants County .....	.....	Unclassifiable/Attainment.		
Pocahontas County .....	.....	Unclassifiable/Attainment.		
Preston County .....	.....	Unclassifiable/Attainment.		
Putnam County .....	.....	Unclassifiable/Attainment.		
Raleigh County .....	.....	Unclassifiable/Attainment.		
Randolph County .....	.....	Unclassifiable/Attainment.		
Ritchie County .....	.....	Unclassifiable/Attainment.		
Roane County .....	.....	Unclassifiable/Attainment.		
Summers County .....	.....	Unclassifiable/Attainment.		
Taylor County .....	.....	Unclassifiable/Attainment.		

WEST VIRGINIA—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Tucker County .....	.....	Unclassifiable/Attainment.		
Tyler County .....	.....	Unclassifiable/Attainment.		
Upshur County .....	.....	Unclassifiable/Attainment.		
Wayne County .....	.....	Unclassifiable/Attainment.		
Webster County .....	.....	Unclassifiable/Attainment.		
Wetzel County .....	.....	Unclassifiable/Attainment.		
Wirt County .....	.....	Unclassifiable/Attainment.		
Wood County .....	.....	Unclassifiable/Attainment.		
Wyoming County .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> Includes any Indian country located in each county or area, unless otherwise noted.

<sup>2</sup> This date is July 20, 2012, unless otherwise noted.

■ 51. Section 81.350 is amended as follows:

■ a. By revising the table heading for “Wisconsin—Ozone (8-Hour Standard)” to read “Wisconsin—1997 8-Hour

Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Wisconsin—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Wisconsin—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.350 Wisconsin.**  
 \* \* \* \* \*

WISCONSIN—2008 8-HOUR OZONE NAAQS  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Sheboygan County, WI: <sup>2</sup> .....	.....	Nonattainment .....	.....	Marginal.
Sheboygan County				
Adams County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Ashland County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Barron County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Bayfield County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Brown County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Buffalo County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Burnett County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Calumet County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Chippewa County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Clark County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Columbia County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Crawford County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Dane County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Dodge County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Door County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Douglas County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Dunn County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Eau Claire County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Florence County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Fond du Lac County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Forest County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Grant County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Green County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Green Lake County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Iowa County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Iron County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jackson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Jefferson County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Juneau County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Kewaunee County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
La Crosse County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Lafayette County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Langlade County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Lincoln County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Manitowoc County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Marathon County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Marinette County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Marquette County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Menominee County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

WISCONSIN—2008 8-HOUR OZONE NAAQS—Continued  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Milwaukee County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Monroe County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Oconto County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Oneida County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Outagamie County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Ozaukee County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Pepin County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Pierce County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Polk County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Portage County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Price County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Racine County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Richland County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Rock County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Rusk County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
St. Croix County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Sauk County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Sawyer County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Shawano County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Taylor County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Trempealeau County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Vernon County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Vilas County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Walworth County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Washburn County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Washington County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Waukesha County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Waupaca County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Waushara County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Winnebago County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		
Wood County <sup>3</sup> .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.  
<sup>3</sup> Includes any Indian country in each county or area, unless otherwise specified.

■ 52. Section 81.351 is amended as follows:  
 ■ a. By revising the table heading for “Wyoming—Ozone (8-Hour Standard)” to read “Wyoming—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

■ b. By adding a new table entitled “Wyoming—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Wyoming—1997 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.351 Wyoming.**  
 \* \* \* \* \*

WYOMING—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Upper Green River Basin Area, WY: <sup>2</sup> ..... Lincoln County (part)	.....	Nonattainment .....	.....	Marginal.

WYOMING—2008 8-HOUR OZONE NAAQS—Continued  
 [Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
<p>The area of the county north and east of the boundary defined by a line starting at the point defined by the intersection of the southwest corner Section 30 Range (R) 115 West Township (T) 27N and the northwest corner of Section 31 R 115 West T27N of Sublette County at Sublette County's border with Lincoln County. From this point the boundary moves to the west 500 feet to Aspen Creek. The boundary follows the centerline of Aspen Creek downstream to the confluence of Aspen Creek and Fontenelle Creek (in R116W T26N, Section 1). From this point the boundary moves generally to the south along the centerline of Fontenelle Creek to the confluence of Fontenelle Creek and Roney Creek (in R115W T24N Section 6). From the confluence, the boundary moves generally to the east along the centerline of Fontenelle Creek and into the Fontenelle Reservoir (in R112W T24N Section 6). The boundary moves east southeast along the centerline of the Fontenelle Reservoir and then toward the south along the centerline of the Green River to where the Green River in R111W T24N Section 31 crosses into Sweetwater County.</p> <p>Sublette County                      Sweetwater County (part)</p> <p>The area of the county west and north of the boundary which begins at the midpoint of the Green River, where the Green River enters Sweetwater County from Lincoln County in R111W T24N Section 31. From this point, the boundary follows the center of the channel of the Green River generally to the south and east to the confluence of the Green River and the Big Sandy River (in R109W T22N Section 28). From this point, the boundary moves generally north and east along the centerline of the Big Sandy River to the confluence of the Big Sandy River with Little Sandy Creek (in R106W T25N Section 33). The boundary continues generally toward the northeast along the centerline of Little Sandy Creek to the confluence of Little Sandy Creek and Pacific Creek (in R106W T25N Section 24). From this point, the boundary moves generally to the east and north along the centerline of Pacific Creek to the confluence of Pacific Creek and Whitehorse Creek (in R103W T26N Section 10). From this point the boundary follows the centerline of Whitehorse Creek generally to the northeast until it reaches the eastern boundary of Section 1 R103W T26N. From the point where Whitehorse Creek crosses the eastern section line of Section 1 R103W T26N, the boundary moves straight north along the section line to the southeast corner of Section 36 R103W T27N in Sublette County where the boundary ends.</p>				
Rest of State and Rest of Indian Country .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

<sup>2</sup> Excludes Indian country located in each area, unless otherwise noted.

- 53. Section 81.352 is amended as follows:
- a. By revising the table heading for “American Samoa—Ozone (8-Hour Standard)” to read “American Samoa—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”

- b. By adding a new table entitled “American Samoa—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“American Samoa—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.352 American Samoa.**  
\* \* \* \* \*

**AMERICAN SAMOA—2008 8-HOUR OZONE NAAQS**  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Territory Wide and Any Areas of Indian Country: American Samoa .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

- 54. Section 81.353 is amended as follows:
- a. By revising the table heading for “Guam—Ozone (8-Hour Standard)” to read “Guam—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

- b. By adding a new table entitled “Guam—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Guam—1997 8-

Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.353 Guam.**  
\* \* \* \* \*

**GUAM—2008 8-HOUR OZONE NAAQS**  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Territory Wide and Any Areas of Indian Country: Guam .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

- 55. Section 81.354 is amended as follows:
- a. By revising the table heading for “Northern Mariana Islands—Ozone (8-Hour Standard)” to read “Northern Mariana Islands—1997 8-Hour Ozone NAAQS (Primary and Secondary)”

- b. By adding a new table entitled “Northern Mariana Islands—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table “Northern Mariana Islands—1997 8-Hour Ozone NAAQS

(Primary and Secondary)” to read as follows:

**§ 81.354 Northern Mariana Islands.**  
\* \* \* \* \*

**NORTHERN MARIANA ISLANDS—2008 8-HOUR OZONE NAAQS**  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Northern Mariana Islands and Any Areas of Indian Country.	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.

- 56. Section 81.355 is amended as follows:
- a. By revising the table heading for “Puerto Rico—Ozone (8-Hour Standard)” to read “Puerto Rico—1997

8-Hour Ozone NAAQS (Primary and Secondary)”

- b. By adding a new table entitled “Puerto Rico—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Puerto Rico—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.355 Puerto Rico.**  
\* \* \* \* \*



PUERTO RICO—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
All of Puerto Rico AQCR 244 .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified.  
<sup>2</sup> This date is July 20, 2012, unless otherwise noted.

■ 57. Section 81.356 is amended as follows:  
■ a. By revising the table heading for “Virgin Islands—Ozone (8-Hour Standard)” to read “Virgin Islands—

1997 8-Hour Ozone NAAQS (Primary and Secondary)”  
■ b. By adding a new table entitled “Virgin Islands—2008 8-Hour Ozone NAAQS (Primary and Secondary)” following the newly designated table

“Virgin Islands—1997 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.356 Virgin Islands.**  
\* \* \* \* \*

VIRGIN ISLANDS—2008 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
All of Virgin Islands AQCR 247: <sup>2</sup> .....	.....	Unclassifiable/Attainment.		

<sup>1</sup> This date is July 20, 2012, unless otherwise noted.  
<sup>2</sup> Includes any Indian country in each county or area, unless otherwise specified.

[FR Doc. 2012–11618 Filed 5–18–12; 8:45 am]  
BILLING CODE 6560–50–P

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 50 and 51**

[EPA–HQ–OAR–2010–0885, FRL–9667–9]  
RIN 2060–AR32

**Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes**

**AGENCY:** Environmental Protection Agency (EPA).  
**ACTION:** Final rule.

**SUMMARY:** In this final rule, the EPA is establishing the air quality thresholds that define the classifications assigned to all nonattainment areas for the 2008 ozone national ambient air quality standards (NAAQS) (the “2008 ozone NAAQS”) which were promulgated on March 12, 2008. The EPA is also granting reclassification for selected nonattainment areas that voluntarily reclassified under the 1997 ozone NAAQS. This rule also establishes December 31 of each relevant calendar year as the attainment date for all nonattainment area classification categories. Finally, this rule provides for

the revocation of the 1997 ozone NAAQS for transportation conformity purposes to occur 1 year after the effective date of designations for the 2008 ozone NAAQS.

**DATES:** This rule is effective on July 20, 2012.

**ADDRESSES:** The EPA has established a docket for this action under Docket ID No. EPA–HQ–OAR–2010–0885. All documents in the docket are listed on the <http://www.regulations.gov> Web site. Although listed in the index, some information is not publicly available, e.g., confidential business information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through <http://www.regulations.gov> or in hard copy at the Air and Radiation Docket and Information Center, EPA/DC, EPA West Building, Room 3334, 1301 Constitution Ave. NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the Air Docket is (202) 566–1742.

**FOR FURTHER INFORMATION CONTACT:** For further general information on this rulemaking, contact Dr. Karl Pepple, Office of Air Quality Planning and

Standards, U.S. Environmental Protection Agency (C539–01), Research Triangle Park, NC 27711, phone number (919) 541–2683, or by email at [pepple.karl@epa.gov](mailto:pepple.karl@epa.gov); or Mr. Butch Stackhouse, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency (C539–01), Research Triangle Park, NC 27711, phone number (919) 541–5208, or by email at [stackhouse.butch@epa.gov](mailto:stackhouse.butch@epa.gov).

**SUPPLEMENTARY INFORMATION:**

**I. General Information**

*A. Does this action apply to me?*

Entities potentially affected directly by this final rule include state, local, and tribal governments. Entities potentially affected indirectly by the final rule include owners and operators of sources of emissions [volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>)] that contribute to ground-level ozone concentrations.

*B. Where can I get a copy of this document and other related information?*

In addition to being available in the docket, an electronic copy of this notice will be posted at <http://www.epa.gov/air/ozonepollution/actions.html#impl> under “recent actions.”

*C. How is this notice organized?*

The information presented in this notice is organized as follows:

**ENVIRONMENTAL PROTECTION  
AGENCY**

**40 CFR Parts 50, 51, 52, 53, and 58**

[EPA-HQ-OAR-2008-0699; FRL-9933-18-OAR]

RIN 2060-AP38

**National Ambient Air Quality  
Standards for Ozone**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** Based on its review of the air quality criteria for ozone (O<sub>3</sub>) and related photochemical oxidants and national ambient air quality standards (NAAQS) for O<sub>3</sub>, the Environmental Protection Agency (EPA) is revising the primary and secondary NAAQS for O<sub>3</sub> to provide requisite protection of public health and welfare, respectively. The EPA is revising the levels of both standards to 0.070 parts per million (ppm), and retaining their indicators (O<sub>3</sub>), forms (fourth-highest daily maximum, averaged across three consecutive years) and averaging times (eight hours). The EPA is making corresponding revisions in data handling conventions for O<sub>3</sub> and changes to the Air Quality Index (AQI); revising regulations for the prevention of significant deterioration (PSD) program to add a transition provision for certain applications; and establishing exceptional events schedules and providing information related to implementing the revised standards. The EPA is also revising the O<sub>3</sub> monitoring seasons, the Federal Reference Method (FRM) for monitoring O<sub>3</sub> in the ambient air, Federal Equivalent Method (FEM) analyzer performance requirements, and the Photochemical Assessment Monitoring Stations (PAMS) network. Along with exceptional events schedules related to implementing the revised O<sub>3</sub> standards, the EPA is applying this same schedule approach to other future new or revised NAAQS and removing obsolete regulatory language for expired exceptional events deadlines. The EPA is making minor changes to the procedures and time periods for evaluating potential FRMs and equivalent methods, including making the requirements for nitrogen dioxide (NO<sub>2</sub>) consistent with the requirements for O<sub>3</sub>, and removing an obsolete requirement for the annual submission of Product Manufacturing Checklists by manufacturers of FRMs and FEMs for monitors of fine and coarse particulate matter. For a more detailed summary, see the Executive Summary below.

**DATES:** The final rule is effective on December 28, 2015.

**ADDRESSES:** EPA has established a docket for this action (Docket ID No. EPA-HQ-OAR-2008-0699) and a separate docket, established for the Integrated Science Assessment (ISA) (Docket No. EPA-HQ-ORD-2011-0050), which has been incorporated by reference into the rulemaking docket. All documents in the docket are listed on the [www.regulations.gov](http://www.regulations.gov) Web site. Although listed in the docket index, some information is not publicly available, e.g., confidential business information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and may be viewed, with prior arrangement, at the EPA Docket Center. Publicly available docket materials are available either electronically in [www.regulations.gov](http://www.regulations.gov) or in hard copy at the Air and Radiation Docket and Information Center, EPA/DC, WJC West Building, Room 3334, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744 and the telephone number for the Air and Radiation Docket and Information Center is (202) 566-1742. For additional information about EPA's public docket, visit the EPA Docket Center homepage at: <http://www.epa.gov/epahome/dockets.htm>.

**FOR FURTHER INFORMATION CONTACT:** Ms. Susan Lyon Stone, Health and Environmental Impacts Division, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Mail code C504-06, Research Triangle Park, NC 27711; telephone: (919) 541-1146; fax: (919) 541-0237; email: [stone.susan@epa.gov](mailto:stone.susan@epa.gov).

**SUPPLEMENTARY INFORMATION:**

**General Information**

*Availability of Related Information*

A number of the documents that are relevant to this action are available through the EPA's Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN) Web site ([http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html)). These documents include the *Integrated Science Assessment for Ozone* (U.S. EPA, 2013), available at [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_2008\\_isa.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_2008_isa.html); the *Health Risk and Exposure Assessment* and the *Welfare Risk and Exposure Assessment for Ozone*, Final

Reports (HREA and WREA, respectively; U.S. EPA, 2014a, 2014b), available at [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_2008\\_rea.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_2008_rea.html); and the *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* (PA; U.S. EPA, 2014c), available at [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_2008\\_pa.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_2008_pa.html). These and other related documents are also available for inspection and copying in the EPA docket identified above.

**Table of Contents**

The following topics are discussed in this preamble:

Executive Summary

I. Background

- A. Legislative Requirements
- B. Related Control Programs
- C. Review of Air Quality Criteria and Standards for O<sub>3</sub>

D. Ozone Air Quality

E. Summary of Proposed Revisions to the O<sub>3</sub> Standards

F. Organization and Approach to Decisions in This O<sub>3</sub> NAAQS Review

II. Rationale for Decision on the Primary Standard

A. Introduction

- 1. Overview of Health Effects Evidence
- 2. Overview of Human Exposure and Health Risk Assessments

B. Need for Revision of the Primary Standard

- 1. Basis for Proposed Decision
- 2. Comments on the Need for Revision
- 3. Administrator's Conclusions on the Need for Revision

C. Conclusions on the Elements of a Revised Primary Standard

- 1. Indicator
- 2. Averaging Time
- 3. Form
- 4. Level

D. Decision on the Primary Standard

III. Communication of Public Health Information

A. Proposed Revisions to the AQI

B. Comments on Proposed Revisions to the AQI

C. Final Revisions to the AQI

IV. Rationale for Decision on the Secondary Standard

A. Introduction

- 1. Overview of Welfare Effects Evidence
- 2. Overview of Welfare Exposure and Risk Assessment

3. Potential Impacts on Public Welfare

B. Need for Revision of the Secondary Standard

- 1. Basis for Proposed Decision
- 2. Comments on the Need for Revision
- 3. Administrator's Conclusions on the Need for Revision

C. Conclusions on Revision of the Secondary Standard

- 1. Basis for Proposed Revision
- 2. Comments on Proposed Revision
- 3. Administrator's Conclusions on Revision
- D. Decision on the Secondary Standard

V. Appendix U: Interpretation of the Primary and Secondary NAAQS for O<sub>3</sub>

- A. Background
- B. Data Selection Requirements
- C. Data Reporting and Data Handling Requirements
- D. Exceptional Events Information Submission Schedule
- VI. Ambient Monitoring Related to O<sub>3</sub> Standards
  - A. Background
  - B. Revisions to the Length of the Required O<sub>3</sub> Monitoring Seasons
    1. Proposed Changes to the Length of the Required O<sub>3</sub> Monitoring Seasons
    2. Comments on the Length of the Required O<sub>3</sub> Monitoring Seasons
    3. Final Decisions on the Length of the Required O<sub>3</sub> Monitoring Seasons
  - C. Revisions to the PAMS Network Requirements
    1. Network Design
    2. Speciated VOC Measurements
    3. Carbonyl Measurements
    4. Nitrogen Oxides Measurements
    5. Meteorology Measurements
    6. PAMS Season
    7. Timing and Other Implementation Issues
  - D. Addition of a New FRM for O<sub>3</sub>
    1. Proposed Changes to the FRM for O<sub>3</sub>
    2. Comments on the FRM for O<sub>3</sub>
  - E. Revisions to the Analyzer Performance Requirements
    1. Proposed Changes to the Analyzer Performance Requirements
    2. Comments on the Analyzer Performance Requirements
- VII. Grandfathering Provision for Certain PSD Permits
  - A. Summary of the Proposed Grandfathering Provision
  - B. Comments and Responses
  - C. Final Action and Rationale
- VIII. Implementation of the Revised O<sub>3</sub> Standards
  - A. NAAQS Implementation Plans
    1. Cooperative Federalism
    2. Additional New Rules and Guidance
    3. Background O<sub>3</sub>
    4. Section 110 State Implementation Plans
    5. Nonattainment Area Requirements
  - B. O<sub>3</sub> Air Quality Designations
    1. Area Designation Process
    2. Exceptional Events
  - C. How do the New Source Review (NSR) requirements apply to the revised O<sub>3</sub> NAAQS?
    1. NSR Requirements for Major Stationary Sources for the Revised O<sub>3</sub> NAAQS
    2. Prevention of Significant Deterioration (PSD) Program
    3. Nonattainment NSR
  - D. Transportation and General Conformity
    1. What are Transportation and General Conformity?
    2. When would Transportation and General Conformity apply to areas designated nonattainment for the revised O<sub>3</sub> NAAQS?
    3. Impact of a Revised O<sub>3</sub> NAAQS on a State's Existing Transportation and/or General Conformity SIP
  - E. Regional and International Pollution Transport
    1. Interstate Transport
    2. International Transport
- IX. Statutory and Executive Order Reviews
  - A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review
  - B. Paperwork Reduction Act
  - C. Regulatory Flexibility Act
  - D. Unfunded Mandates Reform Act
  - E. Executive Order 13132: Federalism
  - F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments
  - G. Executive Order 13045: Protection of Children From Environmental Health & Safety Risks
  - H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use
  - I. National Technology Transfer and Advancement Act
  - J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations
  - K. Congressional Review Act (CRA)

## References

**Executive Summary**

This section summarizes information about the purpose of this regulatory action, the major provisions of this action, and provisions related to implementation.

*Purpose of This Regulatory Action*

Sections 108 and 109 of the Clean Air Act (CAA) govern the establishment, review, and revision, as appropriate, of the NAAQS to protect public health and welfare. The CAA requires the EPA to periodically review the air quality criteria—the science upon which the standards are based—and the standards themselves. This rulemaking is being conducted pursuant to these statutory requirements. The schedule for completing this review is established by a federal court order, which requires that the EPA make a final determination by October 1, 2015.

The EPA completed its most recent review of the NAAQS for O<sub>3</sub> in 2008. As a result of that review, EPA took four principal actions: (1) Revised the level of the 8-hour primary standard to 0.075 ppm; (2) expressed the standard to three decimal places; (3) revised the 8-hour secondary standard by making it identical to the revised primary standard; and (4) made conforming changes to the AQI.

In subsequent litigation, the U.S. Court of Appeals for the District of Columbia Circuit (DC Circuit) upheld the EPA's 2008 primary standard but remanded the 2008 secondary standard (*Mississippi v. EPA*, 744 F. 3d 1334 [D.C. Cir. 2013]). With respect to the primary standard, the court held that the EPA reasonably determined that the existing primary standard, set in 1997, did not protect public health with an adequate margin of safety and required

revision. In upholding the EPA's revised primary standard, the court dismissed arguments that the EPA should have adopted a more stringent standard. The court remanded the secondary standard to the EPA after finding that the EPA's justification for setting the secondary standard identical to the revised 8-hour primary standard violated the CAA because the EPA had not adequately explained how that standard provided the required public welfare protection. In remanding the 2008 secondary standard, the court did not vacate it. The EPA has addressed the court's remand with this final action.

This final action reflects the Administrator's conclusions based on a review of the O<sub>3</sub> NAAQS that began in September 2008, and also concludes the EPA's reconsideration of the 2008 decision that it initiated in 2009 and subsequently consolidated with the current review. In conducting this review, the EPA has carefully evaluated the currently available scientific literature on the health and welfare effects of O<sub>3</sub>, focusing particularly on the new literature available since the conclusion of the previous review in 2008. Between 2008 and 2014, the EPA prepared draft and final versions of the Integrated Science Assessment, the Health and Welfare Risk and Exposure Assessments, and the Policy Assessment. Multiple drafts of these documents were subject to public review and comment, and, as required by the CAA, were peer-reviewed by the Clean Air Scientific Advisory Committee (CASAC), an independent scientific advisory committee established pursuant to the CAA and charged with providing advice to the Administrator.

The EPA proposed revisions to the primary and secondary O<sub>3</sub> NAAQS on December 17, 2014 (79 FR 75234), and provided a 3-month period for submission of comments from the public. In addition to written comments submitted to EPA, comments were also provided at public hearings held in Washington, DC, and Arlington, Texas, on January 29, 2015, and in Sacramento, California, on February 2, 2015. After consideration of public comments and the advice from the CASAC, the EPA has developed this final rulemaking, which is the final step in the review process.

In this rulemaking, the EPA is revising the suite of standards for O<sub>3</sub> to provide requisite protection of public health and welfare. In addition, the EPA is updating the AQI, and making changes in the data handling conventions and ambient air monitoring, reporting, and network

design requirements to correspond with the changes to the O<sub>3</sub> NAAQS.

#### *Summary of Major Provisions*

With regard to the primary standard, the EPA is revising the level of the standard to 0.070 ppm to provide increased public health protection against health effects associated with long- and short-term exposures. The EPA is retaining the indicator (O<sub>3</sub>), averaging time (8-hour) and form (annual fourth-highest daily maximum, averaged over 3 years) of the existing standard. This action provides increased protection for children, older adults, and people with asthma or other lung diseases, and other at-risk populations against an array of adverse health effects that include reduced lung function, increased respiratory symptoms and pulmonary inflammation; effects that contribute to emergency department visits or hospital admissions; and mortality.

The decisions on the adequacy of the current standard and the appropriate level for the revised standard are based on an integrative assessment of an extensive body of new scientific evidence, which substantially strengthens what was known about O<sub>3</sub>-related health effects in the last review. The revised standard also reflects consideration of a quantitative risk assessment that estimates public health risks likely to remain upon just meeting the current and various alternative standards. Based on this information, the Administrator concludes that the current primary O<sub>3</sub> standard is not requisite to protect public health with an adequate margin of safety, as required by the CAA, and that revision of the level to 0.070 ppm is warranted to provide the appropriate degree of increased public health protection for at-risk populations against an array of adverse health effects. In concluding that a revised primary standard set at a level of 0.070 ppm is requisite to protect public health with an adequate margin of safety, the Administrator relies on several key pieces of information, including: (a) A level of 0.070 ppm is well below the O<sub>3</sub> exposure concentration shown to cause the widest range of respiratory effects (*i.e.*, 0.080 ppm) and is below the lowest O<sub>3</sub> exposure concentration shown to cause the adverse combination of decreased lung function and increased respiratory symptoms (*i.e.*, 0.072 ppm); (b) a level of 0.070 ppm will eliminate, or nearly eliminate, repeated occurrence of these O<sub>3</sub> exposure concentrations (this is important because the potential for adverse effects increases with frequency of occurrence); (c) a level of 0.070 ppm

will protect the large majority of the population, including children and people with asthma, from lower exposure concentrations, which can cause lung function decrements and airway inflammation in some people (*i.e.*, 0.060 ppm); and (d) a level of 0.070 ppm will result in important reductions in the risk of O<sub>3</sub>-induced lung function decrements as well as the risk of O<sub>3</sub>-associated hospital admissions, emergency department visits, and mortality. In addition, the revised level of the primary standard is within the range that CASAC advised the Agency to consider.

The EPA is also revising the level of the secondary standard to 0.070 ppm to provide increased protection against vegetation-related effects on public welfare. The EPA is retaining the indicator (O<sub>3</sub>), averaging time (8-hour) and form (annual fourth-highest daily maximum, averaged over 3 years) of the existing secondary standard. This action, reducing the level of the standard, provides increased protection for natural forests in Class I and other similarly protected areas against an array of vegetation-related effects of O<sub>3</sub>. The Administrator is making this decision based on judgments regarding the currently available welfare effects evidence, the appropriate degree of public welfare protection for the revised standard, and currently available air quality information on seasonal cumulative exposures that may be allowed by such a standard.

In making this decision on the secondary standard, the Administrator focuses on O<sub>3</sub> effects on tree seedling growth as a proxy for the full array of vegetation-related effects of O<sub>3</sub>, ranging from effects on sensitive species to broader ecosystem-level effects. Using this proxy in judging effects to public welfare, the Administrator has concluded that the requisite protection will be provided by a standard that generally limits cumulative seasonal exposures to 17 ppm-hours (ppm-hrs) or lower, in terms of a 3-year W126 index. Based on air quality analyses which indicate such control of cumulative seasonal exposures will be achieved with a standard set at a level of 0.070 ppm (and the same indicator, averaging time, and form as the current standard), the Administrator concludes that a standard revised in this way will provide the requisite protection. In addition to providing protection of natural forests from growth-related effects, the revised standard is also expected to provide increased protection from other effects of potential public welfare significance, including crop yield loss and visible foliar injury.

Thus, based on all of the information available in this review, the Administrator concludes that the current secondary O<sub>3</sub> standard is not requisite to protect public welfare as required by the CAA, and that this revision will provide appropriate protection against known or anticipated adverse effects to the public welfare.

#### *Provisions Related to Implementation*

As directed by the CAA, reducing pollution to meet NAAQS always has been a shared task, one involving the federal government, states, tribes and local air agencies. This partnership has proved effective since the EPA first issued O<sub>3</sub> standards more than three decades ago, and is evidenced by significantly lower O<sub>3</sub> levels throughout the country. To provide a foundation that helps air agencies build successful strategies for attaining new O<sub>3</sub> standards, the EPA will continue to move forward with federal regulatory programs, such as the final Tier 3 motor vehicle emissions standards. To facilitate the development of CAA-compliant implementation plans and strategies to attain new standards, the EPA intends to issue timely and appropriate implementation guidance and, where appropriate and consistent with the law, new rulemakings to streamline regulatory burdens and provide flexibility in implementation. Given the regional nature of O<sub>3</sub> air pollution, the EPA will continue to work with states to address interstate transport of O<sub>3</sub> and O<sub>3</sub> precursors. The EPA also intends to work closely with states to identify locations affected by high background concentrations on high O<sub>3</sub> days due to stratospheric intrusions of O<sub>3</sub>, wildfire O<sub>3</sub> plumes, or long-range transport of O<sub>3</sub> from sources outside the U.S. and ensure that the appropriate CAA regulatory mechanisms are employed. To this end, the EPA will be proposing revisions to the 2007 Exceptional Events Rule and related draft guidance addressing the effects of wildfires.

In addition to revising the primary and secondary standards, this action is changing the AQI to reflect the revisions to the primary standard and also making corresponding revisions in data handling conventions for O<sub>3</sub>, extending the O<sub>3</sub> monitoring season in 33 states, revising the requirements for the PAMS network, and revising regulations for the PSD permitting program to add a provision grandfathering certain pending permits from certain requirements with respect to the revised standards. The preamble also provides schedules and information related to implementing the revised standards.

The rule also contains revisions to the schedules associated with exceptional events demonstration submittals for the revised O<sub>3</sub> standards and other future revised NAAQS, and makes minor changes related to monitoring for other pollutants.

## I. Background

### A. Legislative Requirements

Two sections of the CAA govern the establishment and revision of the NAAQS. Section 108 (42 U.S.C. 7408) directs the Administrator to identify and list certain air pollutants and then to issue air quality criteria for those pollutants. The Administrator is to list those air pollutants that in her “judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare;” “the presence of which in the ambient air results from numerous or diverse mobile or stationary sources;” and “for which . . . [the Administrator] plans to issue air quality criteria . . . .” Air quality criteria are intended to “accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of [a] pollutant in the ambient air . . . .” 42 U.S.C. 7408(b). Section 109 (42 U.S.C. 7409) directs the Administrator to propose and promulgate “primary” and “secondary” NAAQS for pollutants for which air quality criteria are issued. Section 109(b)(1) defines a primary standard as one “the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health.”<sup>1</sup> A secondary standard, as defined in section 109(b)(2), must “specify a level of air quality the attainment and maintenance of which, in the judgment of the Administrator, based on such criteria, is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of [the] pollutant in the ambient air.”<sup>2</sup>

<sup>1</sup> The legislative history of section 109 indicates that a primary standard is to be set at “the maximum permissible ambient air level . . . which will protect the health of any [sensitive] group of the population,” and that, for this purpose, “reference should be made to a representative sample of persons comprising the sensitive group rather than to a single person in such a group.” S. Rep. No. 91–1196, 91st Cong., 2d Sess. 10 (1970).

<sup>2</sup> Welfare effects as defined in section 302(h) (42 U.S.C. 7602(h)) include, but are not limited to, “effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility and climate, damage to and deterioration of property, and hazards to transportation, as well

The requirement that primary standards provide an adequate margin of safety was intended to address uncertainties associated with inconclusive scientific and technical information available at the time of standard setting. It was also intended to provide a reasonable degree of protection against hazards that research has not yet identified. See *Mississippi v. EPA*, 744 F. 3d 1334, 1353 (D.C. Cir. 2013); *Lead Industries Association v. EPA*, 647 F.2d 1130, 1154 (D.C. Cir. 1980); *American Petroleum Institute v. Costle*, 665 F.2d 1176, 1186 (D.C. Cir. 1981); *American Farm Bureau Federation v. EPA*, 559 F. 3d 512, 533 (D.C. Cir. 2009); *Association of Battery Recyclers v. EPA*, 604 F. 3d 613, 617–18 (D.C. Cir. 2010). Both kinds of uncertainties are components of the risk associated with pollution at levels below those at which human health effects can be said to occur with reasonable scientific certainty. Thus, in selecting primary standards that provide an adequate margin of safety, the Administrator is seeking not only to prevent pollution levels that have been demonstrated to be harmful but also to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. The CAA does not require the Administrator to establish a primary NAAQS at a zero-risk level or at background concentrations, see *Lead Industries v. EPA*, 647 F.2d at 1156 n.51; *Mississippi v. EPA*, 744 F. 3d at 1351, but rather at a level that reduces risk sufficiently so as to protect public health with an adequate margin of safety.

In addressing the requirement for an adequate margin of safety, the EPA considers such factors as the nature and severity of the health effects, the size of sensitive population(s)<sup>3</sup> at risk, and the kind and degree of the uncertainties that must be addressed. The selection of any particular approach for providing an adequate margin of safety is a policy choice left specifically to the Administrator’s judgment. See *Lead Industries Association v. EPA*, 647 F.2d at 1161–62; *Mississippi*, 744 F. 3d at 1353.

In setting primary and secondary standards that are “requisite” to protect public health and welfare, respectively, as provided in section 109(b), the EPA’s task is to establish standards that are

as effects on economic values and on personal comfort and well-being.”

<sup>3</sup> As used here with regard to human populations, and similarly throughout this document, the term “population” refers to people having a quality or characteristic in common, including a specific pre-existing illness or a specific age or lifestyle.

neither more nor less stringent than necessary for these purposes. In so doing, the EPA may not consider the costs of implementing the standards. See generally, *Whitman v. American Trucking Associations*, 531 U.S. 457, 465–472, 475–76 (2001). Likewise, “[a]ttainability and technological feasibility are not relevant considerations in the promulgation of national ambient air quality standards.” *American Petroleum Institute v. Costle*, 665 F. 2d at 1185.

Section 109(d)(1) requires that “not later than December 31, 1980, and at 5-year intervals thereafter, the Administrator shall complete a thorough review of the criteria published under section 108 and the national ambient air quality standards . . . and shall make such revisions in such criteria and standards and promulgate such new standards as may be appropriate . . . .” Section 109(d)(2) requires that an independent scientific review committee “shall complete a review of the criteria . . . and the national primary and secondary ambient air quality standards . . . and shall recommend to the Administrator any new . . . standards and revisions of existing criteria and standards as may be appropriate . . . .” Since the early 1980’s, the CASAC<sup>4</sup> has performed this independent review function.

### B. Related Control Programs

States are primarily responsible for ensuring attainment and maintenance of NAAQS once the EPA has established them. The EPA performs an oversight function, and as necessary takes actions to ensure CAA objectives are achieved. Under section 110 of the CAA, and related provisions, states submit, for the EPA’s approval, state implementation plans (SIPs) that provide for the attainment and maintenance of such standards through control programs directed to sources of the relevant pollutants. The states, in conjunction with the EPA, also administer the PSD program (CAA sections 160 to 169) which is a pre-construction permit program designed to prevent significant deterioration in air quality. In addition, federal programs provide for nationwide reductions in emissions of O<sub>3</sub> precursors and other air pollutants through new source performance standards for stationary sources under section 111 of the CAA and the federal motor vehicle and motor vehicle fuel control program under title II of the CAA (sections 202

<sup>4</sup> Lists of CASAC members and of members of the CASAC Ozone Review Panel are accessible from: <http://yoosemite.epa.gov/sab/sabpeople.nsf/WebCommittees/CASAC>.

to 250), which involves controls for emissions from mobile sources and controls for the fuels used by these sources. For some stationary sources, the national emissions standards for hazardous air pollutants under section 112 of the CAA may provide ancillary reductions in O<sub>3</sub> precursors.

After the EPA establishes a new or revised NAAQS, the CAA directs the EPA and the states to take steps to ensure that the new or revised NAAQS are met. One of the first steps, known as the initial area designations, involves identifying areas of the country that are not meeting the new or revised NAAQS along with the nearby areas that contain emissions sources that contribute to the areas not meeting the NAAQS. For areas designated "nonattainment," the responsible states are required to develop SIPs to attain the standards. In developing their attainment plans, states first take into account projected emission reductions from federal and state rules that have been already adopted at the time of plan submittal. A number of significant emission reduction programs that will lead to reductions of O<sub>3</sub> precursors are in place today or are expected to be in place by the time revised SIPs will be due. Examples of such rules include the Nitrogen Oxides (NO<sub>x</sub>) SIP Call and Cross-State Air Pollution Rule (CSAPR),<sup>5</sup> regulations controlling on-road and non-road engines and fuels, hazardous air pollutant rules for utility and industrial boilers, and various other programs already adopted by states to reduce emissions from key emissions sources. States will then evaluate the level of additional emission reductions needed for each nonattainment area to attain the O<sub>3</sub> standards "as expeditiously as practicable," and adopt new state regulations as appropriate. Section VIII of this preamble includes additional discussion of designation and implementation issues associated with the revised O<sub>3</sub> NAAQS.

### C. Review of Air Quality Criteria and Standards for O<sub>3</sub>

The EPA first established primary and secondary NAAQS for photochemical oxidants in 1971 (36 FR 8186, April 30, 1971). The EPA set both primary and

secondary standards at 0.08 ppm,<sup>6</sup> as a 1-hour average of total photochemical oxidants, not to be exceeded more than one hour per year. The EPA based the standards on scientific information contained in the 1970 *Air Quality Criteria for Photochemical Oxidants* (AQCD; U.S. DHEW, 1970). The EPA initiated the first periodic review of the NAAQS for photochemical oxidants in 1977. Based on the 1978 AQCD (U.S. EPA, 1978), the EPA published proposed revisions to the original NAAQS in 1978 (43 FR 26962, June 22, 1978) and final revisions in 1979 (44 FR 8202, February 8, 1979). At that time, the EPA revised the level of the primary and secondary standards from 0.08 to 0.12 ppm and changed the indicator from photochemical oxidants to O<sub>3</sub>, and the form of the standards from a deterministic (*i.e.*, not to be exceeded more than one hour per year) to a statistical form. This statistical form defined attainment of the standards as occurring when the expected number of days per calendar year with maximum hourly average concentration greater than 0.12 ppm equaled one or less.

Following the EPA's decision in the 1979 review, the city of Houston challenged the Administrator's decision arguing that the standard was arbitrary and capricious because natural O<sub>3</sub> concentrations and other physical phenomena in the Houston area made the standard unattainable in that area. The U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) rejected this argument, holding (as noted above) that attainability and technological feasibility are not relevant considerations in the promulgation of the NAAQS. The court also noted that the EPA need not tailor the NAAQS to fit each region or locale, pointing out that Congress was aware of the difficulty in meeting standards in some locations and had addressed this difficulty through various compliance related provisions in the CAA. See *API v. Costle*, 665 F.2d 1176, 1184–6 (D.C. Cir. 1981).

In 1982, the EPA announced plans to revise the 1978 AQCD (47 FR 11561; March 17, 1982), and, in 1983, the EPA initiated the second periodic review of the O<sub>3</sub> NAAQS (48 FR 38009; August 22, 1983). The EPA subsequently published the 1986 AQCD (U.S. EPA, 1986) and the 1989 Staff Paper (U.S.

EPA, 1989). Following publication of the 1986 AQCD, a number of scientific abstracts and articles were published that appeared to be of sufficient importance concerning potential health and welfare effects of O<sub>3</sub> to warrant preparation of a Supplement (U.S. EPA, 1992). In August of 1992, under the terms of a court order, the EPA proposed to retain the existing primary and secondary standards based on the health and welfare effects information contained in the 1986 AQCD and its 1992 Supplement (57 FR 35542, August 10, 1992). In March 1993, the EPA announced its decision to conclude this review by affirming its proposed decision to retain the standards, without revision (58 FR 13008, March 9, 1993).

In the 1992 notice of its proposed decision in that review, the EPA announced its intention to proceed as rapidly as possible with the next review of the air quality criteria and standards for O<sub>3</sub> in light of emerging evidence of health effects related to 6- to 8-hour O<sub>3</sub> exposures (57 FR 35542, August 10, 1992). The EPA subsequently published the AQCD and Staff Paper for the review (U.S. EPA, 1996a,b). In December 1996, the EPA proposed revisions to both the primary and secondary standards (61 FR 65716, December 13, 1996). With regard to the primary standard, the EPA proposed to replace the then-existing 1-hour primary standard with an 8-hour standard set at a level of 0.08 ppm (equivalent to 0.084 ppm based on the proposed data handling convention) as a 3-year average of the annual third-highest daily maximum 8-hour concentration. The EPA proposed to revise the secondary standard either by setting it identical to the proposed new primary standard or by setting it as a new seasonal standard using a cumulative form. The EPA completed this review in 1997 by setting the primary standard at a level of 0.08 ppm, based on the annual fourth-highest daily maximum 8-hour average concentration, averaged over three years, and setting the secondary standard identical to the revised primary standard (62 FR 38856, July 18, 1997). In reaching her decision on the primary standard, the Administrator identified several reasons supporting her decision to reject a potential alternate standard set at 0.07 ppm, including first the fact that no CASAC panel member supported a standard level lower than 0.08 ppm and her consideration of the scientific uncertainties with regard to the health effects evidence for exposure concentrations below 0.08 ppm. In addition to those reasons, the Administrator noted that a standard set

<sup>5</sup> The Cross-State Air Pollution Rule was upheld by the Supreme Court in *Environmental Protection Agency v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584 (2014), and remanded to the D.C. Circuit for further proceedings. The D.C. Circuit issued its decision on remand from the Supreme Court on July 28, 2015, remanding CSAPR to EPA, without vacating the rule, for EPA to reconsider certain emission budgets for certain States (*EME Homer City Generation, L.P. v. Environmental Protection Agency*, No. 11–1302, 2015 WL 4528137 [D.C. Cir. July 28, 2015]).

<sup>6</sup> Although the level of the 2008 O<sub>3</sub> standards are specified in the units of ppm (*i.e.*, 0.075 ppm), O<sub>3</sub> concentrations are described using the units of parts per billion (ppb) in several sections of this notice (*i.e.*, sections II, III, IV and VI) for consistency with the common convention for information discussed in those sections. In ppb, 0.075 ppm is equivalent to 75.

at a level of 0.07 ppm would be closer to peak background concentrations that infrequently occur in some areas due to nonanthropogenic sources of O<sub>3</sub> precursors (62 FR 38856, 38868; July 18, 1997).

On May 14, 1999, in response to challenges by industry and others to the EPA's 1997 decision, the D.C. Circuit remanded the O<sub>3</sub> NAAQS to the EPA, finding that section 109 of the CAA, as interpreted by the EPA, effected an unconstitutional delegation of legislative authority. *American Trucking Assoc. vs. EPA*, 175 F.3d 1027, 1034–1040 (D.C. Cir. 1999) (“*ATA I*”). In addition, the court directed that, in responding to the remand, the EPA should consider the potential beneficial health effects of O<sub>3</sub> pollution in shielding the public from the effects of solar ultraviolet (UV) radiation, as well as adverse health effects. *Id.* at 1051–53. In 1999, the EPA petitioned for rehearing *en banc* on several issues related to that decision. The court granted the request for rehearing in part and denied it in part, but declined to review its ruling with regard to the potential beneficial effects of O<sub>3</sub> pollution. 195 F. 3d 4, 10 (D.C. Cir., 1999) (“*ATA II*”). On January 27, 2000, the EPA petitioned the U.S. Supreme Court for *certiorari* on the constitutional issue (and two other issues), but did not request review of the ruling regarding the potential beneficial health effects of O<sub>3</sub>. On February 27, 2001, the U.S. Supreme Court unanimously reversed the judgment of the D.C. Circuit on the constitutional issue. *Whitman v. American Trucking Assoc.*, 531 U. S. 457, 472–74 (2001) (holding that section 109 of the CAA does not delegate legislative power to the EPA in contravention of the Constitution). The Court remanded the case to the D.C. Circuit to consider challenges to the O<sub>3</sub> NAAQS that had not been addressed by that court's earlier decisions. On March 26, 2002, the D.C. Circuit issued its final decision on remand, finding the 1997 O<sub>3</sub> NAAQS to be “neither arbitrary nor capricious,” and so denying the remaining petitions for review. *American Trucking Associations, Inc. v. EPA*, 283 F.3d 355, 379 (D.C. Cir., 2002) (“*ATA III*”).

Specifically, in *ATA III*, the D.C. Circuit upheld the EPA's decision on the 1997 O<sub>3</sub> standard as the product of reasoned decision making. With regard to the primary standard, the court made clear that the most important support for EPA's decision to revise the standard was the health evidence of insufficient protection afforded by the then-existing standard (“the record is replete with references to studies demonstrating the

inadequacies of the old one-hour standard”), as well as extensive information supporting the change to an 8-hour averaging time (283 F. 3d at 378). The court further upheld the EPA's decision not to select a more stringent level for the primary standard noting “the absence of any human clinical studies at ozone concentrations below 0.08 [ppm]” which supported the EPA's conclusion that “the most serious health effects of ozone are ‘less certain’ at low concentrations, providing an eminently rational reason to set the primary standard at a somewhat higher level, at least until additional studies become available” (283 F. 3d at 378, internal citations omitted). The court also pointed to the significant weight that the EPA properly placed on the advice it received from CASAC (283 F. 3d at 379). In addition, the court noted that “although relative proximity to peak background O<sub>3</sub> concentrations did not, in itself, necessitate a level of 0.08 [ppm], the EPA could consider that factor when choosing among the three alternative levels” (283 F. 3d at 379).

Independently of the litigation, the EPA responded to the court's remand to consider the potential beneficial health effects of O<sub>3</sub> pollution in shielding the public from effects of UV radiation. The EPA provisionally determined that the information linking changes in patterns of ground-level O<sub>3</sub> concentrations to changes in relevant patterns of exposures to UV radiation of concern to public health was too uncertain, at that time, to warrant any relaxation in 1997 O<sub>3</sub> NAAQS. The EPA also expressed the view that any plausible changes in UV-B radiation exposures from changes in patterns of ground-level O<sub>3</sub> concentrations would likely be very small from a public health perspective. In view of these findings, the EPA proposed to leave the 1997 primary standard unchanged (66 FR 57268, Nov. 14, 2001). After considering public comment on the proposed decision, the EPA published its final response to this remand in 2003, re-affirming the 8-hour primary standard set in 1997 (68 FR 614, January 6, 2003).

The EPA initiated the fourth periodic review of the air quality criteria and standards for O<sub>3</sub> with a call for information in September 2000 (65 FR 57810, September, 26, 2000). The schedule for completion of that review was ultimately governed by a consent decree resolving a lawsuit filed in March 2003 by plaintiffs representing national environmental and public health organizations, who maintained that the EPA was in breach of a nondiscretionary duty to complete review of the O<sub>3</sub> NAAQS within a

statutorily mandated deadline. In 2007, the EPA proposed to revise the level of the primary standard within a range of 0.075 to 0.070 ppm (72 FR 37818, July 11, 2007). The EPA proposed to revise the secondary standard either by setting it identical to the proposed new primary standard or by setting it as a new seasonal standard using a cumulative form. Documents supporting these proposed decisions included the 2006 AQCD (U.S. EPA, 2006a) and 2007 Staff Paper (U.S. EPA, 2007) and related technical support documents. The EPA completed the review in March 2008 by revising the level of the primary standard from 0.08 ppm to 0.075 ppm, and revising the secondary standard to be identical to the revised primary standard (73 FR 16436, March 27, 2008).

In May 2008, state, public health, environmental, and industry petitioners filed suit challenging the EPA's final decision on the 2008 O<sub>3</sub> standards. On September 16, 2009, the EPA announced its intention to reconsider the 2008 O<sub>3</sub> standards, and initiated a rulemaking to do so. At the EPA's request, the court held the consolidated cases in abeyance pending the EPA's reconsideration of the 2008 decision.

On January 2010, the EPA issued a notice of proposed rulemaking to reconsider the 2008 final decision (75 FR 2938, January 19, 2010). In that notice, the EPA proposed that further revisions of the primary and secondary standards were necessary to provide a requisite level of protection to public health and welfare. The EPA proposed to revise the level of the primary standard from 0.075 ppm to a level within the range of 0.060 to 0.070 ppm, and to revise the secondary standard to one with a cumulative, seasonal form. At the EPA's request, the CASAC reviewed the proposed rule at a public teleconference on January 25, 2010 and provided additional advice in early 2011 (Samet, 2010, 2011). After considering comments from CASAC and the public, the EPA prepared a draft final rule, which was submitted for interagency review pursuant to Executive Order 12866. On September 2, 2011, consistent with the direction of the President, the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB), returned the draft final rule to the EPA for further consideration. In view of this return and the fact that the Agency's next periodic review of the O<sub>3</sub> NAAQS required under CAA section 109 had already begun (as announced on September 29, 2008), the EPA decided to consolidate the

reconsideration with its statutorily required periodic review.<sup>7</sup>

In light of the EPA's decision to consolidate the reconsideration with the current review, the D.C. Circuit proceeded with the litigation on the 2008 final decision. On July 23, 2013, the court upheld the EPA's 2008 primary O<sub>3</sub> standard, but remanded the 2008 secondary standard to the EPA (*Mississippi v. EPA*, 744 F. 3d 1334). With respect to the primary standard, the court first held that the EPA reasonably determined that the existing standard was not requisite to protect public health with an adequate margin of safety, and consequently required revision. Specifically, the court noted that there were "numerous epidemiologic studies linking health effects to exposure to ozone levels below 0.08 ppm and clinical human exposure studies finding a causal relationship between health effects and exposure to ozone levels at and below 0.08 ppm" (*Mississippi v. EPA*, 744 F. 3d at 1345). The court also specifically endorsed the weight of evidence approach utilized by the EPA in its deliberations (*Mississippi v. EPA*, 744 F. 3d at 1344).

The court went on to reject arguments that the EPA should have adopted a more stringent primary standard. Dismissing arguments that a clinical study (as properly interpreted by the EPA) showing effects at 0.06 ppm necessitated a standard level lower than that selected, the court noted that this was a single, limited study (*Mississippi v. EPA*, 744 F. 3d at 1350). With respect to the epidemiologic evidence, the court accepted the EPA's argument that there could be legitimate uncertainty that a causal relationship between O<sub>3</sub> and 8-hour exposures less than 0.075 ppm exists, so that associations at lower levels reported in epidemiologic studies did not necessitate a more stringent standard (*Mississippi v. EPA*, 744 F. 3d at 1351–52).<sup>8</sup>

The court also rejected arguments that an 8-hour primary standard of 0.075 ppm failed to provide an adequate margin of safety, noting that margin of

<sup>7</sup> This rulemaking concludes the reconsideration process. Under CAA section 109, the EPA is required to base its review of the NAAQS on the current air quality criteria, and thus the record and decision for this review also serve for the reconsideration.

<sup>8</sup> The court cautioned, however, that "perhaps more [clinical] studies like the Adams studies will yet reveal that the 0.060 ppm level produces significant adverse decrements that simply cannot be attributed to normal variation in lung function," and further cautioned that "agencies may not merely recite the terms 'substantial uncertainty' as a justification for their actions." *Id.* at 1350, 1357 (internal citations omitted).

safety considerations involved policy judgments by the agency, and that by setting a standard "appreciably below" the level of the current standard (0.08 ppm), the agency had made a reasonable policy choice (*Mississippi v. EPA*, 744 F. 3d at 1351–52). Finally, the court rejected arguments that the EPA's decision was inconsistent with the CASAC's scientific recommendations because the CASAC had been insufficiently clear in its recommendations whether it was providing scientific or policy recommendations, and the EPA had reasonably addressed the CASAC's policy recommendations (*Mississippi v. EPA*, 744 F. 3d at 1357–58).

With respect to the secondary standard, the court held that the EPA's justification for setting the secondary standard identical to the revised 8-hour primary standard violated the CAA because the EPA had not adequately explained how that standard provided the required public welfare protection. The court thus remanded the secondary standard to the EPA (*Mississippi v. EPA*, 744 F. 3d at 1360–62).

At the time of the court's decision, the EPA had already completed significant portions of its next statutorily required periodic review of the O<sub>3</sub> NAAQS. This review was formally initiated in 2008 with a call for information in the **Federal Register** (73 FR 56581, Sept. 29, 2008). On October 28–29, 2008, the EPA held a public workshop to discuss the policy-relevant science, which informed identification of key policy issues and questions to frame the review. Based in part on the workshop discussions, the EPA developed a draft Integrated Review Plan (IRP) outlining the schedule, process,<sup>9</sup> and key policy-relevant questions that would guide the evaluation of the air quality criteria for O<sub>3</sub> and the review of the primary and secondary O<sub>3</sub> NAAQS. A draft of the IRP was released for public review and comment in September 2009 and was the subject of a consultation with the CASAC on November 13, 2009 (74 FR 54562; October 22, 2009).<sup>10</sup> After considering the comments received from that consultation and from the public, the EPA completed and released the IRP for the review in 2011 (U.S. EPA, 2011a).

<sup>9</sup> As of this review, the document developed in NAAQS reviews to document the air quality criteria, previously the AQCD, is the ISA, and the document describing the OAQPS staff evaluation, previously the Staff Paper, is the PA. These documents are described in the IRP.

<sup>10</sup> See <http://yosemite.epa.gov/sab/sabproduct.nsf/WebProjectsByTopicCASAC!OpenView> for more information on CASAC activities related to the current O<sub>3</sub> NAAQS review.

In preparing the first draft ISA, the EPA's National Center for Environmental Assessment (NCEA) considered CASAC and public comments on the IRP, and also comments received from a workshop held on August 6, 2010, to review and discuss preliminary drafts of key ISA sections (75 FR 42085, July 20, 2010). In 2011, the first draft ISA was released for public comment and for review by CASAC at a public meeting on May 19–20, 2011 (U.S. EPA, 2011b; 76 FR 10893, February 28, 2011; 76 FR 23809, April 28, 2011). Based on CASAC and public comments, NCEA prepared a second draft ISA, which was released for public comment and CASAC review (U.S. EPA, 2011c; 76 FR 60820, September 30, 2011). The CASAC reviewed this draft at a January 9–10, 2012, public meeting (76 FR 236, December 8, 2011). Based on CASAC and public comments, NCEA prepared a third draft ISA (U.S. EPA, 2012; 77 FR 36534, June 19, 2012), which was reviewed at a CASAC meeting in September 2012. The EPA released the final ISA in February 2013 (U.S. EPA, 2013).

The EPA presented its plans for conducting Risk and Exposure Assessments (REAs) for health risk and exposure (HREA) and welfare risk and exposure (WREA) in two documents that outlined the scope and approaches for use in conducting quantitative assessments, as well as key issues to be addressed as part of the assessments (U.S. EPA, 2011d, e). The EPA released these documents for public comment in April 2011, and consulted with CASAC on May 19–20, 2011 (76 FR 23809, April 28, 2011). The EPA considered CASAC advice and public comments in further planning for the assessments, issuing a memo that described changes to elements of the REA plans and brief explanations regarding them (Samet, 2011; Wegman, 2012).

In July 2012, the EPA made the first drafts of the Health and Welfare REAs available for CASAC review and public comment (77 FR 42495, July 19, 2012; 77 FR 51798, August 27, 2012). The first draft PA was made available for CASAC review and public comment in August 2012 (77 FR 42495, July 19, 2012; 77 FR 51798, August 27, 2012).<sup>11</sup> The first

<sup>11</sup> The PA is prepared by the OAQPS staff. Formerly known as the Staff Paper, it presents a staff evaluation of the policy implications of the key scientific and technical information in the ISA and REAs for the EPA's consideration. The PA provides a transparent evaluation, and staff conclusions, regarding policy considerations related to reaching judgments about the adequacy of the current standards, and if revision is considered, what revisions may be appropriate to consider. The PA is intended to help "bridge the gap" between the agency's scientific assessments presented in the ISA



draft REAs and PA were the focus of a CASAC public meeting in September 2012 (Frey and Samet, 2012a, 2012b). The second draft REAs and PA, prepared with consideration of CASAC advice and public comments, were made available for public comment and CASAC review in January 2014 (79 FR 4694, January 29, 2014). These documents were the focus of a CASAC public meeting on March 25–27, 2014 (Frey, 2014a; Frey, 2014b; Frey, 2014c). The final versions of these documents were developed with consideration of the comments and recommendations from CASAC, as well as comments from the public on the draft documents, and were released in August 2014 (U.S. EPA 2014a; U.S. EPA, 2014b; U.S. EPA, 2014c).

The proposed decision (henceforth “proposal”) on this review of the O<sub>3</sub> NAAQS was signed on November 25, 2014, and published in the **Federal Register** on December 17, 2014. The EPA held three public hearings to provide direct opportunity for oral testimony by the public on the proposal. The hearings were held on January 29, 2015, in Arlington, Texas, and Washington, DC, and on February 2, 2015, in Sacramento, California. At these public hearings, the EPA heard testimony from nearly 500 individuals representing themselves or specific interested organizations. Transcripts from these hearings and written testimony provided at the hearings are in the docket for this review. Additionally, approximately 430,000 written comments were received from various commenters during the public comment period on the proposal, approximately 428,000 as part of mass mail campaigns. Significant issues raised in the public comments are discussed in the preamble of this final action. A summary of all other significant comments, along with the EPA’s responses, can be found in a separate document (henceforth “Response to Comments”) in the docket for this review.

The schedule for completion of this review is governed by a court order resolving a lawsuit filed in January 2014 by a group of plaintiffs who alleged that the EPA had failed to perform its mandatory duty, under section 109(d)(1), to complete a review of the O<sub>3</sub> NAAQS within the period provided by statute. The court order that governs this review, entered by the court on April 30, 2014, provides that the EPA will sign for publication a notice of final

rulemaking concerning its review of the O<sub>3</sub> NAAQS no later than October 1, 2015.

As in prior NAAQS reviews, the EPA is basing its decision in this review on studies and related information included in the ISA, REAs and PA, which have undergone CASAC and public review. The studies assessed in the ISA and PA, and the integration of the scientific evidence presented in them, have undergone extensive critical review by the EPA, the CASAC, and the public. The rigor of that review makes these studies, and their integrative assessment, the most reliable source of scientific information on which to base decisions on the NAAQS, decisions that all parties recognize as of great import. NAAQS decisions can have profound impacts on public health and welfare, and NAAQS decisions should be based on studies that have been rigorously assessed in an integrative manner not only by the EPA but also by the statutorily mandated independent advisory committee, as well as the public review that accompanies this process. Some commenters have referred to and discussed individual scientific studies on the health and welfare effects of O<sub>3</sub> that were not included in the ISA (USEPA, 2013) (“‘new’ studies”). In considering and responding to comments for which such “new” studies were cited in support, the EPA has provisionally considered the cited studies in the context of the findings of the ISA. The EPA’s provisional consideration of these studies did not and could not provide the kind of in-depth critical review described above.

The decision to rely on studies and related information included in the ISA, REAs and PA, which have undergone CASAC and public review, is consistent with the EPA’s practice in prior NAAQS reviews and its interpretation of the requirements of the CAA. Since the 1970 amendments, the EPA has taken the view that NAAQS decisions are to be based on scientific studies and related information that have been assessed as a part of the pertinent air quality criteria, and the EPA has consistently followed this approach. This longstanding interpretation was strengthened by new legislative requirements enacted in 1977, which added section 109(d)(2) of the Act concerning CASAC review of air quality criteria. See 71 FR 61144, 61148 (October 17, 2006) (final decision on review of NAAQS for particulate matter) for a detailed discussion of this issue and the EPA’s past practice.

As discussed in the EPA’s 1993 decision not to revise the NAAQS for

O<sub>3</sub>, “new” studies may sometimes be of such significance that it is appropriate to delay a decision on revision of a NAAQS and to supplement the pertinent air quality criteria so the studies can be taken into account (58 FR at 13013–13014, March 9, 1993). In the present case, the EPA’s provisional consideration of “new” studies concludes that, taken in context, the “new” information and findings do not materially change any of the broad scientific conclusions regarding the health and welfare effects and exposure pathways of ambient O<sub>3</sub> made in the air quality criteria. For this reason, reopening the air quality criteria review would not be warranted even if there were time to do so under the court order governing the schedule for this rulemaking.

Accordingly, the EPA is basing the final decisions in this review on the studies and related information included in the O<sub>3</sub> air quality criteria that have undergone CASAC and public review. The EPA will consider the “new” studies for purposes of decision making in the next periodic review of the O<sub>3</sub> NAAQS, which the EPA expects to begin soon after the conclusion of this review and which will provide the opportunity to fully assess these studies through a more rigorous review process involving the EPA, CASAC, and the public. Further discussion of these “new” studies can be found in the Response to Comments document, which is in the docket for this rulemaking and also available on the web ([http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html)).

#### D. Ozone Air Quality

Ozone is formed near the earth’s surface due to chemical interactions involving solar radiation and precursor pollutants including volatile organic compounds (VOCs) and NO<sub>x</sub>. Over longer time periods, methane (CH<sub>4</sub>) and carbon monoxide (CO) can also lead to O<sub>3</sub> formation at the global scale. The precursor emissions leading to O<sub>3</sub> formation can result from both man-made sources (e.g., motor vehicles and electric power generation) and natural sources (e.g., vegetation and wildfires). Occasionally, O<sub>3</sub> that is created naturally in the stratosphere can also contribute to O<sub>3</sub> levels near the surface. Once formed, O<sub>3</sub> near the surface can be transported by winds before eventually being removed from the atmosphere via chemical reactions or deposition to surfaces. In sum, O<sub>3</sub> concentrations are influenced by complex interactions between precursor emissions, meteorological conditions, and surface characteristics (U.S. EPA, 2014a).

and REAs, and the judgments required of the EPA Administrator in determining whether it is appropriate to retain or revise the NAAQS.

In order to continuously assess O<sub>3</sub> air pollution levels, state and local environmental agencies operate O<sub>3</sub> monitors at various locations and subsequently submit the data to the EPA. At present, there are approximately 1,400 monitors across the U.S. reporting hourly O<sub>3</sub> averages during the times of the year when local O<sub>3</sub> pollution can be important (U.S. EPA, 2014c, Section 2.1). Much of this monitoring is focused on urban areas where precursor emissions tend to be largest, as well as locations directly downwind of these areas, but there are also over 100 sites in rural areas where high levels of O<sub>3</sub> can also be measured. Based on data from this national network, the EPA estimates that, in 2013, approximately 99 million Americans lived in counties where O<sub>3</sub> design values<sup>12</sup> were above the level of the existing health-based (primary) NAAQS of 0.075 ppm. High O<sub>3</sub> values can occur almost anywhere within the contiguous 48 states, although the poorest O<sub>3</sub> air quality in the U.S. is typically observed in California, Texas, and the Northeast Corridor, locations with some of the most densely populated areas in the country. From a temporal perspective, the highest daily peak O<sub>3</sub> concentrations generally tend to occur during the afternoon within the warmer months due to higher solar radiation and other conducive meteorological conditions during these times. The exceptions to this general rule include 1) some rural sites where transport of O<sub>3</sub> from upwind areas of regional production can occasionally result in high nighttime levels of O<sub>3</sub>, 2) high-elevation sites episodically influenced by stratospheric intrusions which can occur in other months, and 3) certain locations in the western U.S. where large quantities of O<sub>3</sub> precursors emissions associated with oil and gas development can be trapped by strong inversions associated with snow cover during the colder months and efficiently converted to O<sub>3</sub> (U.S. EPA, 2014c, Section 2.3).

One of the challenging aspects of developing plans to address high O<sub>3</sub> concentrations is that the response of O<sub>3</sub> to precursor reductions is nonlinear. In particular, NO<sub>x</sub> emissions can lead to both increases and decreases of O<sub>3</sub>. The net impact of NO<sub>x</sub> emissions on O<sub>3</sub> concentrations depends on the local quantities of NO<sub>x</sub>, VOC, and sunlight which interact in a set of complex chemical reactions. In some areas, such as certain urban centers where NO<sub>x</sub>

emissions typically are high compared to local VOC emissions, NO<sub>x</sub> can suppress O<sub>3</sub> locally. This phenomenon is particularly pronounced under conditions associated with low O<sub>3</sub> concentrations (*i.e.*, during cool, cloudy weather and at night when photochemical activity is limited or nonexistent). However, while NO<sub>x</sub> emissions can initially suppress O<sub>3</sub> levels near the emission sources, these same NO<sub>x</sub> emissions ultimately react to form higher O<sub>3</sub> levels downwind when conditions are favorable. Photochemical model simulations suggest that, in general, reductions in NO<sub>x</sub> emissions in the U.S. will slightly increase O<sub>3</sub> concentrations on days with lower O<sub>3</sub> concentrations in close proximity to NO<sub>x</sub> sources (*e.g.*, in urban core areas), while at the same time decreasing the highest O<sub>3</sub> concentrations in downwind areas. See generally, U.S. EPA, 2014a (section 2.2.1).

At present, both the primary and secondary NAAQS use the annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years, as the form of the standard. An additional metric, the W126 exposure index, is often used to assess impacts of O<sub>3</sub> exposure on ecosystems and vegetation. W126 is a cumulative seasonal aggregate of weighted hourly O<sub>3</sub> values observed between 8 a.m. and 8 p.m. As O<sub>3</sub> precursor emissions have decreased across the U.S., annual fourth-highest 8-hour O<sub>3</sub> maxima have concurrently shown a modest downward trend. The national average change in annual fourth-highest daily maximum 8-hour O<sub>3</sub> concentrations between 2000 and 2013 was an 18% decrease. The national average change in the annual W126 exposure index over the same period was a 52% decrease. Air quality model simulations estimate that O<sub>3</sub> air quality will continue to improve over the next decade as additional reductions in O<sub>3</sub> precursors from power plants, motor vehicles, and other sources are realized.

In addition to being affected by changing emissions, future O<sub>3</sub> concentrations may also be affected by climate change. Modeling studies in the EPA's Interim Assessment (U.S. EPA, 2009a) that are cited in support of the 2009 Endangerment Finding under CAA section 202(a) (74 FR 66496, Dec. 15, 2009) as well as a recent assessment of potential climate change impacts (Fann et al., 2015) project that climate change may lead to future increases in summer O<sub>3</sub> concentrations across the contiguous U.S.<sup>13</sup> While the projected impact is not

uniform, climate change has the potential to increase average summertime O<sub>3</sub> concentrations by as much as 1–5 ppb by 2030, if greenhouse gas emissions are not mitigated. Increases in temperature are expected to be the principal factor in driving any O<sub>3</sub> increases, although increases in stagnation frequency may also contribute (Jacob and Winner, 2009). If unchecked, climate change has the potential to offset some of the improvements in O<sub>3</sub> air quality, and therefore some of the improvements in public health, that are expected from reductions in emissions of O<sub>3</sub> precursors.

Another challenging aspect of this air quality issue is the impact from sources of O<sub>3</sub> and its precursors beyond those from domestic, anthropogenic sources. Modeling analyses indicate that nationally the majority of O<sub>3</sub> exceedances are predominantly caused by anthropogenic emissions from within the U.S. However, observational and modeling analyses have concluded that O<sub>3</sub> concentrations in some locations in the U.S. on some days can be substantially influenced by sources that cannot be addressed by domestic control measures. In particular, certain high-elevation sites in the western U.S. are impacted by a combination of non-U.S. sources like international transport, or natural sources such as stratospheric O<sub>3</sub>, and O<sub>3</sub> originating from wildfire emissions.<sup>14</sup> Ambient O<sub>3</sub> from these non-U.S. and natural sources is collectively referred to as background O<sub>3</sub>. See generally section 2.4 of the PA (U.S. EPA, 2014c). The analyses suggest that, at these locations, there can be episodic events with substantial background contributions where O<sub>3</sub> concentrations approach or exceed the level of the current NAAQS (*i.e.*, 75 ppb). These events are relatively infrequent, and the EPA has policies that allow for the exclusion of air quality monitoring data from design value calculations when they are substantially affected by certain background influences.

#### *E. Summary of Proposed Revisions to the O<sub>3</sub> Standards*

For reasons discussed in the proposal, the Administrator proposed to revise the

quality to climate change. A wide range of future climate scenarios and future years have been modeled and there can be variations in the expected response in U.S. O<sub>3</sub> by scenario and across models and years, within the overall signal of higher summer O<sub>3</sub> concentrations in a warmer climate.

<sup>14</sup> Without global greenhouse gas mitigation efforts, climate change is projected to dramatically increase the area burned by wildfires across most of the contiguous U.S., especially in the West (U.S. EPA, 2015 p. 72).

<sup>12</sup> A design value is a statistic that describes the air quality status of a given location relative to the level of the NAAQS.

<sup>13</sup> These modeling studies are based on coupled global climate and regional air quality models and are designed to assess the sensitivity of U.S. air

current primary and secondary standards for O<sub>3</sub>. With regard to the primary standard, the Administrator proposed to revise the level from 75 ppb to a level within a range from 65 to 70 ppb. The EPA proposed to revise the AQI for O<sub>3</sub>, consistent with revision to the primary standard.

With regard to the secondary standard, the Administrator proposed to revise the level of the current secondary standard to within the range of 0.065 to 0.070 ppm, which air quality analyses indicate would provide cumulative, seasonal air quality or exposure values, in terms of 3-year average W126 index values, at or below a range of 13–17 ppm-hours.

The EPA also proposed to make corresponding revisions in data handling conventions for O<sub>3</sub>; to revise regulations for the PSD permitting program to add a provision grandfathering certain pending permits from certain requirements with respect to the proposed revisions to the standards; and to convey schedules and information related to implementing any revised standards. In conjunction with proposing exceptional event schedules related to implementing any revised O<sub>3</sub> standards, the EPA also proposed to extend the new schedule approach to other future NAAQS revisions and to remove obsolete regulatory language associated with expired exceptional event deadlines for historical standards for both O<sub>3</sub> and other pollutants for which NAAQS have been established. The EPA also proposed to make minor changes to the procedures and time periods for evaluating potential FRMs and equivalent methods, including making the requirements for NO<sub>2</sub> consistent with the requirements for O<sub>3</sub>, and removing an obsolete requirement for the annual submission of documentation by manufacturers of certain particulate matter monitors.

#### *F. Organization and Approach to Decisions in This O<sub>3</sub> NAAQS Review*

This action presents the Administrator's final decisions in the current review of the primary and secondary O<sub>3</sub> standards. The final decisions addressing standards for O<sub>3</sub> are based on a thorough review in the ISA of scientific information on known and potential human health and welfare effects associated with exposure to O<sub>3</sub> at levels typically found in the ambient air. These final decisions also take into account the following: (1) Staff assessments in the PA of the most policy-relevant information in the ISA as well as a quantitative health and welfare exposure and risk assessments

based on that information; (2) CASAC advice and recommendations, as reflected in its letters to the Administrator and its discussions of drafts of the ISA, REAs, and PA at public meetings; (3) public comments received during the development of these documents, both in connection with CASAC meetings and separately; and (4) extensive public comments received on the proposed rulemaking.

The primary standard is addressed in section II. Corresponding changes to the AQI are addressed in section III. The secondary standard is addressed in section IV. Related data handling conventions and exceptional events are addressed in section V. Updates to the monitoring regulations are addressed in section VI. Implementation activities, including PSD-related actions, are addressed in sections VII and VIII. Section IX addresses applicable statutory and executive order reviews.

## **II. Rationale for Decision on the Primary Standard**

This section presents the Administrator's final decisions regarding the need to revise the existing primary O<sub>3</sub> standard and the appropriate revision to the level of that standard. Based on her consideration of the full body of health effects evidence and exposure/risk analyses, the Administrator concludes that the current primary standard for O<sub>3</sub> is not requisite to protect public health with an adequate margin of safety. In order to increase public health protection, she is revising the level of the primary standard to 70 ppb, in conjunction with retaining the current indicator, averaging time and form. The Administrator concludes that such a revised standard will be requisite to protect public health with an adequate margin of safety. As discussed more fully below, the rationale for these final decisions draws from the thorough review in the ISA (U.S. EPA, 2013) of the available scientific evidence, generally published through July 2011, on human health effects associated with the presence of O<sub>3</sub> in the ambient air. This rationale also takes into account: (1) Analyses of O<sub>3</sub> air quality, human exposures to O<sub>3</sub>, and O<sub>3</sub>-associated health risks, as presented and assessed in the HREA (U.S. EPA, 2014a); (2) the EPA staff assessment of the most policy-relevant scientific evidence and exposure/risk information in the PA (U.S. EPA, 2014c); (3) CASAC advice and recommendations, as reflected in discussions of drafts of the ISA, REA, and PA at public meetings, in separate written comments, and in CASAC's letters to the Administrator; (4) public

input received during the development of these documents, either in connection with CASAC meetings or separately; and (5) public comments on the proposal notice.

Section II.A below summarizes the information presented in the proposal regarding O<sub>3</sub>-associated health effects, O<sub>3</sub> exposures, and O<sub>3</sub>-attributable health risks. Section II.B presents information related to the adequacy of the current primary O<sub>3</sub> standard, including a summary of the basis for the Administrator's proposed decision to revise the current standard, public comments received on the adequacy of the current standard, and the Administrator's final conclusions regarding the adequacy of the current standard. Section II.C presents information related to the elements of a revised primary O<sub>3</sub> standard, including information related to each of the major elements of the standard (*i.e.*, indicator, averaging time, form, level). Section II.D summarizes the Administrator's final decisions on the primary O<sub>3</sub> standard.

### *A. Introduction*

As discussed in section II.A of the proposal (79 FR 75243–75246, December 17, 2014), the EPA's approach to informing decisions on the primary O<sub>3</sub> standard in the current review builds upon the general approaches used in previous reviews and reflects the broader body of scientific evidence, updated exposure/risk information, and advances in O<sub>3</sub> air quality modeling now available. This approach is based most fundamentally on using the EPA's assessment of the available scientific evidence and associated quantitative analyses to inform the Administrator's judgments regarding a primary standard for O<sub>3</sub> that is "requisite" (*i.e.*, neither more nor less stringent than necessary) to protect public health with an adequate margin of safety. Specifically, it is based on consideration of the available body of scientific evidence assessed in the ISA (U.S. EPA, 2013), exposure and risk analyses presented in the HREA (U.S. EPA, 2014a), evidence- and exposure-/risk-based considerations and conclusions presented in the PA (U.S. EPA, 2014c), advice and recommendations received from CASAC (Frey, 2014a, c), and public comments.

Section II.A.1 below summarizes the information presented in the proposal regarding O<sub>3</sub>-associated health effects. Section II.A.2 summarizes the information presented in the proposal regarding O<sub>3</sub> exposures and O<sub>3</sub>-attributable health risks.

## 1. Overview of Health Effects Evidence

The health effects of O<sub>3</sub> are described in detail in the ISA (U.S. EPA, 2013). Based on its assessment of the health effects evidence, the ISA determined that a “causal” relationship exists between short-term exposure to O<sub>3</sub> in ambient air and effects on the respiratory system<sup>15</sup> and that a “likely to be causal” relationship exists between long-term exposure to O<sub>3</sub> in ambient air and respiratory effects<sup>16</sup> (U.S. EPA, 2013, pp. 1–6 to 1–7). The ISA summarizes the longstanding body of evidence for O<sub>3</sub> respiratory effects as follows (U.S. EPA, 2013, p. 1–5):

The clearest evidence for health effects associated with exposure to O<sub>3</sub> is provided by studies of respiratory effects. Collectively, a very large amount of evidence spanning several decades supports a relationship between exposure to O<sub>3</sub> and a broad range of respiratory effects (see Section 6.2.9 and Section 7.2.8). The majority of this evidence is derived from studies investigating short-term exposures (*i.e.*, hours to weeks) to O<sub>3</sub>, although animal toxicological studies and recent epidemiologic evidence demonstrate that long-term exposure (*i.e.*, months to years) may also harm the respiratory system.

Additionally, the ISA determined that the relationships between short-term exposures to O<sub>3</sub> in ambient air and both total mortality and cardiovascular effects are likely to be causal, based on expanded evidence bases in the current review (U.S. EPA, 2013, pp. 1–7 to 1–8). The ISA determined that the currently available evidence for additional endpoints is “suggestive” of causal relationships with short-term (central nervous system effects) and long-term exposures (cardiovascular effects, reproductive and developmental effects, central nervous system effects and total mortality) to ambient O<sub>3</sub>.

Consistent with emphasis in past reviews on O<sub>3</sub> health effects for which the evidence is strongest, in this review the EPA places the greatest emphasis on studies of health effects that have been determined in the ISA to be caused by, or likely to be caused by, O<sub>3</sub> exposures (U.S. EPA, 2013, section 2.5.2). This preamble section summarizes the evidence for health effects attributable to O<sub>3</sub> exposures, with a focus on respiratory morbidity and mortality

<sup>15</sup> In determining that a causal relationship exists for O<sub>3</sub> with specific health effects, the EPA has concluded that “[e]vidence is sufficient to conclude that there is a causal relationship with relevant pollutant exposures” (U.S. EPA, 2013, p. lxiv).

<sup>16</sup> In determining a “likely to be causal” relationship exists for O<sub>3</sub> with specific health effects, the EPA has concluded that “[e]vidence is sufficient to conclude that a causal relationship is likely to exist with relevant pollutant exposures, but important uncertainties remain” (U.S. EPA, 2013, p. lxiv).

effects attributable to short- and long-term exposures, and cardiovascular system effects (including mortality) and total mortality attributable to short-term exposures (from section II.B in the proposal, 79 FR 75246–75271).

The information highlighted here is based on the assessment of the evidence in the ISA (U.S. EPA, 2013, Chapters 4 to 8) and consideration of that evidence in the PA (U.S. EPA, 2014c, Chapters 3 and 4) on the known or potential effects on public health which may be expected from the presence of O<sub>3</sub> in the ambient air. This section summarizes: (1) Information available on potential mechanisms for health effects associated with exposure to O<sub>3</sub> (II.A.1.a); (2) the nature of effects that have been associated directly with both short- and long-term exposure to O<sub>3</sub> and indirectly with the presence of O<sub>3</sub> in ambient air (II.A.1.b); (3) considerations related to the adversity of O<sub>3</sub>-attributable health effects (II.A.1.c); and (4) considerations in characterizing the public health impact of O<sub>3</sub>, including the identification of “at risk” populations (II.A.1.d).

### a. Overview of Mechanisms

This section briefly summarizes the characterization of the key events and pathways that contribute to health effects resulting from O<sub>3</sub> exposures, as discussed in the proposal (79 FR 75247, section II.B.1) and in the ISA (U.S. EPA, 2013, section 5.3).

Experimental evidence elucidating modes of action and/or mechanisms contributes to our understanding of the biological plausibility of adverse O<sub>3</sub>-related health effects, including respiratory effects and effects outside the respiratory system (U.S. EPA, 2013, Chapters 6 and 7). Evidence indicates that the initial key event is the formation of secondary oxidation products in the respiratory tract (U.S. EPA, 2013, section 5.3). This mainly involves direct reactions with components of the extracellular lining fluid (ELF). Although the ELF has inherent capacity to quench (based on individual antioxidant capacity), this capacity can be overwhelmed, especially with exposure to elevated concentrations of O<sub>3</sub> (U.S. EPA 2014c, at 3–3, 3–9). The resulting secondary oxidation products transmit signals to the epithelium, pain receptive nerve fibers and, if present, immune cells involved in allergic responses. The available evidence indicates that the effects of O<sub>3</sub> are mediated by components of ELF and by the multiple cell types in the respiratory tract. Oxidative stress is an implicit part of this initial key event.

Secondary oxidation products initiate numerous responses at the cellular, tissue, and whole organ level of the respiratory system. These responses include the activation of neural reflexes which leads to lung function decrements; initiation of pulmonary inflammation; alteration of barrier epithelial function; sensitization of bronchial smooth muscle; modification of lung host defenses; airways remodeling; and modulation of autonomic nervous function which may alter cardiac function (U.S. EPA, 2013, section 5.3, Figure 5–8).

Persistent inflammation and injury, which are observed in animal models of chronic and quasi-continuous exposure to O<sub>3</sub>, are associated with airways remodeling (see section 7.2.3 of the ISA, U.S. EPA, 2013). Chronic quasi-continuous exposure to O<sub>3</sub> has also been shown to result in effects on the developing lung and immune system. Systemic inflammation and vascular oxidative/nitrosative stress are also key events in the toxicity pathway of O<sub>3</sub> (U.S. EPA, 2013, section 5.3.8). Extrapulmonary effects of O<sub>3</sub> occur in numerous organ systems, including the cardiovascular, central nervous, reproductive, and hepatic systems (U.S. EPA, 2013, sections 6.3 to 6.5 and sections 7.3 to 7.5).

Responses to O<sub>3</sub> exposure are variable within the population. Studies have shown a large range of pulmonary function (*i.e.*, spirometric) responses to O<sub>3</sub> among healthy young adults, while responses within an individual are relatively consistent over time. Other responses to O<sub>3</sub> have also been characterized by a large degree of interindividual variability, including airways inflammation. The mechanisms that may underlie the variability in responses seen among individuals are discussed in the ISA (U.S. EPA, 2013, section 5.4.2). Certain functional genetic polymorphisms, pre-existing conditions or diseases, nutritional status, lifestages, and co-exposures can contribute to altered risk of O<sub>3</sub>-induced effects. Experimental evidence for such O<sub>3</sub>-induced changes contributes to our understanding of the biological plausibility of adverse O<sub>3</sub>-related health effects, including a range of respiratory effects as well as effects outside the respiratory system (*e.g.*, cardiovascular effects) (U.S. EPA, 2013, Chapters 6 and 7).

### b. Nature of Effects

This section briefly summarizes the information presented in the proposal on respiratory effects attributable to short-term exposures (II.A.1.b.i), respiratory effects attributable to long-

term exposures (II.A.1.b.ii), cardiovascular effects attributable to short-term exposures (II.A.1.b.iii), and premature mortality attributable to short-term exposures (II.A.1.b.iv) (79 FR 75247, section II.B.2).

#### i. Respiratory Effects—Short-term Exposure

Controlled human exposure, animal toxicological, and epidemiologic studies available in the last review provided clear, consistent evidence of a causal relationship between short-term O<sub>3</sub> exposure and respiratory effects (U.S. EPA, 2006a). Recent studies evaluated since the completion of the 2006 AQCD support and expand upon the strong body of evidence available in the last review (U.S. EPA, 2013, section 6.2.9).

Key aspects of this evidence are discussed below with regard to (1) lung function decrements; (2) pulmonary inflammation, injury, and oxidative stress; (3) airway hyperresponsiveness; (4) respiratory symptoms and medication use; (5) lung host defense; (6) allergic and asthma-related responses; (7) hospital admissions and emergency department visits; and (8) respiratory mortality.<sup>17</sup>

#### Lung Function Decrements

Lung function decrements are typically measured by spirometry and refer to reductions in the maximal amount of air that can be forcefully exhaled. Forced expiratory volume in 1 second (FEV<sub>1</sub>) is a common index used to assess the effect of O<sub>3</sub> on lung function. The ISA summarizes the currently available evidence from multiple controlled human exposure studies evaluating changes in FEV<sub>1</sub> following 6.6-hour O<sub>3</sub> exposures in young, healthy adults engaged in moderate levels of physical activity<sup>18</sup> (U.S. EPA, 2013, section 6.2.1.1, Figure 6–1). Exposures to an average O<sub>3</sub> concentration of 60 ppb results in group mean decrements in FEV<sub>1</sub> ranging from 1.8% to 3.6% (Adams, 2002; Adams, 2006;<sup>19</sup> Schelegle et al., 2009;<sup>20</sup> Kim et

al., 2011). The weighted average group mean decrement was 2.7% from these studies. In some analyses, these group mean decrements in lung function were statistically significant (Brown et al., 2008; Kim et al., 2011), while in other analyses they were not (Adams, 2006; Schelegle et al., 2009).<sup>21</sup> Prolonged exposure to an average O<sub>3</sub> concentration of 72 ppb results in a statistically significant group mean decrement in FEV<sub>1</sub> of about 6% (Schelegle et al., 2009).<sup>22</sup> There is a smooth dose-response curve without evidence of a threshold for exposures between 40 and 120 ppb O<sub>3</sub> (U.S. EPA, 2013, Figure 6–1). When these data are taken together, the ISA concludes that “mean FEV<sub>1</sub> is clearly decreased by 6.6-hour exposures to 60 ppb O<sub>3</sub> and higher concentrations in [healthy, young adult] subjects performing moderate exercise” (U.S. EPA, 2013, p. 6–9).

As described in the proposal (79 FR 75250), the ISA focuses on individuals with >10% decrements in FEV<sub>1</sub> because (1) it is accepted by the American Thoracic Society (ATS) as an abnormal response and a reasonable criterion for assessing exercise-induced bronchoconstriction, and (2) some individuals in the Schelegle et al. (2009) study experienced 5–10% FEV<sub>1</sub> decrements following exposure to filtered air. The proportion of healthy adults experiencing FEV<sub>1</sub> decrements >10% following prolonged exposures to 80 ppb O<sub>3</sub> while at moderate exertion ranged from 17% to 29% and following exposures to 60 ppb O<sub>3</sub> ranged from 3% to 20%. The weighted average proportion (*i.e.*, based on numbers of subjects in each study) of young, healthy adults with >10% FEV<sub>1</sub> decrements is 25% following exposure to 80 ppb O<sub>3</sub> and 10% following exposure to 60 ppb O<sub>3</sub>, for 6.6 hours at moderate exertion (U.S. EPA, 2013, page 6–18 and 6–19).<sup>23</sup> Responses within an

<sup>21</sup> Adams (2006) did not find effects on FEV<sub>1</sub> at 60 ppb to be statistically significant. In an analysis of the Adams (2006) data, Brown et al. (2008) addressed the more fundamental question of whether there were statistically significant differences in responses before and after the 6.6 hour exposure period and found the average effect on FEV<sub>1</sub> at 60 ppb to be small, but highly statistically significant using several common statistical tests, even after removal of potential outliers. Schelegle et al. (2009) reported that, compared to filtered air, the largest change in FEV<sub>1</sub> for the 60 ppb protocol occurred after the sixth (and final) exercise period.

<sup>22</sup> As noted above, for the 70 ppb exposure group, Schelegle et al. (2009) reported that the actual mean exposure concentration was 72 ppb.

<sup>23</sup> The ISA notes that by considering responses uncorrected for filtered air exposures, during which lung function typically improves (which would increase the size of the change, pre-and post-exposure), 10% is an underestimate of the proportion of healthy individuals that are likely to

individual tend to be reproducible over a period of several months, reflecting differences in intrinsic responsiveness. Given this, the ISA concludes that “[t]hrough group mean decrements are biologically small and generally do not attain statistical significance, a considerable fraction of exposed individuals [in the clinical studies] experience clinically meaningful decrements in lung function” when exposed for 6.6 hours to 60 ppb O<sub>3</sub> during quasi-continuous, moderate exertion (U.S. EPA, 2013, section 6.2.1.1, p. 6–20).

This review has marked an advance in the ability to make reliable quantitative predictions of the potential lung function response to O<sub>3</sub> exposure, and, thus, to reasonably predict the degree of interindividual response of lung function to that exposure. McDonnell et al. (2012) and Schelegle et al. (2012) developed models, described in more detail in the proposal (79 FR 75250), that included mathematical approaches to simulate the potential protective effect of antioxidants in the ELF at lower ambient O<sub>3</sub> concentrations, and that included a dose threshold below which changes in lung function do not occur. The resulting empirical models can estimate the frequency distribution of individual responses and summary measures of the distribution such as the mean or median response and the proportions of individuals with FEV<sub>1</sub> decrements >10%, 15%, and 20%.<sup>24</sup> The predictions of the models are consistent with the observed results from the individual controlled human exposure studies of O<sub>3</sub>-induced FEV<sub>1</sub> decrements (79 FR 75250–51, see also U.S. EPA, 2013, Figures 6–1 and 6–3). CASAC agreed that these models mark a significant technical advance over the exposure-response modeling approach used for the lung function risk assessment in the last review and explicitly found that “[t]he MSS model to be scientifically and biologically defensible” (Frey, 2014a, pp. 8, 2). CASAC also stated that “the comparison of the MSS model results to those obtained with the exposure-response model is of tremendous importance. Typically, the MSS model gives a result about a factor of three higher . . . for school-age children, which is expected because the MSS model includes

experience clinically meaningful changes in lung function following exposure for 6.6 hours to 60 ppb O<sub>3</sub> during quasi-continuous moderate exertion (U.S. EPA, 2012, section 6.2.1.1).

<sup>24</sup> One of these models, the McDonnell-Stewart-Smith (MSS) model (McDonnell et al. 2012) was used to estimate the occurrences of lung function decrements in the HREA.

<sup>17</sup> CASAC concurred that these were “the kinds of identifiable effects on public health that are expected from the presence of ozone in the ambient air” (Frey 2014c, p. 3).

<sup>18</sup> Table 6–1 of the ISA includes descriptions of the activity levels evaluated in controlled human exposure studies (U.S. EPA, 2013).

<sup>19</sup> Adams (2006); (2002) both provide data for an additional group of 30 healthy subjects that were exposed via facemask to 60 ppb O<sub>3</sub> for 6.6 hours with moderate exercise. These subjects are described on page 133 of Adams (2006) and pages 747 and 761 of Adams (2002). The facemask exposure is not expected to affect the FEV<sub>1</sub> responses relative to a chamber exposure.

<sup>20</sup> For the 60 ppb target exposure concentration, Schelegle et al. (2009) reported that the actual mean exposure concentration was 63 ppb.

responses for a wider range of exposure protocols” (Frey, 2014a, pp. 8, 2).

Epidemiologic studies have consistently linked short-term increases in ambient O<sub>3</sub> concentrations with lung function decrements in diverse populations and lifestyles, including children attending summer camps, adults exercising or working outdoors, and groups with pre-existing respiratory diseases such as asthmatic children (U.S. EPA, 2013, section 6.2.1.2). Some of these studies reported O<sub>3</sub>-associated lung function decrements accompanied by respiratory symptoms<sup>25</sup> in asthmatic children. In contrast, studies of children in the general population have reported similar O<sub>3</sub>-associated lung function decrements but without accompanying respiratory symptoms (79 FR 75251; U.S. EPA, 2013, section 6.2.1.2). As noted in the PA (EPA, 2014c, pp. 4–70 to 4–71), additional research is needed to evaluate responses of people with asthma and healthy people in the 40 to 70 ppb range. Further epidemiologic studies and meta-analyses of the effects of O<sub>3</sub> exposure on children will help elucidate the concentration-response functions for lung function and respiratory symptom effects at lower O<sub>3</sub> concentrations.

Several epidemiologic panel studies<sup>26</sup> reported statistically significant associations with lung function decrements at relatively low ambient O<sub>3</sub> concentrations. For outdoor recreation or exercise, associations were reported in analyses restricted to 1-hour average O<sub>3</sub> concentrations less than 80 ppb, down to less than 50 ppb. Among outdoor workers, Brauer et al. (1996) found a robust association with daily 1-hour max O<sub>3</sub> concentrations less than 40 ppb. Ulmer et al. (1997) found a robust association in schoolchildren with 30-minute maximum O<sub>3</sub> concentrations less than 60 ppb. For 8-hour average O<sub>3</sub> concentrations, associations with lung function decrements in children with asthma were found to persist at concentrations less than 80 ppb in a U.S. multicity study (Mortimer et al., 2002) and less than 51 ppb in a study conducted in the Netherlands (Gielen et al., 1997).

As described in the proposal (79 FR 75251), several epidemiologic panel studies provided information on potential confounding by copollutants and most O<sub>3</sub> effect estimates for lung function were robust to adjustment for temperature, humidity, and copollutants

such as particulate matter with mass median aerodynamic diameter less than or equal to 2.5 micrometers (PM<sub>2.5</sub>), particulate matter with mass median aerodynamic diameter less than or equal to 10 micrometers (PM<sub>10</sub>), NO<sub>2</sub>, or sulfur dioxide (SO<sub>2</sub>) (Hoppe et al., 2003; Brunekreef et al., 1994; Hoek et al. 1993; U.S. EPA, 2013, pp. 6–67 to 6–69). Although examined in only a few epidemiologic studies, O<sub>3</sub> also remained associated with decreases in lung function with adjustment for pollen or acid aerosols (79 F 75251; U.S. EPA, 2013, section 6.2.1.2).

#### Pulmonary Inflammation, Injury and Oxidative Stress

As described in detail in section II.B.2.a.ii of the proposal (79 FR 75252), O<sub>3</sub> exposures can result in increased respiratory tract inflammation and epithelial permeability. Inflammation is a host response to injury, and the induction of inflammation is evidence that injury has occurred. Oxidative stress has been shown to play a key role in initiating and sustaining O<sub>3</sub>-induced inflammation. As noted in the ISA (U.S. EPA, 2013, section 6.2.3), O<sub>3</sub> exposures can initiate an acute inflammatory response throughout the respiratory tract that has been reported to persist for at least 18–24 hours after exposure.

Inflammation induced by exposure of humans to O<sub>3</sub> can have several potential outcomes, ranging from resolving entirely following a single exposure to becoming a chronic inflammatory state, as described in detail in section II.B.2.a.ii of the proposal (79 FR 75252) and in the ISA (U.S. EPA, 2013, section 6.2.3). Continued cellular damage due to chronic inflammation “may alter the structure and function of pulmonary tissues” (U.S. EPA, 2013, p. 6–161). Lung injury and the resulting inflammation provide a mechanism by which O<sub>3</sub> may cause other more serious morbidity effects (e.g., asthma exacerbations) (U.S. EPA, 2013, section 6.2.3).<sup>27</sup>

Building on the last review, recent studies continue to support the evidence for airway inflammation and injury with new evidence for such effects following exposures to lower concentrations than had been evaluated previously. These studies include recent controlled human exposure and epidemiologic studies and are discussed more below.

An extensive body of evidence from controlled human exposure studies, described in section II.B.2.a.ii of the proposal, indicates that short-term exposures to O<sub>3</sub> can cause pulmonary inflammation and increases in polymorphonuclear leukocyte (PMN) influx and permeability following 80–600 O<sub>3</sub> ppb exposures, eosinophilic inflammation following exposures at or above 160 ppb, and O<sub>3</sub>-induced PMN influx following exposures of healthy adults to 60 ppb O<sub>3</sub>, the lowest concentration that has been evaluated for inflammation. A meta-analysis of 21 controlled human exposure studies (Mudway and Kelly, 2004) using varied experimental protocols (80–600 ppb O<sub>3</sub> exposures; 1–6.6 hours exposure duration; light to heavy exercise; bronchoscopy at 0–24 hours post-O<sub>3</sub> exposure) reported that PMN influx in healthy subjects is linearly associated with total O<sub>3</sub> dose.

As with FEV<sub>1</sub> responses to O<sub>3</sub>, inflammatory responses to O<sub>3</sub> are generally reproducible within individuals, with some individuals experiencing more severe O<sub>3</sub>-induced airway inflammation than indicated by group averages. Unlike O<sub>3</sub>-induced decrements in lung function, which are attenuated following repeated exposures over several days, some markers of O<sub>3</sub>-induced inflammation and tissue damage remain elevated during repeated exposures, indicating ongoing damage to the respiratory system (79 FR 75252). Most controlled human exposure studies have reported that asthmatics experience larger O<sub>3</sub>-induced inflammatory responses than non-asthmatics.<sup>28</sup>

In the previous review (U.S. EPA, 2006a), the epidemiologic evidence of O<sub>3</sub>-associated changes in airway inflammation and oxidative stress was limited (79 FR 75253). Since then, as a result of the development of less invasive test methods, there has been a large increase in the number of studies assessing ambient O<sub>3</sub>-associated changes in airway inflammation and oxidative stress, the types of biological samples collected, and the types of indicators. Most of these recent studies have evaluated biomarkers of inflammation or oxidative stress in exhaled breath, nasal lavage fluid, or induced sputum (U.S. EPA, 2013, section 6.2.3.2). These recent studies form a larger database to establish coherence with findings from controlled human exposure and animal

<sup>25</sup> Reversible loss of lung function in combination with the presence of symptoms meets ATS criteria for adversity (ATS, 2000a).

<sup>26</sup> Panel studies include repeated measurements of health outcomes, such as respiratory symptoms, at the individual level (U.S. EPA, 2013, p. 1x).

<sup>27</sup> CASAC also addressed this issue: “The CASAC believes that these modest changes in FEV<sub>1</sub> are usually associated with inflammatory changes, such as more neutrophils in the bronchoalveolar lavage fluid. Such changes may be linked to the pathogenesis of chronic lung disease” (Frey, 2014a p. 2).

<sup>28</sup> When evaluated, these studies have also reported O<sub>3</sub>-induced respiratory symptoms in asthmatics. Specifically, Scannell et al. (1996), Basha et al. (1994), and Vagaggini et al. (2001, 2007) reported increased symptoms in addition to inflammation.

studies that have measured the same or related biological markers. Additionally, results from these studies provide further biological plausibility for the associations observed between ambient O<sub>3</sub> concentrations and respiratory symptoms and asthma exacerbations.

#### Airway Hyperresponsiveness (AHR)

A strong body of controlled human exposure and animal toxicological studies, most of which were available in the last review of the O<sub>3</sub> NAAQS, report O<sub>3</sub>-induced AHR after either acute or repeated exposures (U.S. EPA, 2013, section 6.2.2.2). People with asthma often exhibit increased airway responsiveness at baseline relative to healthy control subjects, and asthmatics can experience further increases in responsiveness following exposures to O<sub>3</sub>. Studies reporting increased airway responsiveness after O<sub>3</sub> exposure contribute to a plausible link between ambient O<sub>3</sub> exposures and increased respiratory symptoms in asthmatics, and increased hospital admissions and emergency department visits for asthma (section II.B.2.a.iii, 79 FR 75254; U.S. EPA, 2013, section 6.2.2.2).

#### Respiratory Symptoms and Medication Use

Respiratory symptoms are associated with adverse outcomes such as limitations in activity, and are the primary reason for people with asthma to use quick relief medication and to seek medical care. Studies evaluating the link between O<sub>3</sub> exposures and such symptoms allow a direct characterization of the clinical and public health significance of ambient O<sub>3</sub> exposure. Controlled human exposure and toxicological studies have described modes of action through which short-term O<sub>3</sub> exposures may increase respiratory symptoms by demonstrating O<sub>3</sub>-induced AHR (U.S. EPA, 2013, section 6.2.2) and pulmonary inflammation (U.S. EPA, 2013, section 6.2.3).

The link between subjective respiratory symptoms and O<sub>3</sub> exposures has been evaluated in both controlled human exposure and epidemiologic studies, and the link with medication use has been evaluated in epidemiologic studies. In the last review, several controlled human exposure studies reported respiratory symptoms following exposures to O<sub>3</sub> concentrations at or above 80 ppb. In addition, one study reported such symptoms following exposures to 60 ppb O<sub>3</sub>, though the increase was not statistically different from filtered air controls. Epidemiologic studies reported associations between ambient O<sub>3</sub> and

respiratory symptoms and medication use in a variety of locations and populations, including asthmatic children living in U.S. cities (U.S. EPA, 2013, pp. 6–1 to 6–2). In the current review, additional controlled human exposure studies have evaluated respiratory symptoms following exposures to O<sub>3</sub> concentrations below 80 ppb and recent epidemiologic studies have evaluated associations with respiratory symptoms and medication use (U.S. EPA, 2013, sections 6.2.1, 6.2.4).

As noted in section II.B.2.a.iv in the proposal (79 FR 75255), the findings for O<sub>3</sub>-induced respiratory symptoms in controlled human exposure studies, and the evidence integrated across disciplines describing underlying modes of action, provide biological plausibility for epidemiologic associations observed between short-term increases in ambient O<sub>3</sub> concentration and increases in respiratory symptoms (U.S. EPA, 2013, section 6.2.4).

Most epidemiologic studies of O<sub>3</sub> and respiratory symptoms and medication use have been conducted in children and/or adults with asthma, with fewer studies, and less consistent results, in non-asthmatic populations (U.S. EPA, 2013, section 6.2.4). The 2006 AQCD (U.S. EPA, 2006a; U.S. EPA, 2013, section 6.2.4) concluded that the collective body of epidemiologic evidence indicated that short-term increases in ambient O<sub>3</sub> concentrations are associated with increases in respiratory symptoms in children with asthma. A large body of single-city and single-region studies of asthmatic children provides consistent evidence for associations between short-term increases in ambient O<sub>3</sub> concentrations and increased respiratory symptoms and asthma medication use in children with asthma (U.S. EPA, 2013, Figure 6–12, Table 6–20, section 6.2.4.1). Methodological differences, described in section II.B.2.a.iv of the proposal, among studies make comparisons across recent multicity studies of respiratory symptoms difficult.

Available evidence indicates that O<sub>3</sub>-associated increases in respiratory symptoms are not confounded by temperature, pollen, or copollutants (primarily PM) (U.S. EPA, 2013, section 6.2.4.5; Table 6–25). However, identifying the independent effects of O<sub>3</sub> in some studies was complicated due to the high correlations observed between O<sub>3</sub> and PM or different lags and averaging times examined for copollutants. Nonetheless, the ISA noted that the robustness of associations in some studies of individuals with

asthma, combined with findings from controlled human exposure studies for the direct effects of O<sub>3</sub> exposure, provide substantial evidence supporting the independent effects of short-term ambient O<sub>3</sub> exposure on respiratory symptoms (U.S. EPA, 2013, section 6.2.4.5).

In summary, both controlled human exposure and epidemiologic studies have reported respiratory symptoms attributable to short-term O<sub>3</sub> exposures. In the last review, the majority of the evidence from controlled human exposure studies in young, healthy adults was for symptoms following exposures to O<sub>3</sub> concentrations at or above 80 ppb. Although studies that have become available since the last review have not reported increased respiratory symptoms in young, healthy adults following exposures with moderate exertion to 60 ppb, one recent study did report increased symptoms following exposure to 72 ppb O<sub>3</sub>. As was concluded in the last review, the collective body of epidemiologic evidence indicates that short-term increases in ambient O<sub>3</sub> concentration are associated with increases in respiratory symptoms in children with asthma (U.S. EPA, 2013, section 6.2.4). Recent studies of respiratory symptoms and medication use, primarily in asthmatic children, add to this evidence. In a smaller body of studies, increases in ambient O<sub>3</sub> concentration were associated with increases in respiratory symptoms in adults with asthma.

#### Lung Host Defense

The mammalian respiratory tract has a number of closely integrated defense mechanisms that, when functioning normally, provide protection from the potential health effects of exposures to a wide variety of inhaled particles and microbes. Based on toxicological and human exposure studies, in the last review EPA concluded that available evidence indicates that short-term O<sub>3</sub> exposures have the potential to impair host defenses in humans, primarily by interfering with alveolar macrophage function. Any impairment in alveolar macrophage function may lead to decreased clearance of microorganisms or nonviable particles. Compromised alveolar macrophage functions in asthmatics may increase their susceptibility to other O<sub>3</sub> effects, the effects of particles, and respiratory infections (U.S. EPA, 2006a).

Relatively few studies conducted since the last review have evaluated the effects of O<sub>3</sub> exposures on lung host defense. As presented in section II.B.2.a.v of the proposal (79 FR 75256),

when the available evidence is taken as a whole, the ISA concludes that acute O<sub>3</sub> exposures impair the host defense capability of animals, primarily by depressing alveolar macrophage function and perhaps also by decreasing mucociliary clearance of inhaled particles and microorganisms. Coupled with limited evidence from controlled human exposure studies, this suggests that humans exposed to O<sub>3</sub> could be predisposed to bacterial infections in the lower respiratory tract.

#### Allergic and Asthma Related Responses

Evidence from controlled human exposure and epidemiologic studies available in the last review indicates that O<sub>3</sub> exposure skews immune responses toward an allergic phenotype and could also make airborne allergens more allergenic, as discussed in more detail in the proposal (79 FR 75257). Evidence from controlled human exposure and animal toxicology studies available in the last review indicates that O<sub>3</sub> may also increase AHR to specific allergen triggers (75 FR 2970, January 19, 2010). When combined with NO<sub>2</sub>, O<sub>3</sub> has been shown to enhance nitration of common protein allergens, which may increase their allergenicity (Franze et al., 2005).

#### Hospital Admissions and Emergency Department Visits

The 2006 AQCD concluded that “the overall evidence supports a causal relationship between acute ambient O<sub>3</sub> exposures and increased respiratory morbidity resulting in increased emergency department visits and [hospital admissions] during the warm season”<sup>29</sup> (U.S. EPA, 2006a). This conclusion was “strongly supported by the human clinical, animal toxicologic[al], and epidemiologic evidence for [O<sub>3</sub>-induced] lung function decrements, increased respiratory symptoms, airway inflammation, and airway hyperreactivity” (U.S. EPA, 2006a).

The results of recent studies largely support the conclusions of the 2006 AQCD (U.S. EPA, 2013, section 6.2.7). Since the completion of the 2006 AQCD, relatively fewer studies, conducted in the U.S., Canada, and Europe, have evaluated associations between short-term O<sub>3</sub> concentrations and respiratory hospital admissions and emergency department visits, with a growing

<sup>29</sup> Epidemiologic associations for O<sub>3</sub> are more robust during the warm season than during cooler months (e.g., smaller measurement error, less potential confounding by copollutants). The rationale for focusing on warm season epidemiologic studies for O<sub>3</sub> can be found at 72 FR 37838–37840.

number of studies conducted in Asia. This epidemiologic evidence is discussed in detail in the proposal (79 FR 75258) and in the ISA (U.S. EPA, 2013, section 6.2.7).<sup>30</sup>

In considering this body of evidence, the ISA focused primarily on multicity studies because they examine associations with respiratory-related hospital admissions and emergency department visits over large geographic areas using consistent statistical methodologies (U.S. EPA, 2013, section 6.2.7.1). The ISA also focused on single-city studies that encompassed a large number of daily hospital admissions or emergency department visits, included long study-durations, were conducted in locations not represented by the larger studies, or examined population-specific characteristics that may impact the risk of O<sub>3</sub>-related health effects but were not evaluated in the larger studies (U.S. EPA, 2013, section 6.2.7.1). When examining the association between short-term O<sub>3</sub> exposure and respiratory health effects that require medical attention, the ISA distinguishes between hospital admissions and emergency department visits because it is likely that a small percentage of respiratory emergency department visits will be admitted to the hospital; therefore, respiratory emergency department visits may represent potentially less serious, but more common outcomes (U.S. EPA, 2013, section 6.2.7.1).

The collective evidence across studies indicates a mostly consistent positive association between O<sub>3</sub> exposure and respiratory-related hospital admissions and emergency department visits. Moreover, the magnitude of these associations may be underestimated to the extent members of study populations modify their behavior in response to air quality forecasts, and to the extent such behavior modification increases exposure misclassification (U.S. EPA, 2013, Section 4.6.6). Studies examining the potential confounding effects of copollutants have reported that O<sub>3</sub> effect estimates remained relatively robust upon the inclusion of PM and gaseous pollutants in two-pollutant models (U.S. EPA, 2013, Figure 6–20, Table 6–29). Additional studies that conducted copollutant analyses, but did not present quantitative results, also support these conclusions (Strickland et al., 2010; Tolbert et al., 2007; Medina-Ramon et

<sup>30</sup> The consideration of ambient O<sub>3</sub> concentrations in the locations of these epidemiologic studies are discussed in sections II.D.1.b and II.E.4.a below, for the current standard and for alternative standards, respectively.

al., 2006; U.S. EPA, 2013, section 6.2.7.5).<sup>31</sup>

In the last review, studies had not evaluated the concentration-response relationship between short-term O<sub>3</sub> exposure and respiratory-related hospital admissions and emergency department visits. As described in the proposal in section II.B.2.a.vii (79 FR 75257) and in the ISA (U.S. EPA, 2013, section 6.2.7.2), a preliminary examination of this relationship in studies that have become available since the last review found no evidence of a deviation from linearity when examining the association between short-term O<sub>3</sub> exposure and asthma hospital admissions (Silverman and Ito, 2010; Strickland et al., 2010). In addition, an examination of the concentration-response relationship for O<sub>3</sub> exposure and pediatric asthma emergency department visits found no evidence of a threshold at O<sub>3</sub> concentrations as low as 30 ppb (for daily maximum 8-hour concentrations) (U.S. EPA, 2013, section 6.2.7.3). However, in these studies there is uncertainty in the shape of the concentration-response curve at the lower end of the distribution of O<sub>3</sub> concentrations due to the low density of data in this range. Further studies at low-level O<sub>3</sub> exposures might reduce this uncertainty.

#### Respiratory Mortality

Evidence from experimental studies indicates multiple potential pathways of respiratory effects from short-term O<sub>3</sub> exposures, which support the continuum of respiratory effects that could potentially result in respiratory-related mortality in adults (U.S. EPA, 2013, section 6.2.8).<sup>32</sup> The evidence in the last review was inconsistent for associations between short-term O<sub>3</sub> concentrations and respiratory mortality (U.S. EPA, 2006a). New epidemiologic evidence for respiratory mortality is discussed in detail in the ISA (U.S. EPA, 2013, section 6.6) and summarized below. The majority of recent multicity studies have reported positive associations between short-term O<sub>3</sub> exposures and respiratory mortality, particularly during the summer months (U.S. EPA, 2013, Figure 6–36).

<sup>31</sup> The ISA concluded that, “[o]verall, recent studies provide copollutant results that are consistent with those from the studies evaluated in the 2006 O<sub>3</sub> AQCD [(U.S. EPA, 2006[a]), Figure 7–12, page 7–80 of the 2006 O<sub>3</sub> AQCD], which found that O<sub>3</sub> respiratory hospital admissions risk estimates remained robust to the inclusion of PM in copollutant models (U.S. EPA, 2013, pp. 6–152 to 6–153).

<sup>32</sup> Premature mortality is discussed in more detail below in section II.A.1.b.iv.



Recent multicity studies from the U.S. (Zanobetti and Schwartz, 2008), Europe (Samoli et al., 2009), Italy (Stafoggia et al., 2010), and Asia (Wong et al., 2010), as well as a multi-continent study (Katsouyanni et al., 2009), reported associations between short-term O<sub>3</sub> concentrations and respiratory mortality (U.S. EPA, 2013, Figure 6–37, page 6–259). With respect to respiratory mortality, summer-only analyses were consistently positive and most were statistically significant. All-year analyses had more mixed results, but most were positive.

Of the studies evaluated, only two studies analyzed the potential for copollutant confounding of the O<sub>3</sub>-respiratory mortality relationship (Katsouyanni et al., (2009); Stafoggia et al., (2010)). Based on the results of these analyses, the O<sub>3</sub> respiratory mortality risk estimates appear to be moderately to substantially sensitive (e.g., increased or attenuated) to inclusion of PM<sub>10</sub>. However, in the APHENA study (Katsouyanni et al., 2009), the mostly every-6th-day sampling schedule for PM<sub>10</sub> in the Canadian and U.S. datasets greatly reduced their sample size and limits the interpretation of these results (U.S. EPA, 2013, sections 6.2.8 and 6.2.9).

The evidence for associations between short-term O<sub>3</sub> concentrations and respiratory mortality has been strengthened since the last review, with the addition of several large multicity studies. The biological plausibility of the associations reported in these studies is supported by the experimental evidence for respiratory effects.

#### ii. Respiratory Effects—Long-Term Exposure

Since the last review, the body of evidence indicating the occurrence of respiratory effects due to long-term O<sub>3</sub> exposure has been strengthened. This evidence is discussed in detail in the ISA (U.S. EPA, 2013, Chapter 7) and summarized below for new-onset asthma and asthma prevalence, asthma hospital admissions, pulmonary structure and function, and respiratory mortality.

Asthma is a heterogeneous disease with a high degree of temporal variability. The onset, progression, and symptoms can vary within an individual's lifetime, and the course of asthma may vary markedly in young children, older children, adolescents, and adults. In the previous review, longitudinal cohort studies that examined associations between long-term O<sub>3</sub> exposures and the onset of asthma in adults and children indicated

a direct effect of long-term O<sub>3</sub> exposures on asthma risk in adults and effect modification by O<sub>3</sub> in children. Since then, additional studies have evaluated associations with new onset asthma, further informing our understanding of the potential gene-environment interactions, mechanisms, and biological pathways associated with incident asthma.

In children, the relationship between long-term O<sub>3</sub> exposure and new-onset asthma has been extensively studied in the Children's Health Study (CHS), a long-term study that was initiated in the early 1990's which has evaluated effects in several cohorts of children. For this review, recent studies from the CHS provide evidence for gene-environment interactions in effects on new-onset asthma by indicating that the lower risks associated with specific genetic variants are found in children who live in lower O<sub>3</sub> communities. Described in detail in the proposal (79 FR 75259) and in the ISA (U.S. EPA, 2013, section 7.2.1), these studies indicate that the risk for new-onset asthma is related in part to genetic susceptibility, as well as behavioral factors and environmental exposure. Cross-sectional studies by Akinbami et al. (2010) and Hwang et al. (2005) provide further evidence relating O<sub>3</sub> exposures with asthma prevalence. Gene-environment interactions are discussed in detail in Section 5.4.2.1 in the ISA (U.S. EPA, 2013).

In the 2006 AQCD (U.S. EPA, 2006a), studies on O<sub>3</sub>-related hospital discharges and emergency department visits for asthma and respiratory disease mainly looked at short-term (daily) metrics. Recent studies continue to indicate that there is evidence for increases in both hospital admissions and emergency department visits in children and adults related to all respiratory outcomes, including asthma, with stronger associations in the warm months.

In the 2006 AQCD (U.S. EPA, 2006a), few epidemiologic studies had investigated the effect of chronic O<sub>3</sub> exposure on pulmonary function. As discussed in the proposal, epidemiologic studies of long-term exposures in both children and adults provide mixed results about the effects of long-term O<sub>3</sub> exposure on pulmonary function and the growth rate of lung function.

Long-term studies in animals allow for greater insight into the potential effects of prolonged exposure to O<sub>3</sub> that may not be easily measured in humans, such as structural changes in the respiratory tract. Despite uncertainties, epidemiologic studies observing associations of O<sub>3</sub> exposure with

functional changes in humans can attain biological plausibility in conjunction with long-term toxicological studies, particularly O<sub>3</sub>-inhalation studies performed in non-human primates whose respiratory systems most closely resemble that of the human. An important series of studies, discussed in section 7.2.3.2 of the ISA (U.S. EPA, 2013), have used nonhuman primates to examine the effect of O<sub>3</sub> alone, or in combination with an inhaled allergen, house dust mite antigen, on morphology and lung function. Animals exhibit the hallmarks of allergic asthma defined for humans (NHLBI, 2007). These studies and others have demonstrated changes in pulmonary function and airway morphology in adult and infant nonhuman primates repeatedly exposed to environmentally relevant concentrations of O<sub>3</sub> (U.S. EPA, 2013, section 7.2.3.2). As discussed in more detail in the proposal, the studies provide evidence of an O<sub>3</sub>-induced change in airway resistance and responsiveness and provide biological plausibility of long-term exposure, or repeated short-term exposures, to O<sub>3</sub> contributing to the effects of asthma in children.

Collectively, evidence from animal studies strongly suggests that chronic O<sub>3</sub> exposure is capable of damaging the distal airways and proximal alveoli, resulting in lung tissue remodeling and leading to apparent irreversible changes. Potentially, persistent inflammation and interstitial remodeling play an important role in the progression and development of chronic lung disease. Further discussion of the modes of action that lead to O<sub>3</sub>-induced morphological changes and the mechanisms involved in lifestage susceptibility and developmental effects can be found in the ISA (U.S. EPA, 2013, section 5.3.7, section 5.4.2.4). The findings reported in chronic animal studies offer insight into potential biological mechanisms for the suggested association between seasonal O<sub>3</sub> exposure and reduced lung function development in children as observed in epidemiologic studies (U.S. EPA, 2013, section 7.2.3.1). Further research could help fill in the gaps in our understanding of the mechanisms involved in lifestage susceptibility and developmental effects in children of seasonal or long-term exposure to O<sub>3</sub>.

A limited number of epidemiologic studies have assessed the relationship between long-term exposure to O<sub>3</sub> and mortality in adults. The 2006 AQCD concluded that an insufficient amount of evidence existed "to suggest a causal relationship between chronic O<sub>3</sub> exposure and increased risk for

mortality in humans” (U.S. EPA, 2006a). Though total and cardio-pulmonary mortality were considered in these studies, respiratory mortality was not specifically considered.

In a recent follow-up analysis of the American Cancer Society cohort (Jerrett et al., 2009), cardiopulmonary deaths were separately subdivided into respiratory and cardiovascular deaths, rather than combined as in the Pope et al. (2002) work. Increased O<sub>3</sub> exposure was associated with the risk of death from respiratory causes, and this effect was robust to the inclusion of PM<sub>2.5</sub>. Additionally, a recent multicity time series study (Zanobetti and Schwartz, 2011), which followed (from 1985 to 2006) four cohorts of Medicare enrollees with chronic conditions that might predispose to O<sub>3</sub>-related effects, observed an association between long-term (warm season) exposure to O<sub>3</sub> and elevated risk of mortality in the cohort that had previously experienced an emergency hospital admission due to chronic obstructive pulmonary disease (COPD). A key limitation of this study is the inability to control for PM<sub>2.5</sub>, because data were not available in these cities until 1999.

### iii. Cardiovascular Effects—Short-Term Exposure

A relatively small number of studies have examined the potential effect of short-term O<sub>3</sub> exposure on the cardiovascular system. The 2006 AQCD (U.S. EPA, 2006a, p. 8–77) concluded that “O<sub>3</sub> directly and/or indirectly contributes to cardiovascular-related morbidity,” but added that the body of evidence was limited. This conclusion was based on a controlled human exposure study that included hypertensive adult males; a few epidemiologic studies of physiologic effects, heart rate variability, arrhythmias, myocardial infarctions, and hospital admissions; and toxicological studies of heart rate, heart rhythm, and blood pressure.

More recently, the body of scientific evidence available that has examined the effect of O<sub>3</sub> on the cardiovascular system has expanded. There is an emerging body of animal toxicological evidence demonstrating that short-term exposure to O<sub>3</sub> can lead to autonomic nervous system alterations (in heart rate and/or heart rate variability) and suggesting that proinflammatory signals may mediate cardiovascular effects. Interactions of O<sub>3</sub> with respiratory tract components result in secondary oxidation product formation and subsequent production of inflammatory mediators, which have the potential to penetrate the epithelial barrier and to

initiate toxic effects systemically. In addition, animal toxicological studies of long-term exposure to O<sub>3</sub> provide evidence of enhanced atherosclerosis and ischemia/reperfusion (I/R) injury, corresponding with development of a systemic oxidative, proinflammatory environment. Recent experimental and epidemiologic studies have investigated O<sub>3</sub>-related cardiovascular events and are summarized in the ISA (U.S. EPA, 2013, section 6.3).

Controlled human exposure studies discussed in previous reviews have not demonstrated any consistent extrapulmonary effects. In this review, evidence from controlled human exposure studies suggests cardiovascular effects in response to short-term O<sub>3</sub> exposure (U.S. EPA, 2013, section 6.3.1) and provides some coherence with evidence from animal toxicology studies. Controlled human exposure studies also support the animal toxicological studies by demonstrating O<sub>3</sub>-induced effects on blood biomarkers of systemic inflammation and oxidative stress, as well as changes in biomarkers that can indicate the potential for increased clotting following O<sub>3</sub> exposures. Increases and decreases in high frequency heart rate variability (HRV) have been reported. These changes in cardiac function observed in animal and human studies provide preliminary evidence for O<sub>3</sub>-induced modulation of the autonomic nervous system through the activation of neural reflexes in the lung (U.S. EPA, 2013, section 5.3.2).

Overall, the ISA concludes that the available body of epidemiologic evidence examining the relationship between short-term exposures to O<sub>3</sub> concentrations and cardiovascular morbidity is inconsistent (U.S. EPA, 2013, section 6.3.2.9).

Despite the inconsistent evidence for an association between O<sub>3</sub> concentration and cardiovascular disease (CVD) morbidity, mortality studies indicate a consistent positive association between short-term O<sub>3</sub> exposure and cardiovascular mortality in multicity studies and in a multi-continent study. When examining mortality due to CVD, epidemiologic studies consistently observe positive associations with short-term exposure to O<sub>3</sub>. Additionally, there is some evidence for an association between long-term exposure to O<sub>3</sub> and mortality, although the association between long-term ambient O<sub>3</sub> concentrations and cardiovascular mortality can be confounded by other pollutants (U.S. EPA, 2013). The ISA (U.S. EPA, 2013, section 6.3.4) states that taken together, the overall body of evidence across the animal and human

studies is sufficient to conclude that there is likely to be a causal relationship between relevant short-term exposures to O<sub>3</sub> and cardiovascular system effects.

### iv. Premature Mortality—Short-Term Exposure

The 2006 AQCD concluded that the overall body of evidence was highly suggestive that short-term exposure to O<sub>3</sub> directly or indirectly contributes to nonaccidental and cardiopulmonary-related mortality in adults, but additional research was needed to more fully establish underlying mechanisms by which such effects occur (U.S. EPA, 2006a; U.S. EPA, 2013, p. 2–18). In building on the evidence for mortality from the last review, the ISA states (U.S. EPA, 2013, p. 6–261):

The evaluation of new multicity studies that examined the association between short-term O<sub>3</sub> exposures and mortality found evidence that supports the conclusions of the 2006 AQCD. These new studies reported consistent positive associations between short-term O<sub>3</sub> exposure and all-cause (nonaccidental) mortality, with associations persisting or increasing in magnitude during the warm season, and provide additional support for associations between O<sub>3</sub> exposure and cardiovascular and respiratory mortality.

The 2006 AQCD reviewed a large number of time-series studies of associations between short-term O<sub>3</sub> exposures and total mortality including single- and multicity studies, and meta-analyses. Available studies reported some evidence for heterogeneity in O<sub>3</sub> mortality risk estimates across cities and across studies. Studies that conducted seasonal analyses reported larger O<sub>3</sub> mortality risk estimates during the warm or summer season. Overall, the 2006 AQCD identified robust associations between various measures of daily ambient O<sub>3</sub> concentrations and all-cause mortality, which could not be readily explained by confounding due to time, weather, or copollutants. With regard to cause-specific mortality, consistent positive associations were reported between short-term O<sub>3</sub> exposure and cardiovascular mortality, with less consistent evidence for associations with respiratory mortality. The majority of the evidence for associations between O<sub>3</sub> and cause-specific mortality were from single-city studies, which had small daily mortality counts and subsequently limited statistical power to detect associations. The 2006 AQCD concluded that “the overall body of evidence is highly suggestive that O<sub>3</sub> directly or indirectly contributes to nonaccidental and cardiopulmonary-related mortality” (U.S. EPA, 2013, section 6.6.1).

Recent studies have strengthened the body of evidence that supports the association between short-term O<sub>3</sub> concentrations and mortality in adults. This evidence includes a number of studies reporting associations with nonaccidental as well as cause-specific mortality. Multi-continent and multicity studies have consistently reported positive and statistically significant associations between short-term O<sub>3</sub> concentrations and all-cause mortality, with evidence for larger mortality risk estimates during the warm or summer months (79 FR 75262; U.S. EPA, 2013 Figure 6–27; Table 6–42). Similarly, evaluations of cause-specific mortality have reported consistently positive associations with O<sub>3</sub>, particularly in analyses restricted to the warm season (79 FR 75262; U.S. EPA, 2013 Fig. 6–37; Table 6–53).

In the previous review, multiple uncertainties remained regarding the relationship between short-term O<sub>3</sub> concentrations and mortality, including the extent of residual confounding by copollutants; characterization of the factors that modify the O<sub>3</sub>-mortality association; the appropriate lag structure for identifying O<sub>3</sub>-mortality effects; and the shape of the O<sub>3</sub>-mortality concentration-response function and whether a threshold exists. Many of the studies, published since the last review, have attempted to address one or more of these uncertainties and are described in more detail in the proposal (79 FR 75262 and in the ISA (U.S. EPA, 2013, section 6.6.2).

In particular, recent studies have evaluated different statistical approaches to examine the shape of the O<sub>3</sub>-mortality concentration-response relationship and to evaluate whether a threshold exists for O<sub>3</sub>-related mortality. These studies are detailed in the proposal (79 FR 75262) and in the ISA (U.S. EPA, 2013, p. 2–32). The ISA reaches the following overall conclusions that the epidemiologic studies identified in the ISA indicated a generally linear C–R function with no indication of a threshold but that there is a lack of data at lower O<sub>3</sub> concentrations and therefore, less certainty in the shape of the C–R curve at the lower end of the distribution (U.S. EPA, 2013, p. 2–32).

### c. Adversity of Effects

In making judgments as to when various O<sub>3</sub>-related effects become regarded as adverse to the health of individuals, in previous NAAQS reviews, the EPA has relied upon the guidelines published by the ATS and the advice of CASAC. In 2000, the ATS published an official statement on

“What Constitutes an Adverse Health Effect of Air Pollution?” (ATS, 2000a), which updated and built upon its earlier guidance (ATS, 1985). The earlier guidance defined adverse respiratory health effects as “medically significant physiologic changes generally evidenced by one or more of the following: (1) Interference with the normal activity of the affected person or persons, (2) episodic respiratory illness, (3) incapacitating illness, (4) permanent respiratory injury, and/or (5) progressive respiratory dysfunction,” while recognizing that perceptions of “medical significance” and “normal activity” may differ among physicians, lung physiologists and experimental subjects (ATS, 1985). The more recent guidance concludes that transient, reversible loss of lung function in combination with respiratory symptoms should be considered adverse.<sup>33</sup> However, the committee also recommended “that a small, transient loss of lung function, by itself, should not automatically be designated as adverse” (ATS, 2000a, p. 670).

There is also a more specific consideration of population risk in the 2000 guidance. Specifically, the committee considered that a shift in the risk factor distribution, and hence the risk profile of the exposed population, should be considered adverse, even in the absence of the immediate occurrence of frank illness (ATS, 2000a, p. 668). For example, a population of asthmatics could have a distribution of lung function such that no individual has a level associated with clinically important impairment. Exposure to air pollution could shift the distribution to lower levels of lung function that still do not bring any individual to a level that is associated with clinically relevant effects. However, this would be considered to be adverse because individuals within the population would already have diminished reserve function, and therefore would be at increased risk to further environmental insult (ATS, 2000a, p. 668).

The ATS also concluded in its guidance that elevations of biomarkers such as cell numbers and types, cytokines, and reactive oxygen species may signal risk for ongoing injury and more serious effects or may simply represent transient responses, illustrating the lack of clear boundaries that separate adverse from nonadverse events. More subtle health outcomes also may be connected mechanistically

<sup>33</sup> “In drawing the distinction between adverse and nonadverse reversible effects, this committee recommended that reversible loss of lung function in combination with the presence of symptoms should be considered as adverse” (ATS, 2000a).

to health effects that are clearly adverse, so that small changes in physiological measures may not appear clearly adverse when considered alone, but may be part of a coherent and biologically plausible chain of related health outcomes that include responses that are clearly adverse, such as mortality (U.S. EPA, 2014c, section 3.1.2.1).

Application of the ATS guidelines to the least serious category of effects<sup>34</sup> related to ambient O<sub>3</sub> exposures, which are also the most numerous and, therefore, are also important from a public health perspective, involves judgments about which medical experts on CASAC panels and public commenters have in the past expressed diverse views. To help frame such judgments, in past reviews, the EPA has defined gradations of individual functional responses (e.g., decrements in FEV<sub>1</sub> and airway responsiveness) and symptomatic responses (e.g., cough, chest pain, wheeze), together with judgments as to the potential impact on individuals experiencing varying degrees of severity of these responses. These gradations were used by the EPA in the 1997 O<sub>3</sub> NAAQS review and slightly revised in the 2008 review (U.S. EPA, 1996b, p. 59; U.S. EPA, 2007, p. 3–72; 72 FR 37849, July 11, 2007). These gradations and impacts are summarized in Tables 3–2 and 3–3 in the 2007 O<sub>3</sub> Staff Paper (U.S. EPA, 2007, pp. 3–74 to 3–75).

For the purpose of estimating potentially adverse lung function decrements in active healthy people, the CASAC panel in the 2008 O<sub>3</sub> NAAQS review indicated that a focus on the mid to upper end of the range of moderate levels of functional responses is most appropriate (e.g., FEV<sub>1</sub> decrements ≥15% but <20%) (Henderson, 2006; U.S. EPA, 2007, p. 3–76). In this review, CASAC reiterated that the “[e]stimation of FEV<sub>1</sub> decrements of ≥15% is appropriate as a scientifically relevant surrogate for adverse health outcomes in active healthy adults” (Frey, 2014c, p. 3).

For the purpose of estimating potentially adverse lung function decrements in people with lung disease, the CASAC panel in the 2008 O<sub>3</sub> NAAQS review indicated that a focus on the lower end of the range of moderate levels of functional responses is most appropriate (e.g., FEV<sub>1</sub> decrements ≥10%) (Henderson, 2006; U.S. EPA, 2007, p. 3–76). In their letter

<sup>34</sup> These include, for example, the transient and reversible effects demonstrated in controlled human exposure studies, such as lung function decrements or respiratory symptoms.

advising the Administrator on the reconsideration of the 2008 final decision, CASAC stated that “[a] 10% decrement in FEV<sub>1</sub> can lead to respiratory symptoms, especially in individuals with pre-existing pulmonary or cardiac disease. For example, people with chronic obstructive pulmonary disease have decreased ventilatory reserve (*i.e.*, decreased baseline FEV<sub>1</sub>) such that a ≥ 10% decrement could lead to moderate to severe respiratory symptoms” (Samet, 2011). In this review, CASAC provided similar advice, stating that “[a]n FEV<sub>1</sub> decrement of ≥ 10% is a scientifically relevant surrogate for adverse health outcomes for people with asthma and lung disease”, and that such decrements “could be adverse for people with lung disease” (Frey, 2014c, pp. 3, 7).

In judging the extent to which these impacts represent effects that should be regarded as adverse to the health status of individuals, in previous NAAQS reviews, the EPA has also considered whether effects were experienced repeatedly during the course of a year or only on a single occasion (U.S. EPA, 2007). While some experts would judge single occurrences of moderate responses to be a “nuisance,” especially for healthy individuals, a more general consensus view of the adversity of such moderate responses emerges as the frequency of occurrence increases. In particular, not every estimated occurrence of an O<sub>3</sub>-induced FEV<sub>1</sub> decrement will be adverse.<sup>35</sup> However, repeated occurrences of moderate responses, even in otherwise healthy individuals, may be considered to be adverse since they could set the stage for more serious illness (61 FR 65723). The CASAC panel in the 1997 NAAQS review expressed a consensus view that these “criteria for the determination of an adverse physiological response were reasonable” (Wolff, 1995). In the review completed in 2008, as in the current review (II.B, II.C below), estimates of repeated occurrences continued to be an important public health policy factor in judging the adversity of moderate lung function decrements in healthy and asthmatic people (72 FR 37850, July 11, 2007).

#### d. Ozone-Related Impacts on Public Health

The currently available evidence expands the understanding of populations that were identified to be at greater risk of O<sub>3</sub>-related health effects

at the time of the last review (*i.e.*, people who are active outdoors, people with lung disease, children and older adults and people with increased responsiveness to O<sub>3</sub>) and supports the identification of additional factors that may lead to increased risk (U.S. EPA, 2006a, section 6.3; U.S. EPA, 2013, Chapter 8). Populations and lifestages may be at greater risk for O<sub>3</sub>-related health effects due to factors that contribute to their susceptibility and/or vulnerability to O<sub>3</sub>. The definitions of susceptibility and vulnerability have been found to vary across studies, but in most instances “susceptibility” refers to biological or intrinsic factors (*e.g.*, lifestage, sex, preexisting disease/conditions) while “vulnerability” refers to non-biological or extrinsic factors (*e.g.*, socioeconomic status [SES]) (U.S. EPA, 2013, p. 8–1; U.S. EPA, 2010, 2009b). In some cases, the terms “at-risk” and “sensitive” have been used to encompass these concepts more generally. In the ISA, PA, and proposal, “at-risk” is the all-encompassing term used to define groups with specific factors that increase their risk of O<sub>3</sub>-related health effects.

There are multiple avenues by which groups may experience increased risk for O<sub>3</sub>-induced health effects. A population or lifestage<sup>36</sup> may exhibit greater effects than other populations or lifestages exposed to the same concentration or dose, or they may be at greater risk due to increased exposure to an air pollutant (*e.g.*, time spent outdoors). A group with intrinsically increased risk would have some factor(s) that increases risk through a biological mechanism and, in general, would have a steeper concentration-risk relationship, compared to those not in the group. Factors that are often considered intrinsic include pre-existing asthma, genetic background, and lifestage. A group of people could also have extrinsically increased risk, which would be through an external, non-biological factor, such as socioeconomic status (SES) and diet. Some groups are at risk of increased internal dose at a given exposure concentration, for example, because of breathing patterns. This category would include people who work or exercise outdoors. Finally, there are those who might be placed at increased risk for experiencing greater exposures by being exposed to higher O<sub>3</sub> concentrations. This would include, for example, groups of people with greater exposure

to ambient O<sub>3</sub> due to less availability or use of home air conditioners such that they are more likely to be in locations with open windows on high O<sub>3</sub> days. Some groups may be at increased risk of O<sub>3</sub>-related health effects through a combination of factors. For example, children tend to spend more time outdoors when O<sub>3</sub> levels are high, and at higher levels of activity than adults, which leads to increased exposure and dose, and they also have biological, or intrinsic, risk factors (*e.g.*, their lungs are still developing) (U.S. EPA, 2013, Chapter 8). An at-risk population or lifestage is more likely to experience adverse health effects related to O<sub>3</sub> exposures and/or, develop more severe effects from exposure than the general population. The populations and lifestages identified by the ISA (U.S. EPA, 2013, section 8.5) identified that have “adequate” evidence for increased O<sub>3</sub>-related health effects are people with certain genotypes, people with asthma, younger and older age groups, people with reduced intake of certain nutrients, and outdoor workers. These at-risk populations and lifestages are described in more detail in section II.B.4 of the proposal (79 FR 75264–269).

One consideration in the assessment of potential public health impacts is the size of various population groups for which there is adequate evidence of increased risk for health effects associated with O<sub>3</sub>-related air pollution exposure (U.S. EPA, 2014c, section 3.1.5.2). The factors for which the ISA judged the evidence to be “adequate” with respect to contributing to increased risk of O<sub>3</sub>-related effects among various populations and lifestages included: Asthma; childhood and older adulthood; diets lower in vitamins C and E; certain genetic variants; and working outdoors (U.S. EPA, 2013, section 8.5). No statistics are available to estimate the size of an at-risk population based on nutritional status or genetic variability.

With regard to asthma, Table 3–7 in the PA (U.S. EPA, 2014c, section 3.1.5.2) summarizes information on the prevalence of current asthma by age in the U.S. adult population in 2010 (Schiller et al. 2012; children—Bloom et al., 2011). Individuals with current asthma constitute a fairly large proportion of the population, including more than 25 million people. Asthma prevalence tends to be higher in children than adults. Within the U.S., approximately 8.2% of adults have reported currently having asthma (Schiller et al., 2012) and 9.5% of

<sup>35</sup> As noted above, the ATS recommended “that a small, transient loss of lung function, by itself, should not automatically be designated as adverse” (ATS, 2000a, p. 670).

<sup>36</sup> Lifestages, which in this case includes childhood and older adulthood, are experienced by most people over the course of a lifetime, unlike other factors associated with at-risk populations.

children have reported currently having asthma (Bloom et al., 2011).<sup>37</sup>

With regard to lifestyles, based on U.S. census data from 2010 (Howden and Meyer, 2011), about 74 million people, or 24% of the U.S. population, are under 18 years of age and more than 40 million people, or about 13% of the U.S. population, are 65 years of age or older. Hence, a large proportion of the U.S. population (*i.e.*, more than a third) is included in age groups that are considered likely to be at increased risk for health effects from ambient O<sub>3</sub> exposure.

With regard to outdoor workers, in 2010, approximately 11.7% of the total number of people (143 million people) employed, or about 16.8 million people, worked outdoors one or more days per week (based on worker surveys).<sup>38</sup> Of these, approximately 7.4% of the workforce, or about 7.8 million people, worked outdoors three or more days per week.

While it is difficult to estimate the total number of people in groups that are at greater risk from exposure to O<sub>3</sub>, due to the overlap in members of the different at-risk population groups, the proportion of the total population at greater risk is large. The size of the at-risk population combined with the estimates of risk of different health outcomes associated with exposure to O<sub>3</sub> can give an indication of the magnitude of O<sub>3</sub> impacts on public health.

## 2. Overview of Human Exposure and Health Risk Assessments

To put judgments about health effects into a broader public health context, the EPA has developed and applied models to estimate human exposures to O<sub>3</sub> and O<sub>3</sub>-associated health risks. Exposure and risk estimates that are output from such models are presented and assessed in the HREA (U.S. EPA, 2014a). Section II.C of the proposal discusses the quantitative assessments of O<sub>3</sub> exposures and O<sub>3</sub>-related health risks that are presented in the HREA (79 FR

75270). Summaries of these discussions are provided below for the approach used to adjust air quality for quantitative exposure and risk analyses in the HREA (II.A.2.a), the HREA assessment of exposures to ambient O<sub>3</sub> (II.A.2.b), and the HREA assessments of O<sub>3</sub>-related health risks (II.A.2.c).

### a. Air Quality Adjustment

As discussed in section II.C.1 of the proposal (79 FR 75270), the HREA uses a photochemical model to estimate sensitivities of O<sub>3</sub> to changes in precursor emissions in order to estimate ambient O<sub>3</sub> concentrations that would just meet the current and alternative standards (U.S. EPA, 2014a, Chapter 4).<sup>39</sup> For the 15 urban study areas evaluated in the HREA,<sup>40</sup> this model-based adjustment approach estimates hourly O<sub>3</sub> concentrations at each monitor location when modeled U.S. anthropogenic precursor emissions (*i.e.*, NO<sub>x</sub>, VOC)<sup>41</sup> are reduced. The HREA estimates air quality that just meets the current and alternative standards for the 2006–2008 and 2008–2010 periods.<sup>42</sup>

As discussed in Chapter 4 of the HREA (U.S. EPA, 2014a), this approach to adjusting air quality models the physical and chemical atmospheric processes that influence ambient O<sub>3</sub> concentrations. Compared to the quadratic rollback approach used in previous reviews, it provides more realistic estimates of the spatial and temporal responses of O<sub>3</sub> to reductions in precursor emissions. Because ambient NO<sub>x</sub> can contribute both to the formation and destruction of O<sub>3</sub> (U.S. EPA, 2014a, Chapter 4), the response of ambient O<sub>3</sub> concentrations to reductions in NO<sub>x</sub> emissions is more variable than

indicated by the quadratic rollback approach. This improved approach to adjusting O<sub>3</sub> air quality is consistent with recommendations from the National Research Council of the National Academies (NRC, 2008). In addition, CASAC strongly supported the new approach as an improvement and endorsed the way it was utilized in the HREA, stating that “the quadratic rollback approach has been replaced by a scientifically more valid Higher-order Decoupled Direct Method (HDDM)” and that “[t]he replacement of the quadratic rollback procedure by the HDDM procedure is important and supported by the CASAC” (Frey, 2014a, pp. 1 and 3).

Within urban study areas, the model-based air quality adjustments show reductions in the O<sub>3</sub> levels at the upper ends of ambient concentrations and increases in the O<sub>3</sub> levels at the lower ends of those distributions (U.S. EPA, 2014a, section 4.3.3.2, Figures 4–9 and 4–10).<sup>43</sup> Seasonal means of daily O<sub>3</sub> concentrations generally exhibit only modest changes upon model adjustment, reflecting the seasonal balance between daily decreases in relatively higher concentrations and increases in relatively lower concentrations (U.S. EPA, 2014a, Figures 4–9 and 4–10). The resulting compression in the seasonal distributions of ambient O<sub>3</sub> concentrations is evident in all of the urban study areas evaluated, though the degree of compression varies considerably across areas (U.S. EPA, 2014a, Figures 4–9 and 4–10).

As discussed in the PA (U.S. EPA, 2014c, section 3.2.1), adjusted patterns of O<sub>3</sub> air quality have important implications for exposure and risk estimates in urban case study areas. Estimates influenced largely by the upper ends of the distribution of ambient concentrations (*i.e.*, exposures of concern and lung function risk estimates, as discussed in sections 3.2.2 and 3.2.3.1 of the PA) will decrease with model-adjustment to the current and alternative standards. In contrast, seasonal risk estimates influenced by the full distribution of ambient O<sub>3</sub> concentrations (*i.e.*, epidemiology-based risk estimates, as discussed in section 3.2.3.2 of the PA) either increase or decrease in response to air quality adjustment, depending on the balance between the daily decreases in high O<sub>3</sub>

<sup>37</sup> As noted below (II.C.3.a.ii), asthmatics can experience larger O<sub>3</sub>-induced respiratory effects than non-asthmatic, healthy adults. The responsiveness of asthmatics to O<sub>3</sub> exposures could depend on factors that have not been well-evaluated such as asthma severity, the effectiveness of asthma control, or the prevalence of medication use.

<sup>38</sup> The O\*NET program is the nation's primary source of occupational information. Central to the project is the O\*NET database, containing information on hundreds of standardized and occupation-specific descriptors. The database, which is available to the public at no cost, is continually updated by surveying a broad range of workers from each occupation. <http://www.onetcenter.org/overview.html>. [http://www.onetonline.org/find/descriptor/browse/Work\\_Context/4.C.2/](http://www.onetonline.org/find/descriptor/browse/Work_Context/4.C.2/).

<sup>39</sup> The HREA uses the Community Multi-scale Air Quality (CMAQ) photochemical model instrumented with the higher order direct decoupled method (HDDM) to estimate O<sub>3</sub> concentrations that would occur with the achievement of the current and alternative O<sub>3</sub> standards (U.S. EPA, 2014a, Chapter 4).

<sup>40</sup> The urban study areas assessed are Atlanta, Baltimore, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Sacramento, St. Louis, and Washington, DC.

<sup>41</sup> Exposure and risk analyses for most of the urban study areas focus on reducing U.S. anthropogenic NO<sub>x</sub> emissions alone. The exceptions are Chicago and Denver. Exposure and risk analyses for Chicago and Denver are based on reductions in emissions of both NO<sub>x</sub> and VOC (U.S. EPA, 2014a, section 4.3.3.1; Appendix 4D).

<sup>42</sup> These estimates thus reflect design values—8 hour values using the form of the NAAQS that meet the level of the current or alternative standards. These simulations are illustrative and do not reflect any consideration of specific control programs designed to achieve the reductions in emissions required to meet the specified standards. Further, these simulations do not represent predictions of when, whether, or how areas might meet the specified standards.

<sup>43</sup> It is important to note that sensitivity analyses in the HREA indicate that the increases in low O<sub>3</sub> concentrations are smaller when NO<sub>x</sub> and VOC emissions are reduced than when only NO<sub>x</sub> emissions are reduced (U.S. EPA, 2014a, Appendix 4–D, section 4.7).

concentrations and increases in low O<sub>3</sub> concentrations.<sup>44</sup>

To evaluate uncertainties in air quality adjustments, the HREA assessed the extent to which the modeled O<sub>3</sub> response to reductions in NO<sub>x</sub> emissions appropriately represent the trends observed in monitored ambient O<sub>3</sub> following actual reductions in NO<sub>x</sub> emissions, and the extent to which the O<sub>3</sub> response to reductions in precursor emissions could differ with emissions reduction strategies that are different from those used in HREA to generate risk estimates.

To evaluate the first issue, the HREA conducted a national analysis evaluating trends in monitored ambient O<sub>3</sub> concentrations during a time period when the U.S. experienced large-scale reductions in NO<sub>x</sub> emissions (*i.e.*, 2001 to 2010). Analyses of trends in monitored O<sub>3</sub> indicate that over such a time period, the upper end of the distribution of monitored O<sub>3</sub> concentrations (*i.e.*, indicated by the 95th percentile) generally decreased in urban and non-urban locations across the U.S. (U.S. EPA, 2014a, Figure 8–29). During this same time period, median O<sub>3</sub> concentrations decreased in suburban and rural locations, and in some urban locations. However, median concentrations increased in some large urban centers (U.S. EPA, 2014a, Figure 8–28). As discussed in the HREA, these increases in median concentrations likely reflect the increases in relatively low O<sub>3</sub> concentrations that can occur near important sources of NO<sub>x</sub> upon reductions in NO<sub>x</sub> emissions (U.S. EPA, 2014a, section 8.2.3.1). These patterns of monitored O<sub>3</sub> during a period when the U.S. experienced large reductions in NO<sub>x</sub> emissions are qualitatively consistent with the modeled responses of O<sub>3</sub> to reductions in NO<sub>x</sub> emissions.

To evaluate the second issue, the HREA assessed the O<sub>3</sub> air quality response to reducing both NO<sub>x</sub> and VOC emissions (*i.e.*, in addition to assessing reductions in NO<sub>x</sub> emissions alone) for a subset of seven urban study areas. As discussed in the PA (U.S. EPA, 2014c, section 3.2.1), the addition of VOC reductions generally resulted in larger decreases in mid-range O<sub>3</sub> concentrations (25th to 75th percentiles) (U.S. EPA, 2014a, Appendix 4D, section 4.7).<sup>45</sup> In addition, in all seven of the

urban study areas evaluated, the increases in low O<sub>3</sub> concentrations were smaller for the NO<sub>x</sub>/VOC scenarios than the NO<sub>x</sub> alone scenarios (U.S. EPA, 2014a, Appendix 4D, section 4.7). This was most apparent for Denver, Houston, Los Angeles, New York, and Philadelphia. Given the impacts on total risk estimates of increases in low O<sub>3</sub> concentrations (discussed below), these results suggest that in some locations optimized emissions reduction strategies could result in larger reductions in O<sub>3</sub>-associated mortality and morbidity than indicated by HREA estimates.

#### b. Exposure Assessment

As discussed in section II.C.2 of the proposal, the O<sub>3</sub> exposure assessment presented in the HREA (U.S. EPA, 2014a, Chapter 5) provides estimates of the number and percent of people exposed to various concentrations of ambient O<sub>3</sub> while at specified exertion levels. The HREA estimates exposures in the 15 urban study areas for four study groups, all school-age children (ages 5 to 18), asthmatic school-age children, asthmatic adults (ages 19 to 95), and all older adults (ages 65 to 95), reflecting the evidence indicating that these populations are at increased risk for O<sub>3</sub>-attributable effects (U.S. EPA, 2013, Chapter 8; II.A.1.d, above). An important purpose of these exposure estimates is to provide perspective on the extent to which air quality adjusted to just meet the current O<sub>3</sub> NAAQS could be associated with exposures to O<sub>3</sub> concentrations reported to result in respiratory effects.<sup>46</sup> These analyses of exposure assessment incorporate behavior patterns, including estimates of physical exertion, which are critical in assessing whether ambient concentrations of O<sub>3</sub> may pose a public health risk.<sup>47</sup> In particular, exposures to

(U.S. EPA, 2014a, Appendix 4–D, section 4.7). In this analysis, emissions of NO<sub>x</sub> and VOC were reduced by equal percentages, a scenario not likely to reflect the optimal combination for reducing risks. In most of the urban study areas the inclusion of VOC emissions reductions did not alter the NO<sub>x</sub> emissions reductions required to meet the current or alternative standards. The exceptions are Chicago and Denver, for which the HREA risk estimates are based on reductions in both NO<sub>x</sub> and VOC (U.S. EPA, 2014a, section 4.3.3.1).

<sup>46</sup> In addition, the range of modeled personal exposures to ambient O<sub>3</sub> provide an essential input to the portion of the health risk assessment based on exposure-response functions (for lung function decrements) from controlled human exposure studies. The health risk assessment based on exposure-response information is discussed below (II.C.3).

<sup>47</sup> See 79 FR 75269 “The activity pattern of individuals is an important determinant of their exposure. Variation in O<sub>3</sub> concentrations among various microenvironments means that the amount of time spent in each location, as well as the level

ambient or near-ambient O<sub>3</sub> concentrations have only been shown to result in potentially adverse effects if the ventilation rates of people in the exposed populations are raised to a sufficient degree (*e.g.*, through physical exertion) (U.S. EPA, 2013, section 6.2.1.1). Estimates of such “exposures of concern” provide perspective on the potential public health impacts of O<sub>3</sub>-related effects, including effects that cannot currently be evaluated in a quantitative risk assessment.<sup>48</sup>

The HREA estimates 8-hour exposures at or above benchmark concentrations of 60, 70, and 80 ppb for individuals engaged in moderate or greater exertion (*i.e.*, to approximate conditions in the controlled human exposure studies on which benchmarks are based). Benchmarks reflect exposure concentrations at which O<sub>3</sub>-induced respiratory effects are known to occur in some healthy adults engaged in moderate, quasi-continuous exertion, based on evidence from controlled human exposure studies (U.S. EPA, 2013, section 6.2; U.S. EPA, 2014c, section 3.1.2.1). The amount of weight to place on the estimates of exposures at or above specific benchmark concentrations depends in part on the weight of the scientific evidence concerning health effects associated with O<sub>3</sub> exposures at those benchmark concentrations. It also depends on judgments about the importance, from a public health perspective, of the health effects that are known or can reasonably be inferred to occur as a result of exposures at benchmark concentrations (U.S. EPA, 2014c, sections 3.1.3, 3.1.5).

In considering estimates of O<sub>3</sub> exposures of concern at or above benchmarks of 60, 70, and 80 ppb, the PA focuses on modeled exposures for school-age children (ages 5–18), including asthmatic school-age children, which are key at-risk populations identified in the ISA (U.S. EPA, 2014c, section 3.1.5). The percentages of children estimated to experience exposures of concern are considerably larger than the percentages estimated for adult populations (*i.e.*, approximately 3-fold larger across urban

of activity, will influence an individual’s exposure to ambient O<sub>3</sub>. Activity patterns vary both among and within individuals, resulting in corresponding variations in exposure across a population and over time” (internal citations omitted).

<sup>48</sup> In this review, the term “exposure of concern” is defined as a personal exposure, while at moderate or greater exertion, to 8-hour average ambient O<sub>3</sub> concentrations at and above specific benchmarks levels. As discussed below, these benchmark levels represent exposure concentrations at which O<sub>3</sub>-induced health effects are known to occur, or can reasonably be anticipated to occur, in some individuals.

<sup>44</sup> In addition, because epidemiology-based risk estimates use “area-wide” average O<sub>3</sub> concentrations, calculated by averaging concentrations across multiple monitors in urban case study areas (section 3.2.3.2 below), risk estimates on a given day depend on the daily balance between increasing and decreasing O<sub>3</sub> concentrations at individual monitors.

<sup>45</sup> This was the case for all of the urban study areas evaluated, with the exception of New York

study areas)<sup>49</sup> (U.S. EPA, 2014a, section 5.3.2 and Figures 5–5 to 5–8). The larger exposure estimates for children are due primarily to the larger percentage of children estimated to spend an extended period of time being physically active outdoors when O<sub>3</sub> concentrations are elevated (U.S. EPA, 2014a, sections 5.3.2 and 5.4.1).

Although exposure estimates differ between children and adults, the patterns of results across the urban study areas and years are similar among all of the populations evaluated (U.S. EPA, 2014a, Figures 5–5 to 5–8). Therefore, while the PA highlights estimates in children, including asthmatic school-age children, it also

notes that the patterns of exposures estimated for children represent the patterns estimated for adult asthmatics and older adults.

Table 1 of the proposal (79 FR 75272 to 75273) summarizes key results from the exposure assessment. This table is reprinted below.

**TABLE 1—SUMMARY OF ESTIMATED EXPOSURES OF CONCERN IN ALL SCHOOL-AGE CHILDREN FOR THE CURRENT AND ALTERNATIVE O<sub>3</sub> STANDARDS IN URBAN STUDY AREAS**

Benchmark concentration	Standard level (ppb)	Average % children exposed <sup>50</sup>	Average number of children exposed [average number of asthmatic children] <sup>51</sup>	% Children—worst year and worst area
<b>One or more exposures of concern per season</b>				
≥ 80 ppb .....	75	0–0.3 (0.1)	27,000 [3,000]	1.1
	70	0–0.1 (0)	3,700 [300]	0.2
	65	0 (0)	300 [0]	0
	60	0 (0)	100 <sup>52</sup> [0]	0
	75	0.6–3.3 (1.9)	362,000 [40,000]	8.1
≥ 70 ppb .....	70	0.1–1.2 (0.5)	94,000 [10,000]	3.2
	65	0–0.2 (0.1)	14,000 [2,000]	0.5
	60	0 (0)	1,400 [200]	0.1
	75	9.5–17 (12.2)	2,316,000 [246,000]	25.8
≥ 60 ppb .....	70	3.3–10.2 (6.2)	1,176,000 [126,000]	18.9
	65	0–4.2 (2.1)	392,000 [42,000]	9.5
	60	0–1.2 (0.4)	70,000 [8,000]	2.2
	75	0 (0)	600 [100]	0.1
	70	0 (0)	0 [0]	0
≥ 70 ppb .....	65	0 (0)	0 [0]	0
	60	0 (0)	0 [0]	0
	75	0.1–0.6 (0.2)	46,000 [5,000]	2.2
	70	0–0.1 (0)	5,400 [600]	0.4
≥ 60 ppb .....	65	0 (0)	300 [100]	0
	60	0 (0)	0 [0]	0
	75	3.1–7.6 (4.5)	865,000 [93,000]	14.4
	70	0.5–3.5 (1.7)	320,000 [35,000]	9.2
	65	0–0.8 (0.3)	67,000 [7,500]	2.8
	60	0–0.2 (0)	5,100 [700]	0.3

Uncertainties in exposure estimates are summarized in section II.C.2.b of the proposal (79 FR 75273). For example, due to variability in responsiveness, only a subset of individuals who experience exposures at or above a benchmark concentration can be expected to experience health effects.<sup>53</sup> In addition, not all of these effects will

be adverse. Given the lack of sufficient exposure-response information for most of the health effects that informed benchmark concentrations, estimates of the number of people likely to experience exposures at or above benchmark concentrations generally cannot be translated into quantitative estimates of the number of people likely

to experience specific health effects.<sup>54</sup> The PA views health-relevant exposures as a continuum with greater confidence and less uncertainty about the existence of adverse health effects at higher O<sub>3</sub> exposure concentrations, and less confidence and greater uncertainty as one considers lower exposure concentrations (e.g., U.S. EPA, 2014c,

<sup>49</sup> HREA exposure estimates for all children and asthmatic children are virtually indistinguishable, in terms of the percent estimated to experience exposures of concern (U.S. EPA, 2014a, Chapter 5). Consistent with this, HREA analyses indicate that activity data for people with asthma is generally similar to non-asthmatic populations (U.S. EPA, 2014a, Appendix 5G, Tables 5G2-to 5G–5).

<sup>50</sup> Estimates for each urban case study area were averaged for the years evaluated in the HREA (2006 to 2010). Ranges reflect the ranges across urban study areas. Estimates smaller than 0.05% were rounded downward to zero (from U.S. EPA, 2014a, Tables 5–11 and 5–12). Numbers in parentheses

reflect averages across urban study areas, as well as over the years evaluated in the HREA.

<sup>51</sup> Numbers of children exposed in each urban case study area were averaged over the years 2006 to 2010. These averages were then summed across urban study areas. Numbers were rounded to nearest thousand unless otherwise indicated. Estimates smaller than 50 were rounded downward to zero (from U.S. EPA, 2014a, Appendix 5F Table 5F–5).

<sup>52</sup> As discussed in section 4.3.3 of the HREA, the model-based air quality adjustment approach used to estimate exposures and lung function decrements associated with the current and alternative standards was unable to estimate the distribution of

ambient O<sub>3</sub> concentrations in New York City upon just meeting an alternative standard with a level of 60 ppb. Therefore, for the 60 ppb standard level, the numbers of children and asthmatic children, and the ranges of percentages, reflect all of the urban study areas except New York.

<sup>53</sup> As noted below (II.C.3.a.ii), in the case of asthmatics, responsiveness to O<sub>3</sub> could depend on factors that have not been well-evaluated, such as asthma severity, the effectiveness of asthma control, or the prevalence of medication use.

<sup>54</sup> The exception to this is lung function decrements, as discussed below (and in U.S. EPA, 2014c, section 3.2.3.1).

sections 3.1 and 4.6). This view draws from the overall body of available health evidence, which indicates that as exposure concentrations increase, the incidence, magnitude, and severity of effects increases.

Another important uncertainty is that there is very limited evidence from controlled human exposure studies, which provided the basis for health benchmark concentrations for both exposures of concern and lung function decrements, related to clinical responses in at-risk populations. Compared to the healthy young adults included in the controlled human exposure studies, members of at-risk populations could be more likely to experience adverse effects, could experience larger and/or more serious effects, and/or could experience effects following exposures to lower O<sub>3</sub> concentrations.<sup>55</sup>

There are also uncertainties associated with the exposure modelling. These are described most fully, and their potential impact characterized, in section 5.5.2 of the HREA (U.S. EPA, 2013, pp. 5–72 to 5–79). These include interpretation of activity patterns set forth in diaries which do not typically distinguish the basis for activity patterns and so may reflect averting behavior,<sup>56</sup> and whether the HREA underestimates exposures for groups spending especially large proportion of time being active outdoors during the O<sub>3</sub> season (outdoor workers and especially active children).

c. Quantitative Health Risk Assessments  
 As discussed in section II.C.3 of the proposal (79 FR 75274), for some health endpoints, there is sufficient scientific evidence and information available to support the development of quantitative estimates of O<sub>3</sub>-related health risks. In the current review, for short-term O<sub>3</sub> concentrations, the HREA estimates lung function decrements; respiratory symptoms in asthmatics; hospital admissions and emergency department visits for respiratory causes; and all-cause mortality (U.S. EPA, 2014a). For long-term O<sub>3</sub> concentrations, the HREA estimates respiratory mortality (U.S. EPA, 2014a).<sup>57</sup> Estimates of O<sub>3</sub>-induced lung function decrements are based on exposure modeling using the MSS model (see section II.1.b.i.(1) above, and 79 FR 75250), combined with exposure-response relationships from controlled human exposure studies (U.S. EPA, 2014a, Chapter 6). Estimates of O<sub>3</sub>-associated respiratory symptoms, hospital admissions and emergency department visits, and mortality are based on concentration-response relationships from epidemiologic studies (U.S. EPA, 2014a, Chapter 7). As with the exposure assessment discussed above, O<sub>3</sub>-associated health risks are estimated for recent air quality and for ambient concentrations adjusted to just meet the current and alternative O<sub>3</sub> standards, based on 2006–2010 air quality and adjusted precursor emissions. The following sections summarize the discussions from the

proposal on the lung function risk assessment (II.A.2.c.i) and the epidemiology-based morbidity and mortality risk assessments (II.A.2.c.ii).

i. Lung Function Risk Assessment

The HREA estimates risks of lung function decrements in school-aged children (ages 5 to 18), asthmatic school-aged children, and the general adult population for the 15 urban study areas. The results presented in the HREA are based on an updated dose-threshold model that estimates FEV<sub>1</sub> responses for individuals following short-term exposures to O<sub>3</sub> (McDonnell et al., 2012), reflecting methodological improvements since the last review (II.B.2.a.i (1), above; U.S. EPA, 2014a, section 6.2.4). The impact of the dose threshold is that O<sub>3</sub>-induced FEV<sub>1</sub> decrements result primarily from exposures on days with average ambient O<sub>3</sub> concentrations above about 40 ppb (U.S. EPA, 2014a, section 6.3.1, Figure 6–9).<sup>58</sup>

Table 2 in the proposal (79 FR 75275), and reprinted below, summarizes key results from the lung function risk assessment. Table 2 presents estimates of the percentages of school-aged children estimated to experience O<sub>3</sub>-induced FEV<sub>1</sub> decrements >10, 15, or 20% when air quality was adjusted to just meet the current and alternative 8-hour O<sub>3</sub> standards. Table 2 also presents the numbers of children, including children with asthma, estimated to experience such decrements.

TABLE 2—SUMMARY OF ESTIMATED O<sub>3</sub>-INDUCED LUNG FUNCTION DECREMENTS FOR THE CURRENT AND POTENTIAL ALTERNATIVE O<sub>3</sub> STANDARDS IN URBAN CASE STUDY AREAS

Lung function decrement	Alternative standard level	Average % children <sup>59</sup>	Number of children (5 to 18 years) [number of asthmatic children] <sup>60</sup>	% Children worst year and area
<b>One or more decrements per season</b>				
≥10% .....	75	14–19	3,007,000 [312,000]	22
	70	11–17	2,527,000 [261,000]	20
	65	3–15	1,896,000 [191,000]	18
	60	5–11	<sup>61</sup> 1,404,000 [139,000]	13
≥15% .....	75	3–5	766,000 [80,000]	7
	70	2–4	562,000 [58,000]	5
	65	0–3	356,000 [36,000]	4
	60	1–2	225,000 [22,000]	3
≥20% .....	75	1–2	285,000 [30,000]	2.8
	70	1–2	189,000 [20,000]	2.1
	65	0–1	106,000 [11,000]	1.4
	60	0–1	57,000 [6,000]	0.9

<sup>55</sup> The CASAC further notes that clinical studies do not address sensitive subgroups, such as children with asthma, and that there is a scientific basis to anticipate that the adverse effects for such subgroups are likely to be more significant at 60 ppb than for healthy adults” (Frey 2014a, p. 7).

<sup>56</sup> See EPA 2014a pp. 5–53 to 54 describing EPA’s sensitivity analysis regarding impacts of potential averting behavior for school-age children on the

exposure and lung function decrement estimate, and see also section B.2.a.i below.

<sup>57</sup> Estimates of O<sub>3</sub>-associated respiratory mortality are based on the study by Jerrett *et al.* (2009). This study used seasonal averages of 1-hour daily maximum O<sub>3</sub> concentrations to estimate long-term concentrations.

<sup>58</sup> Analysis of this issue in the HREA is based on risk estimates in Los Angeles for 2006 unadjusted air quality. The HREA shows that more than 90% of daily instances of FEV<sub>1</sub> decrements ≥10% occur when 8-hr average ambient concentrations are above 40 ppb for this modeled scenario. The HREA notes that the distribution of responses will be different for different study areas, years, and air quality scenarios (U.S. EPA, 2014c, Chapter 6).



TABLE 2—SUMMARY OF ESTIMATED O<sub>3</sub>-INDUCED LUNG FUNCTION DECREMENTS FOR THE CURRENT AND POTENTIAL ALTERNATIVE O<sub>3</sub> STANDARDS IN URBAN CASE STUDY AREAS—Continued

Lung function decrement	Alternative standard level	Average % children <sup>59</sup>	Number of children (5 to 18 years) [number of asthmatic children] <sup>60</sup>	% Children worst year and area
<b>Two or more decrements per season</b>				
≥10% .....	75	7.5–12	1,730,000 [179,000]	14
	70	5.5–11	1,414,000 [145,000]	13
	65	1.3–8.8	1,023,000 [102,000]	11
≥15% .....	60	2.1–6.4	741,000 [73,000]	7.3
	75	1.7–2.9	391,000 [40,000]	3.8
	70	0.9–2.4	276,000 [28,000]	3.1
≥20% .....	65	0.1–1.8	168,000 [17,000]	2.3
	60	0.2–1.0	101,000 [10,000]	1.4
	75	0.5–1.1	128,000 [13,000]	1.5
	70	0.3–0.8	81,000 [8,000]	1.1
	65	0–0.5	43,000 [4,000]	0.8
	60	0–0.2	21,000 [2,000]	0.4

Uncertainties in estimates of lung function risks are summarized in section II.C.3.a.ii of the proposal (79 FR 75275). In addition to the uncertainties noted for exposure estimates, an uncertainty which impacts lung function risk estimates stems from the lack of exposure-response information in children. In the near absence of controlled human exposure data for children, risk estimates are based on the assumption that children exhibit the same lung function response following O<sub>3</sub> exposures as healthy 18 year olds (*i.e.*, the youngest age for which controlled human exposure data is generally available) (U.S. EPA, 2014a, section 6.5.3). This assumption is justified in part by the findings of McDonnell et al. (1985), who reported that children (8–11 years old) experienced FEV<sub>1</sub> responses similar to those observed in adults (18–35 years old) (U.S. EPA, 2014a, p. 3–10). In

<sup>59</sup> Estimates in each urban case study area were averaged for the years evaluated in the HREA (2006 to 2010). Ranges reflect the ranges across urban study areas.

<sup>60</sup> Numbers of children estimated to experience decrements in each study urban case study area were averaged over 2006 to 2010. These averages were then summed across urban study areas. Numbers are rounded to nearest thousand unless otherwise indicated.

<sup>61</sup> As discussed in section 4.3.3 of the HREA, the model-based air quality adjustment approach used to estimate risks associated with the current and alternative standards was unable to estimate the distribution of ambient O<sub>3</sub> concentrations in New York City upon just meeting an alternative standard with a level of 60 ppb. Therefore, for the 60 ppb standard level, the numbers of children and asthmatic children experiencing decrements, and the ranges of percentages of such children across study areas, reflect all of the urban study areas except New York City. Because of this, in some cases (*i.e.*, when New York City provided the smallest risk estimate), the lower end of the ranges in Table 2 are higher for a standard level of 60 ppb than for a level of 65 ppb.

addition, as discussed in the ISA (U.S. EPA, 2013, section 6.2.1), summer camp studies of school-aged children reported O<sub>3</sub>-induced lung function decrements similar in magnitude to those observed in controlled human exposure studies using adults. In extending the risk model to children, the HREA thus fixes the age term in the model at its highest value, the value for age 18. Notwithstanding the information just summarized supporting this approach, EPA acknowledges the uncertainty involved, and notes that the approach could result in either over- or underestimates of O<sub>3</sub>-induced lung function decrements in children, depending on how children compare to the adults used in controlled human exposure studies (U.S. EPA, 2014a, section 6.5.3).

A related source of uncertainty is that the risk assessment estimates of O<sub>3</sub>-induced decrements in asthmatics used the exposure-response relationship developed from data collected from healthy individuals. Although the evidence has been mixed (U.S. EPA, 2013, section 6.2.1.1), several studies have reported statistically larger, or a tendency toward larger, O<sub>3</sub>-induced lung function decrements in asthmatics than in non-asthmatics (Kreit et al., 1989; Horstman et al., 1995; Jorres et al., 1996; Alexis et al., 2000). On this issue, CASAC noted that “[a]sthmatic subjects appear to be at least as sensitive, if not more sensitive, than non-asthmatic subjects in manifesting O<sub>3</sub>-induced pulmonary function decrements” (Frey, 2014c, p. 4). To the extent asthmatics experience larger O<sub>3</sub>-induced lung function decrements than the healthy adults used to develop exposure-response relationships, the HREA could underestimate the impacts of O<sub>3</sub> exposures on lung function in

asthmatics, including asthmatic children. The implications of this uncertainty for risk estimates remain unknown at this time (U.S. EPA, 2014a, section 6.5.4), and could depend on a variety of factors that have not been well-evaluated, including the severity of asthma and the prevalence of medication use. However, the available evidence shows responses to O<sub>3</sub> increase with severity of asthma (Horstman et al., 1995) and corticosteroid usage does not prevent O<sub>3</sub> effects on lung function decrements or respiratory symptoms in people with asthma (Vagaggini et al., 2001, 2007).

#### ii. Mortality and Morbidity Risk Assessments

As discussed in section II.C.3.b of the proposal (79 FR 75276), the HREA estimates O<sub>3</sub>-associated risks in 12 urban study areas<sup>62</sup> using concentration-response relationships drawn from epidemiologic studies. These concentration-response relationships are based on “area-wide” average O<sub>3</sub> concentrations.<sup>63</sup> The HREA estimates risks for the years 2007 and 2009 in order to provide estimates of risk for a year with generally higher O<sub>3</sub>

<sup>62</sup> The 12 urban areas evaluated are Atlanta, Baltimore, Boston, Cleveland, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Sacramento, and St. Louis.

<sup>63</sup> In the epidemiologic studies that provide the health basis for HREA risk assessments, concentration-response relationships are based on daytime O<sub>3</sub> concentrations, averaged across multiple monitors within study areas. These daily averages are used as surrogates for the spatial and temporal patterns of exposures in study populations. Consistent with this approach, the HREA epidemiologic-based risk estimates also utilize daytime O<sub>3</sub> concentrations, averaged across monitors, as surrogates for population exposures. In this notice, we refer to these averaged concentrations as “area-wide” O<sub>3</sub> concentrations. Area-wide concentrations are discussed in more detail in section 3.1.4 of the PA (U.S. EPA, 2014c).

concentrations (2007) and a year with generally lower O<sub>3</sub> concentrations (2009) (U.S. EPA, 2014a, section 7.1.1).

In considering the epidemiology-based risk estimates, the proposal focuses on mortality risks associated with short-term O<sub>3</sub> concentrations. The proposal considers estimates of total risk (*i.e.*, based on the full distributions of ambient O<sub>3</sub> concentrations) and estimates of risk associated with O<sub>3</sub> concentrations in the upper portions of ambient distributions. Both estimates are discussed to provide information that considers risk estimates based on concentration-response relationships being linear over the entire distribution of ambient O<sub>3</sub> concentrations, and thus have the greater potential for morbidity and mortality to be affected by changes in relatively low O<sub>3</sub> concentrations, as well as risk estimates that are associated with O<sub>3</sub> concentrations in the upper portions of the ambient distribution, thus focusing on risk from higher O<sub>3</sub> concentrations and placing greater weight on the uncertainty associated with the shapes of concentration-response curves for O<sub>3</sub> concentrations in the lower portions of the distribution. These results for O<sub>3</sub>-associated mortality risk are summarized in Table 3 in the proposal (79 FR 75277).

Important uncertainties in epidemiology-based risk estimates, based on their consideration in the HREA and PA, are discussed in section II.C.3.b.ii of the proposal (79 FR 75277). Compared to estimates of O<sub>3</sub> exposures of concern and estimates of O<sub>3</sub>-induced lung function decrements (discussed above), the HREA conclusions reflect lower confidence in epidemiologic-based risk estimates (U.S. EPA, 2014a, section 9.6). In particular, the HREA highlights the heterogeneity in effect estimates between locations, the potential for exposure measurement errors, and uncertainty in the interpretation of the shape of concentration-response functions at lower O<sub>3</sub> concentrations (U.S. EPA, 2014a, section 9.6). The HREA also concludes that lower confidence should be placed in the results of the assessment of respiratory mortality risks associated with long-term O<sub>3</sub>, primarily because that analysis is based on only one study, though that study is well-designed, and because of the uncertainty in that study about the existence and identification of a potential threshold in the concentration-response function (U.S. EPA, 2014a, section 9.6).<sup>64,65</sup> This section further

discusses some of the key uncertainties in epidemiologic-based risk estimates, as summarized in the PA (U.S. EPA, 2014c, section 3.2.3.2), with a focus on uncertainties that can have particularly important implications for the Administrator's consideration of epidemiology-based risk estimates.

The PA notes that reducing NO<sub>x</sub> emissions generally reduces O<sub>3</sub>-associated mortality and morbidity risk estimates in locations and time periods with relatively high ambient O<sub>3</sub> concentrations and increases risk estimates in locations and time periods with relatively low concentrations (II.A, above). When evaluating uncertainties in epidemiologic risk estimates, the PA considered (1) the extent to which the modeled O<sub>3</sub> response to reductions in NO<sub>x</sub> emissions appropriately represents the trends observed in monitored ambient O<sub>3</sub> following actual reductions in NO<sub>x</sub> emissions, (2) the extent to which the O<sub>3</sub> response to reductions in precursor emissions could differ with emissions reduction strategies that are different from those used in HREA to generate risk estimates, and (3) the extent to which estimated changes in risks in urban study areas are representative of the changes that would be experienced broadly across the U.S. population. The first two of these issues are discussed in section II.A.2.c above. The third issue is discussed below.

The HREA conducted national air quality modeling analyses that estimated the proportion of the U.S. population living in locations where seasonal averages of daily O<sub>3</sub> concentrations are estimated to decrease in response to reductions in NO<sub>x</sub> emissions, and the proportion living in locations where such seasonal averages are estimated to increase. Given the close relationship between changes in seasonal averages of daily O<sub>3</sub> concentrations and changes in seasonal mortality and morbidity risk estimates, this analysis informs consideration of the extent to which the risk results in urban study areas represent the U.S. population as a whole. This "representativeness analysis" indicates that the majority of the U.S. population lives in locations where reducing NO<sub>x</sub> emissions would be expected to result in decreases in warm season averages of

mortality response, the estimated number of premature deaths avoidable for long-term exposure reductions for several levels need to be viewed with caution" (Frey, 2014a, p. 3).

<sup>65</sup> There is also uncertainty about the extent to which mortality estimates based on the long-term metric used in the study by Jerrett et al. (2009) (*i.e.*, seasonal average of 1-hour daily maximum concentrations) reflects associations with long-term average O<sub>3</sub> versus repeated occurrences of elevated short-term concentrations.

daily maximum 8-hour ambient O<sub>3</sub> concentrations. Because the HREA urban study areas tend to underrepresent the populations living in such areas (*e.g.*, suburban, smaller urban, and rural areas), risk estimates for the urban study areas are likely to understate the average reductions in O<sub>3</sub>-associated mortality and morbidity risks that would be experienced across the U.S. population as a whole upon reducing NO<sub>x</sub> emissions (U.S. EPA, 2014a, section 8.2.3.2).

Section 7.4 of the HREA also highlights some additional uncertainties associated with epidemiologic-based risk estimates (U.S. EPA, 2014a). This section of the HREA identifies and discusses sources of uncertainty and presents a qualitative evaluation of key parameters that can introduce uncertainty into risk estimates (U.S. EPA, 2014a, Table 7-4). For several of these parameters, the HREA also presents quantitative sensitivity analyses (U.S. EPA, 2014a, sections 7.4.2 and 7.5.3). Of the uncertainties discussed in Chapter 7 of the HREA, those related to the application of concentration-response functions from epidemiologic studies can have particularly important implications for consideration of epidemiology-based risk estimates, as discussed below.

An important uncertainty is the shape of concentration-response functions at low ambient O<sub>3</sub> concentrations (U.S. EPA, 2014a, Table 7-4).<sup>66</sup> In recognition of the ISA's conclusion that certainty in the shape of O<sub>3</sub> concentration-response functions decreases at low ambient concentrations, the HREA provides estimates of epidemiology-based mortality risks for entire distributions of ambient O<sub>3</sub> concentrations, as well as estimates of total mortality associated with various ambient O<sub>3</sub> concentrations. The PA considers both types of risk estimates, recognizing greater public health concern for adverse O<sub>3</sub>-attributable effects at higher ambient O<sub>3</sub> concentrations (which drive higher exposure concentrations, section 3.2.2 of the PA (U.S. EPA, 2014c)), as compared to lower concentrations.

A related consideration is associated with the public health importance of the increases in relatively low O<sub>3</sub> concentrations following air quality adjustment. There is uncertainty that relates to the assumption that the concentration response function for O<sub>3</sub> is linear, such that total risk estimates are equally influenced by decreasing

<sup>66</sup> A related uncertainty is the existence, or not, of a threshold. The HREA addresses this issue for long-term O<sub>3</sub> by evaluating risks in models that include potential thresholds (II.D.2.c).

<sup>64</sup> The CASAC also concluded that "[i]n light of the potential nonlinearity of the C-R function for long-term exposure reflecting a threshold of the

high concentrations and increasing low concentrations, when the increases and decreases are of equal magnitude. Even on days with increases in relatively low area-wide average concentrations, resulting in increases in estimated risks, some portions of the urban study areas could experience decreases in high O<sub>3</sub> concentrations. To the extent adverse O<sub>3</sub>-attributable effects are more strongly supported for higher ambient concentrations (which, as noted above, are consistently reduced upon air quality adjustment), the impacts on risk estimates of increasing low O<sub>3</sub> concentrations reflect an important source of uncertainty. In addition to the uncertainties discussed above, the proposal also notes uncertainties related to (1) using concentration-response relationships developed for a particular population in a particular location to estimate health risks in different populations and locations; (2) using concentration-response functions from epidemiologic studies reflecting a particular air quality distribution to adjusted air quality necessarily reflecting a different (simulated) air quality distribution; (3) using a national concentration-response function to estimate respiratory mortality associated with long-term O<sub>3</sub>; and (4) unquantified reductions in risk that could be associated with reductions in the ambient concentrations of pollutants other than O<sub>3</sub>, resulting from control of NO<sub>x</sub> (79 FR 75277 to 75279).

#### *B. Need for Revision of the Primary Standard*

The initial issue to be addressed in the current review of the primary O<sub>3</sub> standard is whether, in view of the advances in scientific knowledge and additional information, it is appropriate to revise the existing standard. This section presents the Administrator's final decision on whether it is "appropriate" to revise the current standard within the meaning of section 109 (d)(1) of the CAA. Section II.B.1 contains a summary discussion of the basis for the proposed conclusions on the adequacy of the primary standard. Section II.B.2 discusses comments received on the adequacy of the primary standard. Section II.B.3 presents the Administrator's final conclusions on the adequacy of the current primary standard.

##### 1. Basis for Proposed Decision

In evaluating whether it is appropriate to retain or revise the current standard, the Administrator's considerations build upon those in the 2008 review, including consideration of the broader body of scientific evidence and

exposure and health risk information now available, as summarized in sections II.A to II.C (79 FR 75246–75279) of the proposal and section II.A above.

In developing conclusions on the adequacy of the current primary O<sub>3</sub> standard, the Administrator takes into account both evidence-based and quantitative exposure- and risk-based considerations. Evidence-based considerations include the assessment of evidence from controlled human exposure, animal toxicological, and epidemiologic studies for a variety of health endpoints. The Administrator focuses on health endpoints for which the evidence is strong enough to support a "causal" or a "likely to be causal" relationship, based on the ISA's integrative synthesis of the entire body of evidence. The Administrator's consideration of quantitative exposure and risk information draws from the results of the exposure and risk assessments presented in the HREA.

The Administrator's consideration of the evidence and exposure/risk information is informed by the considerations and conclusions presented in the PA (U.S. EPA, 2014c). The purpose of the PA is to help "bridge the gap" between the scientific and technical information assessed in the ISA and HREA, and the policy decisions that are required of the Administrator (U.S. EPA, 2014c, Chapter 1); see also *American Farm Bureau Federation*, 559 F. 3d at 516, 521 ("[a]lthough not required by the statute, in practice EPA staff also develop a Staff Paper, which discusses the information in the Criteria Document that is most relevant to the policy judgments the EPA makes when it sets the NAAQS"). The PA's evidence-based and exposure-/risk-based considerations and conclusions are briefly summarized below in sections II.B.1.a (evidence-based considerations), II.B.1.b (exposure- and risk-based considerations), and II.B.1.c (PA conclusions on the current standard). Section II.B.1.d summarizes CASAC advice to the Administrator and public commenter views on the current standard. Section II.B.1.e presents a summary of the Administrator's proposed conclusions concerning the adequacy of the public health protection provided by the current standard, and her proposed decision to revise that standard.

##### a. Evidence-Based Considerations From the PA

In considering the available scientific evidence, the PA evaluates the O<sub>3</sub> concentrations in health effects studies (U.S. EPA, 2014c, section 3.1.4).

Specifically, the PA characterizes the extent to which health effects have been reported for the O<sub>3</sub> exposure concentrations evaluated in controlled human exposure studies, and effects occurring over the distributions of ambient O<sub>3</sub> concentrations in locations where epidemiologic studies have been conducted. These considerations, as they relate to the adequacy of the current standard, are presented in detail in section 3.1.4 of the PA (U.S. EPA, 2014c) and are summarized in the proposal (79 FR 75279–75287). The PA's considerations are summarized briefly below for controlled human exposure, epidemiologic panel studies, and epidemiologic population-based studies.

Section II.D.1.a of the proposal discusses the PA's consideration of the evidence from controlled human exposure and panel studies. This evidence is assessed in section 6.2 of the ISA (U.S. EPA, 2013) and is summarized in section 3.1.2 of the PA (U.S. EPA, 2014c). A large number of controlled human exposure studies have reported lung function decrements, respiratory symptoms, air inflammation, airway hyperresponsiveness, and/or impaired lung host defense in young, healthy adults engaged in moderate quasi-continuous exertion, following 6.6-hour O<sub>3</sub> exposures. These studies have consistently reported such effects following exposures to O<sub>3</sub> concentrations of 80 ppb or greater. In addition to lung function decrements, available studies have evaluated respiratory symptoms or airway inflammation following exposures to O<sub>3</sub> concentrations below 75 ppb. Table 3–1 in the PA highlights the group mean results of individual controlled human exposure studies that evaluated exposures to O<sub>3</sub> concentrations below 75 ppb. These studies observe the combination of lung function decrements and respiratory symptoms following exposures to O<sub>3</sub> concentrations as low as 72 ppb, and lung function decrements and airway inflammation following exposures to O<sub>3</sub> concentrations as low as 60 ppb (based on group means).

Based on this evidence, the PA notes that controlled human exposure studies have reported a variety of respiratory effects in young, healthy adults following exposures to a wide range of O<sub>3</sub> concentrations for 6.6 hours, including exposures to concentrations below 75 ppb. In particular, the PA further notes that a recent controlled human exposure study reported the combination of lung function decrements and respiratory symptoms in healthy adults engaged in quasi-

continuous, moderate exertion following 6.6 hour exposures to 72 ppb O<sub>3</sub>, a combination of effects that have been classified as adverse based on ATS guidelines for adversity (ATS, 2000a). In addition, a recent study has also reported lung function decrements and pulmonary inflammation following exposure to 60 ppb O<sub>3</sub>. Sixty ppb is the lowest exposure concentration for which inflammation has been evaluated and reported to occur, and corresponds to the lowest exposure concentration demonstrated to result in lung function decrements large enough to be judged an abnormal response by ATS (ATS, 2000b). The PA also notes, and CASAC agreed, that these controlled human exposure studies were conducted in healthy adults, while at-risk groups (e.g., children, people with asthma) could experience larger and/or more serious effects. Therefore, the PA concludes that the evidence from controlled human exposure studies provide support that the respiratory effects experienced following exposures to O<sub>3</sub> concentrations lower than 75 ppb would be adverse in some individuals, particularly if experienced by members of at-risk populations (e.g., people with asthma, children).

The PA also notes consistent results in some panel studies of O<sub>3</sub>-associated lung function decrements. In particular, the PA notes that epidemiologic panel studies in children and adults consistently indicate O<sub>3</sub>-associated lung function decrements when on-site, ambient monitored concentrations were below 75 ppb (although the evidence becomes less consistent at low O<sub>3</sub> concentrations, and the averaging periods involved ranged from 10 minutes to 12 hours (U.S. EPA, 2014c, section 3.2.4.2)).

Section II.D.1.b of the proposal summarizes the PA's analyses of monitored O<sub>3</sub> concentrations in locations of epidemiologic studies. While the majority of the epidemiologic study areas evaluated would have violated the current standard during study periods, the PA makes the following observations with regard to health effect associations at O<sub>3</sub> concentrations likely to have met the current standard:

(1) A single-city study reported positive and statistically significant associations with asthma emergency department visits in children and adults in Seattle, a location that would have met the current standard over the entire study period (Mar and Koenig, 2009).

(2) Additional single-city studies support associations with respiratory morbidity at relatively low ambient O<sub>3</sub> concentrations, including when

virtually all monitored concentrations were below the level of the current standard (Silverman and Ito, 2010; Strickland et al., 2010).

(3) Canadian multicity studies reported positive and statistically significant associations with respiratory morbidity or mortality when the majority of study cities, though not all study cities, would have met the current standard over the study period in each of these studies (Cakmak et al., 2006; Dales et al., 2006; Katsouyanni et al., 2009; Stieb et al., 2009).

(4) A U.S. multicity study reported positive and statistically significant associations with mortality when ambient O<sub>3</sub> concentrations were restricted to those likely to have met the current O<sub>3</sub> standard (Bell et al., 2006).

The PA also takes into account important uncertainties in these analyses of air quality in locations of epidemiologic study areas. These uncertainties are summarized in section II.D.1.b.iii of the proposal. Briefly, they include the following: (1) Uncertainty in conclusions about the extent to which multicity effect estimates reflect associations with air quality meeting the current standard, versus air quality violating that standard; (2) uncertainty regarding the potential for thresholds to exist, given that regional heterogeneity in O<sub>3</sub> health effect associations could obscure the presence of thresholds, should they exist; (3) uncertainty in the extent to which the PA appropriately recreated the air quality analyses in the published study by Bell et al. (2006); and (4) uncertainty in the extent to which reported health effects are caused by exposures to O<sub>3</sub> itself, as opposed to other factors such as co-occurring pollutants or pollutant mixtures, particularly at low ambient O<sub>3</sub> concentrations.<sup>67</sup>

In considering the analyses of monitored O<sub>3</sub> air quality in locations of epidemiologic studies, as well as the important uncertainties in these analyses, the PA concludes that these analyses provide support for the occurrence of morbidity and mortality associated with short-term ambient O<sub>3</sub> concentrations likely to meet the current O<sub>3</sub> standard.<sup>68</sup> In considering the

<sup>67</sup> As noted above (section II.A.1.B.i), the ISA concludes that studies that examined the potential confounding effects of copollutants found that O<sub>3</sub> effect estimates remained relatively robust upon the inclusion of PM and gaseous pollutants in two-pollutant models (U.S. EPA, 2013, section 6.2.7.5).

<sup>68</sup> Unlike for the studies of short-term O<sub>3</sub>, the available U.S. and Canadian epidemiologic studies evaluating long-term ambient O<sub>3</sub> concentration metrics have not been conducted in locations likely to have met the current 8-hour O<sub>3</sub> standard during the study period, and have not reported concentration-response functions that indicate

evidence as a whole, the PA concludes that (1) controlled human exposure studies provide strong support for the occurrence of adverse respiratory effects following exposures to O<sub>3</sub> concentrations below the level of the current standard and (2) epidemiologic studies provide support for the occurrence of adverse respiratory effects and mortality under air quality conditions that would meet the current standard.

#### b. Exposure- and Risk-Based Considerations in the PA

In order to further inform judgments about the potential public health implications of the current O<sub>3</sub> NAAQS, the PA considers the exposure and risk assessments presented in the HREA (U.S. EPA, 2014c, section 3.2). Overviews of these exposure and risk assessments, including brief summaries of key results and uncertainties, are provided in section II.A.2 above. Section II.D.2 of the proposal summarizes key observations from the PA related to the adequacy of the current O<sub>3</sub> NAAQS, based on consideration of the HREA exposure assessment, lung function risk assessment, and mortality/morbidity risk assessments (79 FR 75283).

Section II.D.2.a of the proposal summarizes key observations from the PA regarding estimates of O<sub>3</sub> exposures of concern (79 FR 75283). Given the evidence for respiratory effects from controlled human exposure studies, the PA considers the extent to which the current standard would be estimated to protect at-risk populations against exposures of concern to O<sub>3</sub> concentrations at or above the health benchmark concentrations of 60, 70, and 80 ppb (*i.e.*, based on HREA estimates of one or more and two or more exposures of concern). In doing so, the PA notes the CASAC conclusion that (Frey, 2014c, p. 6):

The 80 ppb-8hr benchmark level represents an exposure level for which there is substantial clinical evidence demonstrating a range of ozone-related effects including lung inflammation and airway responsiveness in healthy individuals. The 70 ppb-8hr benchmark level reflects the fact that in healthy subjects, decreases in lung function and respiratory symptoms occur at concentrations as low as 72 ppb and that these effects almost certainly occur in some people, including asthmatics and others with low lung function who are less tolerant of such effects, at levels of 70 ppb and below. The 60 ppb-8hr benchmark level represents the lowest exposure level at which ozone-

confidence in health effect associations at O<sub>3</sub> concentrations meeting the current standard (U.S. EPA, 2014c, section 3.1.4.3).

related effects have been observed in clinical studies of healthy individuals.

For exposures of concern at or above 60 ppb, the proposal highlights the following key observations for air quality adjusted to just meet the current standard:

(1) On average over the years 2006 to 2010, the current standard is estimated to allow approximately 10 to 18% of children in urban study areas to experience one or more exposures of concern at or above 60 ppb. Summing across urban study areas, these percentages correspond to almost 2.5 million children experiencing approximately 4 million exposures of concern at or above 60 ppb during a single O<sub>3</sub> season. Of these children, almost 250,000 are asthmatics.<sup>69</sup>

(2) On average over the years 2006 to 2010, the current standard is estimated to allow approximately 3 to 8% of children in urban study areas to experience two or more exposures of concern to O<sub>3</sub> concentrations at or above 60 ppb. Summing across the urban study areas, these percentages correspond to almost 900,000 children (including almost 90,000 asthmatic children).

(3) In the worst-case years (*i.e.*, those with the largest exposure estimates), the current standard is estimated to allow approximately 10 to 25% of children to experience one or more exposures of concern at or above 60 ppb, and approximately 4 to 14% to experience two or more exposures of concern at or above 60 ppb.

For exposures of concern at or above 70 ppb, the PA highlights the following key observations for air quality adjusted to just meet the current standard:

(1) On average over the years 2006 to 2010, the current standard is estimated to allow up to approximately 3% of children in urban study areas to experience one or more exposures of concern at or above 70 ppb. Summing across urban study areas, almost 400,000 children (including almost 40,000 asthmatic children) are estimated to experience O<sub>3</sub> exposure concentrations at or above 70 ppb during a single O<sub>3</sub> season.

(2) On average over the years 2006 to 2010, the current standard is estimated to allow less than 1% of children in urban study areas to experience two or more exposures of concern to O<sub>3</sub> concentrations at or above 70 ppb.

(3) In the worst-case location and year, the current standard is estimated to allow approximately 8% of children to experience one or more exposures of concern at or above 70 ppb, and approximately 2% to experience two or more exposures of concern, at or above 70 ppb.

For exposures of concern at or above 80 ppb, the PA highlights the observation that the current standard is estimated to allow about 1% or fewer children in urban study areas to experience exposures of concern at or above 80 ppb, even in years with the highest exposure estimates.

Uncertainties in exposure estimates are summarized in section II.C.2.b of the proposal (79 FR 75273), and discussed more fully in the HREA (U.S. EPA, 2014a, section 5.5.2) and the PA (U.S. EPA, 2014c, section 3.2.2). Key uncertainties include the variability in responsiveness following O<sub>3</sub> exposures, resulting in only a subset of exposed individuals experiencing health effects, adverse or otherwise, and the limited evidence from controlled human exposure studies conducted in at-risk populations. In addition, there are a number of uncertainties in the exposure modelling approach used in the HREA, contributing to overall uncertainty in exposure estimates.

Section II.D.2.b of the proposal summarizes key observations from the PA regarding the estimated risk of O<sub>3</sub>-induced lung function decrements (79 FR 75283 to 75284). With respect to the lung function decrements that have been evaluated in controlled human exposure studies, the PA considers the extent to which standards with revised levels would be estimated to protect healthy and at-risk populations against one or more, and two or more, moderate (*i.e.*, FEV<sub>1</sub> decrements  $\geq 10\%$  and  $\geq 15\%$ ) and large (*i.e.*, FEV<sub>1</sub> decrements  $\geq 20\%$ ) lung function decrements. As discussed in section 3.1.3 of the PA (U.S. EPA, 2014c), although some experts would judge single occurrences of moderate responses to be a nuisance, especially for healthy individuals, a more general consensus view of the adversity of moderate lung function decrements emerges as the frequency of occurrence increases.

With regard to decrements  $\geq 10\%$ , the PA highlights the following key observations for air quality adjusted to just meet the current standard:

(1) On average over the years 2006 to 2010, the current standard is estimated to allow approximately 14 to 19% of children in urban study areas to experience one or more lung function decrements  $\geq 10\%$ . Summing across

urban study areas, this corresponds to approximately 3 million children experiencing 15 million O<sub>3</sub>-induced lung function decrements  $\geq 10\%$  during a single O<sub>3</sub> season. Of these children, about 300,000 are asthmatics.

(2) On average over the years 2006 to 2010, the current standard is estimated to allow approximately 7 to 12% of children in urban study areas to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 10\%$ . Summing across the urban study areas, this corresponds to almost 2 million children (including almost 200,000 asthmatic children) estimated to experience two or more O<sub>3</sub>-induced lung function decrements greater than 10% during a single O<sub>3</sub> season.

(3) In the worst-case years, the current standard is estimated to allow approximately 17 to 23% of children in urban study areas to experience one or more lung function decrements  $\geq 10\%$ , and approximately 10 to 14% to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 10\%$ .

With regard to decrements  $\geq 15\%$ , the PA highlights the following key observations for air quality adjusted to just meet the current standard:

(1) On average over the years 2006 to 2010, the current standard is estimated to allow approximately 3 to 5% of children in urban study areas to experience one or more lung function decrements  $\leq 15\%$ . Summing across urban study areas, this corresponds to approximately 800,000 children (including approximately 80,000 asthmatic children) estimated to experience at least one O<sub>3</sub>-induced lung function decrement  $\leq 15\%$  during a single O<sub>3</sub> season.

(2) On average over the years 2006 to 2010, the current standard is estimated to allow approximately 2 to 3% of children in urban study areas to experience two or more O<sub>3</sub>-induced lung function decrements  $\leq 15\%$ .

(3) In the worst-case years, the current standard is estimated to allow approximately 4 to 6% of children in urban study areas to experience one or more lung function decrements  $\leq 15\%$ , and approximately 2 to 4% to experience two or more O<sub>3</sub>-induced lung function decrements  $\leq 15\%$ .

With regard to decrements  $\leq 20\%$ , the PA highlights the following key observations for air quality adjusted to just meet the current standard:

(1) On average over the years 2006 to 2010, the current standard is estimated to allow approximately 1 to 2% of children in urban study areas to experience one or more lung function decrements  $\geq 20\%$ . Summing across

<sup>69</sup> As discussed in section II.C.2.b of the proposal, due to variability in responsiveness, only a subset of individuals who experience exposures at or above a benchmark concentration can be expected to experience adverse health effects.

urban study areas, this corresponds to approximately 300,000 children (including approximately 30,000 asthmatic children) estimated to experience at least one O<sub>3</sub>-induced lung function decrement  $\geq 20\%$  during a single O<sub>3</sub> season.

(2) On average over the years 2006 to 2010, the current standard is estimated to allow less than 1% of children in urban study areas to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 20\%$ .

(3) In the worst-case years, the current standard is estimated to allow approximately 2 to 3% of children to experience one or more lung function decrements  $\geq 20\%$ , and less than 2% to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 20\%$ .

Uncertainties in lung function risk estimates are summarized in section II.C.3.a of the proposal, and discussed more fully in the HREA (U.S. EPA, 2014a, section 6.5) and the PA (U.S. EPA, 2014c, section 3.2.3.1). In addition to the uncertainties noted above for exposure estimates, the key uncertainties associated with estimates of O<sub>3</sub>-induced lung function decrements include the paucity of exposure-response information in children and in people with asthma.

Section II.D.2.c of the proposal summarizes key observations from the PA regarding risk estimates of O<sub>3</sub>-associated mortality and morbidity (79 FR 75284 to 75285). With regard to total mortality or morbidity associated with short-term O<sub>3</sub>, the PA notes the following for air quality adjusted to just meet the current standard:

(1) When air quality was adjusted to the current standard for the 2007 model year (the year with generally “higher” O<sub>3</sub>-associated risks), 10 of 12 urban study areas exhibited either decreases or virtually no change in estimates of the number of O<sub>3</sub>-associated deaths (U.S. EPA, 2014a, Appendix 7B). Increases were estimated in two of the urban

study areas (Houston, Los Angeles)<sup>70</sup> (U.S. EPA, 2014a, Appendix 7B).<sup>71</sup>

(2) In focusing on total risk, the current standard is estimated to allow thousands of O<sub>3</sub>-associated deaths per year in the urban study areas. In focusing on the risks associated with the upper portions of distributions of ambient concentrations (area-wide concentrations  $\leq 40, 60$  ppb), the current standard is estimated to allow hundreds to thousands of O<sub>3</sub>-associated deaths per year in the urban study areas.

(3) The current standard is estimated to allow tens to thousands of O<sub>3</sub>-associated morbidity events per year (*i.e.*, respiratory-related hospital admissions, emergency department visits, and asthma exacerbations). With regard to respiratory mortality associated with long-term O<sub>3</sub>, the PA notes the following for air quality adjusted to just meet the current standard:

(1) Based on a linear concentration-response function, the current standard is estimated to allow thousands of O<sub>3</sub>-associated respiratory deaths per year in the urban study areas.

(2) Based on threshold models, HREA sensitivity analyses indicate that the number of respiratory deaths associated with long-term O<sub>3</sub> concentrations could potentially be considerably lower (*i.e.*,

<sup>70</sup> As discussed above (II.C.1), in locations and time periods when NO<sub>x</sub> is predominantly contributing to O<sub>3</sub> formation (*e.g.*, downwind of important NO<sub>x</sub> sources, where the highest O<sub>3</sub> concentrations often occur), model-based adjustment to the current and alternative standards decreases estimated ambient O<sub>3</sub> concentrations compared to recent monitored concentrations (U.S. EPA, 2014a, section 4.3.3.2). In contrast, in locations and time periods when NO<sub>x</sub> is predominantly contributing to O<sub>3</sub> titration (*e.g.*, in urban centers with high concentrations of NO<sub>x</sub> emissions, where ambient O<sub>3</sub> concentrations are often suppressed and are thus relatively low), model-based adjustment increases ambient O<sub>3</sub> concentrations compared to recent monitored concentrations (U.S. EPA, 2014a, section 4.3.3.2). Changes in epidemiology-based risk estimates depend on the balance between the daily decreases in high O<sub>3</sub> concentrations and increases in low O<sub>3</sub> concentrations following the model-based air quality adjustment. Commenting on this issue, CASAC noted that “controls designed to reduce the peak levels of ozone (*e.g.*, the fourth-highest annual MDA8) may not be effective at reducing lower levels of ozone on more typical days and may actually increase ozone levels on days where ozone concentrations are low” (Frey 2014a, p. 2). CASAC further noted that risk results “suggest that the ozone-related health risks in the urban cores can increase for some of the cities as ozone NAAQS alternatives become more stringent. This is because reductions in nitrogen oxides emissions can lead to less scavenging of ozone and free radicals, resulting in locally higher levels of ozone” (Frey 2014c, p. 10).

<sup>71</sup> For the 2009 adjusted year (*i.e.*, the year with generally lower O<sub>3</sub> concentrations), changes in risk were generally smaller than in 2007 (*i.e.*, most changes about 2% or smaller). Increases were estimated for Houston, Los Angeles, and New York City.

by more than 75% if a threshold exists at 40 ppb, and by about 98% if a threshold exists at 56 ppb) (U.S. EPA, 2014a, Figure 7–9).<sup>72</sup>

Compared to the weight given to HREA estimates of exposures of concern and lung function risks, and the weight given to the evidence, the PA places relatively less weight on epidemiologic-based risk estimates. In doing so, the PA notes that the overall conclusions from the HREA likewise reflect less confidence in estimates of epidemiologic-based risks than in estimates of exposures and lung function risks. The determination to attach less weight to the epidemiologic-based estimates reflects the uncertainties associated with mortality and morbidity risk estimates, including the heterogeneity in effect estimates between locations, the potential for exposure measurement errors, and uncertainty in the interpretation of the shape of concentration-response functions at lower O<sub>3</sub> concentrations (U.S. EPA, 2014a, section 9.6).

Uncertainty in the shape of concentration-response functions at lower O<sub>3</sub> concentrations is particularly important to interpreting risk estimates given the approach used to adjust air quality to just meet the current standard, and potential alternative standards, and the resulting compression in the air quality distributions (*i.e.*, decreasing high concentrations and increasing low concentrations) (II.A.2.a, above). Total risk estimates in the HREA are based on the assumption that the concentration response function for O<sub>3</sub> is linear, such that total risk estimates are equally influenced by decreasing high concentrations and increasing low concentrations, when the increases and decreases are of equal magnitude. However, consistent with the PA’s consideration of risk estimates, in the proposal the Administrator notes that the overall body of evidence provides stronger support for the occurrence of

<sup>72</sup> Risk estimates for respiratory mortality associated with long-term O<sub>3</sub> exposures are based on the study by Jerrett et al. (2009) (U.S. EPA, 2014a, Chapter 7). As discussed above (II.B.2.b.iv) and in the PA (U.S. EPA, 2014c, section 3.1.4.3), Jerrett et al. (2009) reported that when seasonal averages of 1-hour daily maximum O<sub>3</sub> concentrations ranged from 33 to 104 ppb, there was no statistical deviation from a linear concentration-response relationship between O<sub>3</sub> and respiratory mortality across 96 U.S. cities (U.S. EPA, 2013, section 7.7). However, the authors reported “limited evidence” for an effect threshold at an O<sub>3</sub> concentration of 56 ppb ( $p=0.06$ ). In communications with EPA staff (Sasser, 2014), the study authors indicated that it is not clear whether a threshold model is a better predictor of respiratory mortality than the linear model, and that “considerable caution should be exercised in accepting any specific threshold.”

O<sub>3</sub>-attributable health effects following exposures to O<sub>3</sub> concentrations corresponding to the upper ends of typical ambient distributions (II.E.4.d of the proposal). In addition, even on days with increases in relatively low area-wide average concentrations, resulting in increases in estimated risks, some portions of the urban study areas could experience decreases in high O<sub>3</sub> concentrations. Therefore, to the extent adverse O<sub>3</sub>-attributable effects are more strongly supported for higher ambient concentrations (which, as noted above, are consistently reduced upon air quality adjustment), the PA notes that the impacts on risk estimates of increasing low O<sub>3</sub> concentrations reflect an important source of uncertainty.

#### c. PA Conclusions on the Current Standard

Section II.D.3 of the proposal summarizes the PA conclusions on the adequacy of the existing primary O<sub>3</sub> standard (79 FR 75285). As an initial matter, the PA concludes that reducing precursor emissions to achieve O<sub>3</sub> concentrations that meet the current standard will provide important improvements in public health protection. This initial conclusion is based on (1) the strong body of scientific evidence indicating a wide range of adverse health outcomes attributable to exposures to O<sub>3</sub> concentrations commonly found in the ambient air and (2) estimates indicating decreased occurrences of O<sub>3</sub> exposures of concern and decreased health risks upon meeting the current standard, compared to recent air quality.

In particular, the PA concludes that strong support for this initial conclusion is provided by controlled human exposure studies of respiratory effects, and by quantitative estimates of exposures of concern and lung function decrements based on information in these studies. Analyses in the HREA estimate that the percentages of children (*i.e.*, all children and children with asthma) in urban study areas experiencing exposures of concern, or experiencing abnormal and potentially adverse lung function decrements, are consistently lower for air quality that just meets the current O<sub>3</sub> standard than for recent air quality. The HREA estimates such reductions consistently across the urban study areas evaluated and throughout various portions of individual urban study areas, including in urban cores and the portions of urban study areas surrounding urban cores. These reductions in exposures of concern and O<sub>3</sub>-induced lung function decrements reflect the consistent decreases in the highest O<sub>3</sub>

concentrations following reductions in precursor emissions to meet the current standard. Thus, populations in both urban and non-urban areas would be expected to experience important reductions in O<sub>3</sub> exposures and O<sub>3</sub>-induced lung function risks upon meeting the current standard.

The PA further concludes that support for this initial conclusion is also provided by estimates of O<sub>3</sub>-associated mortality and morbidity based on application of concentration-response relationships from epidemiologic studies to air quality adjusted to just meet the current standard. These estimates are based on the assumption that concentration-response relationships are linear over entire distributions of ambient O<sub>3</sub> concentrations, an assumption which has uncertainties that complicate interpretation of these estimates (II.A.2.c.ii). However, risk estimates for effects associated with short- and long-term O<sub>3</sub> exposures, combined with the HREA's national analysis of O<sub>3</sub> responsiveness to reductions in precursor emissions and the consistent reductions estimated for the highest ambient O<sub>3</sub> concentrations, suggest that O<sub>3</sub>-associated mortality and morbidity would be expected to decrease nationwide following reductions in precursor emissions to meet the current O<sub>3</sub> standard.

After reaching the initial conclusion that meeting the current primary O<sub>3</sub> standard will provide important improvements in public health protection, and that it is not appropriate to consider a standard that is less protective than the current standard, the PA considers the adequacy of the public health protection that is provided by the current standard. In considering the available scientific evidence, exposure/risk information, advice from CASAC (II.B.1.d, below), and input from the public, the PA reaches the conclusion that the available evidence and information clearly call into question the adequacy of public health protection provided by the current primary standard. In reaching this conclusion, the PA notes that evidence from controlled human exposure studies provides strong support for the occurrence of adverse respiratory effects following exposures to O<sub>3</sub> concentrations below the level of the current standard. Epidemiologic studies provide support for the occurrence of adverse respiratory effects and mortality under air quality conditions that would likely meet the current standard. In addition, based on the analyses in the HREA, the PA concludes that the exposures and risks projected to remain

upon meeting the current standard are indicative of risks that can reasonably be judged to be important from a public health perspective. Thus, the PA concludes that the evidence and information provide strong support for giving consideration to revising the current primary standard in order to provide increased public health protection against an array of adverse health effects that range from decreased lung function and respiratory symptoms to more serious indicators of morbidity (*e.g.*, including emergency department visits and hospital admissions), and mortality. In consideration of all of the above, the PA draws the conclusion that it is appropriate for the Administrator to consider revision of the current primary O<sub>3</sub> standard to provide increased public health protection.

#### d. CASAC Advice

Section II.D.4 of the proposal summarizes CASAC advice regarding the adequacy of the existing primary O<sub>3</sub> standard. Following the 2008 decision to revise the primary O<sub>3</sub> standard by setting the level at 0.075 ppm (75 ppb), CASAC strongly questioned whether the standard met the requirements of the CAA. In September 2009, the EPA announced its intention to reconsider the 2008 standards, issuing a notice of proposed rulemaking in January 2010 (75 FR 2938). Soon after, the EPA solicited CASAC review of that proposed rule and in January 2011, solicited additional advice. This proposal was based on the scientific and technical record from the 2008 rulemaking, including public comments and CASAC advice and recommendations. As further described above (I.D), in the fall of 2011, the EPA did not revise the standard as part of the reconsideration process but decided to defer decisions on revisions to the O<sub>3</sub> standards to the next periodic review, which was already underway. Accordingly, in this section we describe CASAC's advice related to the 2008 final decision and the subsequent reconsideration, as well as its advice on this current review of the O<sub>3</sub> NAAQS that was initiated in September 2008.

In April 2008, the members of the CASAC Ozone Review Panel sent a letter to EPA stating “[I]n our most-recent letters to you on this subject—dated October 2006 and March 2007—the CASAC unanimously recommended selection of an 8-hour average Ozone NAAQS within the range of 0.060 to 0.070 parts per million [60 to 70 ppb] for the primary (human health-based) Ozone NAAQS” (Henderson, 2008). In 2010, in response to the EPA's solicitation of advice on the EPA's

proposed rulemaking as part of the reconsideration, CASAC again stated that the current standard should be revised to provide additional protection to the public health (Samet, 2010):

CASAC fully supports EPA's proposed range of 0.060–0.070 parts per million (ppm) for the 8-hour primary ozone standard. CASAC considers this range to be justified by the scientific evidence as presented in the Air Quality Criteria for Ozone and Related Photochemical Oxidants (March 2006) and Review of the National Ambient Air Quality Standards for Ozone: Policy Assessment of Scientific and Technical Information, OAQPS Staff Paper (July 2007). As stated in our letters of October 24, 2006, March 26, 2007 and April 7, 2008 to former Administrator Stephen L. Johnson, CASAC unanimously recommended selection of an 8-hour average ozone NAAQS within the range proposed by EPA (0.060 to 0.070 ppm). In proposing this range, EPA has recognized the large body of data and risk analyses demonstrating that retention of the current standard would leave large numbers of individuals at risk for respiratory effects and/or other significant health impacts including asthma exacerbations, emergency room visits, hospital admissions and mortality.

In response to the EPA's request for additional advice on the reconsideration in 2011, CASAC reaffirmed their conclusion that "the evidence from controlled human and epidemiological studies strongly supports the selection of a new primary ozone standard within the 60–70 ppb range for an 8-hour averaging time" (Samet, 2011, p. ii). As requested by the EPA, CASAC's advice and recommendations were based on the scientific and technical record from the 2008 rulemaking. In considering the record for the 2008 rulemaking, CASAC stated the following to summarize the basis for their conclusions (Samet, 2011, p. ii to iii):

(1) The evidence available on dose-response for effects of O<sub>3</sub> shows associations extending to levels within the range of concentrations currently experienced in the United States.

(2) There is scientific certainty that 6.6-hour exposures with exercise of young, healthy, non-smoking adult volunteers to concentrations ≥80 ppb cause clinically relevant decrements of lung function.

(3) Some healthy individuals have been shown to have clinically relevant responses, even at 60 ppb.

(4) Since the majority of clinical studies involve young, healthy adult populations, less is known about health effects in such potentially ozone sensitive populations as the elderly, children and those with cardiopulmonary disease. For these susceptible groups, decrements in lung function may be greater than in healthy

volunteers and are likely to have a greater clinical significance.

(5) Children and adults with asthma are at increased risk of acute exacerbations on or shortly after days when elevated O<sub>3</sub> concentrations occur, even when exposures do not exceed the NAAQS concentration of 75 ppb.

(6) Large segments of the population fall into what the EPA terms a "sensitive population group," *i.e.*, those at increased risk because they are more intrinsically susceptible (children, the elderly, and individuals with chronic lung disease) and those who are more vulnerable due to increased exposure because they work outside or live in areas that are more polluted than the mean levels in their communities.

With respect to evidence from epidemiologic studies, CASAC stated "while epidemiological studies are inherently more uncertain as exposures and risk estimates decrease (due to the greater potential for biases to dominate small effect estimates), specific evidence in the literature does not suggest that our confidence on the specific attribution of the estimated effects of ozone on health outcomes differs over the proposed range of 60–70 ppb" (Samet, 2011, p. 10).

Following its review of the second draft PA in the current review, which considers an updated scientific and technical record since the 2008 rulemaking, CASAC concluded that "there is clear scientific support for the need to revise the standard" (Frey, 2014c, p. ii). In particular, CASAC noted the following (Frey, 2014c, p. 5):

[T]he scientific evidence provides strong support for the occurrence of a range of adverse respiratory effects and mortality under air quality conditions that would meet the current standard. Therefore, CASAC unanimously recommends that the Administrator revise the current primary ozone standard to protect public health.<sup>73</sup>

In supporting these conclusions, CASAC judged that the strongest evidence comes from controlled human exposure studies of respiratory effects. The Committee specifically noted that "the combination of decrements in FEV<sub>1</sub> together with the statistically significant alterations in symptoms in human subjects exposed to 72 ppb ozone meets the American Thoracic Society's definition of an adverse health effect" (Frey, 2014c, p. 5). CASAC further judged that "if subjects had been exposed to ozone using the 8-hour

averaging period used in the standard, adverse effects could have occurred at lower concentration" and that "the level at which adverse effects might be observed would likely be lower for more sensitive subgroups, such as those with asthma" (Frey, 2014c, p. 5). With regard to 60 ppb exposures, CASAC noted that "a level of 60 ppb corresponds to the lowest exposure concentration demonstrated to result in lung function decrements large enough to be judged an abnormal response by ATS and that could be adverse in individuals with lung disease" (Frey, 2014c, p. 7). The CASAC further noted that "a level of 60 ppb also corresponds to the lowest exposure concentration at which pulmonary inflammation has been reported" (Frey, 2014c, p. 7).

In their advice, CASAC also took note of estimates of O<sub>3</sub> exposures of concern and the risk of O<sub>3</sub>-induced lung function decrements. With regard to the benchmark concentrations used in estimating exposures of concern, CASAC stated the following (Frey, 2014c, p. 6):

The 80 ppb-8hr benchmark level represents an exposure level for which there is substantial clinical evidence demonstrating a range of ozone-related effects including lung inflammation and airway responsiveness in healthy individuals. The 70 ppb-8hr benchmark level reflects the fact that in healthy subjects, decreases in lung function and respiratory symptoms occur at concentrations as low as 72 ppb and that these effects almost certainly occur in some people, including asthmatics and others with low lung function who are less tolerant of such effects, at levels of 70 ppb and below. The 60 ppb-8hr benchmark level represents the lowest exposure level at which ozone-related effects have been observed in clinical studies of healthy individuals. Based on its scientific judgment, the CASAC finds that the 60 ppb-8hr exposure benchmark is relevant for consideration with respect to adverse effects on asthmatics.

With regard to lung function risk estimates, CASAC concluded that "estimation of FEV<sub>1</sub> decrements of ≥15% is appropriate as a scientifically relevant surrogate for adverse health outcomes in active healthy adults, whereas an FEV<sub>1</sub> decrement of ≥10% is a scientifically relevant surrogate for adverse health outcomes for people with asthma and lung disease" (Frey, 2014c, p. 3). The Committee further concluded that "[a]sthmatic subjects appear to be at least as sensitive, if not more sensitive, than non-asthmatic subjects in manifesting O<sub>3</sub>-induced pulmonary function decrements" (Frey, 2014c, p. 4).

Although CASAC judged that controlled human exposure studies of respiratory effects provide the strongest

<sup>73</sup> CASAC provided similar advice in their letter to the Administrator on the HREA, stating that "The CASAC finds that the current primary NAAQS for ozone is not protective of human health and needs to be revised" (Frey, 2014a, p. 15).



evidence supporting their conclusion on the current standard, the Committee judged that there is also “sufficient scientific evidence based on epidemiologic studies for mortality and morbidity associated with short-term exposure to ozone at the level of the current standard” (Frey, 2014c, p. 5) and noted that “[r]ecent animal toxicological studies support identification of modes of action and, therefore, the biological plausibility associated with the epidemiological findings” (Frey, 2014c, p. 5).

#### e. Administrator’s Proposed Decision

Section II.D.5 in the proposal (79 FR 75287–75291) discusses the Administrator’s proposed conclusions related to the adequacy of the public health protection provided by the current primary O<sub>3</sub> standard, resulting in her proposed decision to revise that standard. These proposed conclusions and her proposed decision, summarized below, were based on the Administrator’s consideration of the available scientific evidence, exposure/risk information, the comments and advice of CASAC, and public input that had been received by the time of proposal.

As an initial matter, the Administrator concluded that reducing precursor emissions to achieve O<sub>3</sub> concentrations that meet the current primary O<sub>3</sub> standard will provide important improvements in public health protection, compared to recent air quality. In reaching this initial conclusion, she noted the discussion in section 3.4 of the PA (U.S. EPA, 2014c). In particular, the Administrator noted that this initial conclusion is supported by (1) the strong body of scientific evidence indicating a wide range of adverse health outcomes attributable to exposures to O<sub>3</sub> concentrations commonly measured in the ambient air and (2) estimates indicating decreased occurrences of O<sub>3</sub> exposures of concern and decreased O<sub>3</sub>-associated health risks upon meeting the current standard, compared to recent air quality. Thus, she concluded that it would not be appropriate in this review to consider a standard that is less protective than the current standard.<sup>74</sup>

<sup>74</sup> Although the Administrator noted that reductions in O<sub>3</sub> precursor emissions (e.g., NO<sub>x</sub>; VOC) to achieve O<sub>3</sub> concentrations that meet the current standard could also increase public health protection by reducing the ambient concentrations of pollutants other than O<sub>3</sub> (e.g., PM<sub>2.5</sub>, NO<sub>2</sub>), we did not quantitatively analyze these effects, consistent with CASAC advice (Frey, 2014a, p.10). However, the Administrator is not setting the standard to address risks from pollutants other than O<sub>3</sub>.

After reaching the initial conclusion that meeting the current primary O<sub>3</sub> standard will provide important improvements in public health protection, and that it is not appropriate to consider a standard that is less protective than the current standard, the Administrator next considered the adequacy of the public health protection that is provided by the current standard. In doing so, the Administrator first noted that studies evaluated since the completion of the 2006 AQCD support and expand upon the strong body of evidence that, in the last review, indicated a causal relationship between short-term O<sub>3</sub> exposures and respiratory health effects, the strongest determination under the ISA’s hierarchical system for classifying weight of evidence for causation. Together, experimental and epidemiologic studies support conclusions regarding a continuum of O<sub>3</sub> respiratory effects ranging from small reversible changes in pulmonary function, and pulmonary inflammation, to more serious effects that can result in respiratory-related emergency department visits, hospital admissions, and premature mortality. The Administrator further noted that recent animal toxicology studies support descriptions of modes of action for these respiratory effects and provide support for biological plausibility for the role of O<sub>3</sub> in reported effects. With regard to mode of action, evidence indicates that antioxidant capacity may modify the risk of respiratory morbidity associated with O<sub>3</sub> exposure, and that the inherent capacity to quench (based on individual antioxidant capacity) can be overwhelmed, especially with exposure to elevated concentrations of O<sub>3</sub>. In addition, based on the consistency of findings across studies and evidence for the coherence of results from different scientific disciplines, evidence indicates that certain populations are at increased risk of experiencing O<sub>3</sub>-related effects, including the most severe effects. These include populations and lifestages identified in previous reviews (*i.e.*, people with asthma, children, older adults, outdoor workers) and populations identified since the last review (*i.e.*, people with certain genotypes related to antioxidant and/or anti-inflammatory status; people with reduced intake of certain antioxidant nutrients, such as Vitamins C and E).

The Administrator further noted that evidence for adverse respiratory health effects attributable to long-term<sup>75</sup> O<sub>3</sub>

<sup>75</sup> Based on the exposure surrogates used in recent epidemiologic studies of long-term O<sub>3</sub> exposure, it is not possible to distinguish between

exposures is much stronger than in previous reviews, and noted the ISA’s conclusion that there is “likely to be” a causal relationship between such O<sub>3</sub> exposures and adverse respiratory health effects (the second strongest causality determination). She noted that the evidence available in this review includes new epidemiologic studies using a variety of designs and analysis methods, conducted by different research groups in different locations, evaluating the relationships between long-term O<sub>3</sub> exposures and measures of respiratory morbidity and mortality. New evidence supports associations between long-term O<sub>3</sub> exposures and the development of asthma in children, with several studies reporting interactions between genetic variants and such O<sub>3</sub> exposures. Studies also report associations between long-term O<sub>3</sub> exposures and asthma prevalence, asthma severity and control, respiratory symptoms among asthmatics, and respiratory mortality.

In considering the O<sub>3</sub> exposure concentrations reported to elicit respiratory effects, the Administrator agreed with the conclusions of the PA and with the advice of CASAC (Frey, 2014c) that controlled human exposure studies provide the most certain evidence indicating the occurrence of health effects in humans following exposures to specific O<sub>3</sub> concentrations. In particular, she noted that the effects reported in controlled human exposure studies are due solely to O<sub>3</sub> exposures, and interpretation of study results is not complicated by the presence of co-occurring pollutants or pollutant mixtures.

In considering the evidence from controlled human exposure studies, the Administrator first noted that these studies have reported a variety of respiratory effects in healthy adults following exposures to O<sub>3</sub> concentrations of 60, 72, or 80 ppb, and higher. The largest respiratory effects, and the broadest range of effects, have been studied and reported following exposures of healthy adults to 80 ppb O<sub>3</sub> or higher, with most exposure studies conducted at these higher concentrations. She further noted that recent evidence includes controlled human exposure studies reporting the combination of lung function decrements and respiratory symptoms in healthy adults engaged in quasi-continuous, moderate exertion following 6.6 hour exposures to concentrations as low as 72 ppb, and lung function decrements and

the impacts of long-term O<sub>3</sub> exposure and exposure to repeated short-term peaks over an O<sub>3</sub> season.

pulmonary inflammation following exposures to O<sub>3</sub> concentrations as low as 60 ppb. As discussed below, compared to the evidence available in the last review, the Administrator viewed these studies as having strengthened support for the occurrence of abnormal and adverse respiratory effects attributable to short-term exposures to O<sub>3</sub> concentrations below the level of the current standard. The Administrator stated that such exposures to O<sub>3</sub> concentrations below the level of the current standard are potentially important from a public health perspective, given the following:

(1) The combination of lung function decrements and respiratory symptoms reported to occur in healthy adults following exposures to 72 ppb O<sub>3</sub> or higher, while at moderate exertion, meet ATS criteria for an adverse response. In specifically considering the 72 ppb exposure concentration, CASAC noted that “the combination of decrements in FEV<sub>1</sub> together with the statistically significant alterations in symptoms in human subjects exposed to 72 ppb ozone meets the American Thoracic Society’s definition of an adverse health effect” (Frey, 2014c, p. 5).

(2) With regard to 60 ppb O<sub>3</sub>, CASAC agreed that “a level of 60 ppb corresponds to the lowest exposure concentration demonstrated to result in lung function decrements large enough to be judged an abnormal response by ATS and that could be adverse in individuals with lung disease” (Frey, 2014c, p. 7). CASAC further noted that “a level of 60 ppb also corresponds to the lowest exposure concentration at which pulmonary inflammation has been reported” (Frey, 2014c, p. 7).

(3) The controlled human exposure studies reporting these respiratory effects were conducted in healthy adults, while at-risk groups (*e.g.*, children, people with asthma) could experience larger and/or more serious effects. In their advice to the Administrator, CASAC concurred with this reasoning (Frey, 2014a, p. 14; Frey, 2014c, p. 5).

(4) These respiratory effects are coherent with the serious health outcomes that have been reported in epidemiologic studies evaluating exposure to O<sub>3</sub> (*e.g.*, respiratory-related hospital admissions, emergency department visits, and mortality).

As noted above, the Administrator’s proposed conclusions regarding the adequacy of the current primary O<sub>3</sub> standard placed a large amount of weight on the results of controlled human exposure studies. In particular, given the combination of lung function decrements and respiratory symptoms

following 6.6-hour exposures to O<sub>3</sub> concentrations as low as 72 ppb, and given CASAC advice regarding effects at 72 ppb, along with ATS adversity criteria, she concluded that the evidence in this review supports the occurrence of adverse respiratory effects following exposures to O<sub>3</sub> concentrations lower than the level of the current standard.<sup>76</sup> As discussed below, the Administrator further considered information from the broader body of controlled human exposure studies within the context of quantitative estimates of exposures of concern and O<sub>3</sub>-induced FEV<sub>1</sub> decrements.

While putting less weight on information from epidemiologic studies than on information from controlled human exposure studies, the Administrator also considered what the available epidemiologic evidence indicates with regard to the adequacy of the public health protection provided by the current primary O<sub>3</sub> standard. She noted that recent epidemiologic studies provide support, beyond that available in the last review, for associations between short-term O<sub>3</sub> exposures and a wide range of adverse respiratory outcomes (including respiratory-related hospital admissions, emergency department visits, and mortality) and with total mortality. Associations with morbidity and mortality are stronger during the warm or summer months, and remain robust after adjustment for copollutants.

In considering information from epidemiologic studies within the context of her conclusions on the adequacy of the current standard, the Administrator considered the extent to which available studies support the occurrence of O<sub>3</sub> health effect associations with air quality likely to be allowed by the current standard. Most of the epidemiologic studies considered by the Administrator were conducted in locations likely to have violated the current standard over at least part of the study period. However, she noted three U.S. single-city studies that support the occurrence of O<sub>3</sub>-associated hospital admissions or emergency department visits at ambient O<sub>3</sub> concentrations below the level of the current standard, or when virtually all monitored concentrations were below the level of the current standard (Mar and Koenig, 2009; Silverman and Ito, 2010; Strickland et al., 2010) (section II.D.1 of the proposal). While the Administrator acknowledged greater uncertainty in interpreting air quality for multicity

studies, she noted that O<sub>3</sub> associations with respiratory morbidity or mortality have been reported when the majority of study locations (though not all study locations) would likely have met the current O<sub>3</sub> standard. When taken together, the Administrator reached the initial conclusion at proposal that single-city epidemiologic studies and associated air quality information support the occurrence of O<sub>3</sub>-associated hospital admissions and emergency department visits for ambient O<sub>3</sub> concentrations likely to have met the current standard, and that air quality analyses in locations of multicity studies provide some support for this conclusion for a broader range of effects, including mortality.

Beyond her consideration of the scientific evidence, the Administrator also considered the results of the HREA exposure and risk analyses in reaching initial conclusions regarding the adequacy of the current primary O<sub>3</sub> standard. In doing so, as noted above, she focused primarily on exposure and risk estimates based on information from controlled human exposure studies (*i.e.*, exposures of concern and O<sub>3</sub>-induced lung function decrements) and placed relatively less weight on epidemiologic-based risk estimates.

With regard to estimates of exposures of concern, the Administrator considered the extent to which the current standard provides protection against exposures to O<sub>3</sub> concentrations at or above 60, 70, and 80 ppb. Consistent with CASAC advice (Frey, 2014c), the Administrator focused on children in these analyses of O<sub>3</sub> exposures, noting that estimates for all children and asthmatic children are virtually indistinguishable, in terms of the percent estimated to experience exposures of concern.<sup>77</sup> Though she focused on children, she also recognized that exposures to O<sub>3</sub> concentrations at or above 60 or 70 ppb could be of concern for adults. As discussed in the HREA and PA (and II.C.2.a of the proposal), the patterns of exposure estimates across urban study areas, across years, and across air quality scenarios are similar in adults with asthma, older adults, all children, and children with asthma, though smaller percentages of adult populations are estimated to experience exposures of concern than children and children with asthma. Thus, the Administrator recognized that the exposure patterns for children across years, urban study areas, and air

<sup>76</sup> This CASAC advice and ATS recommendations are discussed in more detail in section II.C.4 below (see also II.A.1.c, above).

<sup>77</sup> As noted above, HREA analyses indicate that activity data for asthmatics is generally similar to non-asthmatics (U.S. EPA, 2014a, Appendix 5G, Tables 5G2-to 5G-5).

quality scenarios are indicative of the exposure patterns in a broader group of at-risk populations that also includes asthmatic adults and older adults.

She further noted that while single exposures of concern could be adverse for some people, particularly for the higher benchmark concentrations (70, 80 ppb) where there is stronger evidence for the occurrence of adverse effects, she became increasingly concerned about the potential for adverse responses as the number of occurrences increases (61 FR 75122).<sup>78</sup> In particular, she noted that repeated occurrences of the types of effects shown to occur following exposures of concern can have potentially adverse outcomes. For example, repeated occurrences of airway inflammation could potentially result in the induction of a chronic inflammatory state; altered pulmonary structure and function, leading to diseases such as asthma; altered lung host defense response to inhaled microorganisms; and altered lung response to other agents such as allergens or toxins (U.S. EPA, 2013, section 6.2.3). Thus, the Administrator noted that the types of respiratory effects shown to occur in some individuals following exposures to O<sub>3</sub> concentrations from 60 to 80 ppb, particularly if experienced repeatedly, provide a mode of action by which O<sub>3</sub> may cause other more serious effects (e.g., asthma exacerbations). Therefore, the Administrator placed the most weight on estimates of two or more exposures of concern (i.e., as a surrogate for the occurrence of repeated exposures), though she also considered estimates of one or more, particularly for the 70 and 80 ppb benchmarks.<sup>79</sup>

As illustrated in Table 1 (above), the Administrator noted that if the 15 urban study areas evaluated in the HREA were to just meet the current O<sub>3</sub> standard, fewer than 1% of children in those areas would be estimated to experience two or more exposures of concern at or above 70 ppb, though approximately 3 to 8% of children, including approximately 3 to 8% of asthmatic children, would be

<sup>78</sup> The Administrator noted that not all people who experience an exposure of concern will experience an adverse effect (even members of at-risk populations). For most of the endpoints evaluated in controlled human exposure studies (with the exception of O<sub>3</sub>-induced FEV<sub>1</sub> decrements, as discussed below), the number of those experiencing exposures of concern who will experience adverse effects cannot be reliably quantified.

<sup>79</sup> The Administrator's considerations related to estimated O<sub>3</sub> exposures of concern, including her views on estimates of two or more and one or more such exposures, are discussed in more detail within the context of her consideration of public comments on the level of the revised standard and her final decision on level (II.C.4.b and II.C.4.c, below).

estimated to experience two or more exposures of concern to O<sub>3</sub> concentrations at or above 60 ppb<sup>80</sup> (based on estimates averaged over the years of analysis). To provide some perspective on these percentages, the Administrator noted that they correspond to almost 900,000 children in urban study areas, including about 90,000 asthmatic children, estimated to experience two or more exposures of concern at or above 60 ppb. Nationally, if the current standard were to be just met, the number of children experiencing such exposures would be larger. In the worst-case year and location (i.e., year and location with the largest exposure estimates), the Administrator noted that over 2% of children are estimated to experience two or more exposures of concern at or above 70 ppb and over 14% are estimated to experience two or more exposures of concern at or above 60 ppb.

Although, as discussed above and in section II.E.4.d of the proposal, the Administrator was less concerned about single occurrences of exposures of concern, she noted that even single occurrences can cause adverse effects in some people, particularly for the 70 and 80 ppb benchmarks. Therefore, she also considered estimates of one or more exposures of concern. As illustrated in Table 1 (above), if the 15 urban study areas evaluated in the HREA were to just meet the current O<sub>3</sub> standard, fewer than 1% of children in those areas would be estimated to experience one or more exposures of concern at or above 80 ppb (based on estimates averaged over the years of analysis). However, approximately 1 to 3% of children, including 1 to 3% of asthmatic children, would be estimated to experience one or more exposures of concern to O<sub>3</sub> concentrations at or above 70 ppb and approximately 10 to 17% would be estimated to experience one or more exposures of concern to O<sub>3</sub> concentrations at or above 60 ppb. In the worst-case year and location, the Administrator noted that over 1% of children are estimated to experience one or more exposures of concern at or above 80 ppb, over 8% are estimated to experience one or more exposures of concern at or above 70 ppb, and about 26% are estimated to experience one or more exposures of concern at or above 60 ppb.

In addition to estimated exposures of concern, the Administrator also considered HREA estimates of the

<sup>80</sup> Almost no children in those areas would be estimated to experience two or more exposures of concern at or above 80 ppb.

occurrence of O<sub>3</sub>-induced lung function decrements. In doing so, she particularly noted CASAC advice that "estimation of FEV<sub>1</sub> decrements of  $\geq 15\%$  is appropriate as a scientifically relevant surrogate for adverse health outcomes in active healthy adults, whereas an FEV<sub>1</sub> decrement of  $\geq 10\%$  is a scientifically relevant surrogate for adverse health outcomes for people with asthma and lung disease" (Frey, 2014c, p. 3). While these surrogates provide perspective on the potential for the occurrence of adverse respiratory effects following O<sub>3</sub> exposures, the Administrator agreed with the conclusion in past reviews that a more general consensus view of the adversity of moderate responses emerges as the frequency of occurrence increases (citing to 61 FR 65722-3) (Dec, 13, 1996). Therefore, in the proposal the Administrator expressed increasing concern about the potential for adversity as the frequency of occurrences increased and, as a result, she focused primarily on estimates of two or more O<sub>3</sub>-induced FEV<sub>1</sub> decrements (i.e., as a surrogate for repeated exposures).

When averaged over the years evaluated in the HREA, the Administrator noted that the current standard is estimated to allow about 1 to 3% of children in the 15 urban study areas (corresponding to almost 400,000 children) to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 15\%$ , and to allow about 8 to 12% of children (corresponding to about 180,000 asthmatic children) to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 10\%$ . Nationally, larger numbers of children would be expected to experience such O<sub>3</sub>-induced decrements if the current standard were to be just met. The current standard is also estimated to allow about 3 to 5% of children in the urban study areas to experience one or more decrements  $\geq 15\%$  and about 14 to 19% of children to experience one or more decrements  $\geq 10\%$ . In the worst-case year and location, the current standard is estimated to allow 4% of children in the urban study areas to experience two or more decrements  $\geq 15\%$  (and 7% to experience one or more such decrements) and 14% of children to experience two or more decrements  $\geq 10\%$  (and 22% to experience one or more such decrements).<sup>81</sup>

<sup>81</sup> As discussed below (II.C.4), in her consideration of potential alternative standard levels, the Administrator placed less weight on estimates of the risk of O<sub>3</sub>-induced FEV<sub>1</sub> decrements. In doing so, she particularly noted that, unlike exposures of concern, the variability in lung

In further considering the HREA results, the Administrator considered the epidemiology-based risk estimates. Compared to the weight given to HREA estimates of exposures of concern and lung function risks, she placed relatively less weight on epidemiology-based risk estimates. Consistent with the conclusions in the PA, her determination to attach less weight to the epidemiologic-based risk estimates reflected her consideration of key uncertainties, including the heterogeneity in effect estimates between locations, the potential for exposure measurement errors, and uncertainty in the interpretation of the shape of concentration-response functions for O<sub>3</sub> concentrations in the lower portions of ambient distributions (U.S. EPA, 2014a, section 9.6) (section II.D.2 of the proposal).

The Administrator focused on estimates of total mortality risk associated with short-term O<sub>3</sub> exposures.<sup>82</sup> Given the decreasing certainty in the shape of concentration-response functions for area-wide O<sub>3</sub> concentrations at the lower ends of warm season distributions (U.S. EPA, 2013, section 2.5.4.4), the Administrator focused on estimates of risk associated with O<sub>3</sub> concentrations in the upper portions of ambient distributions. Even when considering only area-wide O<sub>3</sub> concentrations from these upper portions of seasonal distributions, the Administrator noted that the current standard is estimated to allow hundreds to thousands of O<sub>3</sub>-associated deaths per year in urban study areas (79 FR 75291 citing to section II.C.3 of the proposal).

In addition to the evidence and exposure/risk information discussed above, the Administrator took note of the CASAC advice in the current review and in the 2010 proposed

function risk estimates across urban study areas is often greater than the differences in risk estimates between various standard levels (Table 2, above). Given this, and the resulting considerable overlap between the ranges of lung function risk estimates for different standard levels, although the Administrator noted her confidence in the lung function risk estimates themselves, she viewed them as providing a more limited basis than exposures of concern for distinguishing between the degree of public health protection provided by alternative standard levels.

<sup>82</sup> In doing so, she concluded that lower confidence should be placed in the results of the assessment of respiratory mortality risks associated with long-term O<sub>3</sub> exposures, primarily because that analysis is based on only one study (even though that study is well-designed) and because of the uncertainty in that study about the existence and identification of a potential threshold in the concentration-response function (U.S. EPA, 2014a, section 9.6) (section II.D.2 of the proposal). CASAC also called into question the extent to which it is appropriate to place confidence in risk estimates for respiratory mortality (Frey, 2014a, p. 11).

reconsideration of the 2008 decision establishing the current standard. As discussed in more detail above, the current CASAC “finds that the current NAAQS for ozone is not protective of human health” and “unanimously recommends that the Administrator revise the current primary ozone standard to protect public health” (Frey, 2014c, p. 5).

In consideration of all of the above, the Administrator proposed that the current primary O<sub>3</sub> standard is not adequate to protect public health, and that it should be revised to provide increased public health protection. This proposed decision was based on the Administrator’s initial conclusions that the available evidence and exposure and risk information clearly call into question the adequacy of public health protection provided by the current primary standard and, therefore, that the current standard is not requisite to protect public health with an adequate margin of safety. With regard to the evidence, she specifically noted that (1) controlled human exposure studies provide support for the occurrence of adverse respiratory effects following exposures to O<sub>3</sub> concentrations below the level of the current standard (*i.e.*, as low as 72 ppb), and that (2) single-city epidemiologic studies provide support for the occurrence of adverse respiratory effects under air quality conditions that would likely meet the current standard, with multicity studies providing limited support for this conclusion for a broader range of effects (*i.e.*, including mortality). In addition, based on the analyses in the HREA, the Administrator concluded that the exposures and risks projected to remain upon meeting the current standard can reasonably be judged to be important from a public health perspective. Thus, she reached the proposed conclusion that the evidence and information, together with CASAC advice based on their consideration of that evidence and information, provide strong support for revising the current primary standard in order to increase public health protection against an array of adverse effects that range from decreased lung function and respiratory symptoms to more serious indicators of morbidity (*e.g.*, including emergency department visits and hospital admissions), and mortality.

## 2. Comments on the Need for Revision

The EPA received a large number of comments, more than 430,000 comments, on the proposed decision to revise the current primary O<sub>3</sub> standard. These comments generally fell into one

of two broad groups that expressed sharply divergent views.

Many commenters asserted that the current primary O<sub>3</sub> standard is not sufficient to protect public health, especially the health of sensitive groups, with an adequate margin of safety. These commenters agreed with the EPA’s proposed decision to revise the current standard to increase public health protection. Among those calling for revisions to the current primary standard were medical groups (*e.g.*, American Academy of Pediatrics (AAP), American Medical Association, American Lung Association (ALA), American Thoracic Society, American Heart Association, and the American College of Occupational and Environmental Medicine); national, state, and local public health and environmental organizations (*e.g.*, the National Association of County and City Health Officials, American Public Health Association, Physicians for Social Responsibility, Sierra Club, Natural Resources Defense Council, Environmental Defense Fund, Center for Biological Diversity, and Earthjustice); the majority of state and local air pollution control authorities that submitted comments (*e.g.*, agencies from California Air Resources Board and Office of Environmental Health Hazard Assessment, Connecticut, Delaware, Iowa, Illinois, Maryland, Minnesota, New Hampshire, New York, North Dakota, Oregon, Pennsylvania, Tennessee, and Wisconsin); the National Tribal Air Association; State organizations (*e.g.*, National Association of Clean Air Agencies (NACAA), Northeast States for Coordinated Air Use Management, Ozone Transport Commission). While all of these commenters agreed with the EPA that the current O<sub>3</sub> standard needs to be revised, many supported a more protective standard than proposed by EPA, as discussed in more detail below (II.C.4). Many individual commenters also expressed similar views.

A second group of commenters, representing industry associations, businesses and some state agencies, opposed the proposed decision to revise the current primary O<sub>3</sub> standard, expressing the view that the current standard is adequate to protect public health, including the health of sensitive groups, and to do so with an adequate margin of safety. Industry and business groups expressing this view included the American Petroleum Institute (API), the Alliance of Automobile Manufacturers (AAM), the American Forest and Paper Association, the Dow Chemical Company, the National Association of Manufacturers, the

National Mining Association, the U.S. Chamber of Commerce (in a joint comment with other industry groups), and the Utility Air Regulatory Group (UARG). State environmental agencies opposed to revising the current primary O<sub>3</sub> standard included agencies from Arkansas, Georgia, Louisiana, Kansas, Michigan, Mississippi, Nebraska, North Carolina, Ohio, Texas, Virginia, and West Virginia.

The following sections discuss comments submitted by these and other groups, and the EPA's responses to those comments. Comments dealing with overarching issues that are fundamental to EPA's decision-making methodology are addressed in section II.B.2.a. Comments on the health effects evidence, including evidence from controlled human exposure and epidemiologic studies, are addressed in section II.B.2.b. Comments on human exposure and health risk assessments are addressed in section II.B.2.c. Comments on the appropriate indicator, averaging time, form, or level of a revised primary O<sub>3</sub> standard are addressed below in section II.C. In addition to the comments addressed in this preamble, the EPA has prepared a Response to Comments document that addresses other specific comments related to standard setting, as well as comments on implementation- and/or cost-related factors that the EPA may not consider as part of the basis for decisions on the NAAQS. This document is available for review in the docket for this rulemaking and through the EPA's OAQPS TTN Web site ([http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html)).

#### a. Overarching Comments

Some commenters maintained that the proposed rule (and by extension the final rule) is fundamentally flawed because it does not quantify, or otherwise define, what level of protection is "requisite" to protect the public health. These commenters asserted that "EPA has not explained how far above zero-risk it believes is appropriate or how close to background is acceptable. EPA has failed to explain how the current standard is inadequate on this specific basis" (e.g., UARG, p. 10). These commenters further maintained that the failure to quantify a requisite level of protection "drastically reduces the value of public participation" since "the public does not understand what is driving EPA's decision" (e.g., UARG, p. 11).

The EPA disagrees with these comments and notes that industry petitioners made virtually the same argument before the D.C. Circuit in *ATA*

*III*, on remand from the Supreme Court, arguing that unless EPA identifies and quantifies a degree of acceptable risk, it is impossible to determine if a NAAQS is requisite (i.e., neither too stringent or insufficiently stringent to protect the public health). The D.C. Circuit rejected petitioners' argument, holding that "[a]lthough we recognize that the Clean Air Act and circuit precedent require EPA qualitatively to describe the standard governing its selection of particular NAAQS, we have expressly rejected the notion that the Agency must 'establish a measure of the risk to safety it considers adequate to protect public health every time it establish a [NAAQS]'" *ATA III*, 283 F. 3d at 369 (quoting *NRDC v. EPA*, 902 F.2d 962, 973 (D.C. Cir. 1990)). The court went on to explain that the requirement is only for EPA to engage in reasoned decision-making, "not that it definitively identify pollutant levels below which risks to public health are negligible." *ATA III*, 283 F. 3d at 370.

Thus, the Administrator is required to exercise her judgment in the face of scientific uncertainty to establish the NAAQS to provide appropriate protection against risks to public health, both known and unknown. As discussed below, in the current review, the Administrator judges that the existing primary O<sub>3</sub> standard is not requisite to protect public health with an adequate margin of safety, a judgment that is consistent with CASAC's conclusion that "there is clear scientific support for the need to revise the standard" (Frey, 2014c, p. ii). Further, in section II.C.4 below, the Administrator has provided a thorough explanation of her rationale for concluding that a standard with a level of 70 ppb is requisite to protect public health with an adequate margin of safety, explaining the various scientific uncertainties which circumscribe the range of potential alternative standards, and how she exercised her "judgment" (per section 109 (b)(1) of the CAA) in selecting a standard from within that range of scientifically reasonable choices. This "reasoned decision making" is what the Act requires, 283 F. 3d at 370, not the quantification advocated by these commenters.

The EPA further disagrees with the comment that a failure to quantify a requisite level of protection impaired or impeded public notice and comment opportunities. In fact, the EPA clearly gave adequate notice of the bases both for determining that the current standard does not afford requisite

protection,<sup>83</sup> and for determining how the standard should be revised. In particular, the EPA explained in detail which evidence it considered critical, and the scientific uncertainties that could cause the Administrator to weight that evidence in various ways (79 FR 75308–75310). There were robust comments submitted by commenters from a range of viewpoints on all of these issues, an indication of the adequacy of notice. The public was also afforded multiple opportunities to comment to the EPA and to CASAC during the development of the ISA, REA, and PA. Thus, the EPA does not agree that lack of quantification of a risk level that is "requisite" has deprived commenters of adequate notice and opportunity to comment in this proceeding.

Various commenters maintained that it was inappropriate to revise the current NAAQS based on their view that natural background concentrations in several states are at or above O<sub>3</sub> concentrations associated with meeting a NAAQS set at a level less than 75 ppb (presumably retaining the same indicator, form, and averaging time), making the NAAQS impossible for those states to attain and maintain, a result they claim is legally impermissible. In support for their argument, the commenters cite monitoring and modelling results from various areas in the intermountain west, state that EPA analyses provide underestimates of background O<sub>3</sub> and conclude that high concentrations of background O<sub>3</sub><sup>84</sup> exist

<sup>83</sup> See 79 FR 75287–91 (noting, among other things, that exposure to ambient O<sub>3</sub> concentrations below the level of the current standard has been associated with diminished lung function capacity, respiratory symptoms, and respiratory health effects resulting in emergency room visits or hospital admissions, and that a single-city epidemiologic study showed associations with asthma emergency department visits in an area that would have met the current standard over the entire study period). See also Frey 2014c, p. 5 (CASAC reiterated its conclusion, after multiple public comment opportunities, that as a matter of science the current standard "is not protective of public health" and provided the bases for that conclusion).

<sup>84</sup> Background O<sub>3</sub> can be generically defined as the portion of O<sub>3</sub> in ambient air that comes from sources outside the jurisdiction of an area and can include natural sources as well as transported O<sub>3</sub> of anthropogenic origin. EPA has identified two specific definitions of background O<sub>3</sub> relevant to this discussion: natural background (NB) and United States background (USB). NB is defined as the O<sub>3</sub> that would exist in the absence of any manmade precursor emissions. USB is defined as that O<sub>3</sub> that would exist in the absence of any manmade emissions inside the U.S. This includes anthropogenic emissions outside the U.S. as well as naturally occurring ozone. In many cases, the comments reference background O<sub>3</sub> only in the generic sense. Unless explicitly noted otherwise, we have assumed all references to background in the comments are intended to refer to USB.

in many parts of the United States that will “prevent attainment” of a revised standard (NMA, p. 5).

The courts have clearly established that “[a]ttainability and technological feasibility are not relevant considerations in the promulgation of [NAAQS].” *API v. EPA*, 665 F. 2d 1176, 1185 (D.C. Cir. 1981). Further, the courts have clarified that the EPA may consider proximity to background concentrations as a factor in the decision whether and how to revise the NAAQS only in the context of considering standard levels within the range of reasonable values supported by the air quality criteria and judgments of the Administrator. 79 FR 75242–43 (citing *ATA III*, 283 F. 3d at 379). In this review, the overall body of scientific evidence and exposure/risk information, as discussed in Section II.B of this notice, is clear and convincing: The existing standard is not adequate to protect public health with an adequate margin of safety and that the standard needs to be revised to reflect a lower level to provide that protection. The EPA analyses indicate that there may be infrequent instances in a limited number of rural areas where background O<sub>3</sub> would be appreciable but not the sole contributor to an exceedance of the revised NAAQS, but do not indicate U.S. background (USB) O<sub>3</sub> concentrations will prevent attainment of a revised O<sub>3</sub> standard with a level of 70 ppb. USB is defined as that O<sub>3</sub> that would exist even in the absence of any manmade emissions within the United States.

The EPA’s estimates of U.S. background ozone concentrations are based on frequently-utilized, state-of-the-science air quality models and are considered reasonable and reliable, not underestimates. In support of their view, the commenters state that monitored (not modelled) ozone concentrations in remote rural locations include instances of 8-hour average concentrations very occasionally higher than 70 ppb. Monitoring data from places like the Grand Canyon and Yellowstone National Parks, are examples cited in comments. It is inappropriate to assume that monitored O<sub>3</sub> concentrations at remote sites can be used as a proxy for background O<sub>3</sub>. Even at the most remote locations, local O<sub>3</sub> concentrations are impacted by anthropogenic emissions from within the U.S. The EPA modeling analyses (U.S. EPA, 2014c, Figure 2–18) estimate that, on a seasonal basis, 10–20% of the O<sub>3</sub> at even the most remote locations in the intermountain western U.S. originates from manmade emissions from the U.S., and thus is not part of

USB. This conclusion is supported by commenter-submitted recent data analyses of rural O<sub>3</sub> observations in Nevada and Utah (NMA, Appendices D and H). These analyses conclude that natural sources, international O<sub>3</sub> transport, O<sub>3</sub> transported from upwind states, and O<sub>3</sub> transported from urban areas within a state all contributed to O<sub>3</sub> concentrations at rural sites.<sup>85</sup> Thus, while O<sub>3</sub> in high-altitude, rural portions of the intermountain western U.S. can, at times, be substantially influenced by background sources such as wildfires, international transport or the stratosphere, measured O<sub>3</sub> in rural locations are also influenced by domestic emissions and so cannot, by themselves, be used to estimate USB concentrations. Accordingly, the fact that 2011–2013 design values in locations like Yellowstone National Park (66 ppb) or Grand Canyon National Park (72 ppb) approach or exceed 70 ppb, does not support the conclusion that a standard with a level of 70 ppb is impossible to attain.

To accurately estimate USB concentrations, it is necessary to use air quality models which can estimate how much of the O<sub>3</sub> at any given location originates from sources other than manmade emissions within the U.S. As part of the rulemaking, the EPA has summarized a variety of modeling-based analyses of background O<sub>3</sub> (U.S. EPA, 2013, Chapter 3) and conducted our own multi-model assessment of USB concentrations across the U.S. (U.S. EPA, 2014c, Chapter 2). The EPA analyses, which are consistent with the previously-summarized studies highlighted by commenters, concluded that seasonal mean daily maximum 8-hour average concentrations of USB O<sub>3</sub> range from 25–50 ppb, with the highest estimates located across the intermountain western U.S.

Importantly, the modeling analyses also indicate that the highest O<sub>3</sub> days (*i.e.*, the days most relevant to the form of the NAAQS) generally have similar daily maximum 8-hour average USB concentrations as the seasonal means of this metric, but have larger contributions from U.S. anthropogenic sources. As summarized in the PA, “the highest modeled O<sub>3</sub> site-days tend to have background O<sub>3</sub> levels similar to mid-range O<sub>3</sub> days . . . [T]he days with

<sup>85</sup> The analysis of observations in Utah notes the influence of domestic emissions—either from Salt Lake City (for two of the areas) or from Los Angeles and California (for the third of the areas)—on O<sub>3</sub> concentrations at each of the locations included (NMA comments, Appendix E). Additionally, the analysis of monitoring data for Nevada also describes the influence of the monitoring sites by domestic emissions from other western states (NMA, Appendix H).

highest O<sub>3</sub> levels have similar distributions (*i.e.* means, inter-quartile ranges) of background levels as days with lower values, down to approximately 40 ppb. As a result, the proportion of total O<sub>3</sub> that has background origins is smaller on high O<sub>3</sub> days (*e.g.* greater than 60 ppb) than on the more common lower O<sub>3</sub> days that tend to drive seasonal means” (U.S. EPA, 2014c, p. 2–21, emphasis added). When averaged over the entire U.S., the models estimate that the mean USB fractional contribution to daily maximum 8-hour average O<sub>3</sub> concentrations above 70 ppb is less than 35 percent. U.S. anthropogenic emission sources are thus the dominant contributor to the majority of modeled O<sub>3</sub> exceedances across the U.S. (U.S. EPA, 2014c, Figures 2–14 and 2–15).

As noted in the PA, and as highlighted by the commenters based on existing modeling, there can be infrequent events where daily maximum 8-hour O<sub>3</sub> concentrations approach or exceed 70 ppb largely due to the influence of USB sources like a wildfire or stratospheric intrusion. As discussed below in Section V, the statute and EPA implementing regulations allow for the exclusion of air quality monitoring data from design value calculations when there are exceedances caused by certain event-related U.S. background influences (*e.g.*, wildfires or stratospheric intrusions). As a result, these “exceptional events” will not factor into attainability concerns.

In sum, the EPA believes that the commenters have failed to establish the predicate for their argument. Uncontrollable background concentrations of O<sub>3</sub> are not expected to preclude attainment of a revised O<sub>3</sub> standard with a level of 70 ppb. The EPA also disagrees with aspects of the specific statements made by the commenters as support for their view that the EPA analyses have underestimated background O<sub>3</sub>.<sup>86</sup> Thus, even assuming the commenters are correct that the EPA may use proximity to background as a justification for not revising a standard that, in the judgment of the Administrator, is inadequate to protect public health, the commenters’ arguments for the justification and need to do so for this review are based on a flawed premise.

#### b. Comments on the Health Effects Evidence

As noted above, comments on the adequacy of the current standard fell into two broad categories reflecting very

<sup>86</sup> Specific aspects of the comments on the EPA analyses are addressed in more detail in the RTC.

different views of the available scientific evidence. Commenters who expressed support for the EPA's proposed decision to revise the current primary O<sub>3</sub> standard generally concluded that the body of scientific evidence assessed in the ISA is much stronger and more compelling than in the last review. These commenters also generally emphasized CASAC's interpretation of the body of available evidence, which formed an important part of the basis for CASAC's reiterated recommendations to revise the O<sub>3</sub> standard to provide increased public health protection. In some cases, these commenters supported their positions by citing studies published since the completion of the ISA.

The EPA generally agrees with these commenters regarding the need to revise the current primary O<sub>3</sub> standard in order to increase public health protection though, in many cases, not with their conclusions about the degree of protection that is appropriate (II.C.4.b and II.C.4.c, below). The scientific evidence noted by these commenters was generally the same as that assessed in the ISA (U.S. EPA, 2013) and the proposal,<sup>87</sup> and their interpretation of the evidence was often, though not always, consistent with the conclusions of the ISA and CASAC. The EPA agrees that the evidence available in this review provides a strong basis for the conclusion that the current O<sub>3</sub> standard is not adequately protective of public health. In reaching this conclusion, the EPA places a large amount of weight on the scientific advice of CASAC, and on CASAC's endorsement of the assessment of the evidence in the ISA (Frey and Samet, 2012).

In contrast, while commenters who opposed the proposed decision to revise the primary O<sub>3</sub> standard generally focused on many of the same studies assessed in the ISA, these commenters highlighted different aspects of these studies and reached substantially different conclusions about their strength and the extent to which progress has been made in reducing uncertainties in the evidence since the last review. These commenters generally concluded that information about the health effects of concern has not changed significantly since 2008 and that the uncertainties in the underlying health science have not been reduced

since the 2008 review. In some cases, these commenters specifically questioned the EPA's approach to assessing the scientific evidence and to reaching conclusions on the strength of that evidence in the ISA. For example, several commenters asserted that the EPA's causal framework, discussed in detail in the ISA, is flawed and that it has not been applied consistently across health endpoints. Commenters also noted departures from other published causality frameworks (Samet and Bodurow, 2008) and from the criteria for judging causality put forward by Sir Austin Bradford Hill (Hill, 1965).

The EPA disagrees with comments questioning the ISA's approach to assessing the evidence, the causal framework established in the ISA, or the consistent application of that framework across health endpoints. While the EPA acknowledges the ISA's approach departs from assessment and causality frameworks that have been developed for other purposes, such departures reflect appropriate adaptations for the NAAQS. As with other ISAs, the O<sub>3</sub> ISA uses a five-level hierarchy that classifies the weight of evidence for causation. In developing this hierarchy, the EPA has drawn on the work of previous evaluations, most prominently the IOM's *Improving the Presumptive Disability Decision-Making Process for Veterans* (Samet and Bodurow, 2008), EPA's Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), and the U.S. Surgeon General's smoking report (CDC, 2004). The ISA's weight of evidence evaluation is based on the integration of findings from various lines of evidence from across the health and environmental effects disciplines. These separate judgments are integrated into a qualitative statement about the overall weight of the evidence and causality. The ISA's causal framework has been developed over multiple NAAQS reviews, based on extensive interactions with CASAC and based on the public input received as part of the CASAC review process. In the current review, the causality framework, and the application of that framework to causality determinations in the O<sub>3</sub> ISA, have been reviewed and endorsed by CASAC (Frey and Samet, 2012).

Given these views on the assessment of the evidence in the ISA, it is relevant to note that many of the issues and concerns raised by commenters on the EPA's interpretation of the evidence, and on the EPA's conclusions regarding the extent to which uncertainties have been reduced since the 2008 review, are essentially restatements of issues raised during the development of the ISA, HREA, and/or PA. The CASAC O<sub>3</sub> Panel

reviewed the interpretation of the evidence, and the EPA's use of information from specific studies, in drafts of these documents. In CASAC's advice to the Administrator, which incorporates its consideration of many of the issues raised by commenters, CASAC approved of the scientific content, assessments, and accuracy of the ISA, REA, and PA, and indicated that these documents provide an appropriate basis for use in regulatory decision making for the O<sub>3</sub> NAAQS (Frey and Samet, 2012, Frey, 2014a, Frey, 2014c). Therefore, the EPA's responses to many of the comments on the evidence rely heavily on the process established in the ISA for assessing the evidence, which is the product of extensive interactions with CASAC over a number of different reviews, and on CASAC advice received as part of this review of the O<sub>3</sub> NAAQS.

The remainder of this section discusses public comments and the EPA's responses, on controlled human exposure studies (II.B.2.b.i); epidemiologic studies (II.B.2.b.ii); and at-risk populations (II.B.2.b.iii).

#### i. Evidence From Controlled Human Exposure Studies

This section discusses major comments on the evidence from controlled human exposure studies and provides the Agency's responses to those comments. To support their views on the adequacy of the current standard, commenters often highlighted specific aspects of the scientific evidence from controlled human exposure studies. Key themes discussed by these commenters included the following: (1) The adversity of effects demonstrated in controlled human exposure studies, especially studies conducted at exposure concentrations below 80 ppb; (2) representativeness of different aspects of the controlled human exposure studies for making inferences to the general population and at-risk populations; (3) results of additional analyses of the data from controlled human exposure studies; (4) evaluation of a threshold for effects; and (5) importance of demonstration of inflammation at 60 ppb. This section discusses these key comment themes, and provides the EPA's responses. More detailed discussion of individual comments, and the EPA's responses, is provided in the Response to Comments document.

#### Adversity

Some commenters who disagreed with the EPA's proposed decision to revise the current primary O<sub>3</sub> standard disputed the Agency's characterization

<sup>87</sup> As discussed in section I.C above, the EPA has provisionally considered studies that were highlighted by commenters and that were published after the ISA. These studies are generally consistent with the evidence assessed in the ISA, and they do not materially alter our understanding of the scientific evidence or the Agency's conclusions based on that evidence.

of the adversity of the O<sub>3</sub>-induced health effects shown to occur in controlled human exposure studies. Some of these commenters contended that the proposal does not provide a clear definition of adversity or that there is confusion concerning what responses the Administrator considers adverse. The EPA disagrees with these comments, and notes that section II.E.4.d of the proposal describes the Administrator's proposed approach to considering the adversity of effects observed in controlled human exposure studies. Her final approach to considering the adversity of these effects, and her conclusions on adversity, are described in detail below (II.C.4.b, II.C.4.c).

Other commenters disagreed with the EPA's judgments regarding adversity and expressed the view that the effects observed in controlled human exposure studies following 6.6-hour exposures to O<sub>3</sub> concentrations below the level of the current standard (*i.e.*, 75 ppb) are not adverse.<sup>88</sup> This group of commenters cited several reasons to support their views, including that: (1) The lung function decrements and respiratory symptoms observed at 72 ppb in the study by Schelegle et al. (2009) were not correlated with each other, and therefore were not adverse; and (2) group mean FEV<sub>1</sub> decrements observed following exposures below 75 ppb are small (*e.g.*, <10%, as highlighted by some commenters), transient and reversible, do not interfere with daily activities, and do not result in permanent respiratory injury or progressive respiratory dysfunction.

While the EPA agrees that not all effects reported in controlled human exposure studies following exposures below 75 ppb can reasonably be considered to be adverse, the Agency strongly disagrees with comments asserting that none of these effects can be adverse. As an initial matter, the Administrator notes that, when considering the extent to which the current or a revised standard could allow adverse respiratory effects, based on information from controlled human exposure studies, she considers not only the effects themselves, but also quantitative estimates of the extent to which the current or a revised standard could allow such effects. Quantitative

exposure and risk estimates provide perspective on the extent to which various standards could allow populations, including at-risk populations such as children and children with asthma, to experience the types of O<sub>3</sub> exposures that have been shown in controlled human exposure studies to cause respiratory effects. As discussed further below (II.B.3, II.C.4.b, II.C.4.c), to the extent at-risk populations are estimated to experience such exposures repeatedly, the Administrator becomes increasingly concerned about the potential for adverse responses in the exposed population. Repeated exposures provide a plausible mode of action by which O<sub>3</sub> may cause other more serious effects. Thus, even though the Administrator concludes there is important uncertainty in the adversity of some of the effects observed in controlled human exposure studies based on the single exposure periods evaluated in these studies (*e.g.*, FEV<sub>1</sub> decrements observed following exposures to 60 ppb O<sub>3</sub>, as discussed in sections II.C.4.b and II.C.4.c below), she judges that the potential for adverse effects increases as the number of exposures increases. Contrary to the commenters' views noted above, the Administrator considers the broader body of available information (*i.e.*, including quantitative exposure and risk estimates) when considering the extent to which the current or a revised standard could allow adverse respiratory effects (II.B.3, II.C.4.b, II.C.4.c, below).

In further considering commenters' views on the potential adversity of the respiratory effects themselves (*i.e.*, without considering quantitative estimates), the EPA notes that although the results of controlled human exposure studies provide a high degree of confidence regarding the occurrence of health effects following exposures to O<sub>3</sub> concentrations from 60 to 80 ppb, there are no universally accepted criteria by which to judge the adversity of the observed effects. Therefore, as in the proposal, the Administrator relies upon recommendations from the ATS and advice from CASAC to inform her judgments on adversity.

In particular, the Administrator focuses on the ATS recommendation that "reversible loss of lung function in combination with the presence of symptoms should be considered adverse" (ATS, 2000a). The study by Schelegle et al. (2009) reported a statistically significant decrease in group mean FEV<sub>1</sub> and a statistically significant increase in respiratory symptoms in healthy adults following 6.6-hour exposures to average O<sub>3</sub>

concentrations of 72 ppb. In considering these effects, CASAC noted that "the combination of decrements in FEV<sub>1</sub> together with the statistically significant alterations in symptoms in human subjects exposed to 72 ppb ozone meets the American Thoracic Society's definition of an adverse health effect" (Frey, 2014c, p. 5).

As mentioned above, some commenters nonetheless maintained that the effects observed in Schelegle et al. (2009) following exposure to 72 ppb O<sub>3</sub> (average concentration) were not adverse because the magnitudes of the FEV<sub>1</sub> decrements and the increases in respiratory symptoms (as measured by the total subjective symptoms score, TSS) were not correlated across individual study subjects. A commenter submitted an analysis of the individual-level data from the study by Schelegle et al. (2009) to support their position. This analysis indicated that, while the majority of study volunteers (66%) did experience both lung function decrements and increased respiratory symptoms following 6.6-hour exposures to 72 ppb O<sub>3</sub>, some (33%) did not (*e.g.*, Figure 3 in comments from Gradient).<sup>89</sup> In addition, the study subjects who experienced relatively large lung function decrements did not always also experience relatively large increases in respiratory symptoms. These commenters interpreted the lack of a statistically significant correlation between the magnitudes of decrements and symptoms as meaning that the effects reported by Schelegle et al. (2009) at 72 ppb did not meet the ATS criteria for an adverse response.

However, the ATS recommendation that the combination of lung function decrements and symptomatic responses be considered adverse is not restricted to effects of a particular magnitude nor a requirement that individual responses be correlated. Similarly, CASAC made no such qualifications in its advice on the combination of respiratory symptoms and lung function decrements (See *e.g.*, Frey, 2014c, p. 5). Therefore, as in the proposal and consistent with both CASAC advice and ATS recommendations, the EPA continues to conclude that the finding of both statistically significant decrements in lung function and significant increases in respiratory symptoms following 6.6-hour exposures to an average O<sub>3</sub> concentration of 72 ppb provides a strong indication of the

<sup>88</sup> Commenters who supported revising the primary O<sub>3</sub> standard often concluded that there is clear evidence for adverse effects following exposures to O<sub>3</sub> concentrations at least as low as 60 ppb, and that such adverse effects support setting the level of a revised primary O<sub>3</sub> standard at 60 ppb. These comments, and the EPA's responses, are discussed below within the context of the Administrator's decision on a revised level (II.C.4.b).

<sup>89</sup> The figure provided in comments by Gradient only clearly illustrated the responses of 30 out of 31 subjects.



potential for exposed individuals to experience this combination of effects.<sup>90</sup>

In particular, the Administrator notes that lung function provides an objective measure of the respiratory response to O<sub>3</sub> exposure while respiratory symptoms are subjective, and as evaluated by Schelegle et al. (2009) were based on a TSS score. If an O<sub>3</sub> exposure causes increases in both objectively measured lung function decrements and subjective respiratory symptoms, which indicate that people may modify their behavior in response to the exposure, then the effect is properly viewed as adverse. As noted above, the commenter's analysis shows that the majority of study volunteers exposed to 72 ppb O<sub>3</sub> in the study by Schelegle et al. (2009) did, in fact, experience both a decrease in lung function and an increase in respiratory symptoms.

In further considering this comment, the EPA recognizes that, consistent with commenter's analysis, some individuals may experience large decrements in lung function with minimal to no respiratory symptoms (McDonnell et al., 1999), and vice versa. As indicated above and discussed in the proposal (79 FR 75289), the Administrator acknowledges such interindividual variability in responsiveness in her interpretation of estimated exposures of concern. Specifically, she notes that not everyone who experiences an exposure of concern, including for the 70 ppb benchmark, is expected to experience an adverse response. However, she further judges that the likelihood of adverse effects increases as the number of occurrences of O<sub>3</sub> exposures of concern increases. In making this judgment, she notes that the types of respiratory effects that can occur following exposures of concern, particularly if experienced repeatedly, provide a plausible mode of action by which O<sub>3</sub> may cause other more serious effects.<sup>91</sup> Therefore, her decisions on the primary standard emphasize the public health importance of limiting the occurrence of repeated exposures to O<sub>3</sub> concentrations at or above those shown to cause adverse

effects in controlled human exposure studies (II.B.3, II.C.4.b, II.C.4.c). The Administrator views this approach to considering the evidence from controlled human exposure studies as being consistent with commenter's analysis indicating that, while the majority did, not all study volunteers exposed to 72 ppb O<sub>3</sub> experienced the adverse combination of lung function decrements and respiratory symptoms following the single exposure period evaluated by Schelegle et al. (2009).

#### Representativeness

A number of commenters raised issues concerning the representativeness of controlled human exposure studies considered by the Administrator in this review, based on different aspects of these studies. These commenters asserted that since the controlled human exposure studies were not representative of real-world exposures, they should not be relied upon as a basis for finding that the current standard is not adequate to protect public health. Some issues highlighted by commenters include: Small size of the study populations; unrealistic activity levels used in the studies; unrealistic exposure scenarios (*i.e.*, triangular exposure protocol) used in some studies, including Schelegle et al. (2009); and differences in study design that limit comparability across studies.

Some commenters noted that the controlled human exposure studies were not designed to have individuals represent portions of any larger group and that the impacts on a small number of people do not implicate the health of an entire subpopulation, particularly when the FEV<sub>1</sub> decrements are small, temporary, and reversible. These commenters also noted that the Administrator failed to provide an explanation or justification for why the individuals in these studies can be viewed as representatives of a subpopulation. Further, they asserted that EPA's use of results from individuals, rather than the group mean responses, contradicts the intent of CAA section 109 to protect groups of people, not just the most sensitive individuals in any group (79 FR 75237).

Consistent with CASAC advice (Frey, 2014c, p. 5), the EPA concludes that the body of controlled human exposure studies are sufficiently representative to be relied upon as a basis for finding that the current standard is not adequate to protect public health. These studies generally recruit healthy young adult volunteers, and often expose them to O<sub>3</sub> concentrations found in the ambient air under real-world exposure conditions. As described in more detail above in

section II.A.1.b, the evidence from controlled human exposure studies to date makes it clear that there is considerable variability in responses across individuals, even in young healthy adult volunteers, and that group mean responses are not representative of more responsive individuals. It is important to look beyond group mean responses to the responses of these individuals to evaluate the potential impact on more responsive members of the population. Moreover, relying on group mean changes to evaluate lung function responses to O<sub>3</sub> exposures would mask the responses of the most sensitive groups, particularly where, as here, the group mean reflects responses solely among the healthy young adults who were the study participants. Thus, the studies of exposures below 80 ppb O<sub>3</sub> show that 10% of young healthy adults experienced FEV<sub>1</sub> decrements >10% following exposures to 60 ppb O<sub>3</sub>, and 19% experienced such decrements following exposures to 72 ppb (under the controlled test conditions involving moderate exertion for 6.6 hours). These percentages would likely have been higher had people with asthma or other at-risk populations been exposed (U.S. EPA, 2013, pp. 6–17 and 6–18; Frey 2014c, p. 7; Frey, 2014a, p. 14).<sup>92</sup>

Moreover, the EPA may legitimately view the individuals in these studies as representatives of the larger subpopulation of at-risk or sensitive groups. As stated in the Senate Report to the 1970 legislation establishing the NAAQS statutory provisions, "the Committee emphasizes that included among these persons whose health should be protected by the ambient standard are particularly sensitive citizens such as bronchial asthmatics and emphysematics who in the normal course of daily activity are exposed to the ambient environment. In establishing an ambient standard necessary to protect the health of these persons, reference should be made to a representative sample of persons comprising the sensitive group rather than to a single person in such a group. . . . For purposes of this description, a statistically related sample is the number of persons necessary to test in order to detect a deviation in the health of any person within such sensitive group which is attributable to the condition of the ambient air." S. Rep. No. 11–1196, 91st

<sup>90</sup> Indeed, the finding of statistically significant decreases in lung function and increases in respiratory symptoms in the same study population indicates that, on average, study volunteers did experience both effects.

<sup>91</sup> For example, as discussed in the proposal (79 FR 75252) and the ISA (p. 6–76), inflammation induced by a single exposure (or several exposures over the course of a summer) can resolve entirely. However, repeated occurrences of airway inflammation could potentially result in the induction of a chronic inflammatory state; altered pulmonary structure and function, leading to diseases such as asthma; altered lung host defense response to inhaled microorganisms; and altered lung response to other agents such as allergens or toxins (ISA, section 6.2.3).

<sup>92</sup> See also *National Environmental Development Associations Clean Action Project v. EPA*, 686 F. 3d 803, 811 (D.C. Cir. 2012) (EPA drew legitimate inference that serious asthmatics would experience more serious health effects than clinical test subjects who did not have this degree of lung function impairment).

Cong. 2d sess. at 10. As just noted above, 10% of healthy young adults in these studies experienced >10% FEV<sub>1</sub> decrements following exposure to 60 ppb O<sub>3</sub>, and the proportion of individuals experiencing such decrements increases with increasing O<sub>3</sub> exposure concentrations. This substantial percentage certainly can be viewed as “a representative sample of persons” and as a sufficient number to “detect a deviation in the health of any person within such sensitive group,” especially given that it reflects the percentage of *healthy adults* who experienced decrements >10%.

These results are consistent with estimates from the MSS model, which makes reliable quantitative predictions of the lung function response to O<sub>3</sub> exposures, and reasonably predicts the magnitude of individual lung function responses following such exposures. As described in section II.A.2.c above, and documented in the HREA, when the MSS model was used to quantify the risk of O<sub>3</sub>-induced FEV<sub>1</sub> decrements in 15 urban study areas, the current standard was estimated to allow about 8 to 12% of children to experience two or more O<sub>3</sub>-induced FEV<sub>1</sub> decrements ≥10%, and about 2 to 3% to experience two or more decrements ≥15% (Table 2, above). These percentages correspond to hundreds of thousands of children in urban study areas, and tens of thousands of asthmatic children. While the Administrator judges that there is uncertainty with regard to the adversity of these O<sub>3</sub>-induced lung function decrements (see II.C.4.b, II.C.4.c, below), such risk estimates clearly indicate that they are a matter of public health importance on a broad scale, not isolated effects on idiosyncratically responding individuals.

Other commenters considered the ventilation rates used in controlled human exposure studies to be unreasonably high and at the extreme of prolonged daily activity. Some of these commenters noted that these scenarios are unrealistic for sensitive populations, such as asthmatics and people with COPD, whose conditions would likely prevent them from performing the intensity of exercise, and therefore experiencing the ventilation rates, required to produce decrements in lung function observed in experimental settings.

The EPA disagrees with these commenters. The activity levels used in controlled human exposure studies were summarized in Table 6–1 of the ISA (U.S. EPA, 2013). The exercise level in the 6.6-hour exposure studies by Adams (2006), Schelegle et al. (2009), and Kim et al. (2011) of young healthy

adults was moderate and ventilation rates are typically targeted for 20 L/min-m<sup>2</sup> BSA.<sup>93</sup> Following the exposures to 60 ppb at this activity level, 10% of the individuals had greater than a 10% decrement in FEV<sub>1</sub> (U.S. EPA, 2013, p. 6–18). Similar 6.6-hour exposure studies of individuals with asthma are not available to assess either the effects of O<sub>3</sub> on their lung function or their ability to perform the required level of moderate exercise.

However, referring to Tables 6–9 and 6–10 of the HREA (U.S. EPA, 2014a), between 42% and 45% of FEV<sub>1</sub> decrements ≥ 10% were estimated to occur at exercise levels of <13 L/min-m<sup>2</sup> BSA. This corresponds to light exercise, and this level of exercise has been used in a 7.6-hour study of healthy people and people with asthma exposed to 160 ppb O<sub>3</sub> (Horstman et al., 1995). In that study, people with asthma exercised with an average minute ventilation of 14.2 L/min-m<sup>2</sup> BSA. Adjusted for filtered air responses, an average 19% FEV<sub>1</sub> decrement was seen in the people with asthma versus an average 10% FEV<sub>1</sub> decrement in the healthy people. In addition, the EPA noted in the HREA that the data underlying the exposure assessment indicate that “activity data for asthmatics [is] generally similar to [that for] non-asthmatics” (U.S. EPA, 2014a, p. 5–75, Tables 5G–2 and 5G–3). Thus, contrary to the commenters’ assertion, based on both the HREA and the Horstman et al. (1995) study, people with respiratory disease such as asthma can exercise for a prolonged period under conditions where they would experience >10% FEV<sub>1</sub> decrements in response to O<sub>3</sub> exposure.

Additionally, a number of commenters asserted that the exposure scenarios in Schelegle et al. (2009), which are based on a so-called triangular study protocol, where O<sub>3</sub> concentrations ramp up and down as the study is conducted, are not directly generalizable to most healthy or sensitive populations because of large changes in the O<sub>3</sub> concentrations from one hour to the next. Commenters stated that although large fluctuations in O<sub>3</sub> are possible in certain locations due to meteorological conditions (e.g., in valleys on very hot, summer days), they believe that, in general, concentrations of O<sub>3</sub> do not fluctuate by more than 20–30 ppb from one hour to the next. Thus, commenters suggested the Schelegle et

al. (2009) study design could happen in a “worst-case” exposure scenario, but that the exposure protocol was not reflective of conditions in most cities and thus not informative with regard to the adequacy of the current standard.

The EPA disagrees with the comment that these triangular exposure scenarios are not generalizable because of hour-to-hour fluctuations. Adams (2002, 2006) showed that FEV<sub>1</sub> responses following 6.6 hours of exposure to 60 and 80 ppb average O<sub>3</sub> exposures do not differ between triangular (*i.e.* ramping concentration up and down) and square-wave (*i.e.* constant concentration). Schelegle et al. (2009) used the 80 ppb triangular protocol and a slightly modified 60 ppb triangular protocol (concentrations during the third and fourth hours were reversed) from Adams (2006). Therefore, in considering pre- to post-exposure changes in lung function, concerns about the hour-by-hour changes in O<sub>3</sub> concentrations at 60 and 80 ppb in the Schelegle et al. (2009) study are unfounded.

Finally, some commenters also stated that the Kim et al. (2011) study is missing critical information and its study design makes comparison to the other studies difficult. That is, the commenter suggests that data at times other than pre- and post-exposure should have been provided.

The EPA disagrees with this comment. With regard to providing data at other time points besides pre- and post-exposure, there is no standard that suggests an appropriate frequency at which lung function should be measured in prolonged 6.6-hour exposure studies. The Adams (2006) study showed that lung function decrements during O<sub>3</sub> exposures with moderate exercise become most apparent following the third hour of exposure. As such, it makes little sense to measure lung function during the first couple hours of exposure. However, having data at multiple time points toward the end of an exposure can provide evidence that the mean post-exposure FEV<sub>1</sub> response is not a single anomalous data point. The FEV<sub>1</sub> response data for the 3-, 4.6-, 5.6-, and 6.6-hour time points of the Kim et al. (2011) study are available in Figure 6 of the McDonnell et al. (2012) paper where they are plotted with the Adams (2006) data for 60 ppb. Similar to the Adams (2006) study, the responses at 5.6 hours are only marginally smaller than the response at 6.6 hours in the Kim et al. (2011) study. This indicates that the post-exposure FEV<sub>1</sub> responses in both studies are consistent with responses at an earlier time point and thus not likely to be anomalous data.

<sup>93</sup> Exercise consisted of alternating periods walking on a treadmill at a pace of 17–18 minutes per mile inclined to a grade of 4–5% or cycling at a load of about 72 watts. Typical heart rates during the exercise periods were between 115–130 beats per minute. This activity level is considered moderate (Table 6–1, U.S. EPA, 2013, p. 6–18).

### Additional Studies

Several commenters analyzed the data from controlled human exposure studies, or they commented on the EPA's analysis of the data from some of these studies (Brown et al., 2008), to come to a different conclusion than the EPA's interpretation of these studies thereby questioning the proposed decision that the current standard is not adequate to protect public health. One commenter submitted an independent assessment of the scientific evidence and risk, and used this analysis to assert that there are multiple flaws in the underlying studies and their interpretation by the EPA. This commenter stated that the EPA's discussion of the spirometric responses of children and adolescents and older adults to O<sub>3</sub> was misleading. They claimed that the EPA did not mention that "the responses of children and adolescents are equivalent to those of young adults (18–35 years old; McDonnell et al., 1985) and that this response diminishes in middle-aged and older adults (Hazucha 1985)." The EPA notes that the commenter misrepresented our characterization of the effect of age on FEV<sub>1</sub> responses to O<sub>3</sub> and asserted mistakenly that EPA did not mention diminished responses on older adults. In fact, the proposal clearly states that, "Respiratory symptom responses to O<sub>3</sub> exposure appears to increase with age until early adulthood and then gradually decrease with increasing age (U.S. EPA, 1996b); lung function responses to O<sub>3</sub> exposure also decline from early adulthood (U.S. EPA, 1996b)" (79 FR 75267) (see also U.S. EPA, 2014c p. 3–82). With regard to differences between children and adults, it was clearly stated in the ISA (U.S. EPA, 2013, p. 6–21) that healthy children exposed to filtered air and 120 ppb O<sub>3</sub> experienced similar spirometric responses, but lesser symptoms than similarly exposed young healthy adults (McDonnell et al., 1985). In addition, the EPA's approach to modeling the effect of age on responses to O<sub>3</sub> is clearly provided in the HREA (U.S. EPA, 2014a, Table 6–2).

The commenter also stated that the EPA's treatment of filtered air responses in the dose-response curve was incorrect. They claimed that when creating a dose-response curve, it is most appropriate to include a zero-dose point and not to subtract the filtered air response from responses to O<sub>3</sub>. Contrary to this assertion, EPA correctly adjusted FEV<sub>1</sub> responses to O<sub>3</sub> by responses following filtered air, as was also done in the McDonnell et al. (2012) model. As indicated in the ISA (U.S. EPA, 2013, p.

6–4), the majority of controlled human exposure studies investigating the effects O<sub>3</sub> are of a randomized, controlled, crossover design in which subjects were exposed, without knowledge of the exposure condition and in random order, to clean filtered air and, depending on the study, to one or more O<sub>3</sub> concentrations. The filtered air control exposure provides an unbiased estimate of the effects of the experimental procedures on the outcome(s) of interest. Comparison of responses following this filtered air exposure to those following an O<sub>3</sub> exposure allows for estimation of the effects of O<sub>3</sub> itself on an outcome measurement while controlling for independent effects of the experimental procedures, such as ventilation rate. Thus, the commenter's approach does not provide an estimate of the effects of O<sub>3</sub> alone. Furthermore, as illustrated in these comments, following "long" filtered air exposures, there is about a 1% improvement in FEV<sub>1</sub>. By not accounting for this increase in FEV<sub>1</sub>, the commenter underestimated the FEV<sub>1</sub> decrement due to O<sub>3</sub> exposure. The commenter's approach thus is fundamentally flawed.

The commenter also asserted that the McDonnell et al. (2012) model and exposure-response (E–R) models incorrectly used only the most responsive people and that EPA's reliance on data from clinical trials that use only the most responsive people irrationally ignores large portions of relevant data. The EPA rejects this assertion that the McDonnell et al. (2012) model and the E–R analysis ignored large portions of relevant data. The McDonnell et al. (2012) model was fit to the FEV<sub>1</sub> responses of 741 individuals to O<sub>3</sub> and filtered air (*i.e.*, reflecting all available data for O<sub>3</sub>-induced changes in FEV<sub>1</sub>). The filtered air responses were subtracted from responses measured during O<sub>3</sub> exposures. Subsequently, as illustrated by the figures in the McDonnell et al. (2012) paper and described in the text of paper, the model was fit to all available FEV<sub>1</sub> data measured during the course of O<sub>3</sub> exposures, including exposures shorter than 6.6 hours. Thus, the model predicts temporal dynamics of FEV<sub>1</sub> response to any set of O<sub>3</sub> exposure conditions that might reasonably be experienced in the ambient environment, predicting the mean responses and the distribution of responses around the mean. For the HREA (EPA, 2014a), the proportion of individuals, under variable exposure conditions, predicted to have FEV<sub>1</sub>

decrements  $\geq 10$ , 15 and 20% was estimated.

Finally, the commenter referenced the exposure-response model on p. 6–18 of the HREA. However, they neglected to note that this was in a section describing the exposure-response function approach used in prior reviews (U.S. EPA, 2014a, starting on p. 6–17). Thus, the commenter confused the exposure-response model used in the last review with the updated approach used in this review.

The commenter also stated that EPA did not properly consider O<sub>3</sub> dose when interpreting the human clinical data. Ozone total dose includes three factors: duration of exposure, concentration, and ventilation rate. The commenter claimed the EPA emphasized only concentration without properly considering and communicating duration of exposure and ventilation rate. Further, they asserted that because people are not exposed to the same dose, they cannot be judged to have the same exposure and would therefore not be expected to respond consistently. The EPA rejects the claim that we emphasized only concentration without properly incorporating the other two factors. As noted in the ISA, total O<sub>3</sub> dose does not describe the temporal dynamics of FEV<sub>1</sub> responses as a function of concentration, ventilation rate, time and age of the exposed individuals (U.S. EPA, 2013, p. 6–5). Thus, the use of total O<sub>3</sub> dose is antiquated and the EPA therefore conducted a more sophisticated analysis of FEV<sub>1</sub> response to O<sub>3</sub> in the HREA. In this review, the HREA estimates risks of lung function decrements in school-aged children (ages 5 to 18), asthmatic school-aged children, and the general adult population for 15 urban study areas. A probabilistic model designed to account for the numerous sources of variability that affect people's exposures was used to simulate the movement of individuals through time and space and to estimate their exposure to O<sub>3</sub> while occupying indoor, outdoor, and in-vehicle locations. That information was linked with the McDonnell et al. (2012) model to estimate FEV<sub>1</sub> responses over time as O<sub>3</sub> exposure concentrations and ventilation rates changed. As noted earlier, CASAC agreed that this approach is both scientifically valid and a significant improvement over approaches used in past O<sub>3</sub> reviews (Frey, 2014a, p. 2).

Several commenters criticized the EPA analysis published by Brown et al. (2008). One commenter suggested that the EPA needed to state why the Brown et al. (2008) analysis was relied on rather than Nicolich (2007) or Lefohn et

al. (2010). Further, commenters stated that the analysis of the Adams (2006) data in Brown et al. (2008) was flawed. Among other reasons, one commenter expressed the opinion that it was not appropriate for Brown et al. (2008) to only examine a portion of the Adams (2006) data, citing comments submitted by Gradient.

The EPA disagrees with these commenters.<sup>94</sup> As an initial matter, Nicolich (2007) was a public comment and is not a peer-reviewed publication that would be used to assess the scientific evidence for effects of O<sub>3</sub> on lung function in the ISA (U.S. EPA, 2013). The Nicolich (2007) comments were specifically addressed by the EPA on pp. 24–25 in the Response to Comments Document for the 2007 proposed rule (U.S. EPA, 2008). On page A–3 of his comments, Dr. Nicolich stated “that the residuals are not normally distributed and the observations do not meet the assumptions required for the model” and that “the subject-based errors are not independently, identically and normally distributed and the subjects do not meet the assumptions required for the model.” The EPA reasonably chose not to rely on this analysis: “Therefore, given that the underlying statistical assumptions required for his analyses were not met and that significance levels are questionable, in EPA’s judgment the analyses presented by Dr. Nicolich are ambiguous” (U.S. EPA, 2008). It is likely that the Lefohn et al. (2010) analysis of the Adams (2006) data would similarly not meet the statistical assumptions of the model (*e.g.*, homoscedasticity). In contrast, recognizing the concerns related to the distribution of responses, Brown et al. (2008) conservatively used a nonparametric sign test to obtain a *p*-value of 0.002 for the comparison responses following 60 ppb O<sub>3</sub> versus filter air. Other common statistical tests also showed significant effects on lung function. In addition, the effects of 60 ppb O<sub>3</sub> on FEV<sub>1</sub> responses in Brown et al. (2008) remained statistically significant even following the exclusion of three potential outliers.

EPA disagrees with the comment stating that it was not appropriate for Brown et al. (2008) to only examine a portion of the Adams (2006) data. In

fact, there is no established single manner or protocol decreeing that data throughout the protocol must be analyzed and included. Furthermore, Brown et al. (2008) was a peer-reviewed journal publication. CASAC also expressed favorable comments in their March 30, 2011, letter to Administrator Jackson. With reference to a memorandum (Brown, 2007) that preceded the Brown et al. (2008) publication, on p. 6 of the CASAC Consensus Responses to Charge Questions CASAC stated, “The results of the Adams et al. study also have been carefully reanalyzed by EPA investigators (Brown et al., [2008]), and this reanalysis showed a statistically significant group effect on FEV<sub>1</sub> after 60 ppb ozone exposure.” On p. A–13, a CASAC panelist and biostatistician stated, “Thus, from my understanding of the statistical analyses that have been conducted, I would argue that the analysis by EPA should be preferred to that of Adams for the specific comparison of the FEV<sub>1</sub> effects of 0.06 ppm exposure relative to filtered air exposure.” (Samet 2011, p. a-13)

#### Threshold

Several commenters used the new McDonnell et al. (2012) and Schelegle et al. (2012) models to support their views about the O<sub>3</sub> concentrations associated with a threshold for adverse lung function decrements. For example, one commenter who supported retaining the current standard noted that McDonnell et al. (2012) found that the threshold model fit the observed data better than the original (no-threshold) model, especially at earlier time points and at the lowest exposure concentrations. The commenter expressed the view that the threshold model showed that the population mean FEV<sub>1</sub> decrement did not reach 10% until exposures were at least 80 ppb, indicating that O<sub>3</sub> exposures of 80 ppb or higher may cause lung function decrements and other respiratory effects.<sup>95</sup>

As described above in section II.A.1.b, the McDonnell et al. (2012) and Schelegle et al. (2012) models represent a significant technological advance in the exposure-response modeling approach since the last review, and these models indicate that a dose-threshold model fits the data better than a non-threshold model. However, the

EPA disagrees that using the predicted group mean response from the McDonnell model provides support for retaining the current standard. As discussed above, the group mean responses do not convey information about interindividual variability, or the proportion of the population estimated to experience the larger lung function decrements (*e.g.*, 10 or 15% FEV<sub>1</sub> decrements) that could be adverse. In fact, it masks this variability. These variable effects in individuals have been found to be reproducible. In other words, a person who has a large lung function response after exposure to O<sub>3</sub> will likely have about the same response if exposed again in a similar manner (raising health concerns, as noted above). Group mean responses are not representative of this segment of the population that has much larger than average responses to O<sub>3</sub>.

#### Inflammation

Some commenters asserted that the pulmonary inflammation observed following exposure to 60 ppb in the controlled human exposure study by Kim et al. (2011) was small and unlikely to result in airway damage. It was also suggested that this inflammation is a normal physiological response in all living organisms to stimuli to which people are normally exposed.

The EPA recognized in the proposal (79 FR 75252) and the ISA (U.S. EPA, 2013, p. 6–76) that inflammation induced by a single exposure (or several exposures over the course of a summer) can resolve entirely. Thus, the inflammatory response observed following the single exposure to 60 ppb in the study by Kim et al. (2011) is not necessarily a concern. However, the EPA notes that it is also important to consider the potential for continued acute inflammatory responses to evolve into a chronic inflammatory state and to affect the structure and function of the lung.<sup>96</sup> The Administrator considers this possibility through her consideration of estimated exposures of concern for the 60 ppb benchmark (II.B.3, II.C.4). As discussed in detail below (II.C.4.b), while she judges that there is uncertainty in the adversity of the effects shown to occur following exposures to 60 ppb O<sub>3</sub>, including the inflammation reported by Kim et al.

<sup>94</sup> The DC Circuit has held that EPA reasonably used and interpreted the Brown (2007) study in the last review. *Mississippi*, 744 F. 3d at 1347. In this review, there is now additional corroborative evidence supporting the Brown (2007) analysis, in the form of further controlled human clinical studies finding health effects in young, healthy adults at moderate exercise at O<sub>3</sub> concentrations of 60 ppb over a 6.6 hour exposure period.

<sup>95</sup> Conversely, another group of commenters who supported revising the standard to a level of 60 ppb noted that the results of these models are consistent with the results of controlled human exposure studies finding adverse health effects at 60 ppb. These comments are discussed below (II.C.4.b), within the context of the Administrator’s decision on a revised standard level.

<sup>96</sup> Inflammation induced by exposure of humans to O<sub>3</sub> can have several potential outcomes, ranging from resolving entirely following a single exposure to becoming a chronic inflammatory state (U.S. EPA, 2013, section 6.2.3). Lung injury and the resulting inflammation provide a mechanism by which O<sub>3</sub> may cause other more serious morbidity effects (*e.g.*, asthma exacerbations) (U.S. EPA, 2013, section 6.2.3). See generally section II.A.1.a above.

(2011), she gives some consideration to estimates of two or more exposures of concern for the 60 ppb benchmark (*i.e.*, as a health-protective surrogate for repeated exposures of concern at or above 60 ppb), particularly when considering the extent to which the current and revised standards incorporate a margin of safety.

ii. Evidence From epidemiologic studies

This section discusses key comments on the EPA's assessment of the epidemiologic evidence and provides the Agency's responses to those comments. The focus in this section is on overarching comments related to the EPA's approach to assessing and interpreting the epidemiologic evidence as a whole. Detailed comments on specific studies, or specific methodological or technical issues, are addressed in the Response to Comments document. As discussed above, many of the issues and concerns raised by commenters on the interpretation of the epidemiologic evidence are essentially restatements of issues raised during the development of the ISA, HREA, and/or PA, and in many instances were considered by CASAC in the development of its advice on the current standard. The EPA's responses to these comments rely heavily on the process established in the ISA for assessing the evidence, and on CASAC advice received as part of this review of the O<sub>3</sub> NAAQS.

As with evidence from controlled human exposure studies, commenters expressed sharply divergent views on the evidence from epidemiologic studies, and on the EPA's interpretation of that evidence. One group of commenters, representing medical, public health and environmental organizations, and some states, generally supported the EPA's interpretation of the epidemiologic evidence with regard to the consistency of associations, the coherence with other lines of evidence, and the support provided by epidemiologic studies for the causality determinations in the ISA. These commenters asserted that the epidemiologic studies evaluated in the ISA provide valuable information supporting the need to revise the level of the current primary O<sub>3</sub> standard in order to increase public health protection. In reaching this conclusion, commenters often cited studies (including a number from the past review) which they interpreted as showing health effect associations in locations with O<sub>3</sub> air quality concentrations below the level of the current standard. A second group of commenters, mostly representing

industry associations, businesses, and states opposed to revising the primary O<sub>3</sub> standard, expressed the general view that while many new epidemiologic studies have been published since the last review of the O<sub>3</sub> NAAQS, inconsistencies and uncertainties inherent in these studies as a whole, and in the EPA's assessment of study results, should preclude any reliance on them as justification for a more stringent primary O<sub>3</sub> standard. To support their views, these commenters often focused on specific technical or methodological issues that contribute to uncertainty in epidemiologic studies, including the potential for exposure error, confounding by copollutants and by other factors (*e.g.*, weather, season, disease, day of week, etc.), and heterogeneity in results across locations.

The EPA agrees with certain aspects of each of these views. Specifically, while the EPA agrees that epidemiologic studies are an important part of the broader body of evidence that supports the ISA's causality determinations, and that these studies provide support for the decision to revise the current primary O<sub>3</sub> standard, the Agency also acknowledges that there are important uncertainties and limitations associated with these epidemiologic studies that should be considered when reaching decisions on the current standard. Thus, although these studies show consistent associations between O<sub>3</sub> exposures and serious health effects, including morbidity and mortality, and some of these studies reported such associations with ambient O<sub>3</sub> concentrations below the level of the current standard, there are also uncertainties regarding the ambient O<sub>3</sub> concentrations in critical studies, such that they lend only limited support to establishing a specific level for a revised standard. (See generally, *Mississippi*, 744 F. 3d at 1351 (noting that in prior review, EPA reasonably relied on epidemiologic information in determining to revise the standard but appropriately gave the information limited weight in determining a level of a revised standard); see also *ATA III*, 283 F. 3d at 370 (EPA justified in revising NAAQS when health effect associations are observed in epidemiologic studies at levels allowed by the current NAAQS); *Mississippi*, 744 F. 3d at 1345 (same)).

Uncertainties in the evidence were considered by the Administrator in the proposal, and contributed to her decision to place less weight on information from epidemiologic studies than on information from controlled human exposure studies when considering the adequacy of the current primary O<sub>3</sub> standard (see 79 FR 75281–

83). Despite receiving less weight in the proposal, the EPA does not agree with commenters who asserted that uncertainties in the epidemiologic evidence provide a basis for concluding that the current primary standard does not need revision. The Administrator specifically considered the extent to which available studies support the occurrence of O<sub>3</sub> health effect associations with air quality likely to be allowed by the current standard, while also considering the implications of important uncertainties, as assessed in the ISA and discussed in the PA. This consideration is consistent with CASAC comments on consideration of these studies in the draft PA (Frey, 2014c, p. 5).

Based on analyses of study area air quality in the PA, the EPA notes that most of the U.S. and Canadian epidemiologic studies evaluated were conducted in locations likely to have violated the current standard over at least part of the study period. Although these studies support the ISA's causality determinations, they provide limited insight into the adequacy of the public health protection provided by the current primary O<sub>3</sub> standard. However, as discussed in the proposal, air quality analyses in the locations of three U.S. single-city studies provide support for the occurrence of O<sub>3</sub>-associated hospital admissions or emergency department visits at ambient O<sub>3</sub> concentrations below the level of the current standard.<sup>97</sup> Specifically, a U.S. single-city study reported associations with respiratory emergency department visits in children and adults in a location that would have met the current O<sub>3</sub> standard over the entire study period (Mar and Koenig, 2009). In addition, for two studies conducted in locations where the current standard was likely not met (*i.e.*, Silverman and Ito, 2010; Strickland et al., 2010), PA analyses indicate that reported concentration-response functions and available air quality data support the occurrence of O<sub>3</sub>-health effect associations on subsets of days with virtually all monitored ambient O<sub>3</sub> concentrations below the level of the current standard (U.S. EPA, 2014c,

<sup>97</sup> As discussed in section II.E.4.d of the proposal, is the Administrator noted the greater uncertainty in using analyses of short-term O<sub>3</sub> air quality in locations of the multicity studies in this review to inform decisions on the primary O<sub>3</sub> standard. This is because the health information in these studies cannot be disaggregated by individual city. Thus, the multicity effect estimates reported in these studies do not provide clear indication of the extent to which health effects are associated with the ambient O<sub>3</sub> concentrations in the study locations that met the current O<sub>3</sub> standard, versus the ambient O<sub>3</sub> concentrations in the study locations that violated the standard.

section 3.1.4.2, pp. 3–66 to 67).<sup>98</sup> Thus, the EPA notes that a small number of O<sub>3</sub> epidemiologic studies provide support for the conclusion that the current primary standard is not requisite, and that it should be revised to increase public health protection.

As part of a larger set of comments criticizing the EPA's interpretation of the evidence from time series epidemiologic studies, some commenters objected to the EPA's reliance on the studies by Strickland et al. (2010), Silverman and Ito (2010), and Mar and Koenig (2009). These commenters highlighted what they considered to be key uncertainties in interpreting these studies, including uncertainties due to the potential for confounding by co-pollutants, aeroallergens, or the presence of upper respiratory infections; and uncertainties in the interpretation of zero-day lag models (*i.e.*, specifically for Mar and Koenig, 2009).

While the EPA agrees that there are uncertainties associated with interpreting the O<sub>3</sub> epidemiologic evidence, as discussed above and elsewhere in this preamble, we disagree with commenters' assertion that these uncertainties should preclude the use of the O<sub>3</sub> epidemiologic evidence in general, or the studies by Silverman and Ito, Strickland, or Mar and Koenig in particular, as part of the basis for the Administrator's decision to revise the current primary standard. As a general point, when considering the potential importance of uncertainties in epidemiologic studies, we rely on the broader body of evidence, not restricted to these three studies, and the ISA conclusions based on this evidence. The evidence, the ISA's interpretation of specific studies, and the use of information from these studies in the HREA and PA, was considered by CASAC in its review of drafts of the ISA, HREA, and PA. Based on the assessment of the evidence in the ISA, and CASAC's endorsement of the ISA conclusions, as well as CASAC's endorsement of the approaches to using and considering information from epidemiologic studies in the HREA and

PA (Frey, 2014c, p. 5), we do not agree with these commenters' conclusions regarding the usefulness of the epidemiologic studies by Strickland et al. (2010), Silverman and Ito (2010), and Mar and Koenig (2009).

More specifically, with regard to confounding by co-pollutants, we note the ISA conclusion that, in studies of O<sub>3</sub>-associated hospital admissions and emergency department visits "O<sub>3</sub> effect estimates remained relatively robust upon the inclusion of PM<sub>10</sub> and gaseous pollutants in two-pollutant models" (U.S. EPA, 2013, pp. 6–152 and 6–153). This conclusion was supported by several studies that evaluated co-pollutant models including, but not limited to, two of the studies specifically highlighted by commenters (*i.e.*, Silverman and Ito, 2010; Strickland et al., 2010) (U.S. EPA, 2013, section 6.2.7.5; Figure 6–20 and Table 6–29).

Other potential uncertainties highlighted by commenters have been evaluated less frequently (*e.g.*, confounding by allergen exposure, respiratory infections). However, we note that Strickland et al. (2010) did consider the potential for pollen (a common airborne allergen) to confound the association between ambient O<sub>3</sub> and emergency department visits. While quantitative results were not presented, the authors reported that "estimates for associations between ambient air pollutant concentrations and pediatric asthma emergency department visits were similar regardless of whether pollen concentrations were included in the model as covariates" (Strickland et al., 2010, p. 309). This suggests a limited impact of aeroallergens on O<sub>3</sub> associations with asthma-related emergency department visits and hospital admissions.

With respect to the comment about epidemiologic studies not controlling for respiratory infections in the model, the EPA disagrees with the commenter's assertion. We recognize that asthma is a multi-etiological disease and that air pollutants, including O<sub>3</sub>, represent only one potential avenue to trigger an asthma exacerbation. Strickland et al. attempted to further clarify the relationship between short-term O<sub>3</sub> exposures and asthma emergency department visits by controlling for the possibility that respiratory infections may lead to an asthma exacerbation. By including the daily count of upper respiratory visits as a covariate in the model, Strickland et al. were able to account for the possibility that respiratory infections contribute to the daily counts of asthma emergency department visits, and to identify the O<sub>3</sub> effect on asthma emergency department

visits. In models that controlled for upper respiratory infection visits, associations between O<sub>3</sub> and emergency department visits remained statistically significant (Strickland et al., Table 4 in published study), demonstrating a relatively limited influence of respiratory infections on the association observed between short-term O<sub>3</sub> exposures and asthma emergency department visits, contrary to the commenter's claim.

In addition, with regard to the criticism of the results reported by Mar and Koenig, the EPA disagrees with commenters who questioned the appropriateness of a zero-day lag. These commenters specifically noted uncertainty in the relative timing of the O<sub>3</sub> exposure and the emergency department visit when they occurred on the same day. However, based on the broader body of evidence the ISA concludes that the strongest support is for a relatively immediate respiratory response following O<sub>3</sub> exposures. Specifically, the ISA states that "[t]he collective evidence indicates a rather immediate response within the first few days of O<sub>3</sub> exposure (*i.e.*, for lags days averaged at 0–1, 0–2, and 0–3 days) for hospital admissions and [emergency department] visits for all respiratory outcomes, asthma, and chronic obstructive pulmonary disease in all-year and seasonal analyses" (U.S. EPA, 2013, p. 2–32). Thus, the use of a zero-day lag is consistent with the broader body of evidence supporting the occurrence of O<sub>3</sub>-associated health effects. In addition, while Mar and Koenig reported the strongest associations for zero-day lags, they also reported positive associations for lags ranging from zero to five days (Mar and Koenig, 2009, Table 5 in the published study). In considering this study, the ISA stated that Mar and Koenig (2009) "found consistent positive associations across individual lag days" and that "[f]or children, consistent positive associations were observed across all lags . . . with the strongest associations observed at lag 0 (33.1% [95% CI: 3.0, 68.5]) and lag 3 (36.8% [95% CI: 6.1, 77.2])" (U.S. EPA, 2013, p. 6–150). Given support for a relatively immediate response to O<sub>3</sub> and given the generally consistent results in analyses using various lags, we disagree with commenters who asserted that the use of a zero-day lag represents an important uncertainty in the interpretation of the study by Mar and Koenig (2009).

Given all of the above, we do not agree with commenters who asserted that uncertainties in the epidemiologic evidence in general, or in specific key studies, should preclude the

<sup>98</sup> Air quality analyses in locations of the studies by Silverman and Ito (2010) and Strickland et al. (2010) were used in the PA to inform staff conclusions on the adequacy of the current primary O<sub>3</sub> standard. However, the appropriate interpretation of these analyses became less clear for standard levels below 75 ppb, as the number of days increased with monitored concentrations exceeding the level being evaluated (U.S. EPA, 2014c, Appendix 3B, Tables 3B–6 and 3B–7). Therefore, these analyses were not used in the PA to inform conclusions on potential alternative standard levels lower than 75 ppb (U.S. EPA, 2014c, Chapters 3 and 4).

Administrator from relying on those studies to inform her decisions on the primary O<sub>3</sub> standard.

Some commenters also objected to the characterization in the ISA and the proposal that the results of epidemiologic studies are consistent. These commenters contended that the purported consistency of results across epidemiologic studies is the result of inappropriate selectivity on the part of the EPA in focusing on specific studies and specific results within those studies. In particular, commenters contend that EPA favors studies that show positive associations and selectively ignores certain studies that report null results. They also cite a study published after the completion of the ISA (Goodman et al., 2013) suggesting that, in papers where the results of more than one statistical model are reported, the EPA tends to report the results with the strongest associations.

The EPA disagrees that it has inappropriately focused on specific positive studies or specific positive results within individual studies. The ISA appropriately builds upon the assessment of the scientific evidence presented in previous AQCDs and ISAs.<sup>99</sup> When evaluating new literature, “[s]election of studies for inclusion in the ISA is based on the general scientific quality of the study, and consideration of the extent to which the study is informative and policy-relevant” (U.S. EPA, 2013, p. liii). In addition, “the intent of the ISA is to provide a concise review, synthesis, and evaluation of the most policy-relevant science to serve as a scientific foundation for the review of the NAAQS, not extensive summaries of all health, ecological and welfare effects studies for a pollutant” (U.S. EPA, 2013, p. lv). Therefore, not all studies published since the previous review would be appropriate for inclusion in the ISA.<sup>100</sup> With regard to the specific

studies that are included in the ISA, and the analyses focused upon within given studies, the EPA notes that the ISA undergoes extensive peer review in a public setting by the CASAC. This process provides ample opportunity for CASAC and the public to comment on studies not included in the ISA, and on the specific analyses focused upon within individual studies. In endorsing the final O<sub>3</sub> ISA as adequate for rule-making purposes, CASAC agreed with the selection and presentation of analyses on which to base the ISA’s key conclusions.

### iii. Evidence Pertaining to At-Risk Populations and Lifestyles

A number of groups submitted comments on the EPA’s identification of at-risk populations and lifestyles. Some industry commenters who opposed revising the current standard disagreed with the EPA’s identification of people with asthma or other respiratory diseases as an at-risk population for O<sub>3</sub>-attributable effects, citing controlled human exposure studies that did not report larger O<sub>3</sub>-induced FEV<sub>1</sub> decrements in people with asthma than in people without asthma. In contrast, comments from medical, environmental, and public health groups generally agreed with the at-risk populations identified by EPA, and also identified other populations that they stated should be considered at risk, including people of lower socio-economic status, people with diabetes or who are obese, pregnant women (due to reproductive and developmental effects, and African American, Asian, Hispanic/Latino or tribal communities. As support for the additional populations, these commenters cited various studies, including some that were not included in the ISA (which we have provisionally considered, as described in section I.C above).

With regard to the former group of comments stating that the evidence does not support the identification of asthmatics as an at-risk population, we disagree. As summarized in the proposal, the EPA’s identification of populations at risk of O<sub>3</sub> effects is based on a systematic approach that assesses the current scientific evidence across the relevant scientific disciplines (*i.e.*, exposure sciences, dosimetry, controlled human exposure, toxicology, and epidemiology), with a focus on studies that conducted stratified analyses allowing for an evaluation of different populations exposed to similar

epidemiologic evidence, and most certainly did not select merely studies favorable to the point of view of revising the current standard.

O<sub>3</sub> concentrations within the same study design (U.S. EPA, 2013, pp. 8–1 to 8–3). Based on this established process and framework, the ISA identifies individuals with asthma among the populations and lifestages for which there is “adequate” evidence to support the conclusion of increased risk of O<sub>3</sub>-related health effects. Other populations for which the evidence is adequate are individuals with certain genotypes, younger and older age groups, individuals with reduced intake of certain nutrients, and outdoor workers. These conclusions are based on consistency in findings across studies and evidence of coherence in results from different scientific disciplines.

For example, with regard to people with asthma, the ISA notes a number of epidemiologic and controlled human exposure studies reporting larger and/or more serious effects in people with asthma than in people without asthma or other respiratory diseases. These include epidemiologic studies of lung function, respiratory symptoms, and medication use, as well as controlled human exposure studies showing larger inflammatory responses and markers indicating altered immune functioning in people with asthma, and also includes evidence from animal models of asthma that informs the EPA’s interpretation of the other studies. We disagree with the industry commenters’ focus solely on the results of certain studies without an integrated consideration of the broader body of evidence, and wider range of respiratory endpoints. It is such an integrated approach that supports EPA’s conclusion that “there is adequate evidence for asthmatics to be an at-risk population” (U.S. EPA, 2013, section 8.2.2).

We also disagree with commenters’ misleading reference to various studies cited to support the claim that asthmatics are not at increased risk of O<sub>3</sub>-related health effects. One of the controlled human studies cited in those comments (Mudway et al. 2001) involved asthmatic adults who were older than the healthy controls, and it is well-recognized that responses to O<sub>3</sub> decrease with age (U.S. EPA, 2014c, p. 3–80). Another study (Alexis et al. 2000) used subjects with mild asthma who are unlikely to be as responsive as people with more severe disease (Horstman et al., 1995) (EPA 2014c, p. 3–80). Controlled human exposure studies and epidemiologic studies of adults and children amply confirm that “there is adequate evidence for asthmatics to be an at-risk population” (U.S. EPA, 2014c, p. 3–81).

<sup>99</sup>Cf. *Coalition for Responsible Regulation v. EPA*, 684 F. 3d 102, 119 (D.C. Cir. 2012) (aff’d in part and rev’d in part on other grounds sub. nom. *UARG v. EPA*, S Ct. (2014)) (“EPA simply did here what it and other decision-makers often must do to make a science-based judgment: it sought out and reviewed existing scientific evidence to determine whether a particular finding was warranted. It makes no difference that much of the scientific evidence in large part consisted of ‘syntheses’ of individual studies and research. Even individual studies and research papers often synthesize past work in an area and then build upon it. That is how science works”).

<sup>100</sup>See also section II.C.4.b below responding to comments from environmental interests that EPA inappropriately omitted many studies which (in their view) support establishing a revised standard at a level of 60 ppb or lower. Although, as explained there, the EPA disagrees with these comments, the comments illustrate that the EPA was even-handed in its consideration of the

We also do not agree with the latter group of commenters that there is sufficient evidence to support the identification of additional populations as at risk of O<sub>3</sub>-attributable health effects. Specifically with regard to pregnant women, the ISA concluded that the “evidence is suggestive of a causal relationship between exposures to O<sub>3</sub> and reproductive and developmental effects” including birth outcomes, noting that “the collective evidence for many of the birth outcomes examined is generally inconsistent” (U.S. EPA, 2013, pp. 7–74 and 7–75). At the time of the completion of the ISA, no studies had been identified that examined the relationship between exposure to O<sub>3</sub> and the health of pregnant women (*e.g.*, studies on pre-eclampsia, gestational hypertension). Due to the generally inconsistent epidemiologic evidence for effects on birth outcomes, the lack of studies on the health of pregnant women, and the lack of studies from other disciplines to provide biological plausibility for the effects examined in epidemiologic studies, pregnant women were not considered an at-risk population. Based on the EPA’s provisional consideration of studies published since the completion of the ISA (I.C, above), recent studies that examine exposure to O<sub>3</sub> and pre-eclampsia and other health effects experienced by pregnant women are not sufficient to materially change the ISA’s conclusions on at-risk populations (I.C, above). In addition, as summarized in the proposal, the ISA concluded that the evidence for other populations was either suggestive of increased risk, with further investigation needed (*e.g.*, other genetic variants, obesity, sex, and socioeconomic status), or was inadequate to determine if they were of increased risk of O<sub>3</sub>-related health effects (influenza/infection, COPD, CVD, diabetes, hyperthyroidism, smoking, race/ethnicity, and air conditioning use) (U.S. EPA, 2013, section 2.5.4.1). The CASAC has concurred with the ISA conclusions (Frey, 2014c).

#### c. Comments on Exposure and Risk Assessments

This section discusses major comments on the EPA’s quantitative assessments of O<sub>3</sub> exposures and health risks, presented in the HREA and considered in the PA, and the EPA’s responses to those comments. The focus in this section is on overarching comments related to the EPA’s approach to assessing exposures and risks, and to interpreting the exposure/risk results within the context of the adequacy of the current primary O<sub>3</sub> standard. More

detailed discussion of comments and Agency responses is provided in the Response to Comments document. Section II.B.2.c.i discusses comments on estimates of O<sub>3</sub> exposures of concern, section II.B.2.c.ii discusses comments on estimates of the risk of O<sub>3</sub>-induced lung function decrements, and section II.B.2.b.iii discusses comments on estimates of the risk of O<sub>3</sub>-associated mortality and morbidity.

#### i. O<sub>3</sub> Exposures of Concern

The EPA received a number of comments expressing divergent views on the estimation of, and interpretation of, O<sub>3</sub> exposures of concern. In general, comments from industry, business, and some state groups opposed to revising the current primary O<sub>3</sub> standard asserted that the approaches and assumptions that went into the HREA assessment result in overestimates of O<sub>3</sub> exposures. These commenters highlighted several aspects of the assessment, asserting that the HREA overestimates the proportion of the population expected to achieve ventilation rates high enough to experience an exposure of concern; that the use of out-of-date information on activity patterns results in overestimates of the amount of time people spend being active outdoors; and that exposure estimates do not account for the fact that people spend more time indoors on days with bad air quality (*i.e.*, they engage in averting behavior). In contrast, comments from medical, public health, and environmental groups that supported revision of the current standard asserted that the HREA assessment of exposures of concern, and the EPA’s interpretation of exposure estimates, understates the potential for O<sub>3</sub> exposures that could cause adverse health effects. These commenters claimed that the EPA’s focus on 8-hour exposures understates the O<sub>3</sub> impacts on public health since effects in controlled human exposure studies were shown following 6.6-hour exposures; that the HREA exposure estimates do not capture the most highly exposed populations, such as highly active children and outdoor workers; and that the EPA’s interpretation of estimated exposures of concern impermissibly relies on the assumption that people stay indoors to avoid dangerous air pollution (*i.e.*, that they engage in averting behavior).

In considering these comments, the EPA first notes that as discussed in the HREA, PA, and the proposal, there are aspects of the exposure assessment that, considered by themselves, can result in either overestimates or underestimates of the occurrence of O<sub>3</sub> exposures of

concern. Commenters tended to highlight the aspects of the assessment that supported their positions, including aspects that were discussed in the HREA and/or the PA and that were considered by CASAC. In contrast, commenters tended to ignore the aspects of the assessment that did not support their positions. The EPA has carefully described and assessed the significance of the various uncertainties in the exposure analysis (U.S. EPA, 2014a, Table 5–10), noting that, in most instances, the uncertainties could result in either overestimates or underestimates of exposures and that the magnitudes of the impacts on exposure results were either “low,” “low to moderate,” or “moderate” (U.S. EPA, 2014a, Table 5–10).

Consistent with the characterization of uncertainties in the HREA, PA, and the proposal, the EPA agrees with some, though not all, aspects of these commenters’ views. For example, the EPA agrees with the comment by groups opposed to revision that the equivalent ventilation rate (EVR) used to characterize individuals as at moderate or greater exertion in the HREA likely leads to overestimates of the number of individuals experiencing exposures of concern (U.S. EPA, 2014a, Table 5–10, p. 5–79). In addition, we note that other physiological processes that are incorporated into exposure estimates are also identified in the HREA as likely leading to overestimates of O<sub>3</sub> exposures, based on comparisons with the available scientific literature (U.S. EPA, 2014a, Table 5–10, p. 5–79). These aspects of the exposure assessment are estimated to have either a “moderate” (*i.e.*, EVR) or a “low to moderate” (*i.e.*, physiological processes) impact on exposure estimates (U.S. EPA, 2014a, Table 5–10, p. 5–79). Focusing on these aspects of the assessment, by themselves, could lead to the conclusion that the HREA overstates the occurrence of O<sub>3</sub> exposures of concern.

However, the EPA notes that there are also aspects of the HREA exposure assessment that, taken by themselves, could lead to the conclusion that the HREA understates the occurrence of O<sub>3</sub> exposures of concern. For example, as noted above, some medical, public health, and environmental groups asserted that the exposure assessment could underestimate O<sub>3</sub> exposures for highly active populations, including outdoor workers and children who spend a large portion of time outdoors during summer. In support of these assertions, commenters highlighted sensitivity analyses conducted in the HREA. However, as noted in the HREA (U.S. EPA, 2014a, Table 5–10), this



aspect of the assessment is likely to have a “low to moderate” impact on exposure estimates (*i.e.*, a smaller impact than uncertainty associated with the EVR, and similar in magnitude to uncertainties related to physiological processes, as noted above). Therefore, when considered in the context of all of the uncertainties in exposure estimates, it is unlikely that the HREA’s approach to using data on activity patterns leads to overall underestimates of O<sub>3</sub> exposures. The implications of this uncertainty are discussed in more detail below (II.C.4.b), within the context of the Administrator’s decision on a revised standard level.

In addition, medical, public health, and environmental groups also pointed out that the controlled human exposures studies that provided the basis for health effect benchmarks were conducted in healthy adults, rather than at-risk populations, and these studies evaluated 6.6 hour exposures, rather than the 8-hour exposures evaluated in the HREA exposure analyses. They concluded that adverse effects would occur at lower exposure concentrations in at-risk populations, such as people with asthma, and if people were exposed for 8 hours, rather than 6.6 hours. In its review of the PA, CASAC clearly recognized these uncertainties, which provided part of the basis for CASAC’s advice to consider exposures of concern for the 60 ppb benchmark. For example, when considering the results of the study by Schelegle et al. (2009) for 6.6-hour exposures to an average O<sub>3</sub> concentration of 72 ppb, CASAC judged that if subjects had been exposed for eight hours, the adverse combination of lung function decrements and respiratory symptoms “could have occurred” at lower O<sub>3</sub> exposure concentrations (Frey, 2014c, p. 5). With regard to at-risk populations, CASAC concluded that “based on results for clinical studies of healthy adults, and scientific considerations of differences in responsiveness of asthmatic children compared to healthy adults, there is scientific support that 60 ppb is an appropriate exposure of concern for asthmatic children” (Frey, 2014c, p. 8). As discussed below (II.B.3, II.C.4.b, II.C.4.c), based in large part on CASAC advice, the Administrator does consider exposure results for the 60 ppb benchmark.

Thus, rather than viewing the potential implications of various aspects of the HREA exposure assessment in isolation, as was done by many commenters, the EPA considers them together, along with other issues and uncertainties related to the interpretation of exposure estimates. As

discussed above, CASAC recognized the key uncertainties in exposure estimates, as well as in the interpretation of those estimates in the HREA and PA (Frey, 2014a, c). In its review of the 2nd draft REA, CASAC concluded that “[t]he discussion of uncertainty and variability is comprehensive, appropriately listing the major sources of uncertainty and their potential impacts on the APEX exposure estimates” (Frey, 2014a, p. 6). Even considering these and other uncertainties, CASAC emphasized estimates of O<sub>3</sub> exposures of concern as part of the basis for their recommendations on the primary O<sub>3</sub> NAAQS. In weighing these uncertainties, which can bias exposure results in different directions but tend to have impacts that are similar in magnitude (U.S. EPA, 2014a, Table 5–10), and in light of CASAC’s advice based on its review of the HREA and the PA, the EPA continues to conclude that the approach to considering estimated exposures of concern in the HREA, PA, and the proposal reflects an appropriate balance, and provides an appropriate basis for considering the public health protectiveness of the primary O<sub>3</sub> standard.

The EPA disagrees with other aspects of commenters’ views on HREA estimates of exposures of concern. For example, commenters on both sides of the issue objected to the EPA’s handling of averting behavior in exposure estimates. Some commenters who supported retaining the current standard claimed that the HREA overstates exposures of concern because available time-location-activity data do not account for averting behavior. These commenters noted sensitivity analyses in the HREA that estimated fewer exposures of concern when averting behavior was considered. In contrast, commenters supporting revision of the standard criticized the EPA’s estimates of exposures of concern, claiming that the EPA “emphasizes the role of averting behavior, noting that it may result in an overestimation of exposures of concern, and cites this behavior (essentially staying indoors or not exercising) in order to reach what it deems an acceptable level of risk” (*e.g.*, ALA et al., p. 120).

The EPA disagrees with both of these comments. In brief, the NAAQS must “be established at a level necessary to protect the health of persons,” not the health of persons refraining from normal activity or resorting to medical interventions to ward off adverse effects of poor air quality (S. Rep. No. 11–1196, 91st Cong. 2d Sess. at 10). On the other hand, ignoring normal activity patterns for a pollutant like O<sub>3</sub>, where adverse

responses are critically dependent on ventilation rates, will result in a standard which provides more protection than is requisite. This issue is discussed in more detail below (II.C.4.b), within the context of the Administrator’s decision on a revised standard level.

These commenters also misconstrue the EPA’s limited sensitivity analyses on impacts of averting behavior in the HREA. The purpose of the HREA sensitivity analyses was to provide perspective on the potential role of averting behavior in modifying O<sub>3</sub> exposures. These sensitivity analyses were limited to a single urban study area, a 2-day period, and a single air quality adjustment scenario (U.S. EPA, 2014a, section 5.4.3.3). In addition, the approach used in the HREA to simulate averting behavior was itself uncertain, given the lack of actual activity pattern data that explicitly incorporated this type of behavioral response. In light of these important limitations, sensitivity analyses focused on averting behavior were discussed in the proposal within the context of the discussion of uncertainties in the HREA assessment of exposures of concern (II.C.2.b in the proposal) and, contrary to the claims of some commenters, they were not used to support the proposed decision.

Some industry groups also claimed that the time-location-activity diaries used by APEX to estimate exposures are out-of-date, and do not represent activity patterns in the current population. These commenters asserted that the use of out-of-date diary information leads to overestimates in exposures of concern. This issue was explicitly addressed in the HREA and the EPA disagrees with commenters’ conclusions. In particular, diary data was updated in this review to include data from studies published as late as 2010, directly in response to CASAC concerns. In their review of this data, CASAC stated that “[t]he addition of more recent time activity pattern data addresses a concern raised previously by the CASAC concerning how activity pattern information should be brought up to date” (Frey, 2014a, p. 8). As indicated in the HREA (U.S. EPA, 2014a, Appendix 5G, Figures 5G–7 and Figure 5G–8), the majority of diary days used in exposure simulations of children originate from the most recently conducted activity pattern studies (U.S. EPA, 2014a, Table 5–3). In addition, evaluations included in the HREA indicated that there were not major systematic differences in time-location-activity patterns based on information from older diaries versus those collected more recently (U.S. EPA,

2014a, Appendix 5G, Figures 5G–1 and 5G–2). Given all of the above, the EPA does not agree with commenters who claimed that the time-location-activity diaries used by APEX are out-of-date, and result in overestimates of exposures of concern.

#### ii. Risk of O<sub>3</sub>-Induced FEV<sub>1</sub> Decrements

The EPA also received a large number of comments on the FEV<sub>1</sub> risk assessment presented in chapter 6 of the HREA (U.S. EPA, 2014a) and summarized in the proposal (II.C.3.a in the proposal). Commenters representing medical, public health, and environmental groups generally expressed the view that these risk estimates support the need to revise the current primary O<sub>3</sub> standard in order to increase public health protection, though these groups also questioned some of the assumptions inherent in the EPA's interpretation of those risk estimates. For example, ALA et al. (p. 127) stated that “[t]he HREA uses a risk function derived from a controlled human exposure study of healthy young adults to estimate lung function decrements in children, including children with asthma. This assumption could result in an underestimate of risk.” On this same issue, commenters representing industry groups opposed to revising the standard also asserted that assumptions about children's responses to O<sub>3</sub> exposures are highly uncertain. In contrast to medical and public health groups, these commenters concluded that this uncertainty, along with others discussed below, call into question the use of FEV<sub>1</sub> risk estimates to support a decision to revise the current primary O<sub>3</sub> standard.

The EPA agrees that an important source of uncertainty is the approach to estimating the risk of FEV<sub>1</sub> decrements in children and in children with asthma based on data from healthy adults. However, this issue is discussed at length in the HREA and the PA, and was considered carefully by CASAC in its review of draft versions of these documents. The conclusions of the HREA and PA, and the advice of CASAC, were reflected in the Administrator's interpretation of FEV<sub>1</sub> risk estimates in the proposal, as described below. Commenters have not provided additional information that changes the EPA's views on this issue.

As discussed in the proposal (II.C.3.a.ii in the proposal), in the near absence of controlled human exposure data for children, risk estimates are based on the assumption that children exhibit the same lung function response following O<sub>3</sub> exposures as healthy 18-year olds (*i.e.*, the youngest age for

which sufficient controlled human exposure data is available) (U.S. EPA, 2014a, section 6.5.3). As noted by CASAC (Frey, 2014a, p. 8), this assumption is justified in part by the findings of McDonnell et al. (1985), who reported that children (8–11 years old) experienced FEV<sub>1</sub> responses similar to those observed in adults (18–35 years old). The HREA concludes that this approach could result in either over- or underestimates of O<sub>3</sub>-induced lung function decrements in children, depending on how children compare to the adults used in controlled human exposure studies (U.S. EPA, 2014a, section 6.5.3). With regard to people with asthma, although the evidence has been mixed (U.S. EPA, 2013, section 6.2.1.1), several studies have reported statistically larger, or a tendency for larger, O<sub>3</sub>-induced lung function decrements in asthmatics than in non-asthmatics (Kreit et al., 1989; Horstman et al., 1995; Jorres et al., 1996; Alexis et al., 2000). On this issue, CASAC noted that “[a]sthmatic subjects appear to be at least as sensitive, if not more sensitive, than non-asthmatic subjects in manifesting O<sub>3</sub>-induced pulmonary function decrements” (Frey, 2014c, p. 4). To the extent asthmatics experience larger O<sub>3</sub>-induced lung function decrements than the healthy adults used to develop exposure-response relationships, the HREA could underestimate the impacts of O<sub>3</sub> exposures on lung function in asthmatics, including asthmatic children (U.S. EPA, 2014a, section 6.5.4). As noted above, these uncertainties have been considered carefully by the EPA and by CASAC during the development of the HREA and PA. In addition, the Administrator has appropriately considered these and other uncertainties in her interpretation of risk estimates, as discussed further below (II.B.3, II.C.4.b, II.C.4.c).

Some commenters additionally asserted that the HREA does not appropriately characterize the uncertainty in risk estimates for O<sub>3</sub>-induced lung function decrements. Commenters pointed out that there is statistical uncertainty in model coefficients that is not accounted for in risk estimates. One commenter presented an analysis of this uncertainty, and concluded that there is considerable overlap between risk estimates for standard levels of 75, 70, and 65 ppb, undercutting the confidence in estimated risk reductions for standard levels below 75 ppb.

The Agency recognizes that there are important sources of uncertainty in the FEV<sub>1</sub> risk assessment. In some cases, these sources of uncertainty can

contribute to substantial variability in risk estimates, complicating the interpretation of those estimates. For example, as discussed in the proposal, the variability in FEV<sub>1</sub> risk estimates across urban study areas is often greater than the differences in risk estimates between various standard levels (Table 2, above and 79 FR 75306 n. 164). Given this, and the resulting considerable overlap between the ranges of FEV<sub>1</sub> risk estimates for different standard levels, in the proposal the Administrator viewed these risk estimates as providing a more limited basis than exposures of concern for distinguishing between the degree of public health protection provided by alternative standard levels. Thus, although the EPA does not agree with the overall conclusions of industry commenters, their analysis of statistical uncertainty in risk estimates, and the resulting overlap between risk estimates for standard levels of 75, 70, and 65 ppb, tends to reinforce the Administrator's approach, which places greater weight on estimates of O<sub>3</sub> exposures of concern than on risk estimates for O<sub>3</sub>-induced FEV<sub>1</sub> decrements.

#### iii. Risk of O<sub>3</sub>-Associated Mortality and Morbidity

In the proposal, the Administrator placed the greatest emphasis on the results of controlled human exposure studies and on quantitative analyses based on information from these studies, and less weight on mortality and morbidity risk assessments based on information from epidemiology studies. The EPA received a number of comments on its consideration of epidemiology-based risks, with some commenters expressing support for the Agency's approach and others expressing opposition.

In general, commenters representing industry organizations or states opposed to revising the current primary O<sub>3</sub> standard agreed with the Administrator's approach in the proposal to viewing epidemiology-based risk estimates, though these commenters reached a different conclusion than the EPA regarding the adequacy of the current standard. In supporting their views, these commenters highlighted a number of uncertainties in the underlying epidemiologic studies, and concluded that risk estimates based on information from such studies do not provide an appropriate basis for revising the current standard. For example, commenters noted considerable spatial heterogeneity in health effect associations; the potential for co-occurring pollutants (*e.g.*, PM<sub>2.5</sub>) to confound O<sub>3</sub> health effect associations;

and the lack of statistically significant O<sub>3</sub> health effect associations in many of the individual cities evaluated as part of multicity analyses. In contrast, some commenters representing medical, public health, or environmental organizations placed greater emphasis than the EPA on epidemiology-based risk estimates. These commenters asserted that risk estimates provide strong support for a lower standard level, and pointed to CASAC advice to support their position.

As in the proposal, the EPA continues to place the greatest weight on the results of controlled human exposure studies and on quantitative analyses based on information from these studies (particularly exposures of concern, as discussed below in II.B.3 and II.C.4), and less weight on risk analyses based on information from epidemiologic studies. In doing so, the Agency continues to note that controlled human exposure studies provide the most certain evidence indicating the occurrence of health effects in humans following specific O<sub>3</sub> exposures. In addition, the effects reported in these studies are due solely to O<sub>3</sub> exposures, and interpretation of study results is not complicated by the presence of co-occurring pollutants or pollutant mixtures (as is the case in epidemiologic studies). The Agency further notes the CASAC judgment that “the scientific evidence supporting the finding that the current standard is inadequate to protect public health is strongest based on the controlled human exposure studies of respiratory effects” (Frey, 2014c, p. 5). Consistent with this emphasis, the HREA conclusions reflect relatively greater confidence in the results of the exposure and risk analyses based on information from controlled human exposure studies than the results of epidemiology-based risk analyses. As discussed in the HREA (U.S. EPA, 2014a, section 9.6), several key uncertainties complicate the interpretation of these epidemiology-based risk estimates, including the heterogeneity in O<sub>3</sub> effect estimates between locations, the potential for exposure measurement errors in these epidemiologic studies, and uncertainty in the interpretation of the shape of concentration-response functions at lower O<sub>3</sub> concentrations. Commenters who opposed the EPA’s approach in the proposal to viewing the results of quantitative analyses tended to highlight aspects of the evidence and CASAC advice that were considered by the EPA at the time of proposal and nothing in these commenters’ views has changed those considerations.

Therefore, the EPA continues to place the most emphasis on using the information from controlled human exposure studies to inform consideration of the adequacy of the primary O<sub>3</sub> standard.

However, while the EPA agrees that there are important uncertainties in the O<sub>3</sub> epidemiology-based risk estimates, the Agency disagrees with industry commenters that these uncertainties support a conclusion to retain the current standard. As discussed below, the decision to revise the current primary O<sub>3</sub> standard is based on the EPA’s consideration of the broad body of scientific evidence, quantitative analyses of O<sub>3</sub> exposures and risks, CASAC advice, and public comments. While recognizing uncertainties in the epidemiology-based risk estimates here, and giving these uncertainties appropriate consideration, the Agency continues to conclude that these risk estimates contribute to the broader body of evidence and information supporting the need to revise the primary O<sub>3</sub> standard.

Some commenters opposed to revising the current O<sub>3</sub> standard highlighted the fact that, in a few urban study locations, larger risks are estimated for standard levels below 75 ppb than for the current standard with its level of 75 ppb. For example, TCEQ (p. 3) states that “differential effects on ozone in urban areas also lead to the EPA’s modeled increases in mortality in Houston and Los Angeles with decreasing ozone standards.” These commenters cited such increases in estimated risk as part of the basis for their conclusion that the current standard should be retained.

For communities across the U.S. (including in the Houston and Los Angeles areas), exposure and risk analyses indicate that reducing emissions of O<sub>3</sub> precursors (NO<sub>x</sub>, VOCs) to meet a revised standard with a level of 70 ppb will substantially reduce the occurrence of adverse respiratory effects and mortality risk attributable to high O<sub>3</sub> concentrations (U.S. EPA, 2014a, Appendix 9A; U.S. EPA, 2014c, sections 4.4.2.1 to 4.4.2.3). However, because of the complex chemistry governing the formation and destruction of O<sub>3</sub>, some NO<sub>x</sub> control strategies designed to reduce the highest ambient O<sub>3</sub> concentrations can also result in increases in relatively low ambient O<sub>3</sub> concentrations. As a result of the way the EPA’s epidemiology-based risk assessments were conducted (U.S. EPA, 2014a, Chapter 7), increases estimated in low O<sub>3</sub> concentrations impacted mortality and morbidity risks, leading to the estimated risk increases highlighted

by some commenters. However, while the EPA is confident that reducing the highest ambient O<sub>3</sub> concentrations will result in substantial improvements in public health, including reducing the risk of O<sub>3</sub>-associated mortality, the Agency is far less certain about the public health implications of the changes in relatively low ambient O<sub>3</sub> concentrations (79 FR at 75278/3, 75291/1, and 75308/2). Therefore, reducing precursor emissions to meet a lower O<sub>3</sub> standard is expected to result in important reductions in O<sub>3</sub> concentrations from the part of the air quality distribution where the evidence provides the strongest support for adverse health effects.

Specifically, for area-wide O<sub>3</sub> concentrations at or above 40 ppb,<sup>101</sup> a revised standard with a level of 70 ppb is estimated to reduce the number of premature deaths associated with short-term O<sub>3</sub> concentrations by about 10%, compared to the current standard. In addition, for area-wide concentrations at or above 60 ppb, a revised standard with a level of 70 ppb is estimated to reduce O<sub>3</sub>-associated premature deaths by about 50% to 70%.<sup>102</sup> The EPA views these results, which focus on the portion of the air quality distribution where the evidence indicates the most certainty regarding the occurrence of adverse O<sub>3</sub>-attributable health effects, not only as supportive of the need to revise the current standard (II.B.3, below), but also as showing the benefits of reducing the peak O<sub>3</sub> concentrations associated with air quality distributions meeting the current standard (II.C.4, below).

In addition, even considering risk estimates based on the full distribution of ambient O<sub>3</sub> concentrations (*i.e.*, estimates influenced by decreases in higher concentrations and increases in lower concentrations), the EPA notes that, compared to the current standard, standards with lower levels are estimated to result in overall reductions in mortality risk across the urban study areas evaluated (U.S. EPA, 2014c, Figure 4–10). As discussed above (II.A.2.a, II.A.2.c), analyses in the HREA indicate that these overall risk reductions could understate the actual reductions that

<sup>101</sup> The ISA concludes that there is less certainty in the shape of concentration-response functions for area-wide O<sub>3</sub> concentrations at the lower ends of warm season distributions (*i.e.*, below about 20 to 40 ppb) (U.S. EPA, 2013, section 2.5.4.4).

<sup>102</sup> Available experimental studies provide the strongest evidence for O<sub>3</sub>-induced effects following exposures to O<sub>3</sub> concentrations corresponding to the upper portions of typical ambient distributions. In particular, as discussed above, controlled human exposure studies showing respiratory effects following exposures to O<sub>3</sub> concentrations at or above 60 ppb.

would be experienced by the U.S. population as a whole.

For example, the HREA's national air quality modeling analyses indicate that the HREA urban study areas tend to underrepresent the populations living in areas where reducing NO<sub>x</sub> emissions would be expected to result in decreases in warm season averages of daily maximum 8-hour ambient O<sub>3</sub> concentrations.<sup>103</sup> Given the strong connection between these warm season average O<sub>3</sub> concentrations and risk, risk estimates for the urban study areas are likely to understate the average reductions in O<sub>3</sub>-associated mortality and morbidity risks that would be experienced across the U.S. population as a whole upon reducing NO<sub>x</sub> emissions (U.S. EPA, 2014a, section 8.2.3.2).

In addition, in recognizing that the reductions in modeled NO<sub>x</sub> emissions used in the HREA's core analyses are meant to be illustrative, rather than to imply a particular control strategy for meeting a revised O<sub>3</sub> NAAQS, the HREA also conducted sensitivity analyses in which both NO<sub>x</sub> and VOC emissions reductions were evaluated. In all of the urban study areas evaluated in these analyses, the increases in low O<sub>3</sub> concentrations were smaller for the NO<sub>x</sub>/VOC emission reduction scenarios than the NO<sub>x</sub> only emission reduction scenario (U.S. EPA, 2014a, Appendix 4D, section 4.7). This was most apparent for Denver, Houston, Los Angeles, New York, and Philadelphia. These results suggest that in some locations, optimized emissions reduction strategies could result in larger reductions in O<sub>3</sub>-associated mortality and morbidity than indicated by HREA's core estimates.

Thus, the patterns of estimated mortality and morbidity risks across various air quality scenarios and locations have been evaluated and considered extensively in the HREA and the PA, as well as in the proposal. Epidemiology-based risk estimates have also been considered by CASAC, and those considerations are reflected in CASAC's advice. Specifically, in considering epidemiology-based risk estimates in its review of the REA, CASAC stated that "[a]lthough these estimates for short-term exposure impacts are subject to uncertainty, the CASAC is confident that that the evidence of health effects of O<sub>3</sub>

presented in the ISA and Second Draft HREA in its totality, indicates that there are meaningful reductions in mean, absolute, and relative premature mortality associated with short-term exposures to O<sub>3</sub> levels lower than the current standard" (Frey, 2014a, p. 3). Commenters' views on this issue are not based on new information, but on an interpretation of the analyses presented in the HREA that is different from the EPA's, and CASAC's, interpretation. Given this, the EPA's considerations and conclusions related to this issue, as described in the proposal and as summarized briefly above, remain valid. Therefore, the EPA does not agree with commenters who cited increases in estimated risk in some locations as supporting a conclusion that the current standard should be retained.

For risk estimates of respiratory mortality associated with long-term O<sub>3</sub>, several industry commenters supported placing more emphasis on threshold models, and including these models as part of the core analyses rather than as sensitivity analyses. The EPA agrees with these commenters that an important uncertainty in risk estimates of respiratory mortality associated with long-term O<sub>3</sub> stems from the potential for the existence of a threshold. Based on sensitivity analyses included in the HREA in response to CASAC advice, the existence of a threshold could substantially reduce estimated risks. CASAC discussed this issue at length during its review of the REA and supported the EPA's approach to including a range of threshold models as sensitivity analyses (Frey, 2014a p. 3). Based in part on uncertainty in the existence and identification of a threshold, the HREA concluded that lower confidence should be placed in risk estimates for respiratory mortality associated with long-term O<sub>3</sub> exposures (U.S. EPA, 2014a, section 9.6). This uncertainty was also a key part of the Administrator's rationale for placing only limited emphasis on risk estimates for long-term O<sub>3</sub> exposures. In her final decisions, discussed below (II.B.3, II.C.4.b, II.C.4.c), the Administrator continues to place only limited emphasis on these estimates. The EPA views this approach to considering risk estimates for respiratory mortality as generally consistent with the approach supported by the commenters noted above.

### 3. Administrator's Conclusions on the Need for Revision

This section discusses the Administrator's conclusions related to the adequacy of the public health protection provided by the current

primary O<sub>3</sub> standard, and her final decision that the current standard is not requisite to protect public health with an adequate margin of safety. These conclusions, and her final decision, are based on the Administrator's consideration of the available scientific evidence assessed in the ISA (U.S. EPA, 2013), the exposure/risk information presented and assessed in the HREA (U.S. EPA, 2014a), the consideration of that evidence and information in the PA (U.S. EPA, 2014c), the advice of CASAC, and public comments received on the proposal.

As an initial matter, the Administrator concludes that reducing precursor emissions to achieve O<sub>3</sub> concentrations that meet the current primary O<sub>3</sub> standard will provide important improvements in public health protection, compared to recent air quality. In reaching this conclusion, she notes the discussion in section 3.4 of the PA (U.S. EPA, 2014c). In particular, the Administrator notes that this conclusion is supported by (1) the strong body of scientific evidence indicating a wide range of adverse health outcomes attributable to exposures to O<sub>3</sub> at concentrations commonly found in the ambient air and (2) estimates indicating decreased occurrences of O<sub>3</sub> exposures of concern and decreased O<sub>3</sub>-associated health risks upon meeting the current standard, compared to recent air quality. Thus, she concludes that it would not be appropriate in this review to consider a standard that is less protective than the current standard.

After reaching the conclusion that meeting the current primary O<sub>3</sub> standard will provide important improvements in public health protection, and that it is not appropriate to consider a standard that is less protective than the current standard, the Administrator next considers the adequacy of the public health protection that is provided by the current standard. In doing so, the Administrator first notes that studies evaluated since the completion of the 2006 AQCD support and expand upon the strong body of evidence that, in the last review, indicated a causal relationship between short-term O<sub>3</sub> exposures and respiratory morbidity outcomes (U.S. EPA, 2013, section 2.5). This is the strongest causality finding possible under the ISA's hierarchical system for classifying weight of evidence for causation. In addition, the Administrator notes that the evidence for respiratory health effects attributable to long-term O<sub>3</sub> exposures, including the development of asthma in children, is much stronger than in previous reviews, and the ISA concludes that there is "likely to be" a causal relationship

<sup>103</sup> Specifically, the HREA urban study areas tend to underrepresent populations living in suburban, smaller urban, and rural areas, where reducing NO<sub>x</sub> emissions would be expected to result in decreases in warm season averages of daily maximum 8-hour ambient O<sub>3</sub> concentrations (U.S. EPA, 2014a, section 8.2.3.2).

between such O<sub>3</sub> exposures and adverse respiratory health effects (the second strongest causality finding).

Together, experimental and epidemiologic studies support conclusions regarding a continuum of O<sub>3</sub> respiratory effects ranging from small, reversible changes in pulmonary function, and pulmonary inflammation, to more serious effects that can result in respiratory-related emergency department visits, hospital admissions, and premature mortality. Recent animal toxicology studies support descriptions of modes of action for these respiratory effects and augment support for biological plausibility for the role of O<sub>3</sub> in reported effects. With regard to mode of action, evidence indicates that the initial key event is the formation of secondary oxidation products in the respiratory tract, that antioxidant capacity may modify the risk of respiratory morbidity associated with O<sub>3</sub> exposure, and that the inherent capacity to quench (based on individual antioxidant capacity) can be overwhelmed, especially with exposure to elevated concentrations of O<sub>3</sub>.

In addition, based on the consistency of findings across studies and the coherence of results from different scientific disciplines, the available evidence indicates that certain populations are at increased risk of experiencing O<sub>3</sub>-related effects, including the most severe effects. These include populations and lifestyles identified in previous reviews (*i.e.*, people with asthma, children, older adults, outdoor workers) and populations identified since the last review (*i.e.*, people with certain genotypes related to antioxidant and/or anti-inflammatory status; people with reduced intake of certain antioxidant nutrients, such as Vitamins C and E).

In considering the O<sub>3</sub> exposure concentrations reported to elicit respiratory effects, as in the proposal, the Administrator agrees with the conclusions of the PA that controlled human exposure studies provide the most certain evidence indicating the occurrence of health effects in humans following specific O<sub>3</sub> exposures. In particular, she notes that the effects reported in controlled human exposure studies are due solely to O<sub>3</sub> exposures, and interpretation of study results is not complicated by the presence of co-occurring pollutants or pollutant mixtures (as is the case in epidemiologic studies). Therefore, consistent with CASAC advice (Frey, 2014c), she places the most weight on information from controlled human exposure studies in reaching conclusions on the adequacy of the current primary O<sub>3</sub> standard.

In considering the evidence from controlled human exposure studies, the Administrator first notes that these studies have reported a variety of respiratory effects in healthy adults following exposures to O<sub>3</sub> concentrations of 60, 63,<sup>104</sup> 72,<sup>105</sup> or 80 ppb, and higher. The largest respiratory effects, and the broadest range of effects, have been studied and reported following exposures of healthy adults to 80 ppb O<sub>3</sub> or higher, with most exposure studies conducted at these higher concentrations. As discussed above (II.A.1), the Administrator further notes that recent evidence includes controlled human exposure studies reporting the combination of lung function decrements and respiratory symptoms in healthy adults engaged in moderate exertion following 6.6-hour exposures to concentrations as low as 72 ppb, and lung function decrements and pulmonary inflammation following exposures to O<sub>3</sub> concentrations as low as 60 ppb.

As discussed in her response to public comments above (II.B.2.b.i), and in detail below (II.C.4.b, II.C.4.c), the Administrator concludes that these controlled human exposure studies indicate that adverse effects are likely to occur following exposures to O<sub>3</sub> concentrations below the level of the current standard. The effects observed following such exposures are coherent with the serious health outcomes that have been reported in O<sub>3</sub> epidemiologic studies (*e.g.*, respiratory-related hospital admissions, emergency department visits), and the Administrator judges that such effects have the potential to be important from a public health perspective.

In reaching these conclusions, she particularly notes that the combination of lung function decrements and respiratory symptoms reported to occur in healthy adults following exposures to 72 ppb O<sub>3</sub> meets ATS criteria for an adverse response (II.B.2.b.i, above). In specifically considering the 72 ppb exposure concentration, CASAC noted that “the combination of decrements in FEV<sub>1</sub> together with the statistically significant alterations in symptoms in human subjects exposed to 72 ppb ozone meets the American Thoracic Society’s definition of an adverse health effect” (Frey, 2014c, p. 5). In addition, given that the controlled human exposure study reporting these results was conducted in healthy adults,

<sup>104</sup> For a 60 ppb target exposure concentration, Schelegle et al. (2009) reported that the actual 6.6-hour mean exposure concentration was 63 ppb.

<sup>105</sup> For a 70 ppb target exposure concentration, Schelegle et al. (2009) reported that the actual 6.6-hour mean exposure concentration was 72 ppb.

CASAC judged that the adverse combination of lung function decrements and respiratory symptoms “almost certainly occur in some people” (*e.g.*, people with asthma) following exposures to lower O<sub>3</sub> concentrations (Frey, 2014c, p. 6).

While the Administrator is less certain regarding the adversity of the lung function decrements and airway inflammation that have been observed following exposures as low as 60 ppb, as discussed in more detail elsewhere in this preamble (II.B.2.b.i, II.C.4.b, II.C.4.c), she judges that these effects also have the potential to be adverse, and to be of public health importance, particularly if they are experienced repeatedly. With regard to this judgment, she specifically notes the ISA conclusion that, while the airway inflammation induced by a single exposure (or several exposures over the course of a summer) can resolve entirely, continued inflammation could potentially result in adverse effects, including the induction of a chronic inflammatory state; altered pulmonary structure and function, leading to diseases such as asthma; altered lung host defense response to inhaled microorganisms; and altered lung response to other agents such as allergens or toxins (U.S. EPA, 2013, section 6.2.3). Thus, the Administrator becomes increasingly concerned about the potential for adverse effects at 60 ppb O<sub>3</sub> as the number of exposures increases, though she notes that the available evidence does not indicate a particular number of occurrences of such exposures that would be required to achieve an adverse respiratory effect, and that this number is likely to vary across the population.

In addition to controlled human exposure studies, the Administrator also considers what the available epidemiologic evidence indicates with regard to the adequacy of the public health protection provided by the current primary O<sub>3</sub> standard. She notes that recent epidemiologic studies provide support, beyond that available in the last review, for associations between short-term O<sub>3</sub> exposures and a wide range of adverse respiratory outcomes (including respiratory-related hospital admissions, emergency department visits, and mortality) and with total mortality. As discussed above in the EPA responses to public comments (II.B.2.b.ii), associations with morbidity and mortality are stronger during the warm or summer months, and remain robust after adjustment for copollutants (U.S. EPA, 2013, Chapter 6).

In considering information from epidemiologic studies within the context of her conclusions on the adequacy of the current standard, the Administrator specifically considers analyses in the PA that evaluate the extent to which O<sub>3</sub> health effect associations have been reported for air quality concentrations likely to be allowed by the current standard. She notes that such analyses can provide insight into the extent to which the current standard would allow the distributions of ambient O<sub>3</sub> concentrations that provided the basis for these health effect associations. While the majority of O<sub>3</sub> epidemiologic studies evaluated in the PA were conducted in areas that would have violated the current standard during study periods, as discussed above (II.B.2.b.ii), the Administrator observes that the study by Mar and Koenig (2009) reported associations between short-term O<sub>3</sub> concentrations and asthma emergency department visits in children and adults in a U.S. location that would have met the current O<sub>3</sub> standard over the entire study period.<sup>106</sup> Based on this, she notes the conclusion from the PA that the current primary O<sub>3</sub> standard would have allowed the distribution of ambient O<sub>3</sub> concentrations that provided the basis for the associations with asthma emergency department visits reported by Mar and Koenig (2009) (U.S. EPA, 2014c, section 3.1.4.2).

In addition, even in some single-city study locations where the current standard was violated (*i.e.*, those evaluated in Silverman and Ito, 2010; Strickland et al., 2010), the Administrator notes that PA analyses of reported concentration-response functions and available air quality data support the occurrence of O<sub>3</sub>-attributable hospital admissions and emergency department visits on subsets of days with virtually all ambient O<sub>3</sub> concentrations below the level of the current standard. PA analyses of study area air quality further support the conclusion that exposures to the ambient O<sub>3</sub> concentrations present in the locations evaluated by Strickland et al. (2010) and Silverman and Ito (2010) could have plausibly resulted in the respiratory-related emergency department visits and hospital admissions reported in these studies (U.S. EPA, 2014c, section 3.1.4.2). The Administrator agrees with the PA

<sup>106</sup> The large majority of locations evaluated in U.S. epidemiologic studies of long-term O<sub>3</sub> would have violated the current standard during study periods, thus providing limited insight into the adequacy of the current standard (U.S. EPA, 2014c, section 3.1.4.3).

conclusion that these analyses indicate a relatively high degree of confidence in reported statistical associations with respiratory health outcomes on days when virtually all monitored 8-hour O<sub>3</sub> concentrations were 75 ppb or below. She further agrees with the PA conclusion that although these analyses do not identify true design values, the presence of O<sub>3</sub>-associated respiratory effects on such days provides insight into the types of health effects that could occur in locations with maximum ambient O<sub>3</sub> concentrations below the level of the current standard.

Compared to the single-city epidemiologic studies discussed above, the Administrator notes additional uncertainty in interpreting the relationships between short-term O<sub>3</sub> air quality in individual study cities and reported O<sub>3</sub> multicity effect estimates. In particular, she judges that the available multicity effect estimates in studies of short-term O<sub>3</sub> do not provide a basis for considering the extent to which reported O<sub>3</sub> health effect associations are influenced by individual locations with ambient O<sub>3</sub> concentrations low enough to meet the current O<sub>3</sub> standard, versus locations with O<sub>3</sub> concentrations that violate this standard.<sup>107</sup> While such uncertainties limit the extent to which the Administrator bases her conclusions on air quality in locations of multicity epidemiologic studies, she does note that O<sub>3</sub> associations with respiratory morbidity or premature mortality have been reported in several multicity studies when the majority of study locations (though not all study locations) would have met the current O<sub>3</sub> standard (U.S. EPA, 2014c, section 3.1.4.2).

Looking across the body of epidemiologic evidence, the Administrator thus reaches the conclusion that analyses of air quality in study locations support the occurrence of adverse O<sub>3</sub>-associated effects at ambient O<sub>3</sub> concentrations that met, or are likely to have met, the current standard. She further concludes that the strongest support for this conclusion comes from single-city studies of

<sup>107</sup> As noted in the proposal (II.E.4.d), this uncertainty applies specifically to interpreting air quality analyses within the context of multicity effect estimates for short-term O<sub>3</sub> concentrations, where effect estimates for individual study cities are not presented (as is the case for the key O<sub>3</sub> studies analyzed in the PA, with the exception of the study by Stieb et al. (2009) where none of the city-specific effect estimates for asthma emergency department visits were statistically significant). This specific uncertainty does not apply to multicity epidemiologic studies of long-term O<sub>3</sub> concentrations, where multicity effect estimates are based on comparisons across cities. For example, see discussion of study by Jerrett et al. (2009) in the PA (U.S. EPA, 2014c, section 3.1.4.3).

respiratory-related hospital admissions and emergency department visits associated with short-term O<sub>3</sub> concentrations, with some support also from multicity studies of morbidity or mortality.

Taken together, the Administrator concludes that the scientific evidence from controlled human exposure and epidemiologic studies calls into question the adequacy of the public health protection provided by the current standard. In reaching this conclusion, she particularly notes that the current standard level is higher than the lowest O<sub>3</sub> exposure concentration shown to result in the adverse combination of lung function decrements and respiratory symptoms (*i.e.*, 72 ppb), and that CASAC concluded that such effects “almost certainly occur in some people” following exposures to O<sub>3</sub> concentrations below 72 ppb (Frey, 2014c, p. 6). While she also notes that the current standard level is well-above the lowest O<sub>3</sub> exposure concentration shown to cause respiratory effects (*i.e.*, 60 ppb), she has less confidence that the effects observed at 60 ppb are adverse (discussed in II.B.2.b.i, II.C.4.b, II.C.4.c). She further considers these effects, and the extent to which the current primary O<sub>3</sub> standard could protect against them, within the context of quantitative analyses of O<sub>3</sub> exposures (discussed below). With regard to the available epidemiologic evidence, the Administrator notes PA analyses of O<sub>3</sub> air quality indicating that, while most O<sub>3</sub> epidemiologic studies reported health effect associations with ambient O<sub>3</sub> concentrations that violated the current standard, a small number of single-city U.S. studies support the occurrence of asthma-related hospital admissions and emergency department visits at ambient O<sub>3</sub> concentrations below the level of the current standard, including one study with air quality that would have met the current standard during the study period. Some support for such O<sub>3</sub> associations is also provided by multicity studies of morbidity or mortality. The Administrator further judges that the biological plausibility of associations with clearly adverse morbidity effects is supported by the evidence noted above from controlled human exposure studies conducted at, or in some cases below, typical warm-season ambient O<sub>3</sub> concentrations.

Beyond her consideration of the scientific evidence, the Administrator also considers the results of the HREA exposure and risk analyses in reaching final conclusions regarding the adequacy of the current primary O<sub>3</sub> standard. In doing so, consistent with

her consideration of the evidence, she focuses primarily on quantitative analyses based on information from controlled human exposure studies (*i.e.*, exposures of concern and risk of O<sub>3</sub>-induced FEV<sub>1</sub> decrements). Consistent with the considerations in the PA, and with CASAC advice (Frey, 2014c), she particularly focuses on exposure and risk estimates in children.<sup>108</sup> As discussed in the HREA and PA (and II.B, above), the patterns of exposure and risk estimates across urban study areas, across years, and across air quality scenarios are similar in children and adults though, because children spend more time being physically active outdoors and are more likely to experience the types of O<sub>3</sub> exposures shown to cause respiratory effects, larger percentages of children are estimated to experience exposures of concern and O<sub>3</sub>-induced FEV<sub>1</sub> decrements. Children also have intrinsic risk factors that make them particularly susceptible to O<sub>3</sub>-related effects (*e.g.*, higher ventilation rates relative to lung volume) (U.S. EPA, 2013, section 8.3.1.1; see section II.A.1.d above). In focusing on exposure and risk estimates in children, the Administrator recognizes that the exposure patterns for children across years, urban study areas, and air quality scenarios are indicative of the exposure patterns in a broader group of at-risk populations that also includes asthmatic adults and older adults. She judges that, to the extent the primary O<sub>3</sub> standard provides appropriate protection for children, it will also do so for adult populations,<sup>109</sup> given the larger exposures and intrinsic risk factors in children.

In first considering estimates of exposures of concern, the Administrator considers the extent to which estimates indicate that the current standard limits population exposures to the broader range of O<sub>3</sub> concentrations shown in controlled human exposure studies to cause respiratory effects. In doing so, she focuses on estimates of O<sub>3</sub>

exposures of concern at or above the benchmark concentrations of 60, 70, and 80 ppb. She notes that the current O<sub>3</sub> standard can provide some protection against exposures of concern to a range of O<sub>3</sub> concentrations, including concentrations below the standard level, given that (1) with the current fourth-high form, most days will have concentrations below the standard level and that (2) exposures of concern depend on both the presence of relatively high ambient O<sub>3</sub> concentrations and on activity patterns in the population that result in exposures to such high concentrations while at an elevated ventilation rate (discussed in detail below, II.C.4.b and II.C.4.c).

In considering estimates of O<sub>3</sub> exposures of concern allowed by the current standard, she notes that while single exposures of concern could be adverse for some people, particularly for the higher benchmark concentrations (70, 80 ppb) where there is stronger evidence for the occurrence of adverse effects (II.B.2.b.i, II.C.4.b, II.C.4.c, below), she becomes increasingly concerned about the potential for adverse responses as the number of occurrences increases.<sup>110</sup> In particular, as discussed above with regard to inflammation, she notes that the types of lung injury shown to occur following exposures to O<sub>3</sub> concentrations from 60 to 80 ppb, particularly if experienced repeatedly, provide a mode of action by which O<sub>3</sub> may cause other more serious effects (*e.g.*, asthma exacerbations). Therefore, the Administrator places the most weight on estimates of two or more exposures of concern (*i.e.*, as a surrogate for the occurrence of repeated exposures), though she also considers estimates of one or more exposures for the 70 and 80 ppb benchmarks.

In considering estimates of exposures of concern, the Administrator first notes that if the 15 urban study areas evaluated in the HREA were to just meet the current O<sub>3</sub> standard, fewer than 1% of children in those areas would be estimated to experience two or more exposures of concern at or above 70 ppb, based on exposure estimates averaged over the years of analysis, though up to about 2% would be estimated to experience such exposures in the worst-case year and location (*i.e.*, year and location with the largest

exposure estimates).<sup>111</sup> Although the Administrator is less concerned about single occurrences of exposures of concern, she notes that even single occurrences could cause adverse effects in some people, particularly for the 70 and 80 ppb benchmarks.<sup>112</sup> As illustrated in Table 1 (above), the current standard could allow up to about 3% of children to experience one or more exposures of concern at or above 70 ppb, averaged over the years of analysis, and up to about 8% in the worst-case year and location. In addition, in the worst-case year and location, the current standard could allow about 1% of children to experience at least one exposure of concern at or above 80 ppb, the highest benchmark evaluated.

While the Administrator has less confidence in the adversity of the effects observed following exposures to 60 ppb O<sub>3</sub> (II.B.2.b.i, II.C.4.b, II.C.4.c), particularly for single exposures, she judges that the potential for adverse effects increases as the number of exposures of concern increases. With regard to the 60 ppb benchmark, she particularly notes that the current standard is estimated to allow approximately 3 to 8% of children in urban study areas, including approximately 3 to 8% of asthmatic children, to experience two or more exposures of concern to O<sub>3</sub> concentrations at or above 60 ppb, based on estimates averaged over the years of analysis. To provide some perspective on the average percentages estimated, the Administrator notes that they correspond to almost 900,000 children in urban study areas, including about 90,000 asthmatic children. Nationally, if the current standard were to be just met, the number of children experiencing such exposures would be larger.

Based on her consideration of these estimates within the context of her judgments on adversity, as discussed in her responses to public comments (II.B.2.b.i, II.C.4.b), the Administrator concludes that the exposures projected to remain upon meeting the current standard can reasonably be judged to be important from a public health perspective. In particular, given that the average percent of children estimated to experience two or more exposures of concern for the 60 ppb benchmark approaches 10% in some areas, even based on estimates averaged over the

<sup>108</sup> She focuses on estimates for all children and estimates for children with asthma, noting that exposure and risk estimates for these groups are virtually indistinguishable in terms of the percent estimated to experience exposures of concern or O<sub>3</sub>-induced FEV<sub>1</sub> decrements (U.S. EPA, 2014c, sections 3.2 and 4.4.2).

<sup>109</sup> As noted below (II.C.4.2), this includes populations of highly active adults, such as outdoor workers. Limited sensitivity analyses in the HREA indicate that when diaries were selected to mimic exposures that could be experienced by outdoor workers, the percentages of modeled individuals estimated to experience exposures of concern were generally similar to the percentages estimated for children (*i.e.*, using the full database of diary profiles) in the urban study areas and years with the largest exposure estimates (U.S. EPA, 2014, section 5.4.3.2, Figure 5–14).

<sup>110</sup> Not all people who experience an exposure of concern will experience an adverse effect (even members of at-risk populations). For the endpoints evaluated in controlled human exposure studies, the number of those experiencing exposures of concern who will experience adverse effects cannot be reliably quantified.

<sup>111</sup> Virtually no children in those areas would be estimated to experience two or more exposures of concern at or above 80 ppb.

<sup>112</sup> That is, adverse effects are a possible outcome of single exposures of concern at/above 70 or 80 ppb, though the available information is not sufficient to estimate the likelihood of such effects.

years of the analysis, she concludes that the current standard does not incorporate an adequate margin of safety against the potentially adverse effects that can occur following repeated exposures at or above 60 ppb. Although she has less confidence that the effects observed at 60 ppb are adverse, compared to the effects at and above 72 ppb, she judges that this approach to considering the results for the 60 ppb benchmark is appropriate given CASAC advice, which clearly focuses the EPA on considering the effects observed at 60 ppb (Frey, 2014c) (II.C.4.b, II.C.4.c below).<sup>113</sup> This approach to considering estimated exposures of concern is consistent with setting standards that provide some safeguard against dangers to human health that are not fully certain (*i.e.*, standards that incorporate an adequate margin of safety) (See, *e.g.*, *State of Mississippi*, 744 F. 3d at 1353).

In addition to estimated exposures of concern, the Administrator also considers HREA estimates of the risk of O<sub>3</sub>-induced FEV<sub>1</sub> decrements  $\geq 10$  and 15%. In doing so, she particularly notes CASAC advice that “estimation of FEV<sub>1</sub> decrements of  $\geq 15\%$  is appropriate as a scientifically relevant surrogate for adverse health outcomes in active healthy adults, whereas an FEV<sub>1</sub> decrement of  $\geq 10\%$  is a scientifically relevant surrogate for adverse health outcomes for people with asthma and lung disease” (Frey, 2014c, p. 3). The Administrator notes that while single occurrences of O<sub>3</sub>-induced lung function decrements could be adverse for some people, as discussed above (II.B.1), she agrees with the judgment in past reviews that a more general consensus view of the potential adversity of such decrements emerges as the frequency of occurrences increases. Therefore, as in the proposal, the Administrator focuses primarily on the estimates of two or more O<sub>3</sub>-induced lung function decrements. When averaged over the years evaluated in the HREA, the Administrator notes that the current standard is estimated to allow about 1 to 3% of children in the 15 urban study areas (corresponding to almost 400,000 children) to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 15\%$ , and to allow about 8 to 12% of children (corresponding to about 180,000 asthmatic children) to experience two or more O<sub>3</sub>-induced lung function decrements  $\geq 10\%$ .

In further considering the HREA results, the Administrator considers the

<sup>113</sup> Though this advice is less clear regarding the adversity of effects at 60 ppb than CASAC's advice regarding the adversity of effects at 72 ppb (II.C.4.b, II.C.4.c).

epidemiology-based risk estimates. As discussed in the proposal, compared to the weight given to HREA estimates of exposures of concern and lung function risks, she places relatively less weight on epidemiology-based risk estimates. In giving some consideration to these risk estimates, as discussed in the proposal and above in the EPA's responses to public comments (II.B.2.b.iii), the Administrator focuses on the risks associated with O<sub>3</sub> concentrations in the upper portions of ambient distributions. In doing so, she notes the increasing uncertainty associated with the shapes of concentration-response curves for O<sub>3</sub> concentrations in the lower portions of ambient distributions and the evidence from controlled human exposure studies, which provide the strongest support for O<sub>3</sub>-induced effects following exposures to O<sub>3</sub> concentrations corresponding to the upper portions of typical ambient distributions (*i.e.*, 60 ppb and above). Even when considering only area-wide O<sub>3</sub> concentrations from the upper portions of seasonal distributions (*i.e.*,  $\geq 40$ , 60 ppb, Table 3 in the proposal), the Administrator notes that the general magnitude of mortality risk estimates suggests the potential for a substantial number of O<sub>3</sub>-associated deaths and adverse respiratory events to occur nationally, even when the current standard is met (79 FR 75277 and II.B.2.c.iii above).

In addition to the evidence and exposure/risk information discussed above, the Administrator also takes note of the CASAC advice in the current review, in the 2008 review and decision establishing the current standard, and in the 2010 reconsideration of the 2008 decision. As discussed in more detail above, the current CASAC “finds that the current NAAQS for ozone is not protective of human health” and “unanimously recommends that the Administrator revise the current primary ozone standard to protect public health” (Frey, 2014c, p. 5). The prior CASAC O<sub>3</sub> Panel likewise recommended revision of the current standard to one with a lower level due to the lack of protectiveness of the current standard. This earlier recommendation was based entirely on the evidence and information in the record for the 2008 standard decision, which, as discussed above, has been substantially strengthened in the current review (Samet, 2011; Frey and Samet, 2012).

In consideration of all of the above, the Administrator concludes that the current primary O<sub>3</sub> standard is not requisite to protect public health with an adequate margin of safety, and that

it should be revised to provide increased public health protection. This decision is based on the Administrator's conclusions that the available evidence and exposure and risk information clearly call into question the adequacy of public health protection provided by the current primary standard such that it is not appropriate, within the meaning of section 109(d)(1) of the CAA, to retain the current standard. With regard to the evidence, she particularly notes that the current standard level is higher than the lowest O<sub>3</sub> exposure concentration shown to result in the adverse combination of lung function decrements and respiratory symptoms (*i.e.*, 72 ppb), and also notes CASAC's advice that at-risk groups (*e.g.*, people with asthma) could experience adverse effects following exposure to lower concentrations. In addition, while the Administrator is less certain about the adversity of the effects that occur following lower exposure concentrations, she judges that recent controlled human exposure studies at 60 ppb provide support for a level below 75 ppb in order to provide an increased margin of safety, compared to the current standard, against effects with the potential to be adverse, particularly if they are experienced repeatedly. With regard to O<sub>3</sub> epidemiologic studies, she notes that while most available studies reported health effect associations with ambient O<sub>3</sub> concentrations that violated the current standard, a small number provide support for the occurrence of adverse respiratory effects at ambient O<sub>3</sub> concentrations below the level of the current standard.<sup>114</sup>

Based on the analyses in the HREA, the Administrator concludes that the exposures and risks projected to remain upon meeting the current standard can reasonably be judged to be important from a public health perspective. In particular, this conclusion is based on her judgment that it is appropriate to set a standard that would be expected to eliminate, or almost eliminate, exposures of concern at or above 70 and 80 ppb. In addition, given that the average percent of children estimated to experience two or more exposures of concern for the 60 ppb benchmark approaches 10% in some urban study areas, the Administrator concludes that the current standard does not incorporate an adequate margin of safety

<sup>114</sup> Courts have repeatedly held that this type of evidence justifies an Administrator's conclusion that it is “appropriate” (within the meaning of section 109 (d)(1) of the CAA) to revise a primary NAAQS to provide further protection of public health. See *e.g.* *Mississippi*, 744 F. 3d at 1345; *American Farm Bureau*, 559 F. 3d at 525–26.



against the potentially adverse effects that could occur following repeated exposures at or above 60 ppb. Beyond estimated exposures of concern, the Administrator concludes that the HREA risk estimates (FEV<sub>1</sub> risk estimates, mortality risk estimates) further support a conclusion that the O<sub>3</sub>-associated health effects estimated to remain upon just meeting the current standard are an issue of public health importance on a broad national scale. Thus, she concludes that O<sub>3</sub> exposure and risk estimates, when taken together, support a conclusion that the exposures and health risks associated with just meeting the current standard can reasonably be judged important from a public health perspective, such that the current standard is not sufficiently protective and does not incorporate an adequate margin of safety.

In the next section, the Administrator considers what revisions are appropriate in order to set a standard that is requisite to protect public health with an adequate margin of safety.

### C. Conclusions on the Elements of a Revised Primary Standard

Having reached the conclusion that the current O<sub>3</sub> standard is not requisite to protect public health with an adequate margin of safety, based on the currently available scientific evidence and exposure/risk information, the Administrator next considers the range of alternative standards supported by that evidence and information. Consistent with her consideration of the adequacy of the current standard, the Administrator's conclusions on the elements of the primary standard are informed by the available scientific evidence assessed in the ISA, exposure/risk information presented and assessed in the HREA, the evidence-based and exposure-/risk-based considerations and conclusions in the PA, CASAC advice, and public comments. The sections below discuss the evidence and exposure/risk information, CASAC advice and public input, and the Administrator's proposed conclusions, for the major elements of the NAAQS: Indicator (II.C.1), averaging time (II.C.2), form (II.C.3), and level (II.C.4).

#### 1. Indicator

In the 2008 review, the EPA focused on O<sub>3</sub> as the most appropriate indicator for a standard meant to provide protection against ambient photochemical oxidants. In this review, while the complex atmospheric chemistry in which O<sub>3</sub> plays a key role has been highlighted, no alternatives to O<sub>3</sub> have been advanced as being a more appropriate indicator for ambient

photochemical oxidants. More specifically, the ISA noted that O<sub>3</sub> is the only photochemical oxidant (other than NO<sub>2</sub>) that is routinely monitored and for which a comprehensive database exists (U.S. EPA, 2013, section 3.6). Data for other photochemical oxidants (e.g., peroxyacetyl nitrate, hydrogen peroxide, etc.) typically have been obtained only as part of special field studies. Consequently, no data on nationwide patterns of occurrence are available for these other oxidants; nor are extensive data available on the relationships of concentrations and patterns of these oxidants to those of O<sub>3</sub> (U.S. EPA, 2013, section 3.6). In its review of the second draft PA, CASAC stated "The indicator of ozone is appropriate based on its causal or likely causal associations with multiple adverse health outcomes and its representation of a class of pollutants known as photochemical oxidants" (Frey, 2014c, p. ii).

In addition, the PA notes that meeting an O<sub>3</sub> standard can be expected to provide some degree of protection against potential health effects that may be independently associated with other photochemical oxidants, even though such effects are not discernible from currently available studies indexed by O<sub>3</sub> alone (U.S. EPA, 2014c, section 4.1). That is, since the precursor emissions that lead to the formation of O<sub>3</sub> generally also lead to the formation of other photochemical oxidants, measures leading to reductions in population exposures to O<sub>3</sub> can generally be expected to lead to reductions in population exposures to other photochemical oxidants. In considering this information, and CASAC's advice, the Administrator reached the proposed conclusion that O<sub>3</sub> remains the most appropriate indicator for a standard meant to provide protection against photochemical oxidants.<sup>115</sup>

The EPA received very few comments on the indicator of the primary standard. Those who did comment supported the proposed decision to retain O<sub>3</sub> as the indicator, noting the rationale put forward in the preamble to the proposed rule. These commenters generally expressed support for retaining the current indicator in conjunction with retaining other elements of the current standard, such as the averaging time and form. After considering the available evidence, CASAC advice, and public comments, the Administrator concludes that O<sub>3</sub> remains the most appropriate indicator

<sup>115</sup> The DC Circuit upheld the use of O<sub>3</sub> as the indicator for photochemical oxidants based on these same considerations. *American Petroleum Inst. v. Costle*, 665 F. 2d 1176, 1186 (D.C. Cir. 1981).

for a standard meant to provide protection against photochemical oxidants. Therefore, she is retaining O<sub>3</sub> as the indicator for the primary standard in this final rule.

#### 2. Averaging Time

The EPA established the current 8-hour averaging time<sup>116</sup> for the primary O<sub>3</sub> NAAQS in 1997 (62 FR 38856). The decision on averaging time in that review was based on numerous controlled human exposure and epidemiologic studies reporting associations between adverse respiratory effects and 6- to 8-hour O<sub>3</sub> concentrations (62 FR 38861). The EPA also noted that a standard with a maximum 8-hour averaging time is likely to provide substantial protection against respiratory effects associated with 1-hour peak O<sub>3</sub> concentrations. The EPA reached similar conclusions in the last O<sub>3</sub> NAAQS review and thus, the EPA retained the 8-hour averaging time in 2008.

In reaching a proposed conclusion on averaging time in the current review, the Administrator considered the extent to which the available evidence continues to support the appropriateness of a standard with an 8-hour averaging time (79 FR 75292). Specifically, the Administrator considered the extent to which the available information indicates that a standard with the current 8-hour averaging time provides appropriate protection against short- and long-term O<sub>3</sub> exposures. These considerations from the proposal are summarized below in sections II.C.2.a (short-term) and II.C.2.b (long-term). Section II.C.2.c summarizes the Administrator's proposed decision on averaging time. Section II.C.2.d discusses comments received on averaging time. Section II.C.2.e presents the Administrator's final decision regarding averaging time.

##### a. Short-Term

As an initial consideration with respect to the most appropriate averaging time for the O<sub>3</sub> NAAQS, in the proposal the Administrator noted that the strongest evidence for O<sub>3</sub>-associated health effects is for respiratory effects following short-term exposures. More specifically, the Administrator noted the ISA conclusion that the evidence is "sufficient to infer a causal relationship" between short-term O<sub>3</sub> exposures and respiratory effects. The ISA also judges that for short-term O<sub>3</sub> exposures, the evidence indicates "likely to be causal" relationships with

<sup>116</sup> This 8-hour averaging time reflects daily maximum 8-hour average O<sub>3</sub> concentrations.

both cardiovascular effects and mortality (U.S. EPA, 2013, section 2.5.2). Therefore, as in past reviews, the Administrator noted that the strength of the available scientific evidence provides strong support for a standard that protects the public health against short-term exposures to O<sub>3</sub>.

In first considering the level of support available for specific short-term averaging times, the Administrator noted in the proposal the evidence available from controlled human exposure studies. As discussed in more detail in Chapter 3 of the PA, substantial health effects evidence from controlled human exposure studies demonstrates that a wide range of respiratory effects (e.g., pulmonary function decrements, increases in respiratory symptoms, lung inflammation, lung permeability, decreased lung host defense, and airway hyperresponsiveness) occur in healthy adults following 6.6-hour exposures to O<sub>3</sub> (U.S. EPA, 2013, section 6.2.1.1). Compared to studies evaluating shorter exposure durations (e.g., 1-hour), studies evaluating 6.6-hour exposures in healthy adults have reported respiratory effects at lower O<sub>3</sub> exposure concentrations and at more moderate levels of exertion.

The Administrator also noted in the proposal the strength of evidence from epidemiologic studies that evaluated a wide variety of populations (e.g., including at-risk lifestyles and populations, such as children and people with asthma, respectively). A number of different averaging times have been used in O<sub>3</sub> epidemiologic studies, with the most common being the max 1-hour concentration within a 24-hour period (1-hour max), the max 8-hour average concentration within a 24-hour period (8-hour max), and the 24-hour average. These studies are assessed in detail in Chapter 6 of the ISA (U.S. EPA, 2013). Limited evidence from time-series and panel epidemiologic studies comparing risk estimates across averaging times does not indicate that one exposure metric is more consistently or strongly associated with respiratory health effects or mortality, though the ISA notes some evidence for “smaller O<sub>3</sub> risk estimates when using a 24-hour average exposure metric” (U.S. EPA, 2013, section 2.5.4.2; p. 2–31). For single- and multi-day average O<sub>3</sub> concentrations, lung function decrements were associated with 1-hour max, 8-hour max, and 24-hour average ambient O<sub>3</sub> concentrations, with no strong difference in the consistency or magnitude of association among the averaging times (U.S. EPA, 2013, p. 6–71). Similarly, in studies of short-term exposure to O<sub>3</sub> and mortality, Smith et

al. (2009) and Darrow *et al.* (2011) have reported high correlations between risk estimates calculated using 24-hour average, 8-hour max, and 1-hour max averaging times (U.S. EPA, 2013, p. 6–253). Thus, the Administrator noted that the epidemiologic evidence alone does not provide a strong basis for distinguishing between the appropriateness of 1-hour, 8-hour, and 24-hour averaging times.

Considering the health information discussed above, in the proposal the Administrator concluded that an 8-hour averaging time remains appropriate for addressing health effects associated with short-term exposures to ambient O<sub>3</sub>. An 8-hour averaging time is similar to the exposure periods evaluated in controlled human exposure studies, including recent studies that provide evidence for respiratory effects following exposures to O<sub>3</sub> concentrations below the level of the current standard. In addition, epidemiologic studies provide evidence for health effect associations with 8-hour O<sub>3</sub> concentrations, as well as with 1-hour and 24-hour concentrations. As in previous reviews, the Administrator noted that a standard with an 8-hour averaging time (combined with an appropriate standard form and level) would also be expected to provide substantial protection against health effects attributable to 1-hour and 24-hour exposures (e.g., 62 FR 38861, July 18, 1997). This conclusion is consistent with the advice received from CASAC that “the current 8-hour averaging time is justified by the combined evidence from epidemiologic and clinical studies” (Frey, 2014c, p. 6).

#### b. Long-Term

The ISA concludes that the evidence for long-term O<sub>3</sub> exposures indicates that there is “likely to be a causal relationship” with respiratory effects (U.S. EPA, 2013, chapter 7). Thus, in this review the Administrator also considers the extent to which currently available evidence and exposure/risk information suggests that a standard with an 8-hour averaging time can provide protection against respiratory effects associated with longer term exposures to ambient O<sub>3</sub>.

In considering this issue in the 2008 review of the O<sub>3</sub> NAAQS, the Staff Paper noted that “because long-term air quality patterns would be improved in areas coming into attainment with an 8-hr standard, the potential risk of health effects associated with long-term exposures would be reduced in any area meeting an 8-hr standard” (U.S. EPA, 2007, p. 6–57). In the current review, the PA further evaluates this issue, with

a focus on the long-term O<sub>3</sub> metrics reported to be associated with mortality or morbidity in recent epidemiologic studies. As discussed in section 3.1.3 of the PA (U.S. EPA, 2014c, section 4.2), much of the recent evidence for such associations is based on studies that defined long-term O<sub>3</sub> in terms of seasonal averages of daily maximum 1-hour or 8-hour concentrations.

As an initial consideration, in the proposal the Administrator noted the risk results from the HREA for respiratory mortality associated with long-term O<sub>3</sub> concentrations. These HREA analyses indicate that as air quality is adjusted to just meet the current 8-hour standard, most urban study areas are estimated to experience reductions in respiratory mortality associated with long-term O<sub>3</sub> concentrations based on the seasonal averages of 1-hour daily maximum O<sub>3</sub> concentrations evaluated in the study by Jerrett *et al.* (2009) (U.S. EPA, 2014a, chapter 7).<sup>117</sup> As air quality is adjusted to meet lower alternative standard levels, for standards based on 3-year averages of the annual fourth-highest daily maximum 8-hour O<sub>3</sub> concentrations, respiratory mortality risks are estimated to be reduced further in urban study areas. This analysis indicates that an O<sub>3</sub> standard with an 8-hour averaging time, when coupled with an appropriate form and level, can reduce respiratory mortality reported to be associated with long-term O<sub>3</sub> concentrations.

In further considering the study by Jerrett *et al.* (2009), in the proposal the Administrator noted the PA comparison of long-term O<sub>3</sub> concentrations following model adjustment in urban study areas (*i.e.*, adjusted to meet the current and alternative 8-hour standards) to the concentrations present in study cities that provided the basis for the positive and statistically significant association with respiratory mortality. As indicated in Table 4–3 of the PA (U.S. EPA, 2014c, section 4.2), this comparison suggests that a standard with an 8-hour averaging time can decrease seasonal averages of 1-hour daily maximum O<sub>3</sub> concentrations, and can maintain those O<sub>3</sub> concentrations below the seasonal average concentration where the study indicates the most confidence in the reported concentration-response relationship with respiratory mortality (U.S. EPA, 2014c, sections 4.2 and 4.4.1).

<sup>117</sup> Though the Administrator also notes important uncertainties associated with these risk estimates, as discussed in section II.C.3.b of the proposal.

The Administrator also noted in the proposal that the HREA conducted analyses evaluating the impacts of reducing regional NO<sub>x</sub> emissions on the seasonal averages of daily maximum 8-hour O<sub>3</sub> concentrations. Seasonal averages of 8-hour daily max O<sub>3</sub> concentrations reflect long-term metrics that have been reported to be associated with respiratory morbidity effects in several recent O<sub>3</sub> epidemiologic studies (e.g., Islam *et al.*, 2008; Lin *et al.*, 2008a, 2008b; Salam *et al.*, 2009). The HREA analyses indicate that the large majority of the U.S. population lives in locations where reducing NO<sub>x</sub> emissions would be expected to result in decreases in seasonal averages of daily max 8-hour ambient O<sub>3</sub> concentrations (U.S. EPA, 2014a, chapter 8). Thus, consistent with the respiratory mortality risk estimates noted above, these analyses suggest that reductions in O<sub>3</sub> precursor emissions in order to meet a standard with an 8-hour averaging time would also be expected to reduce the long-term O<sub>3</sub> concentrations that have been reported in recent epidemiologic studies to be associated with respiratory morbidity.

#### c. Administrator's Proposed Conclusion on Averaging Time

In the proposal the Administrator noted that, when taken together, the analyses summarized above indicate that a standard with an 8-hour averaging time, coupled with the current fourth-high form and an appropriate level, would be expected to provide appropriate protection against the short- and long-term O<sub>3</sub> concentrations that have been reported to be associated with respiratory morbidity and mortality. The CASAC agreed with this conclusion, stating that “[t]he current 8-hour averaging time is justified by the combined evidence from epidemiologic and clinical studies” and that “[t]he 8-hour averaging window also provides protection against the adverse impacts of long-term ozone exposures, which were found to be “likely causal” for respiratory effects and premature mortality” (Frey, 2014c, p. 6). Therefore, considering the available evidence and exposure risk information, and CASAC's advice, the Administrator proposed to retain the current 8-hour averaging time, and not to set an additional standard with a different averaging time.

#### d. Comments on Averaging Time

Most public commenters did not address the issue of whether the EPA should consider additional or alternative averaging times. Of those who did address this issue, some commenters representing state agencies or industry groups agreed with the

proposed decision to retain the current 8-hour averaging time, generally noting the supportive evidence discussed in the preamble to the proposed rule. In contrast, several medical organizations and environmental groups questioned the degree of health protection provided by a standard based on an 8-hour averaging time. For example, one group asserted that “[a]veraging over any time period, such as 8 hours, is capable of hiding peaks that may be very substantial if they are brief enough.”

The EPA agrees with these commenters that an important issue in the current review is the appropriateness of using a standard with an 8-hour averaging time to protect against adverse health effects that are attributable to a wide range of O<sub>3</sub> exposure durations, including those shorter and longer than 8 hours. This is an issue that has been thoroughly evaluated by the EPA in past reviews, as well as in the current review.

The 8-hour O<sub>3</sub> NAAQS was originally set in 1997, as part of revising the then-existing standard with its 1-hour averaging time, and was retained in the review completed in 2008 (73 FR 16472). In both of these reviews, several lines of evidence and information provided support for an 8-hour averaging time rather than a shorter averaging time. For example, substantial health evidence demonstrated associations between a wide range of respiratory effects and 6- to 8-hour exposures to relatively low O<sub>3</sub> concentrations (*i.e.*, below the level of the 1-hour O<sub>3</sub> NAAQS in place prior to the review completed in 1997). A standard with an 8-hour averaging time was determined to be more directly associated with health effects of concern at lower O<sub>3</sub> concentrations than a standard with a 1-hour averaging time. In addition, results of quantitative analyses showed that a standard with an 8-hour averaging time can effectively limit both 1- and 8-hour exposures of concern, and that an 8-hour averaging time results in a more uniformly protective national standard than a 1-hour averaging time. In past reviews, CASAC has agreed that an 8-hour averaging time is appropriate.

In reaching her proposed decision to retain the 8-hour averaging time in the current review, the Administrator again considered the body of evidence for adverse effects attributable to a wide range of O<sub>3</sub> exposure durations, including studies specifically referenced by public commenters who questioned the protectiveness of a standard with an 8-hour averaging time. For example, as noted above a substantial body of health effects evidence from controlled human

exposure studies demonstrates that a wide range of respiratory effects occur in healthy adults following 6.6-hour exposures to O<sub>3</sub> (U.S. EPA, 2013, section 6.2.1.1). Compared to studies evaluating shorter exposure durations (e.g., 1-hour), studies evaluating 6.6-hour exposures in healthy adults have reported respiratory effects at lower O<sub>3</sub> exposure concentrations and at more moderate levels of exertion. The Administrator also noted the strength of evidence from epidemiologic studies that evaluated a number of different averaging times, with the most common being the maximum 1-hour concentration within a 24-hour period (1-hour max), the maximum 8-hour average concentration within a 24-hour period (8-hour max), and the 24-hour average. Evidence from time-series and panel epidemiologic studies comparing risk estimates across averaging times does not indicate that one exposure metric is more consistently or strongly associated with respiratory health effects or mortality (U.S. EPA, 2013, section 2.5.4.2; p. 2–31). For single- and multi-day average O<sub>3</sub> concentrations, lung function decrements were associated with 1-hour max, 8-hour max, and 24-hour average ambient O<sub>3</sub> concentrations, with no strong difference in the consistency or magnitude of association among the averaging times (U.S. EPA, 2013, p. 6–71). Similarly, in studies of short-term exposure to O<sub>3</sub> and mortality, Smith *et al.* (2009) and Darrow *et al.* (2011) have reported high correlations between risk estimates calculated using 24-hour average, 8-hour max, and 1-hour max averaging times (U.S. EPA, 2013, p. 6–253). Thus, the epidemiologic evidence does not provide a strong basis for distinguishing between the appropriateness of 1-hour, 8-hour, and 24-hour averaging times.

In addition, quantitative exposure and risk analyses in the HREA are based on an air quality adjustment approach that estimates hourly O<sub>3</sub> concentrations, and on scientific studies that evaluated health effects attributable to a wide range of O<sub>3</sub> exposure durations. For example, the risk of lung function decrements is estimated using a model based on controlled human exposure studies with exposure durations ranging from 2 to 7.6 hours (U.S. EPA, 2013, section 6.2.1.1). Epidemiology-based risk estimates are based on studies that reported health effect associations with short-term ambient O<sub>3</sub> concentrations ranging from 1-hour to 24-hours and with long-term seasonal average concentrations (U.S. EPA, 2014a, Table 7–2). Thus, the HREA estimated health

risks associated with a wide range of O<sub>3</sub> exposure durations and the Administrator's conclusions on averaging time in the current review are based, in part, on consideration of these estimates.

When taken together, the evidence and analyses indicate that a standard with an 8-hour averaging time, coupled with the current fourth-highest form and an appropriate level, would be expected to provide appropriate protection against the short- and long-term O<sub>3</sub> concentrations that have been reported to be associated with respiratory morbidity and mortality. The CASAC agreed with this, stating the following (Frey, 2014c, p. 6):

The current 8-hour averaging time is justified by the combined evidence from epidemiologic and clinical studies referenced in Chapter 4. Results from clinical studies, for example, show a wide range of respiratory effects in healthy adults following 6.6 hours of exposure to ozone, including pulmonary function decrements, increases in respiratory symptoms, lung inflammation, lung permeability, decreased lung host defense, and airway hyperresponsiveness. These findings are supported by evidence from epidemiological studies that show causal associations between short-term exposures of 1, 8 and 24-hours and respiratory effects and "likely to be causal" associations for cardiovascular effects and premature mortality. The 8-hour averaging window also provides protection against the adverse impacts of long-term ozone exposures, which were found to be "likely causal" for respiratory effects and premature mortality.

Given all of the above, the EPA disagrees with commenters who question the protectiveness of an O<sub>3</sub> standard with an 8-hour averaging time, particularly for an 8-hour standard with the revised level of 70 ppb that is being established in this review, as discussed below (II.C.4).

#### e. Administrator's Final Decision Regarding Averaging Time

In considering the evidence and information summarized in the proposal and discussed in detail in the ISA, HREA, and PA; CASAC's views; and public comments, the Administrator concludes that a standard with an 8-hour averaging time can effectively limit health effects attributable to both short- and long-term O<sub>3</sub> exposures. As was the case in the proposal, this final conclusion is based on (1) the strong evidence that continues to support the importance of protecting public health against short-term O<sub>3</sub> exposures (e.g., ≤ 1-hour to 24-hour) and (2) analyses in the HREA and PA supporting the conclusion that the current 8-hour averaging time can effectively limit long-term O<sub>3</sub> exposures. Furthermore,

the Administrator observes that the CASAC Panel agreed with the choice of averaging time (Frey, 2014c). Therefore, in the current review, the Administrator concludes that it is appropriate to retain the 8-hour averaging time and to not set a separate standard with a different averaging time in this final rule.

#### 3. Form

The "form" of a standard defines the air quality statistic that is to be compared to the level of the standard in determining whether an area attains that standard. The foremost consideration in selecting a form is the adequacy of the public health protection provided by the combination of the form and the other elements of the standard. In this review, the Administrator considers the extent to which the available evidence and/or information continue to support the appropriateness of a standard with the current form, defined by the 3-year average of annual fourth-highest 8-hour daily maximum O<sub>3</sub> concentrations. Section II.C.3.a below summarizes the basis for the current form. Section II.C.3.b discusses the Administrator's proposed decision to retain the current form. Section II.C.3.c discusses public comments received on the form of the primary standard. Section II.C.3.d discusses the Administrator's final decision on form.

##### a. Basis for the Current Form

The EPA established the current form of the primary O<sub>3</sub> NAAQS in 1997 (62 FR 38856). Prior to that time, the standard had a "1-expected-exceedance" form.<sup>118</sup> An advantage of the current concentration-based form recognized in the 1997 review is that such a form better reflects the continuum of health effects associated with increasing ambient O<sub>3</sub> concentrations. Unlike an expected exceedance form, a concentration-based form gives proportionally more weight to years when 8-hour O<sub>3</sub> concentrations are well above the level of the standard than years when 8-hour O<sub>3</sub> concentrations are just above the level of the standard.<sup>119</sup> The EPA judged it

<sup>118</sup> For a standard with a 1-expected-exceedance form to be met at an air quality monitoring site, the fourth-highest air quality value in 3 years, given adjustments for missing data, must be less than or equal to the level of the standard.

<sup>119</sup> As discussed (61 FR 65731), this is because with an exceedance-based form, days on which the ambient O<sub>3</sub> concentration is well above the level of the standard are given equal weight to those days on which the O<sub>3</sub> concentration is just above the standard (i.e., each day is counted as one exceedance), even though the public health impact of such days would be very different. With a concentration-based form, days on which higher O<sub>3</sub> concentrations occur would weigh proportionally more than days with lower O<sub>3</sub> concentrations since

appropriate to give more weight to higher O<sub>3</sub> concentrations, given that available health evidence indicated a continuum of effects associated with exposures to varying concentrations of O<sub>3</sub>, and given that the extent to which public health is affected by exposure to ambient O<sub>3</sub> is related to the actual magnitude of the O<sub>3</sub> concentration, not just whether the concentration is above a specified level.

During the 1997 review, the EPA considered a range of alternative "concentration-based" forms, including the second-, third-, fourth- and fifth-highest daily maximum 8-hour concentrations in an O<sub>3</sub> season. The fourth-highest daily maximum was selected, recognizing that a less restrictive form (e.g., fifth-highest) would allow a larger percentage of sites to experience O<sub>3</sub> peaks above the level of the standard, and would allow more days on which the level of the standard may be exceeded when the site attains the standard (62 FR 38856). The EPA also considered setting a standard with a form that would provide a margin of safety against possible but uncertain chronic effects, and would provide greater stability to ongoing control programs.<sup>120</sup> A more restrictive form was not selected, recognizing that the differences in the degree of protection afforded by the alternatives were not well enough understood to use any such differences as a basis for choosing the most restrictive forms (62 FR 38856).

In the 2008 review, the EPA additionally considered the potential value of a percentile-based form. In doing so, the EPA recognized that such a statistic is useful for comparing datasets of varying length because it samples approximately the same place in the distribution of air quality values, whether the dataset is several months or several years long. However, the EPA concluded that a percentile-based statistic would not be effective in ensuring the same degree of public health protection across the country. Specifically, a percentile-based form would allow more days with higher air quality values in locations with longer O<sub>3</sub> seasons relative to locations with shorter O<sub>3</sub> seasons. Thus, in the 2008 review, the EPA concluded that a form based on the nth-highest maximum O<sub>3</sub> concentration would more effectively ensure that people who live in areas

the actual concentrations are used directly to calculate whether the standard is met or violated.

<sup>120</sup> See *American Trucking Ass'n v. EPA*, 283 F.3d at 374-75 (less stable implementation programs may be less effective and would thereby provide less public health protection; EPA may therefore legitimately consider programmatic stability in determining the form of a NAAQS).

with different length O<sub>3</sub> seasons receive the same degree of public health protection.

Based on analyses of forms specified in terms of an nth-highest concentration (n ranged from 3 to 5), advice from CASAC, and public comment, the Administrator concluded that a fourth-highest daily maximum should be retained (73 FR 16465, March 27, 2008). In reaching this decision, the Administrator recognized that “there is not a clear health-based threshold for selecting a particular nth-highest daily maximum form of the standard” and that “the adequacy of the public health protection provided by the combination of the level and form is a foremost consideration” (73 FR 16475, March 27, 2008). Based on this, the Administrator judged that the existing form (fourth-highest daily maximum 8-hour average concentration) should be retained, recognizing the increase in public health protection provided by combining this form with a lower standard level (*i.e.*, 75 ppb).

The Administrator also recognized that it is important to have a form that provides stability with regard to implementation of the standard. In the case of O<sub>3</sub>, for example, he noted the importance of a form insulated from the impacts of extreme meteorological events that are conducive to O<sub>3</sub> formation. Such events could have the effect of reducing public health protection, to the extent they result in frequent shifts in and out of attainment due to meteorological conditions. The Administrator noted that such frequent shifting could disrupt an area’s ongoing implementation plans and associated control programs (73 FR 16474, March 27, 2008). In his final decision, the Administrator judged that a fourth-high form “provides a stable target for implementing programs to improve air quality” (*id.* at 16475).

#### b. Proposed Decision on Form

In the proposal for the current review, the Administrator considered the extent to which newly available information provides support for the current form (79 FR 75293). In so doing, she took note of the conclusions of prior reviews summarized above. She recognized the value of an nth-high statistic over that of an expected exceedance or percentile-based form in the case of the O<sub>3</sub> standard, for the reasons summarized above. The Administrator additionally took note of the importance of stability in implementation to achieving the level of protection specified by the NAAQS. Specifically, she noted that to the extent areas engaged in implementing the O<sub>3</sub> NAAQS frequently shift from meeting

the standard to violating the standard, it is possible that ongoing implementation plans and associated control programs could be disrupted, thereby reducing public health protection.

In light of this, while giving foremost consideration to the adequacy of public health protection provided by the combination of all elements of the standard, including the form, the Administrator considered particularly the findings from prior reviews with regard to the use of the nth-high metric. As noted above, the EPA selected the fourth-highest daily maximum, recognizing the public health protection provided by this form, when coupled with an appropriate averaging time and level, and recognizing that such a form can provide stability for implementation programs. In the proposal the Administrator concluded that the currently available evidence and information do not call into question these conclusions from previous reviews. In reaching this initial conclusion, the Administrator noted that CASAC concurred that the O<sub>3</sub> standard should be based on the fourth-highest, daily maximum 8-hour average value (averaged over 3 years), stating that this form “provides health protection while allowing for atypical meteorological conditions that can lead to abnormally high ambient ozone concentrations which, in turn, provides programmatic stability” (Frey, 2014c, p. 6). Thus, a standard with the current fourth-high form, coupled with a level lower than 75 ppb as discussed below, would be expected to increase public health protection relative to the current standard while continuing to provide stability for implementation programs. Therefore, the Administrator proposed to retain the current fourth-highest daily maximum form for an O<sub>3</sub> standard with an 8-hour averaging time and a revised level.

#### c. Public Comments on Form

Several commenters focused on the stability of the standard to support their positions regarding form. Some industry associations and state agencies support changing to a form that would allow a larger number of exceedances of the standard level than are allowed by the current fourth-high form. In some cases, these commenters argued that a standard allowing a greater number of exceedances would provide the same degree of public health protection as the current standard. Some commenters advocated a percentile-based form, such as the 98th percentile. These commenters cited a desire for consistency with short-term standards for other criteria pollutants (*e.g.*, PM<sub>2.5</sub>,

NO<sub>2</sub>), as well as a desire to allow a greater number of exceedances of the standard level, thus making the standard less sensitive to fluctuations in background O<sub>3</sub> concentrations and to extreme meteorological events.

Other commenters submitted analyses purporting to indicate that a fourth-high form provides only a small increase in stability, relative to forms that allow fewer exceedances of the standard level (*i.e.*, first-high, second-high). These commenters also called into question the degree of health protection achieved by a standard with a fourth-high form and a level in the proposed range (*i.e.*, 65 to 70 ppb). They pointed out that a fourth-high form will, by definition, allow 3 days per year, on average, with 8-hour O<sub>3</sub> concentrations above the level of the standard. Commenters further stated that “[i]f ozone levels on these peak days are appreciably higher than on the fourth-highest day, given EPA’s acknowledged concerns regarding single or multiple (defined by EPA as 2 or more) exposures to elevated ozone concentrations, EPA must account for the degree of under-protection in setting the level of the NAAQS” (*e.g.*, ALA *et al.*, p. 138).

For the reasons discussed in the proposal, and summarized above, the EPA disagrees with commenters who supported a percentile-based form, such as the 98th percentile, for the O<sub>3</sub> NAAQS. As noted above, a percentile-based statistic would not be effective in ensuring the same degree of public health protection across the country. Rather, a percentile-based form would allow more days with higher air quality values in locations with longer O<sub>3</sub> seasons relative to locations with shorter O<sub>3</sub> seasons. Thus, as in the 2008 review, in the current review the EPA concludes that a form based on the nth-highest maximum O<sub>3</sub> concentration would more effectively ensure that people who live in areas with different length O<sub>3</sub> seasons receive the same degree of public health protection.

In considering various nth-high values, as in past reviews (*e.g.*, 73 FR 16475, March 27, 2008), the EPA recognizes that there is not a clear health-based threshold for selecting a particular nth-highest daily maximum form. Rather, the primary consideration is the adequacy of the public health protection provided by the combination of all of the elements of the standard, including the form. Environmental and public health commenters are correct that a standard with the current fourth-high form will allow 3 days per year, on average, with 8-hour O<sub>3</sub> concentrations higher than the standard level. However, the EPA disagrees with these

commenters' assertion that using a fourth-high form results in a standard that is under-protective. The O<sub>3</sub> exposure and risk estimates that informed the Administrator's consideration of the degree of public health protection provided by various standard levels were based on air quality that "just meets" various standards with the current 8-hour averaging time and fourth-high, 3-year average form (U.S. EPA, 2014a, section 4.3.3). Therefore, air quality adjusted to meet various levels of the standard with the current form and averaging time will include days with concentrations above the level of the standard, and these days contribute to exposure and risk estimates. In this way, the Administrator has reasonably considered the public health protection provided by the combination of all of the elements of the standard, including the fourth-high form.

In past reviews, EPA selected the fourth-highest daily maximum form in recognition of the public health protection provided by this form, when coupled with an appropriate averaging time and level, and recognizing that such a form can provide stability for ongoing implementation programs. As noted above, some commenters submitted analyses suggesting that a fourth-high form provides only a small increase in stability, relative to a first- or second-high form. The EPA has conducted analyses of ambient O<sub>3</sub> monitoring data to further consider these commenters' assertions regarding stability. The EPA's analyses of nth-high concentrations ranging from first-high to fifth-high have been summarized in a memo to the docket (Wells, 2015a). Consistent with commenters' analyses, Wells (2015a) indicates a progressive decrease in the variability of O<sub>3</sub> concentrations, and an increase in the stability of those concentrations, as "n" increases. Based on these analyses, there is no clear threshold for selecting a particular nth-high form based on stability alone. Rather, as in past reviews, the decision on form in this review focuses first and foremost on the Administrator's judgments on public health protection, with judgments regarding stability of the standard being a legitimate, but secondary consideration. The Administrator's final decision on form is discussed below.

#### d. Administrator's Final Decision Regarding Form

In reaching a final decision on the form of the primary O<sub>3</sub> standard, as described in the proposal and above, the Administrator recognizes that there is not a clear health-based rationale for

selecting a particular nth-highest daily maximum form. Her foremost consideration is the adequacy of the public health protection provided by the combination of all of the elements of the standard, including the form. In this regard, the Administrator recognizes the support from analyses in previous reviews, and from the CASAC in the current review, for the conclusion that the current fourth-high form of the standard, when combined with a revised level as discussed below, provides an appropriate balance between public health protection and a stable target for implementing programs to improve air quality. In particular, she notes that the CASAC concurred that the O<sub>3</sub> standard should be based on the fourth-highest, daily maximum 8-hour average value (averaged over 3 years), stating that this form "provides health protection while allowing for atypical meteorological conditions that can lead to abnormally high ambient ozone concentrations which, in turn, provides programmatic stability" (Frey, 2014c, p. 6). Based on these considerations, and on consideration of public comments on form as discussed above, the Administrator judges it appropriate to retain the current fourth-high form (fourth-highest daily maximum 8-hour O<sub>3</sub> concentration, averaged over 3 years) in this final rule.

#### 4. Level

This section summarizes the basis for the Administrator's proposed decision to revise the current standard level (II.C.4.a); discusses public comments, and the EPA's responses, on that proposed decision (II.C.4.b); and presents the Administrator's final decision regarding the level of the primary O<sub>3</sub> standard (II.C.4.c).

##### a. Basis for the Administrator's Proposed Decision on Level

In conjunction with her proposed decisions to retain the current indicator, averaging time, and form (II.C.1 to II.C.3, above), the Administrator proposed to revise the level of the primary O<sub>3</sub> standard to within the range of 65 to 70 ppb. In proposing this range of standard levels, as discussed in section II.E.4 of the proposal, the Administrator carefully considered the scientific evidence assessed in the ISA (U.S. EPA, 2013); the results of the exposure and risk assessments in the HREA (U.S. EPA, 2014a); the evidence-based and exposure-/risk-based considerations and conclusions in the PA (U.S. EPA, 2014c); CASAC advice and recommendations, as reflected in CASAC's letters to the Administrator and in public discussions of drafts of

the ISA, HREA, and PA (Frey and Samet, 2012; Frey, 2014 a, c); and public input received during the development of these documents.

The Administrator's proposal to revise the standard level built upon her proposed conclusion that the overall body of scientific evidence and exposure/risk information calls into question the adequacy of public health protection afforded by the current primary O<sub>3</sub> standard, particularly for at-risk populations and lifestages. In reaching proposed conclusions on alternative levels for the primary O<sub>3</sub> standard, the Administrator considered the extent to which various alternatives would be expected to protect the public, including at-risk populations, against the wide range of adverse health effects that have been linked with short- or long-term O<sub>3</sub> exposures.

As was the case for her consideration of the adequacy of the current primary O<sub>3</sub> standard (II.B.3, above), the Administrator placed the greatest weight on the results of controlled human exposure studies and on exposure and risk analyses based on information from these studies. In doing so, she noted that controlled human exposure studies provide the most certain evidence indicating the occurrence of health effects in humans following exposures to specific O<sub>3</sub> concentrations. The effects reported in these studies are due solely to O<sub>3</sub> exposures, and interpretation of study results is not complicated by the presence of co-occurring pollutants or pollutant mixtures (as is the case in epidemiologic studies). She further noted the CASAC judgment that "the scientific evidence supporting the finding that the current standard is inadequate to protect public health is strongest based on the controlled human exposure studies of respiratory effects" (Frey, 2014c, p. 5).

In considering the evidence from controlled human exposure studies, the Administrator first noted that the largest respiratory effects, and the broadest range of effects, have been studied and reported following exposures to 80 ppb O<sub>3</sub> or higher, with most exposure studies conducted at these higher concentrations. Exposures of healthy adults to O<sub>3</sub> concentrations of 80 ppb or higher have been reported to decrease lung function, increase airway inflammation, increase respiratory symptoms, result in airway hyperresponsiveness, and decrease lung host defenses. The Administrator further noted that O<sub>3</sub> exposure concentrations as low as 72 ppb have been shown to both decrease lung function and increase respiratory

symptoms (Schelegle *et al.*, 2009),<sup>121</sup> a combination that meets the ATS criteria for an adverse response, and that exposures as low as 60 ppb have been reported to decrease lung function and increase airway inflammation.

Based on this evidence, the Administrator reached the initial conclusion that the results of controlled human exposure studies strongly support setting the level of a revised O<sub>3</sub> standard no higher than 70 ppb. In reaching this conclusion, she placed a large amount of weight on the importance of setting the level of the standard well below 80 ppb, the exposure concentration at which the broadest range of effects have been studied and reported, and below 72 ppb, the lowest exposure concentration shown to result in the adverse combination of lung function decrements and respiratory symptoms. She placed significant weight on this *combination* of effects, as did CASAC, in making judgments regarding the potential for adverse responses.

In further considering the potential public health implications of a standard with a level of 70 ppb, the Administrator also considered quantitative estimates of the extent to which such a standard would be expected to limit population exposures to the broader range of O<sub>3</sub> concentrations shown in controlled human exposure studies to cause respiratory effects. In doing so, she focused on estimates of O<sub>3</sub> exposures of concern at or above the benchmark concentrations of 60, 70, and 80 ppb. The Administrator judged that the evidence supporting the occurrence of adverse respiratory effects is strongest for exposures at or above the 70 and 80 ppb benchmarks. Therefore, she placed a large amount of emphasis on the importance of setting a standard that limits exposures of concern at or above these benchmarks.

The Administrator expressed less confidence that adverse effects will occur following exposures to O<sub>3</sub> concentrations as low as 60 ppb. In reaching this conclusion, she highlighted the fact that statistically significant increases in respiratory symptoms, combined with lung function decrements, have not been reported following exposures to 60 or 63 ppb O<sub>3</sub>, though several studies have evaluated the potential for such effects (Kim *et al.*, 2011; Schelegle *et al.*, 2009;

Adams, 2006).<sup>122</sup> The proposal specifically stated that “[t]he Administrator has decreasing confidence that adverse effects will occur following exposures to O<sub>3</sub> concentrations below 72 ppb. In particular, compared to O<sub>3</sub> exposure concentrations at or above 72 ppb, she has less confidence that adverse effects will occur following exposures to O<sub>3</sub> concentrations as low as 60 ppb” (79 FR 73304–05).

However, she noted the possibility for adverse effects following such exposures given that: (1) CASAC judged the adverse combination of lung function decrements and respiratory symptoms “almost certainly occur in some people” following exposures to O<sub>3</sub> concentrations below 72 ppb (though CASAC did not specify or otherwise indicate how far below) (Frey, 2014c, p. 6); (2) CASAC indicated the moderate lung function decrements (*i.e.*, FEV<sub>1</sub> decrements  $\geq 10\%$ ) that occur in some healthy adults following exposures to 60 ppb O<sub>3</sub> could be adverse to people with lung disease; and (3) airway inflammation has been reported following exposures as low as 60 ppb O<sub>3</sub>. She also took note of CASAC advice that the occurrence of exposures of concern at or above 60 ppb is an appropriate consideration for people with asthma (Frey, 2014c, p. 6). Therefore, while the Administrator expressed less confidence that adverse effects will occur following exposures to O<sub>3</sub> concentrations as low as 60 ppb, compared to 70 ppb and above, based on the evidence and CASAC advice she also gave some consideration to exposures of concern for the 60 ppb benchmark.

Due to interindividual variability in responsiveness, the Administrator further noted that not every occurrence of an exposure of concern will result in an adverse effect, and that repeated occurrences of some of the effects demonstrated following exposures of concern could increase the likelihood of adversity (U.S. EPA, 2013, section 6.2.3). Therefore, the Administrator was most concerned about protecting at-risk populations against repeated occurrences of exposures of concern. Based on the above considerations, the Administrator focused on the extent to which a revised standard with a level of 70 ppb would be expected to protect populations from experiencing two or more O<sub>3</sub> exposures of concern (*i.e.*, as a surrogate for repeated exposures).

As illustrated in Table 1 in the proposal (and Table 1 above), the Administrator noted that, in urban study areas, a revised standard with a level of 70 ppb is estimated to eliminate the occurrence of two or more exposures of concern to O<sub>3</sub> concentrations at and above 80 ppb and to virtually eliminate the occurrence of two or more exposures of concern to O<sub>3</sub> concentrations at and above 70 ppb, even in the worst-case urban study area and year evaluated. Though the Administrator acknowledged greater uncertainty with regard to the occurrence of adverse effects following exposures to 60 ppb, she noted that a revised standard with a level of 70 ppb would also be expected to protect the large majority of children in the urban study areas (*i.e.*, about 96% to more than 99% of children in individual urban study areas) from experiencing two or more exposures of concern at or above the 60 ppb benchmark. Compared to the current standard, this represents a reduction of more than 60%.<sup>123</sup>

In further evaluating the potential public health impacts of a standard with a level of 70 ppb, the Administrator also considered the HREA estimates of O<sub>3</sub>-induced lung function decrements. To inform her consideration of these decrements, the Administrator took note of CASAC advice that “estimation of FEV<sub>1</sub> decrements of  $\geq 15\%$  is appropriate as a scientifically relevant surrogate for adverse health outcomes in active healthy adults, whereas an FEV<sub>1</sub> decrement of  $\geq 10\%$  is a scientifically relevant surrogate for adverse health outcomes for people with asthma and lung disease” (Frey, 2014c, p. 3).

Although these FEV<sub>1</sub> decrements provide perspective on the potential for the occurrence of adverse respiratory effects following O<sub>3</sub> exposures, the Administrator agreed with the conclusion in past reviews that a more general consensus view of the adversity of moderate responses emerges as the frequency of occurrence increases (61 FR 65722–3, Dec, 13, 1996). Specifically, she judged that not every estimated occurrence of an O<sub>3</sub>-induced FEV<sub>1</sub> decrement will be adverse and

<sup>123</sup> The Administrator judged that the evidence is less compelling, and indicates greater uncertainty, with regard to the potential for adverse effects following single occurrences of O<sub>3</sub> exposures of concern. While acknowledging this greater uncertainty, she noted that a standard with a level of 70 ppb would also be expected to virtually eliminate all occurrences (including single occurrences) of exposures of concern at or above 80 ppb, even in the worst-case year and location. She also judged that such a standard will achieve important reductions, compared to the current standard, in the occurrence of one or more exposures of concern at or above 70 and 60 ppb.

<sup>121</sup> As noted above, for the 70 ppb target exposure concentration, Schelegle *et al.* (2009) reported that the actual mean exposure concentration was 72 ppb.

<sup>122</sup> In the study by Schelegle, for the 60 ppb target exposure concentration, study authors reported that the actual mean exposure concentration was 63 ppb.

that repeated occurrences of moderate responses could lead to more serious illness. Therefore, the Administrator noted increasing concern about the potential for adversity as the number of occurrences increases and, as a result, she focused primarily on estimates of two or more O<sub>3</sub>-induced FEV<sub>1</sub> decrements (*i.e.*, as a surrogate for repeated exposures).<sup>124</sup>

The Administrator noted that a revised O<sub>3</sub> standard with a level of 70 ppb is estimated to protect about 98 to 99% of children in urban study areas from experiencing two or more O<sub>3</sub>-induced FEV<sub>1</sub> decrements  $\geq 15\%$ , and about 89 to 94% from experiencing two or more decrements  $\geq 10\%$ . She judged that these estimates reflect important risk reductions, compared to the current standard. Given these estimates, as well as estimates of one or more decrements per season (about which she was less concerned (79 FR 75290, December 17, 2014)), the Administrator concluded that a revised standard with a level of 70 ppb would be expected to provide substantial protection against the risk of O<sub>3</sub>-induced lung function decrements, and would be expected to result in important reductions in such risks, compared to the current standard. The Administrator further noted, however, that the variability in lung function risk estimates across urban study areas is often greater than the differences in risk estimates between various standard levels (Table 2, above). Given this, and the resulting considerable overlap between the ranges of lung function risk estimates for different standard levels, in the proposal the Administrator viewed lung function risk estimates as providing a more limited basis than exposures of concern for distinguishing between the degrees of public health protection provided by alternative standard levels (79 FR 75306 n. 164).

In next considering the additional protection that would be expected from standard levels below 70 ppb, the Administrator evaluated the extent to which a standard with a level of 65 ppb would be expected to further limit O<sub>3</sub> exposures of concern and O<sub>3</sub>-induced lung function decrements. In addition to eliminating almost all exposures of concern to O<sub>3</sub> concentrations at or above 80 and 70 ppb, even in the worst-case years and locations, the Administrator noted that a revised standard with a

level of 65 ppb would be expected to protect more than 99% of children in urban study areas from experiencing two or more exposures of concern at or above 60 ppb and to substantially reduce the occurrence of one or more such exposures, compared to the current standard. With regard to O<sub>3</sub>-induced lung function decrements, an O<sub>3</sub> standard with a level of 65 ppb is estimated to protect about 98% to more than 99% of children from experiencing two or more O<sub>3</sub>-induced FEV<sub>1</sub> decrements  $\geq 15\%$  and about 91 to 99% from experiencing two or more decrements  $\geq 10\%$ .<sup>125</sup>

Taken together, the Administrator concluded that the evidence from controlled human exposure studies, and the information from quantitative analyses that draw upon these studies, provide strong support for standard levels from 65 to 70 ppb. In particular, she based this conclusion on the fact that such standard levels would be well below the O<sub>3</sub> exposure concentration shown to result in the widest range of respiratory effects (*i.e.*, 80 ppb),<sup>126</sup> and below the lowest O<sub>3</sub> exposure concentration shown to result in the adverse combination of lung function decrements and respiratory symptoms (*i.e.*, 72 ppb). A standard with a level from 65 to 70 ppb would also be expected to result in important reductions, compared to the current standard, in the occurrence of O<sub>3</sub> exposures of concern for all of the benchmarks evaluated (*i.e.*, 60, 70, and 80 ppb) and in the risk of O<sub>3</sub>-induced lung function decrements  $\geq 10$  and 15%.

In further considering the evidence and exposure/risk information, the Administrator considered the extent to which the epidemiologic evidence also provides support for standard levels from 65 to 70 ppb. In particular, the Administrator noted analyses in the PA (U.S. EPA, 2014c, section 4.4.1) indicating that a revised standard with a level of 65 or 70 ppb would be expected to maintain distributions of short-term ambient O<sub>3</sub> concentrations below those present in the locations of all the single-city epidemiologic studies of hospital admissions or emergency department visits analyzed. She concluded that a revised standard with a level at least as low as 70 ppb would

result in improvements in public health, beyond the protection provided by the current standard, in the locations of the single-city epidemiologic studies that reported significant health effect associations.<sup>127</sup>

The Administrator noted additional uncertainty in interpreting air quality in locations of multicity epidemiologic studies of short-term O<sub>3</sub> for the purpose of evaluating alternative standard levels (II.D.1 and U.S. EPA, 2014c, section 4.4.1). While acknowledging this uncertainty, and therefore placing less emphasis on these analyses of study location air quality, she noted that PA analyses suggest that standard levels of 65 or 70 ppb would require reductions, beyond those required by the current standard, in ambient O<sub>3</sub> concentrations present in several of the locations that provided the basis for statistically significant O<sub>3</sub> health effect associations in multicity studies.

In further evaluating information from epidemiologic studies, the Administrator considered the HREA's epidemiology-based risk estimates for O<sub>3</sub>-associated morbidity or mortality (U.S. EPA, 2014a, Chapter 7). Compared to the weight given to the evidence from controlled human exposure studies, and to HREA estimates of exposures of concern and lung function risks, she placed relatively less weight on epidemiology-based risk estimates. In doing so, she noted that the overall conclusions from the HREA likewise reflect relatively less confidence in estimates of epidemiology-based risks than in estimates of exposures of concern and lung function risks.

In considering epidemiology-based risk estimates, the Administrator focused on risks associated with O<sub>3</sub> concentrations in the upper portions of ambient distributions, given the greater uncertainty associated with the shapes of concentration-response curves for O<sub>3</sub> concentrations in the lower portions of ambient distributions (*i.e.*, below about 20 to 40 ppb depending on the O<sub>3</sub> metric, health endpoint, and study population) (U.S. EPA, 2013, section 2.5.4.4). The Administrator further noted that experimental studies provide the strongest evidence for O<sub>3</sub>-induced effects following exposures to O<sub>3</sub> concentrations corresponding to the upper portions of typical ambient

<sup>124</sup> In the proposal, the Administrator further judged that it would not be appropriate to set a standard that is intended to eliminate all O<sub>3</sub>-induced FEV<sub>1</sub> decrements. She noted that this is consistent with CASAC advice, which did not include a recommendation to set the standard level low enough to eliminate all O<sub>3</sub>-induced FEV<sub>1</sub> decrements  $\geq 10$  or 15% (Frey, 2014c).

<sup>125</sup> Although the Administrator was less concerned about the public health implications of single O<sub>3</sub>-induced lung function decrements, she also noted that a revised standard with a level of 65 ppb is estimated to reduce the risk of one or more O<sub>3</sub>-induced decrements per season, compared to the current standard.

<sup>126</sup> Although the widest range of effects have been evaluated following exposures to 80 ppb O<sub>3</sub>, there is no evidence that 80 ppb is a threshold for these effects.

<sup>127</sup> The Administrator also concluded that analyses in the HREA and PA indicate that a standard with an 8-hour averaging time, coupled with the current fourth-high form and a level from 65 to 70 ppb, would be expected to provide increased protection, compared to the current standard, against the long-term O<sub>3</sub> concentrations that have been reported to be associated with respiratory morbidity or mortality (79 FR 75293; 75308).



distributions. In particular, as discussed above, she noted controlled human exposure studies showing respiratory effects following exposures to O<sub>3</sub> concentrations at or above 60 ppb (79 FR 75308, December 17, 2014).

Therefore, in considering risks associated with O<sub>3</sub> concentrations in the upper portions of ambient distributions, the Administrator focused on the extent to which revised standards with levels of 70 or 65 ppb are estimated to reduce the risk of premature deaths associated with area-wide O<sub>3</sub> concentrations at or above 40 ppb and 60 ppb.

Given all of the above evidence, exposure/risk information, and advice from CASAC, the Administrator proposed to revise the level of the current primary O<sub>3</sub> standard to within the range of 65 to 70 ppb. In considering CASAC advice on the range of standard levels, the Administrator placed a large amount of weight on CASAC's conclusion that there is adequate scientific evidence to consider a range of levels for a primary standard that includes an upper end at 70 ppb. She also noted that although CASAC expressed concern about the margin of safety at a level of 70 ppb, it further acknowledged that the choice of a level within the range recommended based on scientific evidence is a policy judgment (Frey, 2014c, p. ii). While she agreed with CASAC that it is appropriate to consider levels below 70 ppb, as reflected in her range of proposed levels from 65 to 70 ppb, for the reasons discussed above she also concluded that a standard level as high as 70 ppb, which CASAC concluded could be supported by the scientific evidence, could reasonably be judged to be requisite to protect public health with an adequate margin of safety.

In considering the appropriateness of standard levels below 65 ppb, the Administrator noted the conclusions of the PA and the advice of CASAC that it would be appropriate for her to consider standard levels as low as 60 ppb. In making the decision to not propose levels below 65 ppb, she focused on CASAC's rationale for a level of 60 ppb, which focused on the importance of limiting exposures to O<sub>3</sub> concentrations as low as 60 ppb (Frey, 2014c, p. 7). As discussed above, the Administrator agreed that it is appropriate to consider the implications of a revised standard level for estimated exposures of concern at or above 60 ppb. She noted that standards within the proposed range of 65 to 70 ppb would be expected to substantially limit the occurrence of exposures of concern to O<sub>3</sub> concentrations at or above 60 ppb, particularly the occurrence of two or

more exposures. When she further considered that not all exposures of concern lead to adverse effects, and that the NAAQS are not meant to be zero-risk or background standards, the Administrator judged that alternative standard levels below 65 ppb are not needed to further reduce such exposures.

#### b. Comments on Level

A number of groups representing medical, public health, or environmental organizations; some state agencies; and many individuals submitted comments on the appropriate level of a revised primary O<sub>3</sub> standard.<sup>128</sup> Virtually all of these commenters supported setting the standard level within the range recommended by CASAC (*i.e.*, 60 to 70). Some expressed support for the overall CASAC range, without specifying a particular level within that range, while others expressed a preference for the lower part of the CASAC range, often emphasizing support for a level of 60 ppb. Some of these commenters stated that if the EPA does not set the level at 60 ppb, then the level should be set no higher than 65 ppb (*i.e.*, the lower bound of the proposed range of standard levels).

To support their views on the level of a revised standard, some commenters focused on overarching issues related to the statutory requirements for the NAAQS. For example, some commenters maintained that the primary NAAQS must be set at a level at which there is an absence of adverse effects in sensitive populations. While this argument has some support in the case law and in the legislative history to the 1970 CAA (see *Lead Industries Ass'n v. EPA*, 647 F. 2d 1147, 1153 (D.C. Cir. 1980)), it is well established that the NAAQS are not meant to be zero risk standards. See *Lead Industries v. EPA*, 647 F.2d at 1156 n.51; *Mississippi v. EPA*, 744 F. 3d at 1351. From the inception of the NAAQS standard-setting process, the EPA and the courts have acknowledged that scientific uncertainties in general, and the lack of clear thresholds in pollutant effects in particular, preclude any such definitive determinations. *Lead Industries*, 647 F. 2d at 1156 (setting standard at a level which would remove most but not all

sub-clinical effects). Likewise, the House report to the 1977 amendments addresses this question (H. Rep. 95–294, 95th Cong. 1st sess. 127):<sup>129</sup>

Some have suggested that since the standards are to protect against all known or anticipated effects and since no safe threshold can be established, the ambient standards should be set at zero or background levels. Obviously, this no-risk philosophy ignores all economic and social consequences and is impractical. This is particularly true in light of the legal requirement for mandatory attainment of the national primary standards within 3 years.

Thus, post-1970 jurisprudence makes clear the impossibility, and lack of legal necessity, for NAAQS removing all health risk. See *ATA III*, 283 F. 3d at 360 (“[t]he lack of a threshold concentration below which these pollutants are known to be harmless makes the task of setting primary NAAQS difficult, as EPA must select standard levels that reduce risks sufficiently to protect public health even while recognizing that a zero-risk standard is not possible”); *Mississippi*, 744 F. 3d at 1351 (same); see also *id.* at 1343 (“[d]etermining what is ‘requisite’ to protect the ‘public health’ with an ‘adequate’ margin of safety may indeed require a contextual assessment of acceptable risk. See *Whitman*, 531 U.S. at 494–95 (Breyer J. concurring)”).

In this review, EPA is setting a standard based on a careful weighing of available evidence, including a weighing of the strengths and limitations of the evidence and underlying scientific uncertainties therein. The Administrator's choice of standard level is rooted in her evaluation of the evidence, which reflects her legitimate uncertainty as to the O<sub>3</sub> concentrations at which the public would experience adverse health effects. This is a legitimate, and well recognized, exercise of “reasoned decision-making.” *ATA III*, 283 F. 3d at 370; see also *id.* at 370 (“EPA's inability to guarantee the accuracy or increase the precision of the . . . NAAQS in no way undermines the standards' validity. Rather, these limitations indicate only that significant scientific uncertainty remains about the health effects of fine particulate matter at low atmospheric concentration. . . .”); *Mississippi*, 744 F. 3d at 1352–53 (appropriate for EPA to balance scientific uncertainties in determining level of revised O<sub>3</sub> NAAQS).

<sup>128</sup> In general, commenters who expressed the view that the EPA should retain the current O<sub>3</sub> NAAQS (*i.e.*, commenters representing industry and business groups, and some states) did not provide comments on alternative standard levels. As a result, this section focuses primarily on comments from commenters who expressed support for the proposed decision to revise the current primary O<sub>3</sub> standard.

<sup>129</sup> Similarly, Senator Muskie remarked during the floor debates on the 1977 Amendments that “there is no such thing as a threshold for health effects. Even at the national primary standard level, which is the health standard, there are health effects that are not protected against”. 123 Cong. Rec. S9423 (daily ed. June 10, 1977).

In an additional overarching comment, some commenters also fundamentally objected to the EPA's consideration of exposure estimates in reaching conclusions on the primary O<sub>3</sub> standard. These commenters' general assertion was that NAAQS must be established so as to be protective, with an adequate margin of safety, regardless of the activity patterns that feed into exposure estimates. They contended that "[a]ir quality standards cannot rely on avoidance behavior in order to protect the public health and sensitive groups" and that "[i]t would be unlawful for EPA to set the standard at a level that is contingent upon people spending most of their time indoors" (e.g., ALA *et al.*, p. 124). To support these comments, for example, ALA *et al.* analyzed ambient monitoring data from Core-Based Statistical Areas (CBSAs) with design values between 66–70 ppb (Table 17, pp. 145–151 in ALA *et al.*) and 62–65 ppb (Table 18, pp. 153–154 in ALA *et al.*) and pointed out that there are many more days with ambient concentrations above the benchmark levels than were estimated in the EPA's exposure analysis (i.e., at and above the benchmark level of 60, 70 and 80 ppb).

The EPA disagrees with these commenters' conclusions regarding the appropriateness of considering exposure estimates, and notes that NAAQS must be "requisite" (i.e., "sufficient, but not more than necessary" (*Whitman*, 531 U.S. at 473)) to protect the "public health" ("the health of the public" (*Whitman*, 531 U.S. at 465)). Estimating exposure patterns based on extensive available data<sup>130</sup> is a reasonable means of ascertaining that standards are neither under- nor over-protective, and that standards address issues of public health rather than health issues pertaining only to isolated individuals.<sup>131</sup> Behavior patterns are critical in assessing whether ambient concentrations of O<sub>3</sub> may pose a public health risk.<sup>132</sup> Exposures to ambient or near-ambient O<sub>3</sub> concentrations have only been shown to result in potentially

adverse effects if the ventilation rates of people in the exposed populations are raised to a sufficient degree (e.g., through physical exertion) (U.S. EPA, 2013, section 6.2.1.1).<sup>133</sup> Ignoring whether such elevated ventilation rates are actually occurring, as advocated by these commenters, would not provide an accurate assessment of whether the public health is at risk. Indeed, a standard established without regard to behavior of the public would likely lead to a standard which is more stringent than necessary to protect the public health.

While setting the primary O<sub>3</sub> standard based only on ambient concentrations, without consideration of activity patterns and ventilation rates, would likely result in a standard that is over-protective, the EPA also concludes that setting a standard based on the assumption that people will adjust their activities to avoid exposures on high-pollution days would likely result in a standard that is under-protective. The HREA's exposure assessment does not make this latter assumption.<sup>134</sup> The time-location-activity diaries that provided the basis for exposure estimates reflect actual variability in human activities. While some diary days may reflect individuals spending less time outdoors than would be typical for them, it is similarly likely that some days reflect individuals spending more time outdoors than would be typical. Considering the actual variability in time-location-activity patterns is at the least a permissible way of identifying standards that are neither over- nor under-protective.<sup>135</sup>

Further, the EPA sees nothing in the CAA that prohibits consideration of the O<sub>3</sub> exposures that could result in effects of public health concern. While a number of judicial opinions have upheld the EPA's decisions in other NAAQS reviews to place little weight on particular risk or exposure analyses (i.e., because of scientific uncertainties

in those analyses), none of these opinions have suggested that such analyses are irrelevant because actual exposure patterns do not matter. See, e.g. *Mississippi*, 744 F. 3d at 1352–53; *ATA III*, 283 F. 3d at 373–74. Therefore, because behavior patterns are critical in assessing whether ambient concentrations of O<sub>3</sub> may pose a public health risk, the EPA disagrees with the views expressed by these commenters objecting to the consideration of O<sub>3</sub> exposures in reaching decisions on the primary O<sub>3</sub> standard.

In addition to these overarching comments, a number of commenters supported their views on standard level by highlighting specific aspects of the scientific evidence, exposure/risk information, and/or CASAC advice. Key themes expressed by these commenters included the following: (1) Controlled human exposure studies provide strong evidence of adverse lung function decrements and airway inflammation in healthy adults following exposures to O<sub>3</sub> concentrations as low as 60 ppb, and at-risk populations would be likely to experience more serious effects or effects at even lower concentrations; (2) epidemiologic studies provide strong evidence for associations with mortality and morbidity in locations with ambient O<sub>3</sub> concentrations below 70 ppb, and in many cases in locations with concentrations near and below 60 ppb; (3) quantitative analyses in the HREA are biased such that they understate O<sub>3</sub> exposures and risks, and the EPA's interpretation of lung function risk estimates is not appropriate and not consistent with other NAAQS; and (4) the EPA must give deference to CASAC advice, particularly CASAC's policy advice to set the standard level below 70 ppb. The next sections discuss comments related to each of these points, and provide the EPA's responses to those comments. More detailed discussion of individual comments, and the EPA's responses, is provided in the Response to Comments document.

#### i. Effects in Controlled Human Exposure Studies

Some commenters who advocated for a level of 60 ppb (or absent that, for 65 ppb) asserted that controlled human exposure studies have reported adverse respiratory effects in healthy adults following exposures to O<sub>3</sub> concentrations as low as 60 ppb. These commenters generally based their conclusions on the demonstration of FEV<sub>1</sub> decrements ≥ 10% and increased airway inflammation following exposures of healthy adults to 60 ppb O<sub>3</sub>. They concluded that even more serious effects would occur in at-risk

<sup>130</sup> The CHAD database used in the HREA's exposure assessment contains over 53,000 individual daily diaries including time-location-activity patterns for individuals of both sexes across a wide range of ages (U.S. EPA, 2014a, Chapter 5).

<sup>131</sup> CASAC generally agreed with the EPA's methodology for characterizing exposures of concern (Frey, 2014a, pp. 5–6).

<sup>132</sup> See 79 FR 75269 ("The activity pattern of individuals is an important determinant of their exposure. Variation in O<sub>3</sub> concentrations among various microenvironments means that the amount of time spent in each location, as well as the level of activity, will influence an individual's exposure to ambient O<sub>3</sub>. Activity patterns vary both among and within individuals, resulting in corresponding variations in exposure across a population and over time" (internal citations omitted)).

<sup>133</sup> For healthy young adults exposed at rest for 2 hours, 500 ppb is the lowest O<sub>3</sub> concentration reported to produce a statistically significant O<sub>3</sub>-induced group mean FEV<sub>1</sub> decrement (U.S. EPA, 2013, section 6.2.1.1).

<sup>134</sup> The EPA was aware of the possibility of averting behavior during the development of the HREA, and that document includes sensitivity analyses to provide perspective on the potential role of averting behavior in modifying O<sub>3</sub> exposures. As discussed further above (II.B.2.c), these sensitivity analyses were limited and the results were discussed in the proposal within the context of uncertainties in the HREA assessment of exposures of concern.

<sup>135</sup> See *Mississippi*, 744 F. 3d at 1343 ("[d]etermining what is 'requisite' to protect the 'public health' with an 'adequate' margin of safety may indeed require a contextual assessment of acceptable risk. See *Whitman*, 531 U.S. at 494–95 (Breyer, J. concurring . . .)"))

populations exposed to 60 ppb O<sub>3</sub>, and that such populations would experience adverse effects following exposures to O<sub>3</sub> concentrations below 60 ppb.

While the EPA agrees that information from controlled human exposure studies conducted at 60 ppb can help to inform the Administrator's decision on the standard level, the Agency does not agree that this information necessitates a level below 70 ppb. In fact, as discussed in the proposal, a revised O<sub>3</sub> standard with a level of 70 ppb can be expected to provide substantial protection against the effects shown to occur following various O<sub>3</sub> exposure concentrations, including those observed following exposures to 60 ppb. This is because the degree of protection provided by any NAAQS is due to the combination of all of the elements of the standard (*i.e.*, indicator, averaging time, form, level). In the case of the fourth-high form of the O<sub>3</sub> NAAQS, which the Administrator is retaining in the current review (II.C.3), the large majority of days in areas that meet the standard will have 8-hour O<sub>3</sub> concentrations below the level of the standard, with most days well below the level. Therefore, as discussed in the proposal, in considering the degree of protection provided by an O<sub>3</sub> standard with a particular level, it is important to consider the extent to which that standard would be expected to limit population exposures of concern to the broader range of O<sub>3</sub> exposure concentrations shown in controlled human exposure studies to result in health effects. The Administrator's consideration of such exposures of concern is discussed below (II.C.4.c).

Another important part of the Administrator's consideration of exposure estimates is the extent to which she judges that adverse effects could occur following specific O<sub>3</sub> exposures. While controlled human exposure studies provide a high degree of confidence regarding the extent to which specific health effects occur following exposures to O<sub>3</sub> concentrations from 60 to 80 ppb, the Administrator notes that there are no universally accepted criteria by which to judge the adversity of the observed effects. Therefore, in making judgments about the extent to which the effects observed in controlled human exposure studies have the potential to be adverse, the Administrator considers the recommendations of ATS and advice from CASAC (II.A.1.c, above).

As an initial matter, with regard to the effects shown in controlled human exposure studies following O<sub>3</sub> exposures, the Administrator notes the following:

1. The largest respiratory effects, and the broadest range of effects, have been studied and reported following exposures to 80 ppb O<sub>3</sub> or higher, with most exposure studies conducted at these higher concentrations.

Specifically, 6.6-hour exposures of healthy young adults to 80 ppb O<sub>3</sub>, while engaged in quasi-continuous, moderate exertion, can decrease lung function, increase airway inflammation, increase respiratory symptoms, result in airway hyperresponsiveness, and decrease lung host defenses.

2. Exposures of healthy young adults for 6.6 hours to O<sub>3</sub> concentrations as low as 72 ppb, while engaged in quasi-continuous, moderate exertion, have been shown to both decrease lung function and result in respiratory symptoms.

3. Exposures of healthy young adults for 6.6 hours to O<sub>3</sub> concentrations as low as 60 ppb, while engaged in quasi-continuous, moderate exertion, have been shown to decrease lung function and to increase airway inflammation.

To inform her judgments on the potential adversity to public health of these effects reported in controlled human exposure studies, as in the proposal, the Administrator considers the ATS recommendation that "reversible loss of lung function in combination with the presence of symptoms should be considered adverse" (ATS, 2000a). She notes that this combination of effects has been shown to occur following 6.6-hour exposures to O<sub>3</sub> concentrations at or above 72 ppb. In considering these effects, CASAC observed that "the combination of decrements in FEV<sub>1</sub> together with the statistically significant alterations in symptoms in human subjects exposed to 72 ppb ozone meets the American Thoracic Society's definition of an adverse health effect" (Frey, 2014c, p. 5).

Regarding the potential for adverse effects following exposures to lower concentrations, the Administrator notes the CASAC judgment that the adverse combination of lung function decrements and respiratory symptoms "almost certainly occur in some people" following exposures to O<sub>3</sub> concentrations below 72 ppb (Frey, 2014c, p. 6). In particular, when commenting on the extent to which the study by Schelegle *et al.* (2009) suggests the potential for adverse effects following O<sub>3</sub> exposures below 72 ppb, CASAC judged that:

[I]f subjects had been exposed to ozone using the 8-hour averaging period used in the standard [rather than the 6.6-hour exposures evaluated in the study], adverse effects could have occurred at lower concentration.

Further, in our judgment, the level at which adverse effects might be observed would likely be lower for more sensitive subgroups, such as those with asthma (Frey, 2014c, p. 5).

Though CASAC did not provide advice as to how far below 72 ppb adverse effects would likely occur, the Administrator agrees that such effects could occur following exposures at least somewhat below 72 ppb.

The Administrator notes that while adverse effects could occur following exposures at least somewhat below 72 ppb, the combination of statistically significant increases in respiratory symptoms and decrements in lung function has not been reported following 6.6-hour exposures to average O<sub>3</sub> concentrations of 60 ppb or 63 ppb, though studies have evaluated the potential for such effects (Adams, 2006; Schelegle *et al.*, 2009; Kim *et al.*, 2011). In the absence of this combination, the Administrator looks to additional ATS recommendations and CASAC advice in order to inform her judgments regarding the potential adversity of the effects that have been observed following O<sub>3</sub> exposures as low as 60 ppb.

With regard to ATS, she first notes the recommendations that "a small, transient loss of lung function, by itself, should not automatically be designated as adverse" and that "[f]ew . . . biomarkers have been validated sufficiently that their responses can be used with confidence to define the point at which a response should be equated to an adverse effect warranting preventive measures" (ATS, 2000a).<sup>136</sup> Based on these recommendations, compared to effects following exposures at or above 72 ppb, the Administrator has less confidence in the adversity of the respiratory effects that have been observed following exposures to 60 or 63 ppb.

She further notes that some commenters who advocated for a level of 60 ppb also focused on ATS recommendations regarding population-level risks. These commenters specifically stated that lung function decrements "may be adverse in terms of 'population risk,' where exposure to air pollution increases the risk to the population even though it might not harm lung function to a degree that is, on its own, 'clinically important' to an individual" (*e.g.*, ALA *et al.*, p. 118). These commenters asserted that the EPA

<sup>136</sup> With regard to this latter recommendation, as discussed above (II.A.1.c), the ATS concluded that elevations of biomarkers such as cell numbers and types, cytokines, and reactive oxygen species may signal risk for ongoing injury and more serious effects or may simply represent transient responses, illustrating the lack of clear boundaries that separate adverse from nonadverse events.

has not appropriately considered the potential for such population-level risk. Contrary to the views expressed by these commenters, the Administrator carefully considers the potential for population risk, particularly within the context of the ATS recommendation that “a shift in the risk factor distribution, and hence the risk profile of the exposed population, should be considered adverse, even in the absence of the immediate occurrence of frank illness” (ATS, 2000a). Given that exposures to 60 ppb O<sub>3</sub> have been shown in controlled human exposure studies to cause transient and reversible decreases in group mean lung function, the Administrator notes the potential for such exposures to result in similarly transient and reversible shifts in the risk profile of an exposed population. However, in contrast to commenters who advocated for a level of 60 ppb, the Administrator also notes that the available evidence does not provide information on the extent to which a short-term, transient decrease in lung function in a population, as opposed to a longer-term or permanent decrease, could affect the risk of other, more serious respiratory effects (*i.e.*, change the risk profile of the population). This uncertainty, together with the additional ATS recommendations noted above, indicates to the Administrator that her judgment that there is uncertainty in the adversity of the effects shown to occur at 60 ppb is consistent with ATS recommendations.<sup>137</sup>

With regard to CASAC advice, the Administrator notes that, while CASAC clearly advised the EPA to consider the health effects shown to occur following exposures to 60 ppb O<sub>3</sub>, its advice regarding the adversity of those effects is less clear. In particular, she notes that CASAC was conditional about whether the lung function decrements observed in some people at 60 ppb (*i.e.*, FEV<sub>1</sub> decrements  $\geq$  10%) are adverse. Specifically, CASAC stated that these decrements “*could be adverse in individuals with lung disease*” (Frey, 2014c, p. 7, *emphasis added*) and that they provide a “*surrogate for adverse health outcomes for people with asthma and lung disease*” (Frey, 2014c, p. 3, *emphasis added*). Further, CASAC did not recommend considering standard levels low enough to eliminate O<sub>3</sub>-induced FEV<sub>1</sub> decrements  $\geq$  10% (Frey,

2014c). With regard to the full range of effects shown to occur at 60 ppb (*i.e.*, FEV<sub>1</sub> decrements, airway inflammation), CASAC stated that exposures of concern for the 60 ppb benchmark are “*relevant for consideration*” with respect to people with asthma (Frey, 2014c, p. 6, *italics added*). In addition, “[t]he CASAC concurs with EPA staff regarding the finding based on scientific evidence that a level of 60 ppb corresponds to the lowest exposure concentration demonstrated to result in lung function decrements large enough to be judged an abnormal response by ATS and that *could be adverse in individuals with lung disease*” (Frey, 2014c, p. 7, *italics added*). The Administrator contrasts these statements with CASAC’s clear advice that “the combination of decrements in FEV<sub>1</sub> together with the statistically significant alterations in symptoms in human subjects exposed to 72 ppb ozone meets the American Thoracic Society’s definition of an adverse health effect” (Frey, 2014c, p. 5).

Based on her consideration of all of the above recommendations and advice noted above, the Administrator judges that, compared to exposure concentrations at and above 72 ppb, there is greater uncertainty with regard to the adversity of effects shown to occur following O<sub>3</sub> exposures as low as 60 ppb. However, based on the effects that have been shown to occur at 60 ppb (*i.e.*, lung function decrements, airway inflammation), and CASAC advice indicating the importance of considering these effects (though its advice regarding the adversity of effects at 60 ppb is less clear), she concludes that it is appropriate to give some consideration to the extent to which a revised standard could allow such effects.

In considering estimates of exposures of concern for the 60, 70, and 80 ppb benchmarks within the context of her judgments on adversity, the Administrator notes that, due to interindividual variability in responsiveness, not every occurrence of an exposure of concern will result in an adverse effect. As discussed above (II.B.2.b.i), this point was highlighted by some commenters who opposed revision of the current standard, based on their analysis of effects shown to occur following exposures to 72 ppb O<sub>3</sub>. This point was also highlighted by some commenters who advocated for a level of 60 ppb, based on the discussion of O<sub>3</sub>-induced inflammation in the proposal. In particular, this latter group of commenters highlighted discussion from the proposal indicating that “[i]nflammation induced by a single O<sub>3</sub>

exposure can resolve entirely but, as noted in the ISA (U.S. EPA, 2013, p. 6–76), ‘continued acute inflammation can evolve into a chronic inflammatory state’” (*e.g.*, ALA *et al.*, p. 48). Consistent with these comments, and with her consideration of estimated exposures of concern in the proposal, the Administrator judges that the types of respiratory effects that can occur following exposures of concern, particularly if experienced repeatedly, provide a plausible mode of action by which O<sub>3</sub> may cause other more serious effects. Because of this, as in the proposal, the Administrator is most concerned about protecting against repeated occurrences of exposures of concern.

The Administrator’s consideration of estimated exposures of concern is discussed in more detail below (II.C.4.b.iv, II.C.4.c). In summary, contrary to the conclusions of commenters who advocated for a level of 60 ppb, the Administrator judges that a revised standard with a level of 70 ppb will effectively limit the occurrence of the O<sub>3</sub> exposures for which she is most confident in the adversity of the resulting effects (*i.e.*, based on estimates for the 70 and 80 ppb benchmarks). She further concludes that such a standard will provide substantial protection against the occurrence of O<sub>3</sub> exposures for which there is greater uncertainty in the adversity of effects (*i.e.*, based on estimates for the 60 ppb benchmark).

As noted above, commenters also pointed out that benchmark concentrations are based on studies conducted in healthy adults, whereas at-risk populations are likely to experience more serious effects and effects at lower O<sub>3</sub> exposure concentrations. In considering this issue, the EPA notes CASAC’s endorsement of 60 ppb as the lower end of the range of benchmarks for evaluation, and its advice that “the 60 ppb-8hr exposure benchmark is relevant for consideration with respect to adverse effects on asthmatics” (Frey, 2014c, p. 6). As discussed in detail below (II.C.4.c), the Administrator has carefully considered estimated exposures of concern for the 60 ppb benchmark. In addition, though the available information does not support the identification of specific benchmarks below 60 ppb that could be appropriate for consideration for at-risk populations, and though CASAC did not recommend consideration of any such benchmarks, the EPA expects that a revised standard with a level of 70 ppb will also reduce the occurrence of exposures to O<sub>3</sub> concentrations at least somewhat below 60 ppb (U.S. EPA,

<sup>137</sup> ATS provided additional recommendations to help inform judgments regarding the adversity of air pollution-related effects (*e.g.*, related to “quality of life”), though it is not clear whether, or how, such recommendations should be applied to the respiratory effects observed in controlled human exposure studies following 6.6-hour O<sub>3</sub> exposures (ATS, 2000a, p. 672).

2014a, Figures 4–9 and 4–10).<sup>138</sup> Thus, even if some members of at-risk populations may experience effects following exposures to O<sub>3</sub> concentrations somewhat below 60 ppb, a revised level of 70 ppb would be expected to reduce the occurrence of such exposures.<sup>139</sup> Therefore, the EPA has considered O<sub>3</sub> exposures that could be relevant for at-risk populations such as children and people with asthma, and does not agree that controlled human exposure studies reporting respiratory effects in healthy adults following exposures to 60 ppb O<sub>3</sub> necessitate a standard level below 70 ppb.

#### ii. Epidemiologic Studies

Commenters representing environmental and public health organizations also highlighted epidemiologic studies that, in their view, provide strong evidence for associations with mortality and morbidity in locations with ambient O<sub>3</sub> concentrations near and below 60 ppb. These commenters focused both on the epidemiologic studies evaluated in the PA's analyses of study location air quality (U.S. EPA, 2014c, Chapter 4) and on studies that were not explicitly analyzed in the PA, and in some cases on studies that were not included in the ISA.

The EPA agrees that epidemiologic studies can provide perspective on the degree to which O<sub>3</sub>-associated health effects have been identified in areas with air quality likely to have met various standards. However, as discussed below, we do not agree with the specific conclusions drawn by these commenters regarding the implications of epidemiologic studies for the standard level. As an initial matter in considering epidemiologic studies, the EPA notes its decision, consistent with CASAC advice, to place the most emphasis on information from controlled human exposure studies (II.B.2 and II.B.3, above). This decision reflects the greater certainty in using information from controlled human exposure studies to link specific O<sub>3</sub> exposures with health effects, compared to using air quality information from epidemiologic studies of O<sub>3</sub> for this purpose.

<sup>138</sup> Air quality analyses in the HREA indicate that reducing the level of the primary standard from 75 ppb to 70 ppb will result in reductions in the O<sub>3</sub> concentrations in the upper portions of ambient distributions. This includes 8-hour ambient O<sub>3</sub> concentrations at, and somewhat below, 60 ppb (U.S. EPA, 2014a, Figures 4–9 and 4–10).

<sup>139</sup> The uncertainty associated with the potential adversity of any such effects would be even greater than that discussed above for the 60 ppb benchmark.

While being aware of the uncertainties discussed above (II.B.2.b.ii), in considering what epidemiologic studies can tell us, the EPA notes analyses in the PA (U.S. EPA, 2014c, section 4.4.1) indicating that a revised standard with a level at or below 70 ppb would be expected to maintain distributions of short-term ambient O<sub>3</sub> concentrations below those present in the locations of all of the single-city epidemiologic studies analyzed. As discussed in the PA (U.S. EPA, 2014c, section 4.4.1), this includes several single-city studies conducted in locations that would have violated the current standard, and the study by Mar and Koenig (2009) that reported positive and statistically significant associations with respiratory emergency department visits with children and adults in a location that would have met the current standard over the entire study period, but would have violated a standard with a level of 70 ppb.<sup>140</sup> While these analyses provide support for a level at least as low as 70 ppb, the Administrator judges that they do not provide a compelling basis for distinguishing between the appropriateness of 70 ppb and lower standard levels.

As in the proposal, the EPA acknowledges additional uncertainty in interpreting air quality in locations of multicity epidemiologic studies of short-term O<sub>3</sub> for the purpose of evaluating alternative standard levels (U.S. EPA, 2014c, sections 3.1.4.2, 4.4.1). In particular, the PA concludes that interpretation of such air quality information is complicated by uncertainties in the extent to which multicity effect estimates (*i.e.*, which are based on combining estimates from multiple study locations) can be attributed to ambient O<sub>3</sub> in the subset of study locations that would have met a particular standard, versus O<sub>3</sub> in the study locations that would have violated the standard. While giving only limited weight to air quality analyses in these study areas because of this uncertainty, the EPA also notes PA analyses indicating that a standard level at or below 70 ppb would require additional reductions, beyond those required by the current standard, in the ambient O<sub>3</sub> concentrations that provided the basis for statistically significant O<sub>3</sub> health effect associations in multicity epidemiologic studies. As

<sup>140</sup> As noted above (II.B.2.b.ii and II.B.3), the studies by Silverman and Ito (2010) and Strickland *et al.* (2010) provided support for the Administrator's decision to revise the current primary O<sub>3</sub> standard, but do not provide insight into the appropriateness of specific standard levels below 75 ppb.

was the case for the single-city studies, and contrary to the views expressed by the commenters noted above, the Administrator judges that these studies do not provide a compelling basis for distinguishing between the appropriateness of alternative standard levels at or below 70 ppb.

In some cases, commenters highlighted studies that were assessed in the 2008 review of the O<sub>3</sub> NAAQS, but were not included in the ISA in the current review. These commenters asserted that such studies support the occurrence of O<sub>3</sub> health effect associations in locations with air quality near or, in some cases, below 60 ppb. Specifically, commenters highlighted a number of studies included in the 2007 Staff Paper that were not included in the ISA, claiming that these studies support a standard level below 70 ppb, and as low as 60 ppb.

As an initial matter with regard to these studies, the EPA notes that the focus of the ISA is on assessing the most policy-relevant scientific evidence. In the current review, the ISA considered over 1,000 new studies that have been published since the last review. Thus, it is not surprising that, as the body of evidence has been strengthened since the last review, some of the studies considered in the last review are no longer among the most policy relevant. However, based on the information included in the 2007 Staff Paper, the EPA does not agree that the studies highlighted by commenters provide compelling support for a level below 70 ppb. In fact, as discussed in the Staff Paper in the last review (U.S. EPA, 2007, p. 6–9; Appendix 3B), the O<sub>3</sub> concentrations reported for these studies, and the concentrations highlighted by commenters, were based on averaging across multiple monitors in study areas. Given that the highest monitor in an area is used to determine whether that area meets or violates the NAAQS, the averaged concentrations reported in the Staff Paper are thus not appropriate for direct comparison to the level of the O<sub>3</sub> standard. When the Staff Paper considered the O<sub>3</sub> concentrations measured at individual monitors for the subset of these study areas with particularly low concentrations, they were almost universally found to be above, and in many cases well above, even the current standard level of 75 ppb.<sup>141</sup> Based on the above

<sup>141</sup> For one study conducted in Vancouver, where data from individual monitors did indicate ambient concentrations below the level of the current standard (Vedal *et al.*, 2003), the Staff Paper noted that the study authors questioned whether O<sub>3</sub>, other gaseous pollutants, and PM in this study may be

considerations, and consistent with the Administrator's overall decision to place less emphasis on air quality in locations of epidemiologic studies to select a standard level, the EPA disagrees with commenters who asserted that epidemiologic studies included in the last review, but not cited in the ISA or PA in this review, necessitate a level below 70 ppb. In fact, the EPA notes that these studies are consistent with the majority of the U.S. studies evaluated in the PA in the current review, in that most were conducted in locations that would have violated the current O<sub>3</sub> NAAQS over at least part of the study periods.

### iii. Exposure and Risk Assessments

Some commenters supporting levels below 70 ppb also asserted that quantitative analyses in the HREA are biased such that they understate O<sub>3</sub> exposures of concern and risks of O<sub>3</sub>-induced FEV<sub>1</sub> decrements. Many of these comments are discussed above within the context of the adequacy of the current standard (II.B.2.b.i), including comments pointing out that exposure and risk estimates are based on information from healthy adults rather than at-risk populations; comments noting that the exposure assessment evaluates 8-hour O<sub>3</sub> exposures rather than the 6.6-hour exposures used in controlled human exposure studies; and comments asserting that the EPA's exposure and risk analyses rely on people staying indoors on high pollution days (*i.e.*, averting behavior).

As discussed in section II.B.2.b.i above, while the EPA agrees with certain aspects of these commenters' assertions, we do not agree with their overall conclusions. In particular, there are aspects of the HREA's quantitative analyses that, if viewed in isolation, would tend to either overstate or understate O<sub>3</sub> exposures and/or health risks. While commenters tended to focus on those aspects of the assessments that support their position, they tended to ignore aspects of the assessments that do not support their position (points that were often raised by commenters on the other side of the issue). Rather than viewing the potential implications of these aspects of the HREA assessments in isolation, the EPA considers them together, along with

acting as surrogate markers of pollutant mixes that contain more toxic compounds, "since the low measured concentrations were unlikely, in their opinion, to cause the observed effects" (U.S. EPA, 2007, p. 6–16). The Staff Paper further noted that another study conducted in Vancouver failed to find statistically significant associations with O<sub>3</sub> (Villeneuve *et al.*, 2003).

other issues and uncertainties related to the interpretation of exposure and risk estimates.

For example, some commenters who advocated for a level below 70 ppb asserted that the exposure assessment could underestimate O<sub>3</sub> exposures for highly active populations, including outdoor workers and children who spend a large portion of time outdoors during summer. In support of these assertions, commenters highlighted sensitivity analyses conducted in the HREA. However, as noted in the HREA (U.S. EPA, 2014a, Table 5–10), this aspect of the assessment is likely to have only a "low to moderate" impact on the magnitude of exposure estimates. To put this magnitude in perspective, HREA sensitivity analyses conducted in a single urban study area indicate that, regardless of whether exposure estimates for children are based on all available diaries or on a subset of diaries restricted to simulate highly exposed children, a revised standard with a level of 70 ppb is estimated to protect more than 99% of children from experiencing two or more exposures of concern at or above 70 ppb (U.S. EPA, 2014a, Chapter 5 Appendices, Figure 5G–9).<sup>142</sup> <sup>143</sup> In contrast to the focus of commenters who supported a level below 70 ppb, other aspects of quantitative assessments, some of which were highlighted by commenters who opposed revising the current standard (II.B.2), tend to result in overestimates of O<sub>3</sub> exposures. These aspects are characterized in the HREA as having either a "low," a "low-to-moderate," or a "moderate" impact on the magnitudes of exposure estimates.

In its reviews of the HREA and PA, CASAC recognized many of the uncertainties and issues highlighted by commenters. Even considering these uncertainties, CASAC endorsed the approaches adopted by the EPA to assess O<sub>3</sub> exposures and health risks, and CASAC used exposure and risk estimates as part of the basis for their recommendations on the primary O<sub>3</sub> NAAQS (Frey, 2014c). Thus, as discussed in section II.B.2.b.i above, the

<sup>142</sup> More specifically, based on all children's diaries, just under 0.1% of children are estimated to experience two or more exposures of concern at or above 70 ppb. Based on simulated profiles of highly exposed children, this estimate increased to just over 0.1% (U.S. EPA, 2014a, Chapter 5 Appendices, Figure 5G–9).

<sup>143</sup> In addition, when diaries were selected to mimic exposures that could be experienced by outdoor workers, the percentages of modeled individuals estimated to experience exposures of concern were generally similar to the percentages estimated for children (*i.e.*, using the full database of diary profiles) in the worst-case cities and years (*i.e.*, cities and years with the highest exposure estimates) (U.S. EPA, 2014, section 5.4.3.2, Figure 5–14).

EPA disagrees with commenters who claim that the aspects of the quantitative assessments that they highlight lead to overall underestimates of exposures or health risks.<sup>144</sup>

Some commenters further contended that the level of the primary O<sub>3</sub> standard should be set below 70 ppb in order to compensate for the use of a form that allows multiple days with concentrations higher than the standard level. These groups submitted air quality analyses to support their point that the current fourth-high form allows multiple days per year with ambient O<sub>3</sub> concentrations above the level of the standard. While the EPA does not dispute the air quality analyses submitted by these commenters, and agrees that fourth-high form allows multiple days per year with ambient O<sub>3</sub> concentrations above the level of the standard (3 days per year, on average over a 3-year period), the Agency disagrees with commenters' assertion that, because of this, the level of the primary O<sub>3</sub> standard should be set below 70 ppb. As discussed above (II.A.2), the quantitative assessments that informed the Administrator's proposed decision, presented in the HREA and considered in the PA and by CASAC, estimated O<sub>3</sub> exposures and health risks associated with air quality that "just meets" various standards with the current 8-hour averaging time and fourth-high, 3-year average form. Thus, in considering the degree of public health protection appropriate for the primary O<sub>3</sub> standard, the Administrator has considered quantitative exposure and risk estimates that are based a fourth-high form, and therefore on a standard that, as these commenters point out, allows multiple days per year with ambient O<sub>3</sub> concentrations above the level of the standard.

### iv. CASAC Advice

Many commenters, including those representing major medical, public health, or environmental groups; some state agencies; and a large number of individual commenters, focused on CASAC advice in their rationale supporting levels below 70 ppb, and as low as 60 ppb. These commenters generally asserted that the EPA must

<sup>144</sup> As discussed in II.B.2.b above, in weighing the various uncertainties, which can bias exposure results in different directions but tend to have impacts that are similar in magnitude (U.S. EPA, 2014a, Table 5–10), and in light of CASAC's advice based on its review of the HREA and the PA, the EPA continues to conclude that the approach to considering estimated exposures of concern in the HREA, PA, and the proposal reflects an appropriate balance, and provides an appropriate basis for considering the public health protectiveness of the primary O<sub>3</sub> standard.

give deference to CASAC. In some cases, these commenters expressed strong objections to a level of 70 ppb, noting CASAC policy advice that such a level would provide little margin of safety.

The EPA agrees that CASAC advice is an important consideration in reaching a decision on the standard level (see *e.g.* CAA section 307 (d)(3)),<sup>145</sup> though not with commenters' conclusion that CASAC advice necessitates a standard level below 70 ppb. As discussed above (II.C.4.a), the Administrator carefully considered CASAC advice in the proposal, and she judged that her proposed decision to revise the level to within the range of 65 to 70 ppb was consistent with CASAC advice, based on the available science.

As in the proposal, in her final decision on level the Administrator notes CASAC's overall conclusion that "based on the scientific evidence from clinical studies, epidemiologic studies, animal toxicology studies, as summarized in the ISA, the findings from the exposure and risk assessments as summarized in the HREA, and the interpretation of the implications of all of these sources of information as given in the Second Draft PA . . . there is adequate scientific evidence to recommend a range of levels for a revised primary ozone standard from 70 ppb to 60 ppb" (Frey, 2014c, p. 8). Thus, CASAC used the health evidence and exposure/risk information to inform its range of recommended standard levels, a range that included an upper bound of 70 ppb based on the scientific evidence, and it did not use the evidence and information to recommend setting the primary O<sub>3</sub> standard at any specific level within the range of 70 to 60 ppb. In addition, CASAC further stated that "the choice of a level within the range recommended based on scientific evidence [*i.e.*, 70 to 60 ppb] is a policy judgment under the statutory mandate of the Clean Air Act" (Frey, 2014c, p. ii).

In addition to its advice based on the scientific evidence, CASAC offered the "policy advice" to set the level below 70 ppb, stating that a standard level of 70 ppb "may not meet the statutory requirement to protect public health with an adequate margin of safety" (Frey, 2014c, p. ii). In supporting its policy advice to set the level below 70 ppb, CASAC noted the respiratory effects that have been shown to occur in controlled human exposure studies following exposures from 60 to 80 ppb

O<sub>3</sub>, and the extent to which various standard levels are estimated to allow the occurrence of population exposures that can result in such effects (Frey, 2014c, pp. 7–8).

The EPA agrees that an important consideration when reaching a decision on level is the extent to which a revised standard is estimated to allow the types of exposures shown in controlled human exposure studies to cause respiratory effects. In reaching her final decision that a level of 70 ppb is requisite to protect public health with an adequate margin of safety (II.C.4.c, below), the Administrator carefully considers the potential for such exposures and effects. In doing so, she emphasizes the importance of setting a standard that limits the occurrence of the exposures about which she is most concerned (*i.e.*, those for which she has the most confidence in the adversity of the resulting effects, which are repeated exposures of concern at or above 70 or 80 ppb, as discussed above in II.C.4.b.i). Based on her consideration of information from controlled human exposure studies in light of CASAC advice and ATS recommendations, the Administrator additionally judges that there is important uncertainty in the extent to which the effects shown to occur following exposures to 60 ppb O<sub>3</sub> are adverse to public health (discussed above, II.C.4.b.i and II.C.4.b.iii). However, based on the effects that have been shown to occur, CASAC advice indicating the importance of considering these effects, and ATS recommendations indicating the potential for adverse population-level effects (II.C.4.b.i, II.C.4.b.iii), she concludes that it is appropriate to give some consideration to the extent to which a revised standard could allow the respiratory effects that have been observed following exposures to 60 ppb O<sub>3</sub>.

When considering the extent to which a revised standard could allow O<sub>3</sub> exposures that have been shown in controlled human exposures studies to result in respiratory effects, the Administrator is most concerned about protecting the public, including at-risk populations, against repeated occurrences of such exposures of concern (II.C.4.b.i, above). In considering the appropriate metric for evaluating repeated occurrences of exposures of concern, the Administrator acknowledges that it is not clear from the evidence, or from the ATS recommendations, CASAC advice, or public comments, how particular numbers of exposures of concern could impact the seriousness of the resulting effects, especially at lower exposure

concentrations. Therefore, the Administrator judges that focusing on HREA estimates of two or more exposures of concern provides a health-protective approach to considering the potential for repeated occurrences of exposures of concern that could result in adverse effects. She notes that other possible metrics for considering repeated occurrences of exposures of concern (*e.g.*, 3 or more, 4 or more, etc.) would result in smaller exposure estimates.

As discussed further below (II.C.4.c), the Administrator notes that a revised standard with a level of 70 ppb is estimated to eliminate the occurrence of two or more exposures of concern to O<sub>3</sub> concentrations at or above 80 ppb and to virtually eliminate the occurrence of two or more exposures of concern to O<sub>3</sub> concentrations at or above 70 ppb (Table 1, above). For the 70 ppb benchmark, this reflects about a 90% reduction in the number of children estimated to experience two or more exposures of concern, compared to the current standard.<sup>146</sup> Even considering the worst-case urban study area and worst-case year evaluated in the HREA, a standard with a level of 70 ppb is estimated to protect more than 99% of children from experiencing two or more exposures of concern to O<sub>3</sub> concentrations at or above 70 ppb (Table 1).

Though the Administrator judges that there is greater uncertainty with regard to the occurrence of adverse effects following exposures as low as 60 ppb, she notes that a revised standard with a level of 70 ppb is estimated to protect the vast majority of children in urban study areas (*i.e.*, about 96% to more than 99% in individual areas) from experiencing two or more exposures of concern at or above 60 ppb. Compared to the current standard, this represents a reduction of more than 60% in exposures of concern for the 60 ppb benchmark (Table 1). Given the Administrator's uncertainty regarding the adversity of the effects following exposures to 60 ppb O<sub>3</sub>, and her health-protective approach to considering repeated occurrences of exposures of concern, the Administrator judges that this degree of protection is appropriate and that it reflects substantial protection against the occurrence of O<sub>3</sub>-induced effects, including effects for which she judges the adversity to public health is uncertain.

<sup>145</sup> The EPA notes, of course, that the CAA places the responsibility for judging what standard is requisite with the Administrator and only requires that, if her decision differs in important ways from CASAC's advice, she explain her reasoning for differing.

<sup>146</sup> Percent reductions in this section refer to reductions in the number of children in HREA urban study areas (averaged over the years evaluated in the HREA) estimated to experience exposures of concern, based on the information in Table 1 above.

While being less concerned about single occurrences of exposures of concern, especially at lower exposure concentrations, the Administrator also notes that a standard with a level of 70 ppb is estimated to (1) virtually eliminate all occurrences of exposures of concern at or above 80 ppb; (2) protect  $\geq$  about 99% of children in urban study areas from experiencing any exposures of concern at or above 70 ppb; and (3) to achieve substantial reductions (*i.e.*, about 50%), compared to the current standard, in the occurrence of one or more exposures of concern at or above 60 ppb (Table 1).

Given the information and advice noted above (and in II.C.4.b.i, II.C.4.b.iii), the Administrator judges that a revised standard with a level of 70 ppb will effectively limit the occurrence of the O<sub>3</sub> exposures for which she has the most confidence in the adversity of the resulting effects (*i.e.*, based on estimates for the 70 and 80 ppb benchmarks). She further judges that such a standard will provide a large degree of protection against O<sub>3</sub> exposures for which there is greater uncertainty in the adversity of effects (*i.e.*, those observed following exposures to 60 ppb O<sub>3</sub>), contributing to the margin of safety of the standard. See *Mississippi*, 744 F. 3d at 1353 (“By requiring an ‘adequate margin of safety’, Congress was directing EPA to build a buffer to protect against uncertain and unknown dangers to human health”). Given the considerable protection provided against repeated exposures of concern for all of the benchmarks evaluated, including the 60 ppb benchmark, the Administrator judges that a standard with a level of 70 ppb will provide an adequate margin of safety against the adverse O<sub>3</sub>-induced effects shown to occur following exposures at or above 72 ppb, and judged by CASAC likely to occur following exposures somewhat below 72 ppb.<sup>147</sup>

Contrary to the conclusions of commenters who advocated for a level below 70 ppb, the Administrator notes that her final decision is consistent with CASAC’s advice, based on the scientific evidence, and with CASAC’s focus on

setting a revised standard to further limit the occurrence of the respiratory effects observed in controlled human exposure studies, including effects observed following exposures to 60 ppb O<sub>3</sub>. Given her judgments and conclusions discussed above, and given that the CAA reserves the choice of the standard that is requisite to protect public health with an adequate margin of safety for the judgment of the EPA Administrator, she disagrees with commenters who asserted that CASAC advice necessitates a level below 70 ppb, and as low as 60 ppb. The Administrator’s final conclusions on level are discussed in more detail below (II.C.4.c).

#### c. Administrator’s Final Decision Regarding Level

Having carefully considered the public comments on the appropriate level of the primary O<sub>3</sub> standard, as discussed above and in the Response to Comments document, the Administrator believes her scientific and policy judgments in the proposal remain valid. In conjunction with her decisions to retain the current indicator, averaging time, and form (II.C.1 to II.C.3, above), the Administrator is revising the level of the primary O<sub>3</sub> standard to 70 ppb. In doing so, she is selecting a primary O<sub>3</sub> standard that is requisite to protect public health with an adequate margin of safety, in light of her judgments based on an interpretation of the scientific evidence and exposure/risk information that neither overstates nor understates the strengths and limitations of that evidence and information and the appropriate inferences to be drawn therefrom.

The Administrator’s decision to revise the level of the primary O<sub>3</sub> standard to 70 ppb builds upon her conclusion that the overall body of scientific evidence and exposure/risk information calls into question the adequacy of public health protection afforded by the current standard, particularly for at-risk populations and lifestages (II.B.3).<sup>148</sup> Consistent with the proposal, her decision on level places the greatest emphasis on the results of controlled human exposure studies and on quantitative analyses based on information from these studies, particularly analyses of O<sub>3</sub> exposures of concern. As in the proposal, and as discussed further below, she views the results of the lung function risk assessment, analyses of O<sub>3</sub> air quality in

locations of epidemiologic studies, and epidemiology-based quantitative health risk assessments as providing information in support of her decision to revise the current standard, but a more limited basis for selecting a particular standard level among a range of options. See *Mississippi*, 744 F. 3d at 1351–52 (studies can legitimately support a decision to revise the standard, but not provide sufficient information to justify their use in setting the level of a revised standard).

Given her consideration of the evidence, exposure/risk information, advice from CASAC, and public comments, the Administrator judges that a standard with a level of 70 ppb is requisite to protect public health with an adequate margin of safety. She notes that the determination of what constitutes an adequate margin of safety is expressly left to the judgment of the EPA Administrator. See *Lead Industries Association v. EPA*, 647 F.2d at 1161–62; *Mississippi*, 744 F. 3d at 1353. She further notes that in evaluating how particular standards address the requirement to provide an adequate margin of safety, it is appropriate to consider such factors as the nature and severity of the health effects, the size of sensitive population(s) at risk, and the kind and degree of the uncertainties present (I.B, above). Consistent with past practice and long-standing judicial precedent, the Administrator takes the need for an adequate margin of safety into account as an integral part of her decision-making on the appropriate level, averaging time, form, and indicator of the standard.<sup>149</sup>

In considering the need for an adequate margin of safety, the Administrator notes that a standard with a level of 70 ppb O<sub>3</sub> would be expected to provide substantial improvements in public health, including for at-risk groups such as children and people with asthma. The following paragraphs summarize the basis for the Administrator’s conclusion that a revised primary O<sub>3</sub> standard with a level of 70 ppb is requisite to protect the public health with an adequate margin of safety.

As an initial matter, consistent with her conclusions on the need for revision of the current standard (II.B.3), in reaching a decision on level the Administrator places the most weight on information from controlled human exposure studies. In doing so, she notes that controlled human exposure studies provide the most certain evidence indicating the occurrence of health

<sup>147</sup> As discussed above (II.C.4.b.i), when commenting on the extent to which the study by Schelegle *et al.* (2009) suggests the potential for adverse effects following O<sub>3</sub> exposures below 72 ppb, CASAC stated the following: “[I]f subjects had been exposed to ozone using the 8-hour averaging period used in the standard [rather than the 6.6-hour exposures evaluated in the study], adverse effects could have occurred at lower concentration. Further, in our judgment, the level at which adverse effects might be observed would likely be lower for more sensitive subgroups, such as those with asthma” (Frey, 2014c, p. 5).

<sup>148</sup> At-risk populations include people with asthma; children and older adults; people who are active outdoors, including outdoor workers; people with certain genetic variants; and people with reduced intake of certain nutrients.

<sup>149</sup> See, *e.g.* *NRDC v. EPA*, 902 F. 2d 962, 973–74 (D.C. Cir. 1990).



effects in humans following specific O<sub>3</sub> exposures. In particular, she notes that the effects reported in controlled human exposure studies are due solely to O<sub>3</sub> exposures, and interpretation of study results is not complicated by the presence of co-occurring pollutants or pollutant mixtures (as is the case in epidemiologic studies). The Administrator also observes that her emphasis on information from controlled human exposure studies is consistent with CASAC's advice and interpretation of the scientific evidence (Frey, 2014c).

With regard to the effects shown in controlled human exposure studies following specific O<sub>3</sub> exposures, as discussed in more detail above (II.B, II.C.4.b.i), the Administrator notes that (1) the largest respiratory effects, and the broadest range of effects, have been studied and reported following exposures to 80 ppb O<sub>3</sub> or higher (*i.e.*, decreased lung function, increased airway inflammation, increased respiratory symptoms, AHR, and decreased lung host defense); (2) exposures to O<sub>3</sub> concentrations as low as 72 ppb have been shown to both decrease lung function and result in respiratory symptoms; and (3) exposures to O<sub>3</sub> concentrations as low as 60 ppb have been shown to decrease lung function and to increase airway inflammation.

While such controlled human exposure studies provide a high degree of confidence regarding the occurrence of health effects following exposures to O<sub>3</sub> concentrations from 60 to 80 ppb, there are no universally accepted criteria by which to judge the adversity of the observed effects. To inform her judgments on the potential adversity to public health of effects reported in controlled human exposure studies, the Administrator considers ATS recommendations and CASAC advice, as described in detail above (II.B.2, II.C.4.b.i, II.C.4.b.iii, II.C.4.b.iv). Based on her consideration of such recommendations and advice, the Administrator is confident that the respiratory effects that have been observed following exposures to 72 ppb O<sub>3</sub> or above can be adverse. In addition, she judges that adverse effects are likely to occur following exposures somewhat below 72 ppb (II.C.4.b.i). However, as described above (II.C.4.b.i, II.C.4.b.iii, II.C.4.b.iv), the Administrator is notably less confident in the adversity to public health of the respiratory effects that have been observed following exposures to O<sub>3</sub> concentrations as low as 60 ppb, given her consideration of the following: (1) ATS recommendations indicating uncertainty in judging adversity based

on lung function decrements alone; (2) uncertainty in the extent to which a short-term, transient population-level decrease in FEV<sub>1</sub> would increase the risk of other, more serious respiratory effects in that population (*i.e.*, per ATS recommendations on population-level risk); and (3) compared to 72 ppb, CASAC advice is less clear regarding the potential adversity of effects at 60 ppb.

Taken together, the Administrator concludes that the evidence from controlled human exposure studies provides strong support for her conclusion that a revised standard with a level of 70 ppb is requisite to protect the public health with an adequate margin of safety. She bases this conclusion, in part, on the fact that such a standard level would be well below the O<sub>3</sub> exposure concentration shown to result in the widest range of respiratory effects (*i.e.*, 80 ppb), and below the lowest O<sub>3</sub> exposure concentration shown to result in the adverse combination of lung function decrements and respiratory symptoms (*i.e.*, 72 ppb). See *Lead Industries*, 647 F. 2d at 1160 (setting NAAQS at level well below the level where the clearest adverse effects occur, and at a level eliminating most "sub-clinical effects" provides an adequate margin of safety).

As discussed above (II.C.4.b.i), the Administrator also notes that a revised O<sub>3</sub> standard with a level of 70 ppb can provide substantial protection against the broader range of O<sub>3</sub> exposure concentrations that have been shown in controlled human exposure studies to result in respiratory effects, including exposure concentrations below 70 ppb. The degree of protection provided by any NAAQS is due to the combination of all of the elements of the standard (*i.e.*, indicator, averaging time, form, level) and, in the case of the fourth-high form of the revised primary O<sub>3</sub> standard (II.C.3), the large majority of days in areas that meet the revised standard will have 8-hour O<sub>3</sub> concentrations below 70 ppb, with most days having 8-hour O<sub>3</sub> concentrations well below this level. In addition, the degree of protection provided by the O<sub>3</sub> NAAQS is also dependent on the extent to which people experience health-relevant O<sub>3</sub> exposures in locations meeting the NAAQS. As discussed above, for a pollutant like O<sub>3</sub> where adverse responses are critically dependent on ventilation rates, the Administrator notes that it is important to consider activity patterns in the exposed population. Not considering activity patterns, and corresponding ventilation rates, can result in a standard that provides more protection than is requisite. Therefore, as discussed in the

proposal, in considering the degree of protection provided by a revised primary O<sub>3</sub> standard, the Administrator considers the extent to which that standard would be expected to limit population exposures of concern (*i.e.*, which take into account activity patterns and estimated ventilation rates) to the broader range of O<sub>3</sub> exposure concentrations shown to result in health effects.

Due to interindividual variability in responsiveness, the Administrator notes that not every occurrence of an exposure of concern will result in an adverse effect (II.C.4.b.i). Moreover, repeated occurrences of some of the effects demonstrated following exposures of concern could increase the likelihood of adversity (U.S. EPA, 2013, Section 6.2.3, p. 6–76). In particular, she notes that the types of respiratory effects that can occur following exposures of concern, particularly if experienced repeatedly, provide a plausible mode of action by which O<sub>3</sub> may cause other more serious effects. Therefore, as in the proposal, the Administrator is most concerned about protecting at-risk populations against repeated occurrences of exposures of concern. In considering the appropriate metric for evaluating repeated occurrences of exposures of concern, the Administrator acknowledges that it is not clear from the evidence, or from the ATS recommendations, CASAC advice, or public comments, how particular numbers of exposures of concern could impact the seriousness of the resulting effects, especially at lower exposure concentrations. Therefore, the Administrator judges that focusing on HREA estimates of two or more exposures of concern provides a health-protective approach to considering the potential for repeated occurrences of exposures of concern that could result in adverse effects.

Based on her consideration of adversity discussed above, the Administrator places the most emphasis on setting a standard that appropriately limits repeated occurrences of exposures of concern at or above the 70 and 80 ppb benchmarks. She notes that a revised standard with a level of 70 ppb is estimated to eliminate the occurrence of two or more exposures of concern to O<sub>3</sub> concentrations at or above 80 ppb and to virtually eliminate the occurrence of two or more exposures of concern to O<sub>3</sub> concentrations at or above 70 ppb for all children and children with asthma, even in the worst-case year and location evaluated.

While she is less confident that adverse effects will occur following exposures to O<sub>3</sub> concentrations as low as 60 ppb, as discussed above, the

Administrator judges that it is also appropriate to consider estimates of exposures of concern for the 60 ppb benchmark. Consistent with this judgment, although CASAC advice regarding the potential adversity of effects at 60 ppb was less definitive than for effects at 72 ppb, CASAC did clearly advise the EPA to consider the extent to which a revised standard is estimated to limit the effects observed following 60 ppb exposures (Frey, 2014c). Therefore, the Administrator considers estimated exposures of concern for the 60 ppb benchmark, particularly considering the extent to which the health protection provided by a revised standard includes a margin of safety against the occurrence of adverse O<sub>3</sub>-induced effects. The Administrator notes that a revised standard with a level of 70 ppb is estimated to protect the vast majority of children in urban study areas (*i.e.*, about 96% to more than 99% of children in individual areas) from experiencing two or more exposures of concern at or above 60 ppb. Compared to the current standard, this represents a reduction of more than 60%.

Given the considerable protection provided against repeated exposures of concern for all of the benchmarks evaluated, including the 60 ppb benchmark, the Administrator judges that a standard with a level of 70 ppb will incorporate a margin of safety against the adverse O<sub>3</sub>-induced effects shown to occur following exposures at or above 72 ppb, and judged likely to occur following exposures somewhat below 72 ppb.

While the Administrator is less concerned about single occurrences of O<sub>3</sub> exposures of concern, especially for the 60 ppb benchmark, she judges that estimates of one or more exposures of concern can provide further insight into the margin of safety provided by a revised standard. In this regard, she notes that a standard with a level of 70 ppb is estimated to (1) virtually eliminate all occurrences of exposures of concern at or above 80 ppb; (2) protect the vast majority of children in urban study areas from experiencing any exposures of concern at or above 70 ppb (*i.e.*,  $\geq$  about 99%, based on mean estimates; Table 1); and (3) to achieve substantial reductions, compared to the current standard, in the occurrence of one or more exposures of concern at or above 60 ppb (*i.e.*, about a 50% reduction; Table 1). The Administrator judges that these results provide further support for her conclusion that a standard with a level of 70 ppb will incorporate an adequate margin of safety against the occurrence of O<sub>3</sub> exposures

that can result in effects that are adverse to public health.

The Administrator additionally judges that a standard with a level of 70 ppb would be expected to result in important reductions, compared to the current standard, in the population-level risk of O<sub>3</sub>-induced lung function decrements ( $\geq 10\%$ ,  $\geq 15\%$ ) in children, including children with asthma. Specifically, a revised standard with a level of 70 ppb is estimated to reduce the risk of two or more O<sub>3</sub>-induced decrements by about 30% and 20% for decrements  $\geq 15$  and 10%, respectively (Table 2, above). However, as discussed above (II.C.4.b.i), the Administrator judges that there are important uncertainties in using lung function risk estimates as a basis for considering the occurrence of adverse effects in the population given (1) the ATS recommendation that “a small, transient loss of lung function, by itself, should not automatically be designated as adverse” (ATS, 2000a); (2) uncertainty in the extent to which a transient population-level decrease in FEV<sub>1</sub> would increase the risk of other, more serious respiratory effects in that population (*i.e.*, per ATS recommendations on population-level risk); and (3) that CASAC did not advise considering a standard that would be estimated to eliminate O<sub>3</sub>-induced lung function decrements  $\geq 10$  or 15% (Frey, 2014c). Moreover, as at proposal, the Administrator notes that the variability in lung function risk estimates across urban study areas is often greater than the differences in risk estimates between various standard levels (Table 2, above).<sup>150</sup> Given this, and the resulting considerable overlap between the ranges of lung function risk estimates for different standard levels, the Administrator puts limited weight on the lung function risk estimates for distinguishing between the degrees of public health protection provided by alternative standard levels. Therefore, the Administrator judges that while a standard with a level of 70 ppb would be expected to result in important reductions, compared to the current standard, in the population-level risk of O<sub>3</sub>-induced lung function decrements ( $>10\%$ , 15%) in children, including children with asthma, she also judges that estimated risks of O<sub>3</sub>-induced lung function decrements provide a more limited basis than exposures of concern for distinguishing between the

<sup>150</sup> For example, the average percentage of children estimated to experience two or more decrements  $\geq 10\%$  ranges from approximately 6 to 11% for a standard level of 70 ppb, up to about 9% for a level of 65 ppb, and up to about 6% for a level of 60 ppb (Table 2, above).

appropriateness of the health protection afforded by a standard level of 70 ppb versus lower levels.

The Administrator also considers the epidemiologic evidence and the quantitative risk estimates based on information from epidemiologic studies. As discussed in the proposal, and above in the EPA's responses to significant comments, although the Administrator acknowledges the important uncertainties in using the O<sub>3</sub> epidemiologic studies as a basis for selecting a standard level, she notes that these studies can provide perspective on the degree to which O<sub>3</sub>-associated health effects have been identified in areas with air quality likely to have met various standards. Specifically, the Administrator notes analyses in the PA (U.S. EPA, 2014c, section 4.4.1) indicating that a revised standard with a level of 70 ppb would be expected to require additional reductions, beyond those required by the current standard, in the short- and long-term ambient O<sub>3</sub> concentrations that provided the basis for statistically significant O<sub>3</sub> health effect associations in both the single-city and multicity epidemiologic studies evaluated. As discussed above in the response to comments, while the Administrator concludes that these analyses support a level at least as low as 70 ppb, based on a study reporting health effect associations in a location that met the current standard over the entire study period but that would have violated a revised standard with a level of 70 ppb,<sup>151</sup> she further judges that they are of more limited utility for distinguishing between the appropriateness of the health protection estimated for a standard level of 70 ppb and the protection estimated for lower levels. Thus, the Administrator notes that a revised standard with a level of 70 ppb will provide additional public health protection, beyond that provided by the current standard, against the clearly adverse effects reported in

<sup>151</sup> As discussed above (II.B.2.c.ii and II.B.3), the study by Mar and Koenig (2009) reported positive and statistically significant associations with respiratory emergency department visits in a location that would have met the current standard over the entire study period, but violated a standard with a level of 70 ppb. In addition, air quality analyses in the locations of two additional studies highlighted in sections II.B.2 and II.B.3 (Silverman and Ito, 2010; Strickland *et al.*, 2010) were used in the PA to inform staff conclusions on the adequacy of the current primary O<sub>3</sub> standard. However, they did not provide insight into the appropriateness of standard levels below 75 ppb and, therefore, these analyses were not used to inform conclusions on potential alternative standard levels lower than 75 ppb (U.S. EPA, 2014c, Chapters 3 and 4). See *Mississippi*, 744 F. 3d at 1352–53 (study appropriate for determining causation may not be probative for determining level of a revised standard).

epidemiologic studies. She judges that a standard with a level of 70 ppb strikes an appropriate balance between setting the level to require reductions in the ambient O<sub>3</sub> concentrations associated with statistically significant health effects in epidemiologic studies, while not being more protective than necessary in light of her considerable uncertainty in the extent to which studies clearly show O<sub>3</sub>-attributable effects at lower ambient O<sub>3</sub> concentrations. This judgment is consistent with the Administrator's conclusions based on information from controlled human exposure studies, as discussed above.

With regard to epidemiology-based risk estimates, the Administrator takes note of the CASAC conclusion that "[a]lthough the estimates for short-term exposure impacts are subject to uncertainty, the data supports a conclusion that there are meaningful reductions in mean premature mortality associated with ozone levels lower than the current standard" (Frey, 2014a, p. 10). While she concludes that epidemiology-based risk analyses provide only limited support for any specific standard level, consistent with CASAC advice the Administrator judges that, compared to the current standard, a revised standard with a level of 70 ppb will result in meaningful reductions in the mortality and respiratory morbidity risk that is associated with short-or long-term ambient O<sub>3</sub> concentrations.

Given all of the evidence and information discussed above, the Administrator judges that a standard with a level of 70 ppb is requisite to protect public health with an adequate margin of safety, and that a level below 70 ppb would be more than "requisite" to protect the public health. In reaching this conclusion, she notes that a decision to set a lower level would place a large amount of emphasis on the potential public health importance of (1) further reducing the occurrence of O<sub>3</sub> exposures of concern, though the exposures about which she is most concerned are estimated to be almost eliminated with a level of 70 ppb, and lower levels would be expected to achieve virtually no additional reductions in these exposures (see Table 1, above); (2) further reducing the risk of O<sub>3</sub>-induced lung function decrements >10 and 15%, despite having less confidence in judging the potential adversity of lung function decrements alone and the considerable overlap between risk estimates for various standard levels that make it difficult to distinguish between the risk reductions achieved; (3) further reducing ambient O<sub>3</sub> concentrations, relative to those in

locations of epidemiologic studies, though associations have not been reported for air quality that would have met a standard with a level of 70 ppb across all study locations and over entire study periods, and despite her consequent judgment that air quality analyses in epidemiologic study locations are not informative regarding the additional degree of public health protection that would be afforded by a standard set at a level below 70 ppb; and (4) further reducing epidemiology-based risk estimates, despite the important uncertainties in those estimates. As discussed in this section and in the responses to significant comments above, the Administrator does not agree that it is appropriate to place significant weight on these factors or to use them to support the appropriateness of standard levels below 70 ppb O<sub>3</sub>. Compared to an O<sub>3</sub> standard level of 70 ppb, the Administrator concludes that the extent to which lower standard levels could result in further public health improvements becomes notably less certain.

Thus, having carefully considered the evidence, information, CASAC advice, and public comments relevant to her decision on the level of the primary O<sub>3</sub> standard, as discussed above and in the Response to Comments document, the Administrator is revising the level of the primary O<sub>3</sub> standard to 70 ppb. She is mindful that the selection of a primary O<sub>3</sub> standard that is requisite to protect public health with an adequate margin of safety requires judgments based on an interpretation of the scientific evidence and exposure/risk information that neither overstate nor understate the strengths and limitations of that evidence and information and the appropriate inferences to be drawn therefrom. Her decision places the greatest emphasis on the results of controlled human exposure studies and on quantitative analyses based on information from these studies, particularly analyses of O<sub>3</sub> exposures of concern. As in the proposal, and as discussed above, she views the results of the lung function risk assessment, analyses of O<sub>3</sub> air quality in locations of epidemiologic studies, and epidemiology-based quantitative health risk assessments as providing information in support of her decision to revise the current standard, but a more limited basis for selecting a particular standard level among a range of options.

In making her decision to revise the level of the primary O<sub>3</sub> standard to 70 ppb, the Administrator judges that a revised standard with a level of 70 ppb

strikes the appropriate balance between limiting the O<sub>3</sub> exposures about which she is most concerned and not going beyond what would be required to effectively limit such exposures. Specifically, the Administrator judges it appropriate to set a standard estimated to eliminate, or almost eliminate, repeated occurrences of exposures of concern for the 70 and 80 ppb benchmarks. She further judges that a lower standard level would not be appropriate given that lower levels would be expected to achieve virtually no additional reductions in repeated occurrences of exposures of concern for these benchmarks. For the 60 ppb benchmark, a level of 70 ppb is estimated to protect the vast majority of children (including children with asthma) in urban study areas from experiencing two or more exposures of concern, reflecting important reductions in such exposures compared to the current standard and indicating that the revised primary O<sub>3</sub> standard provides an adequate margin of safety. Given these results, including the considerable protection provided against repeated exposures of concern for the 60 ppb benchmark, the Administrator judges that a standard with a level of 70 ppb incorporates an adequate margin of safety against the occurrence of adverse O<sub>3</sub>-induced effects.

For all of the above reasons, the Administrator concludes that a primary O<sub>3</sub> standard with an 8-hour averaging time; a 3-year average, fourth-high form; and a level of 70 ppb is requisite to protect public health, including the health of at-risk populations, with an adequate margin of safety. Therefore, in this final rule she is setting the level of the primary O<sub>3</sub> standard at 70 ppb.

#### *D. Decision on the Primary Standard*

For the reasons discussed above, and taking into account information and assessments presented in the ISA, HREA, and PA, the advice and recommendations of the CASAC Panel, and the public comments, the Administrator has decided to revise the existing 8-hour primary O<sub>3</sub> standard. Specifically, the Administrator is revising the level of the primary O<sub>3</sub> standard to 70 ppb. The revised 8-hour primary standard, with a level of 70 ppb, would be met at an ambient air monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration is less than or equal to 70 ppb. Data handling conventions are specified in the new Appendix U that is adopted, as discussed in section V below.

At this time, EPA is also promulgating revisions to the Air Quality Index (AQI) for O<sub>3</sub> to be consistent with the revisions to the primary O<sub>3</sub> standard and the health information evaluated in this review of the standards. These revisions are discussed below in section III.

### III. Communication of Public Health Information

Information on the public health implications of ambient concentrations of criteria pollutants is currently made available primarily through EPA's AQI program. The AQI has been in use since its inception in 1999 (64 FR 42530). It provides accurate, timely, and easily understandable information about daily levels of pollution. It is designed to tell individual members of the public how clean or unhealthy their air is, whether health effects might be a concern, and, if so, measures individuals can take to reduce their exposure to air pollution.<sup>152</sup> See CAA section 127. The AQI focuses on health effects individuals may experience within a few hours or days after breathing unhealthy air. The AQI establishes a nationally uniform system of indexing pollution concentrations for O<sub>3</sub>, CO, NO<sub>2</sub>, PM and SO<sub>2</sub>. The AQI converts pollutant concentrations in a community's air to a number on a scale from 0 to 500. Reported AQI values enable the public to know whether air pollution concentrations in a particular location are characterized as good (0–50), moderate (51–100), unhealthy for sensitive groups (101–150), unhealthy (151–200), very unhealthy (201–300), or

hazardous (301–500). The AQI index value of 100 typically corresponds to the level of the short-term NAAQS for each pollutant. For the 2008 O<sub>3</sub> NAAQS, an 8-hour average concentration of 75 ppb corresponds to an AQI value of 100. An AQI value greater than 100 means that a pollutant is in one of the unhealthy categories (*i.e.*, unhealthy for sensitive groups, unhealthy, very unhealthy, or hazardous) on a given day; an AQI value at or below 100 means that a pollutant concentration is in one of the satisfactory categories (*i.e.*, moderate or good). An additional consideration in selecting breakpoints is for each category to span at least a 15 ppb range to allow for more accurate air pollution forecasting. Decisions about the pollutant concentrations at which to set the various AQI breakpoints, that delineate the various AQI categories, draw directly from the underlying health information that supports the NAAQS review.

#### A. Proposed Revisions to the AQI

Recognizing the importance of revising the AQI in a timely manner to be consistent with any revisions to the NAAQS, EPA proposed conforming changes to the AQI, in connection with the Agency's proposed decision on revisions to the O<sub>3</sub> NAAQS. These conforming changes included setting the 100 level of the AQI at the same level as the revised primary O<sub>3</sub> NAAQS and also making adjustments based on health information from this NAAQS review to AQI breakpoints at the lower end of each range (*i.e.*, AQI values of 50, 150, 200 and 300). The EPA did not propose to change the level at the top of the index (*i.e.*, AQI value of 500) that typically is set equal to the Significant Harm Level (40 CFR 51.16), which would apply to state contingency plans.

The EPA proposed to revise the AQI for O<sub>3</sub> by setting an AQI value of 100 equal to the level of the revised O<sub>3</sub> standard (65–70 ppb). The EPA also proposed to revise the following breakpoints: an AQI value of 50 to within a range from 49–54 ppb; an AQI value of 150 to 85 ppb; an AQI value of 200 to 105 ppb, and an AQI value of 300 to 200 ppb. All these levels are averaged over 8 hours. The EPA proposed to set an AQI value of 50, the breakpoint between the good and moderate categories, at 15 ppb below the value of the proposed standard, *i.e.* to within a range from 49 to 54 ppb. The EPA took comment on what level within this range to select, recognizing that there is no health message for either at-risk or healthy populations in the good category. Thus, the level selected should be below the lowest concentration (*i.e.*,

60 ppb) that has been shown in controlled human exposure studies of young, healthy adults exposed to O<sub>3</sub> while engaged in quasi-continuous moderate exercise for 6.6 hours to cause moderate lung function decrements (*i.e.*, FEV<sub>1</sub> decrements ≥ 10%, which could be adverse to people with lung disease) and airway inflammation.<sup>153</sup> The EPA proposed to set an AQI value of 150, the breakpoint between the unhealthy for sensitive groups and unhealthy categories, at 85 ppb. At this level, controlled human exposure studies of young, healthy adults indicate that up to 25% of exposed people are likely to have moderate lung function decrements (*i.e.*, 25% have FEV<sub>1</sub> decrements ≥ 10%; 12% have FEV<sub>1</sub> decrements ≥ 15%) and up to 7% are likely to have large lung function decrements (*i.e.*, FEV<sub>1</sub> decrements ≥ 20%) (McDonnell *et al.*, 2012; Figure 7). Large lung function decrements would likely interfere with normal activity for many healthy people. For most people with lung disease, large lung function decrements would not only interfere with normal activity but would increase the likelihood that they would seek medical treatment (72 FR 37850, July 11, 2007). The EPA proposed to set an AQI value of 200, the breakpoint between the unhealthy and very unhealthy categories, at 105 ppb. At this level, controlled human exposure studies of young, healthy adults indicate that up to 38% of exposed people are likely to have moderate lung function decrements (*i.e.*, 38% have FEV<sub>1</sub> decrements ≥ 10%; 22% have FEV<sub>1</sub> decrements ≥ 15%) and up to 13% are likely to have large lung function decrements (*i.e.*, FEV<sub>1</sub> decrements ≥ 20%). The EPA proposed to set an AQI value of 300, the breakpoint between the very unhealthy and hazardous categories, at 200 ppb. At this level, controlled human exposure studies of healthy adults indicate that up to 25% of exposed individuals are likely to have large lung function decrements (*i.e.*, FEV<sub>1</sub> decrements ≥ 20%), which would interfere with daily activities for many of them and likely cause people with lung disease to seek medical attention.

EPA stated that the proposed breakpoints reflect an appropriate balance between reflecting the health evidence that is the basis for the proposed primary O<sub>3</sub> standard and providing category ranges that are large enough to be forecasted accurately, so

<sup>152</sup> EPA issued the AQI in 1999, updating the previous Pollutant Standards Index (PSI) to send "a clear and consistent message to the public by providing nationally uniform information on air quality." The rule requires metropolitan areas of 350,000 and larger to report the AQI [and associated health effects] daily; all other AQI-related activities—including real-time ozone and particle pollution reporting, next-day air quality forecasting and action days—are voluntary and are carried out at the discretion of state, local and tribal air agencies. In the 1999 rule, we acknowledged these other programs, noting, for example, that while states primarily use the AQI "to provide general information to the public about air quality and its relationship to public health," some state, local or tribal agencies use the index to call "action days." Action days encourage additional steps, usually voluntary, that the public, business or industry could take to reduce emissions when higher levels of pollution are forecast to occur. As the 1999 rule notes, agencies may have several motivations for calling action days, including: providing health information to the public; attaining or maintaining NAAQS attainment status; meeting specific emission reduction targets; and managing or reducing traffic congestion. State, local and tribal agencies should consider whether non-voluntary emissions or activity curtailments are necessary (as opposed to a suite of voluntary measures) for days when the AQI is forecasted to be on the lower end of the moderate category.

<sup>153</sup> Exposures to 50 ppb have not been evaluated experimentally, but are estimated to potentially affect only a small proportion of healthy adults and with only a half to a third of the moderate to large lung function decrements observed at 60 ppb (McDonnell *et al.*, 2012; Figure 7).

that the new AQI for O<sub>3</sub> can be implemented more easily in the public forum for which the AQI ultimately exists. However, the EPA recognized alternative approaches to viewing the evidence and information and solicited comment on the proposed revisions to the AQI.

With respect to reporting requirements (40 CFR part 58, section 58.50), EPA proposed to revise 40 CFR part 58, section 58.50 (c) to determine the areas subject to AQI reporting requirements based on the latest available census figures, rather than the most recent decennial U.S. census.<sup>154</sup> This change is consistent with our current practice of using the latest population figures to make monitoring requirements more responsive to changes in population.

#### B. Comments on Proposed Revisions to the AQI

EPA received many comments on the proposed changes to the AQI. Three issues came up in the comments, including: (1) Whether the AQI should be revised at all, even if the primary standard is revised; (2) whether an AQI value of 100 should be set equal to the level of the primary standard and the other breakpoints adjusted accordingly; and, (3) whether the AQI reporting requirements should be based on the latest available census figures rather than the most recent decennial census.

With respect to the first issue, some industry commenters stated that the AQI should not be revised at all, even if the level of the primary O<sub>3</sub> standard is revised. In support of this position, these commenters stated that the proposed conforming changes to the AQI would lower O<sub>3</sub> levels in each category, and would mean that air quality that is actually improving would be reported as less healthy. According to commenters, the revised AQI would fail to capture these improvements and potentially mislead the public into thinking that air quality has degraded and that EPA and state regulators are not doing their jobs. These commenters noted that there is no requirement to revise the AQI, and that the CAA does not tie the AQI to the standards, stating that the purpose of section 319(a) of the CAA is to provide a consistent, uniform means of gauging air quality. These commenters further asserted that EPA's proposed changes run counter to that uniformity by changing the air quality significance of a given index value and category and that retention of the

current AQI breakpoints would allow continued uniform information on air quality. Commenters stated that it is important that the EPA clearly communicate that the immediate increases in moderate rated days are due to AQI breakpoint adjustment and not due to a sudden decline in air quality. One commenter estimated the increased proportion of days in the moderate category and above in 10 metropolitan areas for 2013 and also for 2025 for 4 cities from the original 10 that were estimated to attain a standard below 70 ppb, to compare with 2013. This commenter noted that the change in the proposed AQI breakpoint between "good" and "moderate" would result in a larger number of days that did not meet the "good" criteria. They went further to claim that the change in breakpoints would result in fewer "good" days in the year 2025 (using the new breakpoint) than occurred in 2013 (using the old breakpoints) despite substantial improvement in air quality over that time period.

On the other hand, state and local agencies and their organizations, environmental and medical groups, and members of the public overwhelmingly supported revising the AQI when the level of the standard is revised. Even state agencies that did not support revising the standard, expressed support for revising the AQI at the same time as the standard, if the standard is revised.

Recognizing the importance of the AQI as a communication tool that allows members of the public to take exposure reduction measures when air quality poses health risks, the EPA agrees with these comments about revising the AQI at the same time as the primary standard. The EPA agrees with state and local agency commenters that its historical approach of setting an AQI value of 100 equal to the level of the revised 8-hour primary O<sub>3</sub> standard is appropriate, both from a public health and a communication perspective.

EPA disagrees with commenters who stated that the AQI should not be linked to the primary standards. As noted in the August 4, 1999, rulemaking (64 FR 149, 42531) that established the current AQI, the EPA established the nationally uniform air quality index, called the Pollutant Standards Index (PSI), in 1976 to meet the needs of state and local agencies with the following advantages: It sends a clear and consistent message to the public by providing nationally uniform information on air quality; it is keyed as appropriate to the NAAQS and the Significant Harm Level which have a scientific basis relating air quality and public health; it is simple and easily understood by the public; it provides a

framework for reflecting changes to the NAAQS; and it can be forecasted to provide advance information on air quality. Both the PSI and AQI have historically been normalized across pollutants by defining an index value of 100 as the numerical level of the short-term (*i.e.*, averaging time of 24-hours or less) primary NAAQS for each pollutant. Moreover, this approach does not mislead the public. Since the establishment of the AQI, the EPA and state and local air agencies and organizations have developed experience in educating the public about changes in the standards and, concurrently, related changes to AQI breakpoints and advisories. When the standards change, EPA and state and local agencies have tried to help the public understand that air quality is not getting worse, it's that the health evidence underlying the standards and the AQI has changed. EPA's Air Quality System (AQS), the primary repository for air quality monitoring data, is also adjusted to reflect the revised breakpoints. Specifically, all historical AQI values in AQS are recomputed with the revised breakpoints, so that all data queries and reports downstream of AQS will show appropriate trends in AQI values over time.<sup>155</sup>

In general, commenters who supported revising the AQI when the standard is revised, also supported setting an AQI value of 100 equal to the level of the 8-hour primary O<sub>3</sub> standard. The EPA agrees with these commenters. With respect to an AQI value of 100, the EPA is taking final action to set an AQI value of 100 equal to the level of the 8-hour primary standard at 70 ppb O<sub>3</sub>.

With respect to proposed changes to other AQI breakpoints, some state and local agency commenters expressed general support for all the changes in O<sub>3</sub> breakpoints (in Table 2 of Appendix G). In addition, we received a few comments specifically about the breakpoint between the good and moderate categories. One state expressed the view that forecasting the AQI for O<sub>3</sub> is not an exact science, so it is important to provide a range large enough to reasonably predict O<sub>3</sub>

<sup>155</sup> Although we do not contest the assertion that the new AQI breakpoints will lead to fewer green days in the near future, we do not agree that commenters' analysis sufficiently demonstrates that there would be fewer green days in 2025 than in 2013. In their analysis, they compared observed 2013 data with modeled 2025 data without doing any model performance evaluation for AQI categories or comparison of current year modeled and observed data. The current year observations are not directly comparable to the future-year modeling data without some such evaluation and, as such, we cannot support their quantitative conclusions.

<sup>154</sup> Under 40 CFR 58.50, any MSA with a population exceeding 350,000 is required to report AQI data.

concentrations for the following day ( $\geq$  20 ppb). Although not supporting revision of the standard, this state recommended that if the primary standard was revised to 70 ppb, the lower end of moderate category should be set at 50 ppb to allow for a 20 ppb spread in that category. Several commenters recommending a breakpoint between the good and moderate categories of no higher than 50 ppb stated that this breakpoint should be set on health information, pointing to epidemiologic data and the World Health organization guidelines. The Agency agrees that AQI breakpoints should take into consideration health information when possible, and also that it is important for AQI categories to span ranges large enough to support accurate forecasting. The EPA is setting the breakpoint at the lower end of the moderate category at 55 ppb, which is 15 ppb below the level of the standard of 70 ppb. This is consistent with past practice of making a proportional adjustment to this AQI breakpoint, relative to an AQI value of 100 (*i.e.*, 70 ppb), and also retains the current practice of providing a 15 ppb range in the moderate category to allow for accurate forecasting. This level is below the lowest concentration (*i.e.*, 60 ppb) that has been shown in controlled human exposure studies of healthy adults to cause moderate lung function decrements (*i.e.*, FEV<sub>1</sub> decrements  $\geq$  10%, which could be adverse to people with lung disease), large lung function decrements (*i.e.*, FEV<sub>1</sub> decrements  $\geq$  20%) in a small proportion of people, and airway inflammation, notwithstanding the Administrator's judgment that there is uncertainty in the adversity of the effects shown to occur at 60 ppb.

We received fewer comments on proposed changes to the AQI values of 150, 200 and 300. Again, some state and local agency commenters expressed general support for proposed changes to the AQI. Some states specifically supported these breakpoints. However, a commenter suggested setting an AQI value at the lower end of the unhealthy category, at a level much lower than 85 ppb, since they state that it is a key threshold that is often used in air quality action day programs as a trigger to encourage specific behavior modifications or reduce emissions of O<sub>3</sub> precursors (*e.g.*, by taking public transportation to work). This commenter stated that setting the breakpoint at 85 ppb would, in the Agency's own rationale, not require the triggering of these pollution reduction measures until air quality threatened to impact

25% of people exposed. We disagree with this commenter because EPA does not have any requirements for voluntary programs. State and local air agencies have discretion to set the trigger for voluntary action programs at whatever level they choose, and they are currently set at different levels, not just at the unhealthy breakpoint specified in the comment. For example, Houston, Galveston and Brazoria TX metropolitan area calls ozone action days when air quality reaches the unhealthy for sensitive groups category. For more information about action days programs across the U.S. see the AirNow Web site ([www.airnow.gov](http://www.airnow.gov)) and click on the link to AirNow Action Days. The unhealthy category represents air quality where there are general population-level effects. We believe that setting the breakpoint between the unhealthy for sensitive groups and unhealthy categories, at 85 ppb where, as discussed in section IIIA above, controlled human exposure studies of young, healthy adults exposed to O<sub>3</sub> while engaged in quasi-continuous moderate exercise for 6.6 hours indicate that up to 25% of exposed people are likely to have moderate lung function decrements and up to 7% are likely to have large lung function decrements (McDonnell *et al.*, 2012; Figure 7) is appropriate. A smaller proportion of inactive or less active individuals would be expected to experience lung function decrements at 85 ppb. Moreover, a breakpoint at 85 ppb allows for category ranges large enough for accurate forecasting. Accordingly, the EPA is adopting the proposed revisions to the AQI values of 150, 200 and 300.

As noted earlier, the EPA proposed to revise 40 CFR part 58, section 58.50(c) to determine the areas subject to AQI reporting requirements based on the latest available census figures, rather than the most recent decennial U.S. census.

A total of five state air monitoring agencies provided comments on this proposed change. Four agencies supported the proposal. One state commenter did not support the proposal, noting that the change would unnecessarily complicate AQI reporting and possibly increase reporting burdens in an unpredictable manner.

The EPA notes that the majority of monitoring network minimum requirements listed in Appendix D to Part 58 include a reference to "latest available census figures." Minimum network requirements for O<sub>3</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>2</sub> all include this language in the regulatory text and monitoring agencies have successfully adopted these processes into their planning

activities and the subsequent revision of their annual monitoring network plans which are posted for public review. Annual population estimates are easily obtainable from the U.S. Census Bureau and the EPA does not believe the burden in tracking these annual estimates is excessive or complicated.<sup>156</sup> Although the changes in year to year estimates are typically modest, there are MSAs that are approaching (or have recently exceeded) the 350,000 population AQI reporting limit and there is great value in having the AQI reported for these areas when the population threshold is exceeded versus waiting potentially up to 10 years for a revision to the decennial census. Accordingly, the EPA is finalizing the proposed revision to 40 CFR part 58, section 58.50(c) to require the AQI reporting requirements to be based on the latest available census figures.

One state requested additional guidance on the frequency of updating the AQI reporting threshold, and recommended linking the AQI reporting requirement evaluation with the annual air monitoring network plan requirements, and recommended requiring AQI reporting to begin no later than January 1 of the following year. The EPA notes that the census bureau estimates appear to be released around July 1 of each year which would not provide sufficient time for monitoring agencies to incorporate AQI reporting in their annual plans for that year, which are also due by July 1 each year. EPA believes that it should be unnecessary for monitoring agencies to wait until the implementation of the following year's annual plan (*i.e.*, approximately 18 months later) to begin AQI reporting. Accordingly, EPA is not at this time including a specific deadline for commencement of AQI reporting for newly-subject areas in 40 CFR part 58, but will work with agencies to implement additional AQI reporting as needed to ensure that information is being disseminated in a timely fashion.

### C. Final Revisions to the AQI

For the reasons discussed above, the EPA is revising the AQI for O<sub>3</sub> by setting an AQI value of 100 equal to 70 ppb, 8-hour average, the level of the revised primary O<sub>3</sub> standard. The EPA is also revising the following breakpoints: An AQI value of 50 is set at 54 ppb; an AQI value of 150 is set at 85 ppb; an AQI value of 200 is set at 105 ppb; and an AQI value of 300 is set at 200 ppb. All of these levels are averaged over 8 hours. The revisions to all of the

<sup>156</sup> <http://www.census.gov/popest/data/metro/totals/2014/CBSA-EST2014-alldata.html>.

breakpoints are based on estimated health outcomes at relevant ambient concentrations and to allow for each category to span at least a 15–20 ppb category range to allow for more accurate air pollution forecasting. The EPA believes that the revised breakpoints provide a balance between adjustments to reflect the health information supporting the revised O<sub>3</sub> standard and providing category ranges that are large enough to be forecasted accurately, so that the AQI can be implemented more easily in the public forum for which the AQI ultimately exists. With respect to AQI reporting requirements (40 CFR part 58, section 58.50), the EPA is revising 40 CFR part 58, section 58.50(c) to make the AQI reporting requirements based on the latest available census figures, rather than the most recent decennial U.S. census. This change is consistent with our current practice of using the latest population figures to make monitoring requirements more responsive to changes in population.

#### IV. Rationale for Decision on the Secondary Standard

##### A. Introduction

This section (IV) presents the rationale for the Administrator's decisions regarding the need to revise the current secondary standard for O<sub>3</sub>, and the appropriate revision. Based on her consideration of the full body of welfare effects evidence and related analyses, including the evidence of effects associated with cumulative seasonal exposures of the magnitudes allowed by the current standard, the Administrator has concluded that the current secondary standard for O<sub>3</sub> does not provide the requisite protection of public welfare from known or anticipated adverse effects. She has decided to revise the level of the current secondary standard to 0.070 ppm, in conjunction with retaining the current indicator, averaging time and form.

The Administrator has made this decision based on judgments regarding the currently available welfare effects evidence, the appropriate degree of public welfare protection for the revised standard, and currently available air quality information on seasonal cumulative exposures that may be allowed by such a standard. In so doing, she has focused on O<sub>3</sub> effects on tree seedling growth as a proxy for the full array of vegetation-related effects of O<sub>3</sub>, ranging from effects on sensitive species to broader ecosystem-level effects. Using this proxy in judging effects to public welfare, the Administrator has concluded that the requisite protection

from adverse effects to public welfare will be provided by a standard that limits cumulative seasonal exposures to 17 ppm-hrs or lower, in terms of a 3-year W126 index, in nearly all instances, and she has also concluded that such control of cumulative seasonal exposures may be achieved by revising the level of the current standard to 70 ppb. Based on all of these considerations, the Administrator has decided that a secondary standard with a level of 0.070 ppm, and the current form and averaging time, will provide the requisite protection of public welfare from known or anticipated adverse effects.

As discussed more fully below, this decision is based on a thorough review, in the ISA, of the latest scientific information on O<sub>3</sub>-induced environmental effects. This decision also takes into account (1) staff assessments in the PA of the most policy-relevant information in the ISA regarding evidence of adverse effects of O<sub>3</sub> to vegetation and ecosystems, information on biologically-relevant exposure metrics, WREA analyses of air quality, exposure, and ecological risks and associated ecosystem services, and staff analyses of relationships between levels of a W126-based metric and a metric based on the form and averaging time of the current standard summarized in the PA and in the proposal notice; (2) CASAC advice and recommendations; and (3) public comments received during the development of these documents, either in connection with CASAC meetings or separately, and on the proposal notice.

This decision draws on the ISA's integrative synthesis of the entire body of evidence, generally published through July 2011, on environmental effects associated with the presence of O<sub>3</sub> and related photochemical oxidants in the ambient air (U.S. EPA, 2013, ISA chapters 9–10), and includes more than four hundred new studies that build on the extensive evidence base from the last review. In addition to reviewing the most recent scientific information as required by the CAA, this rulemaking incorporates the EPA's response to the judicial remand of the 2008 secondary O<sub>3</sub> standard in *State of Mississippi v. EPA*, 744 F. 3d 1334 (D.C. Cir. 2013) and, in accordance with the court's decision in that case, fully explains the Administrator's conclusions as to the level of air quality that provides the requisite protection of public welfare from known or anticipated adverse effects. In drawing conclusions on the secondary standard, the decision described in this rulemaking is a public welfare policy judgment made by the

Administrator. The Administrator's decision draws upon the available scientific evidence for O<sub>3</sub>-attributable welfare effects and on analyses of exposures and public welfare risks based on impacts to vegetation, ecosystems and their associated services, as well as judgments about the appropriate weight to place on the range of uncertainties inherent in the evidence and analyses. As described in sections IV.B.3 and IV.C.3 below, such judgments in the context of this review include judgments on the weight to place on the evidence of specific vegetation-related effects estimated to result across a range of cumulative seasonal concentration-weighted O<sub>3</sub> exposures; on the weight to give associated uncertainties, including those related to the variability in occurrence of such effects in areas of the U.S., especially areas of particular public welfare significance; and on the extent to which such effects in such areas may be considered adverse to public welfare.

Information related to vegetation and ecosystem effects, biologically relevant exposure indices, and vegetation exposure and risk assessments were summarized in sections IV.A through IV.C of the proposal (79 FR at 75314–75329), respectively, and key observations from the proposal are briefly outlined in sections IV.A.1 to IV.A.3 below. Subsequent sections of this preamble provide a more complete discussion of the Administrator's rationale, in light of key issues raised in public comments, for concluding that the current standard is not requisite to protect public welfare from known or anticipated adverse effects (section IV.B), and that it is appropriate to revise the current secondary standard to provide additional public welfare protection by revising the level while retaining the current indicator, form and averaging time (section IV.C). A summary of the final decisions on revisions to the secondary standard is presented in section IV.D.

##### 1. Overview of Welfare Effects Evidence a. Nature of Effects

In the more than fifty years that have followed identification of O<sub>3</sub>'s phytotoxic effects, extensive research has been conducted both in and outside of the U.S. to examine the impacts of O<sub>3</sub> on plants and their associated ecosystems (U.S. EPA, 1978, 1986, 1996a, 2006a, 2013). As was established in prior reviews, O<sub>3</sub> can interfere with carbon gain (photosynthesis) and allocation of carbon within the plant, making fewer carbohydrates available

for plant growth, reproduction, and/or yield. For seed-bearing plants, these reproductive effects will culminate in reduced seed production or yield (U.S. EPA, 1996a, pp. 5–28 and 5–29). Recent studies, assessed in the ISA, together with this longstanding and well-established literature on O<sub>3</sub>-related vegetation effects, further contribute to the coherence and consistency of the vegetation effects evidence (U.S. EPA, 2013, chapter 9).

The strongest evidence for effects from O<sub>3</sub> exposure on vegetation is from controlled exposure studies, which “have clearly shown that exposure to O<sub>3</sub> is causally linked to visible foliar injury, decreased photosynthesis, changes in reproduction, and decreased growth” in many species of vegetation (U.S. EPA, 2013, p. 1–15). Such effects at the plant scale can also be linked to an array of effects at larger spatial scales, with the currently available evidence indicating that “ambient O<sub>3</sub> exposures can affect ecosystem productivity, crop yield, water cycling, and ecosystem community composition” (U.S. EPA, 2013, p. 1–15; Chapter 9, section 9.4). The current body of O<sub>3</sub> welfare effects evidence confirms and strengthens support for the conclusions reached in the last review on the nature of O<sub>3</sub>-induced welfare effects and is summarized in the ISA as follows (U.S. EPA, 2013, p. 1–8).

The welfare effects of O<sub>3</sub> can be observed across spatial scales, starting at the subcellular and cellular level, then the whole plant and finally, ecosystem-level processes. Ozone effects at small spatial scales, such as the leaf of an individual plant, can result in effects along a continuum of larger spatial scales. These effects include altered rates of leaf gas exchange, growth, and reproduction at the individual plant level, and can result in broad changes in ecosystems, such as productivity, carbon storage, water cycling, nutrient cycling, and community composition.

Based on assessment of this extensive body of science, the EPA has determined that, with respect to vegetation and ecosystems, a causal relationship exists between exposure to O<sub>3</sub> in ambient air and visible foliar injury effects on vegetation, reduced vegetation growth, reduced productivity in terrestrial ecosystems, reduced yield and quality of agricultural crops and alteration of below-ground biogeochemical cycles (U.S. EPA, 2013, Table 1–2). In consideration of the evidence of O<sub>3</sub> exposure and alterations in stomatal performance, “which may affect plant and stand transpiration and therefore possibly affecting hydrological cycling,” the ISA concludes that “[a]lthough the direction of the response

differed among studies,” the evidence is sufficient to conclude a likely causal relationship between O<sub>3</sub> exposure and the alteration of ecosystem water cycling (U.S. EPA, 2013, section 2.6.3). The evidence is also sufficient to conclude a likely causal relationship between O<sub>3</sub> exposure and the alteration of community composition of some terrestrial ecosystems (U.S. EPA, 2013, section 2.6.5). Related to the effects on vegetation growth, productivity and, to some extent, below-ground biogeochemical cycles, the EPA has additionally determined that a likely causal relationship exists between exposures to O<sub>3</sub> in ambient air and reduced carbon sequestration (also termed carbon storage) in terrestrial ecosystems (U.S. EPA, 2013, p. 1–10 and section 2.6.2). Modeling studies available in this review consistently found negative impacts of O<sub>3</sub> on carbon sequestration, although the severity of impact was influenced by “multiple interactions of biological and environmental factors” (U.S. EPA, 2013, p. 2–39).

Ozone in the troposphere is also a major greenhouse gas and radiative forcing agent,<sup>157</sup> with the ISA formally concluding that “the evidence supports a causal relationship between changes in tropospheric O<sub>3</sub> concentrations and radiative forcing” (U.S. EPA, 2013, p. 1–13 and section 2.7.1). While tropospheric O<sub>3</sub> has been ranked third in importance after carbon dioxide and methane, there are “large uncertainties in the magnitude of the radiative forcing estimate attributed to tropospheric O<sub>3</sub>, making the impact of tropospheric O<sub>3</sub> on climate more uncertain than the effect of the longer-lived greenhouse gases” (U.S. EPA, 2013, p. 2–47). The ISA notes that “[e]ven with these uncertainties, global climate models indicate that tropospheric O<sub>3</sub> has contributed to observed changes in global mean and regional surface temperatures” and concludes that “[a]s a result of such evidence presented in climate modeling studies, there is likely to be a causal relationship between changes in tropospheric O<sub>3</sub> concentrations and effects on climate” (U.S. EPA, 2013, p. 2–47).<sup>158</sup> The ISA additionally states that “[i]mportant

<sup>157</sup> As described in the ISA, “[r]adiative forcing by a greenhouse gas or aerosol is a metric used to quantify the change in balance between radiation coming into and going out of the atmosphere caused by the presence of that substance” (U.S. EPA, 2013, p. 1–13).

<sup>158</sup> Climate responses, including increased surface temperature, have downstream climate-related ecosystem effects (U.S. EPA, 2013, p. 10–7). As noted in section I.D above, such effects may include an increase in the area burned by wildfires, which, in turn, are sources of O<sub>3</sub> precursor emissions.

uncertainties remain regarding the effect of tropospheric O<sub>3</sub> on future climate change” (U.S. EPA, 2013, p. 10–31).

#### b. Vegetation Effects

Given the strong evidence base and the findings of causal or likely causal relationships with O<sub>3</sub> in ambient air, including the quantitative assessments of relationships between O<sub>3</sub> exposure and occurrence and magnitude of effects, this review has given primary consideration to three main kinds of vegetation effects, some of which contribute to effects at scales beyond the plant level, such as at the ecosystem level and on ecosystem services. The three kinds of effects are addressed below in the following order: 1) Visible foliar injury, 2) impacts on tree growth, productivity and carbon storage, and 3) crop yield loss.

Visible foliar injury resulting from exposure to O<sub>3</sub> has been well characterized and documented over several decades of research on many tree, shrub, herbaceous, and crop species (U.S. EPA, 2013, p. 1–10; U.S. EPA, 2006a, 1996a, 1986, 1978). Ozone-induced visible foliar injury symptoms on certain plant species, such as black cherry, yellow-poplar and common milkweed, are considered diagnostic of exposure to O<sub>3</sub> based on the consistent association established with experimental evidence (U.S. EPA, 2013, p. 1–10). The evidence has found that visible foliar injury occurs only when sensitive plants are exposed to elevated O<sub>3</sub> concentrations in a predisposing environment; a major modifying factor is the amount of available soil moisture during the year (U.S. EPA, 2013, section 9.4.2).

The significance of O<sub>3</sub> injury at the leaf and whole plant levels depends on an array of factors, and therefore, it is difficult to quantitatively relate visible foliar injury symptoms to vegetation effects such as individual tree growth, or effects at population or ecosystem levels (U.S. EPA, 2013, p. 9–39). The ISA notes that visible foliar injury “is not always a reliable indicator of other negative effects on vegetation” (U.S. EPA, 2013, p. 9–39). Factors that influence the significance to the leaf and whole plant include the amount of total leaf area affected, age of plant, size, developmental stage, and degree of functional redundancy among the existing leaf area (U.S. EPA, 2013, section 9.4.2). Although there remains a lack of robust exposure-response functions that would allow prediction of visible foliar injury severity and incidence under varying air quality and environmental conditions, “[e]xperimental evidence has clearly



established a consistent association of visible injury with O<sub>3</sub> exposure, with greater exposure often resulting in greater and more prevalent injury” (U.S. EPA, 2013, section 9.4.2, p. 9–41).

By far the most extensive field-based dataset of visible foliar injury incidence is that obtained by the U.S. Forest Service Forest Health Monitoring/Forest Inventory and Analysis (USFS FHM/FIA) biomonitoring network program (U.S. EPA, 2013, section 9.4.2.1; Smith, 2012; Coulston *et al.*, 2007). A recently published trend analysis of data from the sites located in 24 states of the northeast and north central U.S. for the 16-year period from 1994 through 2009 (Smith, 2012) describes evidence of visible foliar injury occurrence in the field as well as some insight into the influence of changes in air quality and soil moisture on visible foliar injury and the difficulty inherent in predicting foliar injury response under different air quality and soil moisture scenarios (Smith, 2012; U.S. EPA, 2013, section 9.4.2.1). Study results showed that incidence and severity of foliar injury were dependent on local site conditions for soil moisture availability and O<sub>3</sub> exposure (U.S. EPA, 2013, p. 9–41). Although the study indicated that moderate O<sub>3</sub> exposures continued to cause visible foliar injury at sites throughout the study area, there was an overall declining trend in the incidence of visible foliar injury as peak O<sub>3</sub> concentrations declined (U.S. EPA, 2013, p. 9–40).

Ozone has been shown to affect a number of important U.S. tree species with respect to growth, productivity, and carbon storage. Ambient O<sub>3</sub> concentrations have long been known to cause decreases in photosynthetic rates and plant growth. As discussed in the ISA, research published since the 2006 AQCD substantiates prior conclusions regarding O<sub>3</sub>-related effects on forest tree growth, productivity and carbon storage, and further strengthens the support for those conclusions. A variety of factors in natural environments can either mitigate or exacerbate predicted O<sub>3</sub>-plant interactions and are recognized sources of uncertainty and variability. Such factors include multiple genetically influenced determinants of O<sub>3</sub> sensitivity, changing sensitivity to O<sub>3</sub> across vegetative growth stages, co-occurring stressors and/or modifying environmental factors (U.S. EPA, 2013, section 9.4.8). In considering of the available evidence, the ISA states, “previous O<sub>3</sub> AQCDs concluded that there is strong evidence that exposure to O<sub>3</sub> decreases photosynthesis and growth in numerous plant species” and that “[s]tudies published since the 2008

review support those conclusions” (U.S. EPA, 2013, p. 9–42). The available studies come from a variety of different study types that cover an array of different species, effects endpoints, levels of biological organization and exposure methods and durations. The O<sub>3</sub>-induced effects at the scale of the whole plant may translate to the ecosystem scale, with changes in productivity and carbon storage. As stated in the ISA, “[s]tudies conducted during the past four decades have demonstrated unequivocally that O<sub>3</sub> alters biomass allocation and plant reproduction” (U.S. EPA, 2013, p. 1–10).

The strong evidence of O<sub>3</sub> impacts on trees includes robust exposure-response (E–R) functions for reduced growth, termed relative biomass loss (RBL),<sup>159</sup> in seedlings of 11 species. These functions were developed under the National Health and Environmental Effects Research Laboratory–Western Ecology Division program, a series of experiments that used open top chambers (OTCs) to investigate seedling growth response for a single growing season under a variety of O<sub>3</sub> exposures (ranging from near background to well above current ambient concentrations) and growing conditions (U.S. EPA, 2013, section 9.6.2; Lee and Hogsett, 1996). The evidence from these studies shows that there is a wide range in sensitivity across the studied species in the seedling growth stage over the course of a single growing season, with some species being extremely sensitive and others being very insensitive over the range of cumulative O<sub>3</sub> exposures studied (U.S. EPA, 2014c, Figure 5–1). At the other end of the organizational spectrum, field-based studies of species growing in natural stands have compared observed plant responses across a number of different sites and/or years when exposed to varying ambient O<sub>3</sub> exposure conditions. For example, a study conducted in forest stands in the southern Appalachian Mountains during a period when O<sub>3</sub> concentrations exceeded the current standard found that the cumulative effects of O<sub>3</sub> decreased seasonal stem growth (measured as a change in circumference) by 30–50 percent for most of the examined tree species (*i.e.*, tulip poplar, black cherry, red maple, sugar maple) in a high-O<sub>3</sub> year in comparison to a low-O<sub>3</sub> year (U.S. EPA, 2013, section 9.4.3.1; McLaughlin *et al.*, 2007a). The study also reported that

<sup>159</sup> These functions for RBL estimate reduction in a year's growth as a percentage of that expected in the absence of O<sub>3</sub> (U.S. EPA, 2013, section 9.6.2; U.S. EPA, 2014b, section 6.2).

high ambient O<sub>3</sub> concentrations can increase whole-tree water use and in turn reduce late-season streamflow (McLaughlin *et al.*, 2007b; U.S. EPA, 2013, p. 9–43).

The magnitude of O<sub>3</sub> impact on ecosystem productivity and on forest composition can vary among plant communities based on several factors, including the type of stand or community in which the sensitive species occurs (*e.g.*, single species *versus* mixed canopy), the role or position of the species in the stand (*e.g.*, dominant, sub-dominant, canopy, understory), and the sensitivity of co-occurring species and environmental factors (*e.g.*, drought and other factors). For example, recent studies found O<sub>3</sub> to have little impact on white fir, but to greatly reduce growth of ponderosa pine in southern California locations, with associated reductions in ponderosa pine abundance in the community, and to cause decreased net primary production of most forest types in the mid-Atlantic region, with only small impacts on spruce-fir forest (U.S. EPA, 2013, section 9.4.3.4).

There is previously and newly available evidence of the potential for O<sub>3</sub> to alter biomass allocation and plant reproduction in seasons subsequent to exposure (U.S. EPA, 2013, section 9.4.3). For example, several studies published since the 2006 AQCD further demonstrate that O<sub>3</sub> can alter the timing of flowering and the number of flowers, fruits and seeds in herbaceous and woody plant species (U.S. EPA, 2013, section 9.4.3.3). Further, limited evidence in previous reviews reported that vegetation effects from a single year of exposure to elevated O<sub>3</sub> could be observed in the following year. For example, growth affected by a reduction in carbohydrate storage in one year may result in the limitation of growth in the following year. Such “carry-over” effects have been documented in the growth of some tree seedlings and in roots (U.S. EPA, 2013, section 9.4.8; Andersen *et al.*, 1997). In the current review, additional field-based evidence expands the EPA's understanding of the consequences of single and multi-year O<sub>3</sub> exposures in subsequent years.

A number of studies were conducted at a planted forest at the Aspen free-air carbon-dioxide and ozone enrichment (FACE) experiment site in Wisconsin. These studies, which occurred in a field setting (more similar to natural forest stands than OTC studies), observed tree growth responses when grown in single or two species stands within 30-m diameter rings and exposed over a period of ten years to existing ambient conditions and elevated O<sub>3</sub>

concentrations. Some studies indicate the potential for carry-over effects, such as those showing that the effects of O<sub>3</sub> on birch seeds (reduced weight, germination, and starch levels) could lead to a negative impact on species regeneration in subsequent years, and that the O<sub>3</sub>-attributable effect of reduced aspen bud size might have been related to the observed delay in spring leaf development. These effects suggest that elevated O<sub>3</sub> exposures have the potential to alter carbon metabolism of overwintering buds, which may have subsequent effects in the following year (Darbah, *et al.*, 2008, 2007; Riikonen *et al.*, 2008; U.S. EPA, 2013, section 9.4.3). Other studies found that, in addition to affecting tree heights, diameters, and main stem volumes in the aspen community, elevated O<sub>3</sub> over a 7-year study period was reported to increase the rate of conversion from a mixed aspen-birch community to a community dominated by the more tolerant birch, leading the authors to conclude that elevated O<sub>3</sub> may alter intra- and inter-species competition within a forest stand (U.S. EPA, 2013, section 9.4.3; Kubiske *et al.*, 2006; Kubiske *et al.*, 2007). These studies confirm earlier FACE results of aspen growth reductions from exposure to elevated O<sub>3</sub> during the first seven years of stand growth and of cumulative biomass impacts associated with changes in annual production in studied tree communities (U.S. EPA, 2013, section 9.4.3; King *et al.*, 2005).

Robust and well-established E–R functions for RBL are available for 11 tree species: black cherry, Douglas fir, loblolly pine, ponderosa pine, quaking aspen, red alder, red maple, sugar maple, tulip poplar, Virginia pine, and white pine (U.S. EPA, 2013; U.S. EPA, 2014c). While these 11 species represent only a small fraction (0.8 percent) of the total number of native tree species in the contiguous U.S. (1,497), this small subset includes eastern and western species, deciduous and coniferous species, and species that grow in a variety of ecosystems and represent a range of tolerance to O<sub>3</sub> (U.S. EPA, 2013, section 9.6.2; U.S. EPA, 2014b, section 6.2, Figure 6–2, Table 6–1). Supporting the E–R functions for each of these species are studies in OTCs, with most species studied multiple times under a wide range of exposure and/or growing conditions, with separate E–R functions developed for each combination of species, exposure condition and growing condition scenario (U.S. EPA, 2013, section 9.6.1). Based on these separate E–R functions, species-specific composite E–R functions have been

developed and successfully used to predict the biomass loss response from tree seedling species over a range of cumulative exposure conditions (U.S. EPA, 2013, section 9.6.2). These 11 composite functions, as well as the E–R function for eastern cottonwood (derived from a field study in which O<sub>3</sub> and climate conditions were not controlled),<sup>160</sup> are described in the ISA and graphed in the WREA to illustrate the predicted responses of these species over a wide range of cumulative exposures (U.S. EPA, 2014b, section 6.2, Table 6–1 and Figure 6–2; U.S. EPA, 2013, section 9.6.2). For some of these species, the E–R function is based on a single study (*e.g.*, red maple), while for other species there were as many as 11 studies available (*e.g.*, ponderosa pine). In total, the E–R functions developed for these 12 species (the 11 with robust composite E–R functions plus eastern cottonwood) reflect 52 tree seedling studies. A stochastic analysis in the WREA, summarized in section IV.C of the proposal, indicates the potential for within-species variability in these relationships for each species. Consideration of biomass loss estimates in the PA and in discussions below, however, is based on conventional methods and focuses on estimates for the 11 species for which the robust datasets from OTC experiments are available, in consideration of CASAC advice.

The “detrimental effect of O<sub>3</sub> on crop production has been recognized since the 1960s” (U.S. EPA, 2013, p. 1–10, section 9.4.4). On the whole, the newly available evidence supports and strengthens previous conclusions that exposure to O<sub>3</sub> reduces growth and yield of crops. The ISA describes average crop yield loss reported across a number of recently published meta-analyses and identifies several new exposure studies that support prior findings for a variety of crops of decreased yield and biomass with increased O<sub>3</sub> exposure (U.S. EPA, 2013, section 9.4.4.1, Table 9–17). Studies have also “linked increasing O<sub>3</sub> concentration to decreased photosynthetic rates and accelerated aging in leaves, which are related to

yield” and described effects of O<sub>3</sub> on crop quality, such as nutritive quality of grasses, macro- and micronutrient concentrations in fruits and vegetable crops and cotton fiber quality (U.S. EPA, 2013, p. 1–10, section 9.4.4). The findings of the newly available studies do not change the basic understanding of O<sub>3</sub>-related crop yield loss since the last review and little additional information is available in this review on factors that influence associations between O<sub>3</sub> levels and crop yield loss (U.S. EPA, 2013, section 9.4.4.). However, the evidence available in this review continues to support the conclusion that O<sub>3</sub> in ambient air can reduce the yield of major commodity crops in the U.S. Further, the recent evidence increases our confidence in the use of crop E–R functions based on OTC experiments to characterize the quantitative relationship between ambient O<sub>3</sub> concentrations and yield loss (U.S. EPA, 2013, section 9.4.4).

The new evidence has strengthened support for previously established E–R functions for 10 crops (barley, field corn, cotton, kidney bean, lettuce, peanut, potato, grain sorghum, soybean and winter wheat), reducing two important areas of uncertainty, especially for soybean, as summarized in more detail in section IV.A of the proposal. The established E–R functions for relative yield loss (RYL)<sup>161</sup> were developed from OTC-type experiments from the National Crop Loss Assessment Network (NCLAN) (U.S. EPA, 2013, section 9.6.3; U.S. EPA, 2014b, section 6.2; U.S. EPA, 2014c, Figure 5–4 and section 6.3). With regard to the first area of uncertainty reduced, evaluations in the ISA found that yield loss in soybean from O<sub>3</sub> exposure at the SoyFACE (Soybean Free Air Concentration Enrichment) field experiment was reliably predicted by soybean E–R functions developed from NCLAN data (U.S. EPA, 2013, section 9.6.3.1),<sup>162</sup> demonstrating a robustness of the NCLAN-based E–R functions for predicting relative yield loss from O<sub>3</sub> exposure. A second area of uncertainty that was reduced is that regarding the

<sup>160</sup> The CASAC cautioned the EPA against placing too much emphasis on the eastern cottonwood data. In comments on the draft PA, the CASAC stated that the eastern cottonwood response data from a single study “receive too much emphasis,” explaining that these “results are from a gradient study that did not control for ozone and climatic conditions and show extreme sensitivity to ozone compared to other studies” and that “[a]lthough they are important results, they are not as strong as those from other experiments that developed E–R functions based on controlled ozone exposure” (Frey, 2014c, p. 10).

<sup>161</sup> These functions for RYL estimate reduction in a year’s growth as a percentage of that expected in the absence of O<sub>3</sub> (U.S. EPA, 2013, section 9.6.2; U.S. EPA, 2014b, section 6.2).

<sup>162</sup> The NCLAN program, which was undertaken in the early to mid-1980s, assessed multiple U.S. crops, locations, and O<sub>3</sub> exposure levels, using consistent methods, to provide the largest, most uniform database on the effects of O<sub>3</sub> on agricultural crop yields (U.S. EPA 1996a; U.S. EPA, 2006a; U.S. EPA, 2013, sections 9.2, 9.4, and 9.6, Frey, 2014c, p. 9). The SoyFACE experiment was a chamberless (or free-air) field-based exposure study conducted in Illinois from 2001–2009 (U.S. EPA, 2013, section 9.2.4).

application of the NCLAN E-R functions to more recent cultivars currently growing in the field. Recent studies, especially those focused on soybean, provide little evidence that crops are becoming more tolerant of O<sub>3</sub> (U.S. EPA, 2006a; U.S. EPA, 2013, sections 9.6.3.1 and 9.6.3.4 and p. 9–59). The ISA comparisons of NCLAN and SoyFACE data referenced above also “confirm that the response of soybean yield to O<sub>3</sub> exposure has not changed in current cultivars” (U.S. EPA, 2013, p. 9–59; section 9.6.3.1). Additionally, a recent assessment of the relationship between soybean yield loss and O<sub>3</sub> in ambient air over the contiguous area of Illinois, Iowa, and Indiana found a relationship that correlates well with previous results from FACE- and OTC-type experiments (U.S. EPA, 2013, section 9.4.4.1).

### c. Biologically Relevant Exposure Metric

In assessing biologically based indices of exposure pertinent to O<sub>3</sub> effects on vegetation, the ISA states the following (U.S. EPA, 2013, p. 2–44).

The main conclusions from the 1996 and 2006 O<sub>3</sub> AQCDs [Air Quality Criteria Documents] regarding indices based on ambient exposure remain valid. These key conclusions can be restated as follows: ozone effects in plants are cumulative; higher O<sub>3</sub> concentrations appear to be more important than lower concentrations in eliciting a response; plant sensitivity to O<sub>3</sub> varies with time of day and plant development stage; [and] quantifying exposure with indices that cumulate hourly O<sub>3</sub> concentrations and preferentially weight the higher concentrations improves the explanatory power of exposure/response models for growth and yield, over using indices based on mean and peak exposure values.

The long-standing body of available evidence upon which these conclusions are based includes a wealth of information on aspects of O<sub>3</sub> exposure that are important in influencing plant response (U.S. EPA, 1996a; U.S. EPA, 2006a; U.S. EPA, 2013). Specifically, a variety of “factors with known or suspected bearing on the exposure-response relationship, including concentration, time of day, respite time, frequency of peak occurrence, plant phenology, predisposition, etc.,” have been identified (U.S. EPA, 2013, section 9.5.2). In addition, the importance of the duration of the exposure and the relatively greater importance of higher concentrations over lower concentrations in determining plant response to O<sub>3</sub> have been consistently well documented (U.S. EPA, 2013, section 9.5.3). Based on improved understanding of the biological basis for plant response to O<sub>3</sub> exposure, a large number of “mathematical approaches

for summarizing ambient air quality information in biologically meaningful forms for O<sub>3</sub> vegetation effects assessment purposes” have been developed (U.S. EPA, 2013, section 9.5.3), including those that cumulate exposures over some specified period while weighting higher concentrations more than lower (U.S. EPA, 2013, section 9.5.2). As with any summary statistic, these exposure indices retain information on some, but not all, characteristics of the original observations.

Based on extensive review of the published literature on different types of exposure-response metrics, including comparisons between metrics, the EPA has focused on cumulative, concentration-weighted indices, recognizing them as the most appropriate biologically based metrics to consider in this context (U.S. EPA, 1996a; U.S. EPA, 1996b; U.S. EPA, 2006a; U.S. EPA, 2013). In the last two reviews of the O<sub>3</sub> NAAQS, the EPA concluded that the risk to vegetation comes primarily from cumulative exposures to O<sub>3</sub> over a season or seasons<sup>163</sup> and focused on metrics intended to characterize such exposures: SUM06<sup>164</sup> in the 1997 review (61 FR 65716, December 13, 1996) and W126 in the 2008 review (72 FR 37818, July 11, 2007). Although in both reviews the policy decision was made not to revise the form and averaging time of the secondary standard, the Administrator, in both cases, also concluded, consistent with CASAC advice, that a cumulative, seasonal index was the most biologically relevant way to relate exposure to plant growth response (62 FR 38856, July 18, 1997; 73 FR 16436, March 27, 2008). This approach for characterizing O<sub>3</sub> exposure concentrations that are biologically relevant with regard to potential vegetation effects received strong support from CASAC in the last review and again in this review, including strong support for use of such a metric as the form for the secondary standard (Henderson, 2006, 2008; Samet, 2010; Frey, 2014c).

Alternative methods for characterizing O<sub>3</sub> exposure to predict plant response have, in recent years,

<sup>163</sup> In describing the form as “seasonal,” the EPA is referring generally to the growing season of O<sub>3</sub>-sensitive vegetation, not to the seasons of the year (*i.e.*, spring, summer, fall, winter).

<sup>164</sup> The SUM06 index is a threshold-based approach described as the sum of all hourly O<sub>3</sub> concentrations greater or equal to 0.06 ppm observed during a specified daily and seasonal time window (U.S. EPA, 2013, section 9.5.2). The W126 index is a non-threshold approach, described more fully below.

included flux models, which some researchers have claimed may “better predict vegetation responses to O<sub>3</sub> than exposure-based approaches” because they estimate the ambient O<sub>3</sub> concentration that actually enters the leaf (*i.e.*, flux or deposition). However, the ISA notes that “[f]lux calculations are data intensive and must be carefully implemented” (U.S. EPA, 2013, p. 9–114). Further, the ISA states, “[t]his uptake-based approach to quantify the vegetation impact of O<sub>3</sub> requires inclusion of those factors that control the diurnal and seasonal O<sub>3</sub> flux to vegetation (*e.g.*, climate patterns, species and/or vegetation-type factors and site-specific factors)” (U.S. EPA, 2013, p. 9–114). In addition to these data requirements, each species has different amounts of internal detoxification potential that may protect species to differing degrees. The lack of detailed species- and site-specific data required for flux modeling in the U.S. and the lack of understanding of detoxification processes have continued to make this technique less viable for use in vulnerability and risk assessments at the national scale in the U.S. (U.S. EPA, 2013, section 9.5.4).

Therefore, consistent with the ISA conclusions regarding the appropriateness of considering cumulative exposure indices that preferentially weight higher concentrations over lower for predicting O<sub>3</sub> effects of concern based on the well-established conclusions and supporting evidence described above, and in light of continued CASAC support, we continue to focus on cumulative concentration-weighted indices as the most biologically relevant metrics for consideration of O<sub>3</sub> exposures eliciting vegetation-related effects. Quantifying exposure in this way “improves the explanatory power of exposure/response models for growth and yield over using indices based on mean and peak exposure values” (U.S. EPA, 2013, section 2.6.6.1, p. 2–44). In this review, as in the last review, we use the W126-based cumulative, seasonal metric (U.S. EPA, 2013, sections 2.6.6.1 and 9.5.2) for consideration of the effects evidence and in the exposure and risk analyses in the WREA.

This metric, commonly called the W126 index, is a non-threshold approach described as the sigmoidally weighted sum of all hourly O<sub>3</sub> concentrations observed during a specified daily and seasonal time window, where each hourly O<sub>3</sub> concentration is given a weight that increases from zero to one with increasing concentration (U.S. EPA, 2014c, p. 5–6; U.S. EPA 2013, p. 9–101).

The first step in calculating the seasonal W126 index, as described and considered in this review, is to sum the weighted ambient O<sub>3</sub> concentrations

during daylight hours (defined as 8:00 a.m. to 8:00 p.m.) within each calendar month, resulting in monthly index values (U.S. EPA, 2014b, pp. 4–5 to

4–6). As more completely described in the WREA, the monthly W126 index values are calculated from hourly O<sub>3</sub> concentrations as follows:

$$\text{Monthly W126} = \sum_{d=1}^N \sum_{h=8}^{19} \frac{C_{dh}}{1+4403 \cdot \exp(-126 \cdot C_{dh})}$$

where  $N$  is the number of days in the month,  $d$  is the day of the month ( $d = 1, 2, \dots, N$ ),  $h$  is the hour of the day ( $h = 0, 1, \dots, 23$ ), and  $C_{dh}$  is the hourly O<sub>3</sub> concentration observed on day  $d$ , hour  $h$ , in parts per million. The seasonal W126 index value for a specific year is the maximum sum of the monthly index values for three consecutive months. Three-year W126 index values are calculated by taking the average of seasonal W126 index values for three consecutive years (U.S. EPA, 2014b, pp. 4–5 to 4–6; Wells, 2014a).

## 2. Overview of Welfare Exposure and Risk Assessment

This section outlines the information presented in section IV.C of the proposal regarding the WREA conducted for this review, which built upon similar analyses performed in the last review. The WREA focuses primarily on analyses related to two types of effects on vegetation: Reduced growth (biomass loss) in both trees and agricultural crops, and foliar injury. The assessments of O<sub>3</sub>-associated reduced growth in native trees and crops (specifically, RBL and RYL, respectively) include analysis of associated changes in related ecosystem services, including pollution removal, carbon sequestration or storage, and hydrology, as well as economic impacts on the forestry and agriculture sectors of the economy. The foliar injury assessments include cumulative analyses of the proportion of USFS biosite index scores<sup>165</sup> above zero (or five, in a separate set of analyses) with increasing W126 exposure index estimates, with and without consideration of soil moisture conditions. The implications of visible foliar injury in national parks were considered in a screening level assessment and three case studies.<sup>166</sup>

<sup>165</sup> Sampling sites in the FIA/FHM O<sub>3</sub> biomonitoring program, called “biosites”, are plots of land on which data are collected regarding the incidence and severity of visible foliar injury on a variety of O<sub>3</sub>-sensitive plant species. Biosite index scores are derived from these data (U.S. EPA, 2014b, section 7.2.1).

<sup>166</sup> All of the analyses are described in detail in the WREA and summarized in the PA and in section IV.C of the proposal (U.S. EPA, 2014a; U.S.

Growth-related effects were assessed for W126-based exposure estimates in five scenarios of national-scale<sup>167</sup> air quality: Recent conditions (2006 to 2008), the existing secondary standard, and W126 index values of 15 ppm-hrs, 11 ppm-hrs, and 7 ppm-hrs, using 3-year averages (U.S. EPA, 2014b, chapter 4). For each of these scenarios, 3-year average W126 exposure index values were estimated for 12 kilometer (km) by 12 km grid cells in a national-scale spatial surface. The method for creating these grid cell estimates generally involved two steps (summarized in Table 5–4 of the PA).

The first step in creating the grid cell estimates for each scenario was calculation of the average W126 index value (across the three years) at each monitor location. For the recent conditions scenario, this value was based on unadjusted O<sub>3</sub> concentrations from monitoring data. For the other four scenarios, the W126 index value for each monitor location was calculated from model-adjusted hourly O<sub>3</sub> concentrations. The adjusted concentrations were based on model-predicted relationships between O<sub>3</sub> at each monitor location and reductions in NO<sub>x</sub>. Adjustments were applied independently for each of the nine U.S. regions (see U.S. EPA, 2014b, section 4.3.4.1).<sup>168</sup> The existing standard scenario was created first, with the result being a national dataset for which the highest monitor location in each U.S. region had a design value equal to the level of the current standard.<sup>169</sup> The W126 scenarios were created from the hourly concentrations used to create the existing standard scenario, with model-

EPA, 2014b; 79 FR 75324–75329, December 17, 2014).

<sup>167</sup> Although the scenarios and the grid cell O<sub>3</sub> concentrations on which they are based were limited to the contiguous U.S., we have generally used the phrase “national-scale” in reference to the WREA scenarios and surfaces.

<sup>168</sup> The U.S. regions referenced here and in section IV.C below are NOAA climate regions, as shown in Figure 2B–1 of the PA.

<sup>169</sup> The adjustment results in broad regional reductions in O<sub>3</sub> and includes reductions in O<sub>3</sub> at some monitors that were already at or below the target level. These reductions do not represent an optimized control scenario, but rather characterize one potential distribution of air quality across a region that meets the scenario target (U.S. EPA, 2014b, sections 4.3.4.2 and 4.4).

based adjustments made at all monitor sites in those regions with a site not already at or below the target W126 value for that scenario (U.S. EPA, 2014b, section 4.3.4.1).<sup>170</sup>

After completing step one for all the scenarios, the second step involved creating the national-scale spatial surfaces (composed of 3-year W126 index values at grid cell centroids). These were created by applying the Voronoi Neighbor Averaging (VNA) spatial interpolation technique to the monitor-location, 3-year W126 index values (described in step 1).<sup>171</sup> This step of creating the gridded spatial surfaces resulted in further reduction of the highest values in each modeling region, as demonstrated by comparing the W126 index values from steps one and two for the existing standard scenario. After the step-one adjustment of the monitor location concentrations such that the highest location in each NOAA region just met the existing standard (using relationships mentioned above), the maximum 3-year average W126 values in the nine regions ranged from 18.9 ppm-hrs in the West region to 2.6 ppm-hrs in the Northeast region (U.S. EPA, 2014b, Table 4–3). After application of the VNA technique in the second step, however, the highest 3-year average W126 values across the national surface grid cells, which were in the Southwest region, were below 15 ppm-hrs (U.S. EPA, 2014b, Figure 4–7).<sup>172</sup>

All of the assessments based on growth impacts relied on the W126 index estimates from the national-scale spatial surfaces (created from the 3-year average monitor location values as described above). Among the analyses related to visible foliar injury, a small component of the screening-level

<sup>170</sup> In regions where the air quality adjustment was applied, it was based on emissions reductions determined necessary for the highest monitor in that region to just equal the existing standard or the W126 target for the scenario. Concentrations at all other monitor locations in the region were also adjusted based on the same emissions reductions assumptions.

<sup>171</sup> The VNA technique is described in the WREA (U.S. EPA, 2014b, Appendix 4A).

<sup>172</sup> Thus, it can be seen that application of the VNA interpolation method to estimate W126 index values at the centroid of every 12 km x 12 km grid cell rather than only at each monitor location results in a lowering of the highest values in each region.

national park assessment and also the three national park case studies involved summarizing 3-year W126 index estimates from the four air quality scenarios. However, the visible foliar injury cumulative proportion analyses and a component of the national park screening-level assessment relied on national-scale spatial surfaces of single-year, unadjusted W126 index values created for each year from 2006 through 2010 using the VNA interpolation technique applied to the monitor location index values for these years (U.S. EPA, 2014b, section 4.3.2, Appendix 4A).

Because the W126 estimates generated for the different air quality scenarios assessed are inputs to the vegetation risk analyses for tree biomass and crop yield loss, and also used in some components of the visible foliar injury assessments, limitations and uncertainties in the air quality analyses, which are discussed in detail in the WREA and some of which are mentioned here, are propagated into those analyses (U.S. EPA, 2014b, chapters 4 and 8 and section 8.5, Table 4–5). An important uncertainty in the analyses is the application of regionally determined emissions reductions to meet the existing standard (U.S. EPA, 2014b, section 8.5.1). The model adjustments are based on emissions reductions in NO<sub>x</sub> and characterize only one potential distribution of air quality across a region when all monitor locations meet the standard, as well as for the W126 scenarios (U.S. EPA, 2014b, section 4.3.4.2).<sup>173</sup>

An additional uncertainty related to the W126 index estimates in the national surfaces for each air quality scenario, and to the estimates for the single-year surfaces used in the visible foliar injury cumulative analysis, comes with the creation of the national-scale spatial surfaces of grid cells from the monitor-location O<sub>3</sub> data.<sup>174</sup> In general, spatial interpolation techniques perform better in areas where the O<sub>3</sub> monitoring network is denser. Therefore, the W126 index values estimated using this

<sup>173</sup> The adjustment is applied to all monitor locations in each region. In this way, the adjustment results in broad regional reductions in O<sub>3</sub> and includes reductions in O<sub>3</sub> at some monitors that were already meeting or below the target level. Thus, the adjustments performed to develop a scenario meeting a target level at the highest monitor in each region did result in substantial reduction below the target level in some areas of the region. This result at the monitors already well below the target indicates an uncertainty with regard to air quality expected from specific control strategies that might be implemented to meet a particular target level.

<sup>174</sup> Some uncertainty is inherent in any approach to characterizing O<sub>3</sub> air quality over broad geographic areas based on concentrations at monitor locations.

technique in rural areas in the West, Northwest, Southwest, and West North Central regions where there are few or no monitors (U.S. EPA, 2014b, Figure 2–1) are more uncertain than those estimated for areas with denser monitoring. Further, as described above, this interpolation method generally underpredicts the highest W126 exposure index values. Due to the important influence of higher exposures in determining risks to plants, the potential for the VNA interpolation approach to dampen peak W126 index values could result in an underestimation of risks to vegetation in some areas.<sup>175</sup>

The vegetation analyses performed in the WREA, along with key observations, insights, uncertainties and limitations were summarized in sections IV.C.2 through IV.C.3 of the proposal. Highlights for the three categories of biomass loss and foliar injury assessments are summarized here.

#### a. Tree Growth, Productivity and Carbon Storage

These assessments rely on the species-specific E–R functions described in section IV.A.1.b above. For the air quality scenarios described above, the WREA applied the species-specific E–R functions to develop estimates of O<sub>3</sub>-associated RBL and associated effects on productivity, carbon storage and associated ecosystem services (U.S. EPA, 2014b, Chapter 6). More specifically, the WREA derived species-specific and weighted RBL estimates for grid cells across the continental U.S. and summarized the estimates by counties and national parks. Additional WREA case study analyses focused on selected urban areas. The WREA estimates indicate substantial heterogeneity in plant responses to O<sub>3</sub>, both within species (*e.g.*, study-specific variation), between species, and across regions of the U.S. National variability in the estimates (*e.g.*, eastern vs western U.S.) is influenced by there being different sets of resident species (with different E–R functions) in different areas of the U.S., as well as differences in number of national parks and O<sub>3</sub> monitors. For example, the eastern U.S. has different resident species compared to the western U.S., and the eastern U.S. has far more such species. Additionally, there are more national parks in the western than the eastern U.S., yet fewer O<sub>3</sub> monitors (U.S. EPA, 2014b, chapter 8).

<sup>175</sup> In the visible foliar injury dataset used for the cumulative analysis, underestimation of W126 index values at sites with injury would contribute to overestimates of the cumulative proportion of sites with injury plotted for the lower W126 values.

Relative biomass loss nationally (across all of the air quality surface grid cells) was estimated for each of the 12 studied species from the composite E–R functions for each species described above and information on the distribution of those species across the U.S. (U.S. EPA, 2014b, section 6.2.1.3 and Appendix 6A). In consideration of CASAC advice (summarized in section IV.A.1.b above), the WREA derived RBL and weighted RBL (wRBL) estimates separately, both with and without the eastern cottonwood, and the PA and proposal gave primary focus to analyses that exclude cottonwood. These analyses provided estimates of per-species and cross-species RBL in the different air quality scenarios. Air quality scenario estimates were also developed in terms of proportion of basal area affected at different magnitudes of RBL. The wRBL analysis integrated the species-specific estimates, providing an indication of potential magnitude of ecological effect possible in some ecosystems. The county analyses also included analyses focused on the median species response. The WREA also used the E–R functions to estimate RBL across tree lifespans and the resulting changes in consumer and producer/farmer economic surplus in the forestry and agriculture sectors of the economy. Case studies in five urban areas provided comparisons across air quality scenarios of estimates for urban tree pollutant removal and carbon storage or sequestration.

The array of uncertainties associated with estimates from these tree RBL analyses are summarized in the proposal and described in detail in the WREA, including the potential for the air quality scenarios to underestimate the higher W126 index values and associated implications for the RBL-related estimates, as referenced above.

#### b. Crop Yield Loss

These assessments rely on the species-specific E–R functions described in section IV.A.1.b above. For the different air quality scenarios, the WREA applied the species-specific E–R functions to develop estimates of O<sub>3</sub> impacts related to crop yield, including annual yield losses estimated for 10 commodity crops grown in the U.S. and how these losses affect producer and consumer economic surpluses (U.S. EPA, 2014b, sections 6.2, 6.5). The WREA derived estimates of crop RYL nationally and in a county-specific analysis, relying on information regarding crop distribution (U.S. EPA, 2014b, section 6.5). As with the tree analyses described above, the county analysis included estimates based on

the median O<sub>3</sub> response across the studied crop species (U.S. EPA, 2014b, section 6.5.1, Appendix 6B).

Overall effects on agricultural yields and producer and consumer surplus depend on the ability of producers/farmers to substitute other crops that are less O<sub>3</sub> sensitive, and the responsiveness, or elasticity, of demand and supply (U.S. EPA, 2014b, section 6.5). The WREA discusses multiple areas of uncertainty associated with the crop yield loss estimates, including those associated with the model-based adjustment methodology as well as those associated with the projection of yield loss using the Forest and Agriculture Sector Optimization Model (with greenhouse gases) at the estimated O<sub>3</sub> concentrations (U.S. EPA, 2014b, Table 6–27, section 8.5). Because the W126 index estimates generated in the air quality scenarios are inputs to the vegetation risk analyses for crop yield loss, any uncertainties in the air quality scenario estimation of W126 index values are propagated into those analyses (U.S. EPA, 2014b, Table 6–27, section 8.5). Therefore, the air quality scenarios in the crop yield analyses have the same uncertainties and limitations as in the biomass loss analyses (summarized above), including those associated with the model-based adjustment methodology (U.S. EPA, 2014b, section 8.5).

### c. Visible Foliar Injury

The WREA presents a number of analyses of O<sub>3</sub>-related visible foliar injury and associated ecosystem services impacts (U.S. EPA, 2014b, Chapter 7). In the initial analysis, the WREA used the biomonitoring site data from the USFS FHM/FIA Network (USFS, 2011),<sup>176</sup> associated soil moisture data during the sample years, and national surfaces of ambient air O<sub>3</sub> concentrations based on spatial interpolation of monitoring data from 2006 to 2010 in a cumulative analysis of the proportion of biosite records with any visible foliar injury, as indicated by a nonzero biosite index score (U.S. EPA, 2014b, section 7.2). This analysis was done for all records together, and also for subsets based on soil moisture conditions (normal, wet or dry).

In each cumulative analysis, the biosite records were ordered by W126 index and then, moving from low to high W126 index, the records were cumulated into a progressively larger dataset. With the addition of each new

data point (composed of biosite index score and W126 index value for a biosite and year combination) to the cumulative dataset, the percentage of sites with a nonzero biosite index score was derived and plotted versus the W126 index estimate for the just added data point. The cumulative analysis for all sites indicates that (1) as the cumulative set of sites grows with addition of sites with progressively higher W126 index values, the proportion of the dataset for which no foliar injury was recorded changes (increases) noticeably prior to about 10 ppm-hrs (10.46 ppm-hrs), and (2) as the cumulative dataset grows still larger with the addition of records for higher W126 index estimates, the proportion of the cumulative dataset with no foliar injury remains relatively constant (U.S. EPA, 2014b, Figure 7–10). The data for normal moisture years are very similar to the dataset as a whole, with an overall proportion of about 18 percent for presence of any foliar injury. The data for relatively wet years have a much higher proportion of biosites showing injury, approximately 25% when all data are included, and a proportion of approximately 20% when data for W126 index estimates up to about 5–8 ppm-hrs are included (U.S. EPA, 2014b, Figure 7–10).<sup>177</sup> The overall proportion showing injury for the subset for relatively dry conditions is much lower, less than 15% for the subset (U.S. EPA, 2014b, section 7.2.3, Figures 7–10). While these analyses indicate the potential for foliar injury to occur under conditions that meet the current standard, the extent of foliar injury that might be expected under different exposure conditions is unclear from these analyses.

Criteria derived from the cumulative analyses were then used in two additional analyses. The national-scale screening-level assessment compared W126 index values estimated within 214 national parks using the VNA technique described above for the individual years from 2006 to 2010 with benchmark criteria developed from the biosite data analysis (U.S. EPA, 2014b, Appendix 7A and section 7.3). Separate case study analyses described visits, as well as visitor uses and expenditures for three national parks, and the 3-year

W126 index estimates in those parks for the four air quality scenarios (U.S. EPA, 2014b, section 7.4). Uncertainties associated with these analyses, included those associated with the W126 index estimates, are discussed in the WREA, sections 7.5 and 8.5.3, and in WREA Table 7–24, and also summarized in the PA (e.g., U.S. EPA, 2014c, section 6.3).

### 3. Potential Impacts on Public Welfare

As provided in the CAA, section 109(b)(2), the secondary standard is to “specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator . . . is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air.” Effects on welfare include, but are not limited to, “effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being” (CAA section 302(h)). The secondary standard is not meant to protect against all known or anticipated O<sub>3</sub>-related effects, but rather those that are judged to be adverse to the public welfare, and a bright-line determination of adversity is not required in judging what is requisite (78 FR 8312, January 15, 2013; see also 73 FR 16496, March 27, 2008). Thus, the level of protection from known or anticipated adverse effects to public welfare that is requisite for the secondary standard is a public welfare policy judgment to be made by the Administrator. In the current review, the Administrator’s judgment is informed by conclusions drawn with regard to adversity of effects to public welfare in decisions on secondary O<sub>3</sub> standards in past reviews.

As indicated by the Administrator in the 2008 decision, the degree to which O<sub>3</sub> effects on vegetation should be considered to be adverse to the public welfare depends on the intended use of the vegetation and the significance of the vegetation to the public welfare (73 FR 16496, March 27, 2008). Such judgments regarding public welfare significance in the last O<sub>3</sub> NAAQS decision gave particular consideration to O<sub>3</sub> effects in areas with special federal protections, and lands set aside by states, tribes and public interest groups to provide similar benefits to the public welfare (73 FR 16496, March 27, 2008). For example, in reaching his conclusion regarding the need for revision of the secondary standard in the 2008 review, the Administrator took

<sup>176</sup> Data were not available for several western states (Montana, Idaho, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico, Oklahoma, and portions of Texas).

<sup>177</sup> As discussed in section IV.C.2 below, as the cumulative set increases, with increasing W126 values, the overall prevalence of visible foliar injury in the cumulative set is more and more influenced by data for the lower W126 values. Accordingly, the “leveling off” observed above ~10 ppm-hrs in the ‘all sites’ analysis likely reflects the counterbalancing of visible foliar injury occurrence at the relatively fewer higher O<sub>3</sub> sites by the larger representation within the subset of the lower W126 conditions associated with which there is lower occurrence or extent of foliar injury.

note of “a number of actions taken by Congress to establish public lands that are set aside for specific uses that are intended to provide benefits to the public welfare, including lands that are to be protected so as to conserve the scenic value and the natural vegetation and wildlife within such areas, and to leave them unimpaired for the enjoyment of future generations” (73 FR 16496, March 27, 2008). As further recognized in the 2008 notice, “[s]uch public lands that are protected areas of national interest include national parks and forests, wildlife refuges, and wilderness areas” (73 FR 16496, March 27, 2008).<sup>178 179</sup> Such areas include Class I areas<sup>180</sup> which are federally mandated to preserve certain air quality related values. Additionally, as the Administrator recognized, “States, Tribes and public interest groups also set aside areas that are intended to provide similar benefits to the public welfare, for residents on State and Tribal lands, as well as for visitors to those areas” (73 FR 16496, March 27, 2008). The Administrator took note of the “clear public interest in and value of maintaining these areas in a condition that does not impair their intended use and the fact that many of these lands contain O<sub>3</sub>-sensitive species” (73 FR 16496, March 27, 2008).

The concept described in the 2008 notice regarding the degree to which effects on vegetation in specially protected areas, such as those identified above, may be judged adverse also applies beyond the species level to the ecosystem level, such that judgments

can depend on the intended use<sup>181</sup> for, or service (and value) of, the affected vegetation, ecological receptors, ecosystems and resources and the significance of that use to the public welfare (73 FR 16496, March 27, 2008). Uses or services provided by areas that have been afforded special protection can flow in part or entirely from the vegetation that grows there. Aesthetic value and outdoor recreation depend, at least in part, on the perceived scenic beauty of the environment (U.S. EPA, 2014b, chapters 5 and 7). Further, analyses have reported that the American public values—in monetary as well as nonmonetary ways—the protection of forests from air pollution damage. In fact, studies that have assessed willingness-to-pay for spruce-fir forest protection in the southeastern U.S. from air pollution and insect damage have found that values held by the survey respondents for the more abstract services (existence, option and bequest)<sup>182</sup> were greater than those for recreation or other services (U.S. EPA, 2014b, Table 5–6; Haefele *et al.*, 1991; Holmes and Kramer, 1995).

The spatial, temporal and social dimensions of public welfare impacts are also influenced by the type of service affected. For example, a national park can provide direct recreational services to the thousands of visitors that come each year, but also provide an indirect value to the millions who may not visit but receive satisfaction from knowing it exists and is preserved for the future (U.S. EPA, 2014b, chapter 5, section 5.5.1). Similarly, ecosystem services can be realized over a range of temporal scales. An evaluation of adversity to the public welfare might also consider the likelihood, type, and magnitude of the effect, as well as the potential for recovery and any uncertainties relating to these

conditions, as stated in the preamble of the 2012 final notice of rulemaking on the secondary standards for oxides of nitrogen and sulfur (77 FR 20232, April 3, 2012).

The three main categories of effects on vegetation discussed in section IV.A.1.b above differ with regard to aspects important to judging their public welfare significance. Judgments regarding crop yield loss, for example, depend on considerations related to the heavy management of agriculture in the U.S., while judgments regarding the other categories of effects generally relate to considerations regarding forested areas. For example, while both tree growth-related effects and visible foliar injury have the potential to be significant to the public welfare through impacts in Class I and other protected areas, they differ in how they might be significant and with regard to the clarity of the data that describe the relationship between the effect and the services potentially affected.

With regard to effects on tree growth, reduced growth is associated with effects on an array of ecosystem services including reduced productivity, altered forest and forest community (plant, insect and microbe) composition, reduced carbon storage and altered water cycling (U.S. EPA, 2013, Figure 9–1, sections 9.4.1.1 and 9.4.1.2; U.S. EPA, 2014b, section 6.1). For example, forest or forest community composition can be affected through O<sub>3</sub> effects on growth and reproductive success of sensitive species in the community, with the extent of compositional changes dependent on factors such as competitive interactions (U.S. EPA, 2013, sections 9.4.3 and 9.4.3.1). Depending on the type and location of the affected ecosystem, services benefitting the public in other ways can be affected as well. For example, other services valued by people that can be affected by reduced tree growth, productivity and carbon storage include aesthetic value, food, fiber, timber, other forest products, habitat, recreational opportunities, climate and water regulation, erosion control, air pollution removal, and desired fire regimes (U.S. EPA 2013, sections 9.4.1.1 and 9.4.1.2; U.S. EPA, 2014b, section 6.1, Figure 6–1, section 6.4, Table 6–13). Further, impacts on some of these services (e.g., forest or forest community composition) may be considered of greater public welfare significance when occurring in Class I or other protected areas.

Consideration of the magnitude of tree growth effects that might cause or contribute to adverse effects for trees, forests, forested ecosystems or the public welfare is complicated by aspects

<sup>178</sup> For example, the National Park Service Organic Act of 1916 established the National Park Service (NPS) and, in describing the role of the NPS with regard to “Federal areas known as national parks, monuments, and reservations”, stated that the “fundamental purpose” for these federal areas “is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” 16 U.S.C. 1.

<sup>179</sup> As a second example, the Wilderness Act of 1964 defines designated “wilderness areas” in part as areas “protected and managed so as to preserve [their] natural conditions” and requires that these areas “shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, [and] the preservation of their wilderness character . . .” 16 U.S.C. 1131 (a).

<sup>180</sup> Areas designated as Class I include all international parks, national wilderness areas which exceed 5,000 acres in size, national memorial parks which exceed 5,000 acres in size, and national parks which exceed six thousand acres in size, provided the park or wilderness area was in existence on August 7, 1977. Other areas may also be Class I if designated as Class I consistent with the CAA.

<sup>181</sup> Ecosystem services have been defined as “the benefits that people obtain from ecosystems” (U.S. EPA, 2013, Preamble, p. 1xxii; UNEP, 2003) and thus are an aspect of the use of a type of vegetation or ecosystem. Similarly, a definition used for the purposes of the EPA benefits assessments states that ecological goods and services are the “outputs of ecological functions or processes that directly or indirectly contribute to social welfare or have the potential to do so in the future” and that “[s]ome outputs may be bought and sold, but most are not marketed” (U.S. EPA, 2006b). Ecosystem services analyses were one of the tools used in the last review of the secondary standards for oxides of nitrogen and sulfur to inform the decisions made with regard to adequacy and as such, were used in conjunction with other considerations in the discussion of adversity to public welfare (77 FR 20241, April 3, 2012).

<sup>182</sup> Public surveys have indicated that Americans rank as very important the existence of resources, the option or availability of the resource and the ability to bequest or pass it on to future generations (Cordell *et al.*, 2008).

of, or limitations in, the available information. For example, the evidence on tree seedling growth effects, deriving from the E-R functions for 11 species (described in section IV.A.1 above), provides no clear threshold or breakpoint in the response to O<sub>3</sub> exposure. Additionally, there are no established relationships between magnitude of tree seedling growth reduction and forest ecosystem impacts and, as noted in section IV.A.1.b above, other factors can influence the degree to which O<sub>3</sub>-induced growth effects in a sensitive species affect forest and forest community composition and other ecosystem service flows from forested ecosystems. These include (1) the type of stand or community in which the sensitive species is found (*i.e.*, single species versus mixed canopy); (2) the role or position the species has in the stand (*i.e.*, dominant, sub-dominant, canopy, understory); (3) the O<sub>3</sub> sensitivity of the other co-occurring species (O<sub>3</sub> sensitive or tolerant); and (4) environmental factors, such as soil moisture and others. The lack of such established relationships complicates judgments as to the extent to which different estimates of impacts on tree seedling growth would indicate significance to the public welfare and thus be an important consideration in the level of protection for the secondary standard.

During the 1997 review of the secondary standard, views related to this issue were provided by a 1996 workshop of 16 leading scientists in the context of discussing their views for a secondary O<sub>3</sub> standard (Heck and Cowling, 1997). In their consideration of tree growth effects as an indicator for forest ecosystems and crop yield reduction as an indicator of agricultural systems, the workshop participants identified annual percentages, of RBL for forest tree seedlings and RYL for agricultural crops, considered important to their judgments on the standard. With regard to forest ecosystems and seedling growth effects as an indicator, the participants selected a range of 1–2% RBL per year “to avoid cumulative effects of yearly reductions of 2%.” With regard to crops, they indicated an interest in protecting against crop yield reductions of 5% RYL yet noted uncertainties surrounding such a percentage which led them to identifying 10% RYL for the crop yield endpoint (Heck and Cowling, 1997). The workshop report provides no explicit rationale for the percentages identified (1–2% RBL and 5% or 10% RYL); nor does it describe their connection to ecosystem impacts of a specific

magnitude or type, nor to judgments on significance of the identified effects for public welfare, *e.g.*, taking into consideration the intended use and significance of the affected vegetation (Heck and Cowling, 1997). In recognition of the complexity of assessing the adversity of tree growth effects and effects on crop yield in the broader context of public welfare, the EPA’s consideration of those effects in both the 1997 and 2008 reviews extended beyond the consideration of various benchmark responses for the studied species, and, with regard to crops, additionally took note of their extensive management (62 FR 38856, July 18, 1997; 73 FR 16436, March 27, 2008).

While, as noted above, public welfare benefits of forested lands can be particular to the type of area in which the forest occurs, some of the potential public welfare benefits associated with forest ecosystems are not location dependent. A potentially extremely valuable ecosystem service provided by forested lands is carbon storage, a regulating service that is “of paramount importance for human society” (U.S. EPA, 2013, section 2.6.2.1 and p. 9–37). As noted above, the EPA has concluded that this ecosystem service has a likely causal relationship with O<sub>3</sub> in ambient air. The service of carbon storage is potentially important to the public welfare no matter in what location the sensitive trees are growing or what their intended current or future use. In other words, the benefit exists as long as the tree is growing, regardless of what additional functions and services it provides. Another example of locations potentially vulnerable to O<sub>3</sub>-related impacts but not necessarily identified for such protection might be forested lands, both public and private, where trees are grown for timber production. Forests in urbanized areas also provide a number of services that are important to the public in those areas, such as air pollution removal, cooling, and beautification. There are also many other tree species, such as species identified by the USFS and various ornamental and agricultural species (*e.g.*, Christmas trees, fruit and nut trees), that provide ecosystem services that may be judged important to the public welfare but whose vulnerability to O<sub>3</sub> impacts has not been quantitatively characterized (U.S. EPA, 2014b, Chapter 6).

As noted above, in addition to tree growth-related effects, O<sub>3</sub>-induced visible foliar injury also has the potential to be significant to the public welfare through impacts in Class I and other similarly protected areas. Visible

foliar injury is a visible bioindicator of O<sub>3</sub> exposure in species sensitive to this effect, with the injury affecting the physical appearance of the plant. Accordingly visible foliar injury surveys are used by federal land managers as tools in assessing potential air quality impacts in Class I areas. These surveys may focus on plant species that have been identified as potentially sensitive air quality related values (AQRVs) due to their sensitivity to O<sub>3</sub>-induced foliar injury (USFS, NPS, FWS, 2010). An AQRV is defined by the National Park Service as a “resource, as identified by the [federal land manager] for one or more Federal areas that may be adversely affected by a change in air quality,” and the resource “may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the [federal land manager] for a particular area” (USFS, NPS, USFWS, 2010).<sup>183</sup> No criteria have been established, however, regarding a level or prevalence of visible foliar injury considered to be adverse to the affected vegetation, and, as noted in section IV.A.1.b above, there is not a clear relationship between visible foliar injury and other effects, such as reduced growth and productivity.<sup>184</sup> Thus, key considerations with regard to public welfare significance of this endpoint

<sup>183</sup> The identification, monitoring and assessment of AQRVs with regard to an adverse effect is an approach used for assessing the potential for air pollution impacts in Class I areas from pending permit actions (USFS, NPS, USFWS, 2010). An adverse impact is recognized by the National Park Service as one that results in diminishment of the Class I area’s national significance or the impairment of the ecosystem structure or functioning, as well as impairment of the quality of the visitor experience (USFS, NPS, USFWS, 2010). Federal land managers make such adverse impact determinations on a case-by-case basis, using technical and other information that they provide for consideration by permitting authorities. The National Park Service has developed a document describing an overview of approaches related to assessing projects under the National Environmental Policy Act and other planning initiatives affecting the National Park System ([http://www.nature.nps.gov/air/Pubs/pdf/AQGuidance\\_2011-01-14.pdf](http://www.nature.nps.gov/air/Pubs/pdf/AQGuidance_2011-01-14.pdf)).

<sup>184</sup> The National Park Service identifies various ranges of W126 index values in providing approaches for assessing air quality-related impacts of various development projects which appear to be based on the 1996 workshop report (Heck and Cowling, 1997), and may, at the low end, relate to a benchmark derived for the highly sensitive species, black cherry, for growth effects (10% RBL), rather than visible foliar injury (Kohut, 2007; Lefohn *et al.*, 1997). As noted in section IV.A.1.b above, visible foliar injury is not always a reliable indicator of other negative effects on vegetation (U.S. EPA, 2013, p. 9–39). We also note that the USFS biomonitoring analyses of visible foliar injury biomonitoring data commonly make use of a set of biosite index categories for which risk assumptions have been assigned, providing a relative scale of possible impacts (Campbell *et al.*, 2007); however, little information is available on the studies, effects and judgments on which these categories are based.



have related to qualitative consideration of the plant's aesthetic value in protected forested areas. Depending on the extent and severity, O<sub>3</sub>-induced visible foliar injury might be expected to have the potential to impact the public welfare in scenic and/or recreational areas during the growing season, particularly in areas with special protection, such as Class I areas.

The ecosystem services most likely to be affected by O<sub>3</sub>-induced visible foliar injury (some of which are also recognized above for tree growth-related effects) are cultural services, including aesthetic value and outdoor recreation. In addition, several tribes have indicated that many of the species identified as O<sub>3</sub> sensitive (including bioindicator species) are culturally significant (U.S. EPA, 2014c, Table 5–1). The geographic extent of protected areas that may be vulnerable to such public welfare effects of O<sub>3</sub> is potentially appreciable. Sixty-six plant species that occur on U.S. National Park Service (NPS) and U.S. Fish and Wildlife Service lands<sup>185</sup> have been identified as sensitive to O<sub>3</sub>-induced visible foliar injury, and some also have particular cultural importance to some tribes (U.S. EPA, 2014c, Table 5–1 and Appendix 5–A; U.S. EPA, 2014b, section 6.4.2). Not all species are equally sensitive to O<sub>3</sub>, however, and quantitative E–R relationships for O<sub>3</sub> exposure and other important effects, such as seedling growth reduction, are only available for a subset of 12 of the 66, as summarized in section IV.A.1.b above. A diverse array of ecosystem services has been identified for these twelve species (U.S. EPA, 2014c, Table 5–1). Two species in this group that are slightly more sensitive than the median for the group with regard to effects on growth are the ponderosa pine and quaking aspen (U.S. EPA, 2014b, section 6.2), the ranges for which overlap with many lands that are protected or preserved for enjoyment of current and future generations (consistent with the discussion above on Class I and other protected areas), including such lands located in the west and southwest regions of the U.S. where ambient O<sub>3</sub> concentrations and associated cumulative seasonal exposures can be highest (U.S. EPA, 2014c, Appendix 2B).<sup>186</sup>

With regard to agriculture-related effects, the EPA has recognized other complexities, stating that the degree to

which O<sub>3</sub> impacts on vegetation that could occur in areas and on species that are already heavily managed to obtain a particular output (such as commodity crops or commercial timber production) would impair the intended use at a level that might be judged adverse to the public welfare has been less clear (73 FR 16497, March 27, 2008). As noted in section IV.B.2 of the proposal, while having sufficient crop yields is of high public welfare value, important commodity crops are typically heavily managed to produce optimum yields. Moreover, based on the economic theory of supply and demand, increases in crop yields would be expected to result in lower prices for affected crops and their associated goods, which would primarily benefit consumers. These competing impacts on producers and consumers complicate consideration of these effects in terms of potential adversity to the public welfare (U.S. EPA, 2014c, sections 5.3.2 and 5.7). When agricultural impacts or vegetation effects in other areas are contrasted with the emphasis on forest ecosystem effects in Class I and similarly protected areas, it can be seen that the Administrator has in past reviews judged the significance to the public welfare of O<sub>3</sub>-induced effects on sensitive vegetation growing within the U.S. to differ depending on the nature of the effect, the intended use of the sensitive plants or ecosystems, and the types of environments in which the sensitive vegetation and ecosystems are located, with greater significance ascribed to areas identified for specific uses and benefits to the public welfare, such as Class I areas, than to areas for which such uses have not been established (FR 73 16496–16497, March 27, 2008).

In summary, several considerations are recognized as important to judgments on the public welfare significance of the array of effects of different O<sub>3</sub> exposure conditions on vegetation. While there are complexities associated with the consideration of the magnitude of key vegetation effects that might be concluded to be adverse to ecosystems and associated services, there are numerous locations where O<sub>3</sub>-sensitive tree species are present that may be vulnerable to impacts from O<sub>3</sub> on tree growth, productivity and carbon storage and their associated ecosystems and services. Cumulative exposures that may elicit effects and the significance of the effects in specific situations can vary due to differences in exposed species sensitivity, the importance of the observed or predicted O<sub>3</sub>-induced effect, the role that the species plays in the ecosystem, the intended use of the

affected species and its associated ecosystem and services, the presence of other co-occurring predisposing or mitigating factors, and associated uncertainties and limitations. These factors contribute to the complexity of the Administrator's judgments regarding the adversity of known and anticipated effects to the public welfare.

#### *B. Need for Revision of the Secondary Standard*

The initial issue to be addressed in this review of the secondary standard for O<sub>3</sub> is whether, in view of the currently available scientific evidence, exposure and risk information and air quality analyses, as reflected in the record, the standard should be retained or revised. In drawing conclusions on adequacy of the current O<sub>3</sub> secondary standard, the Administrator has taken into account both evidence-based and quantitative exposure- and risk-based considerations, as well as advice from CASAC and public comment. Evidence-based considerations draw upon the EPA's assessment and integrated synthesis of the scientific evidence from experimental and field studies evaluating welfare effects related to O<sub>3</sub> exposure, with a focus on policy-relevant considerations, as discussed in the PA. Air quality analyses inform these considerations with regard to cumulative, seasonal exposures occurring in areas of the U.S. that meet the current standard. Exposure- and risk-based considerations draw upon the EPA assessments of risk of key welfare effects, including O<sub>3</sub> effects on forest growth, productivity, carbon storage, crop yield and visible foliar injury, expected to occur in model-based scenarios for the current standard, with appropriate consideration of associated uncertainties.

In evaluating whether it is appropriate to revise the current standard, the Administrator's considerations build on the general approach used in the last review, as summarized in section IV.A of the proposal, and reflect the body of evidence and information available during this review. The approach used is based on an integration of the information on vegetation effects associated with exposure to O<sub>3</sub> in ambient air, as well as policy judgments on the adversity of such effects to public welfare and on when the standard is requisite to protect public welfare from known or anticipated adverse effects. Such judgments are informed by air quality and related analyses, quantitative assessments, when available, and qualitative assessment of impacts that could not be quantified. The Administrator has taken into

<sup>185</sup> See <http://www2.nature.nps.gov/air/Pubs/pdf/flag/NPSzonesensppFLAG06.pdf>.

<sup>186</sup> Basal area for resident species in national forests and parks are available in files accessible at: <http://www.fs.fed.us/foresthealth/technology/nidrm2012.shtml>. Basal area is generally described as the area of ground covered by trees.

account both evidence of effects on vegetation and ecosystems and public uses of these entities that may be important to the public welfare. The decision on adequacy of the protection provided by the current standard has also considered the 2013 remand of the secondary standard by the D.C. Circuit such that this decision incorporates the EPA's response to this remand.

Section IV.B.1 below summarizes the basis for the proposed decision by the Administrator that the current secondary standard should be revised. Significant comments received from the public on the proposal are discussed in section IV.B.2 and the Administrator's final decision is described in section IV.B.3.

#### 1. Basis for Proposed Decision

In evaluating whether it was appropriate to propose to retain or revise the current standard, as discussed in section IV.D of the proposal, the Administrator carefully considered the assessment of the current evidence in the ISA, findings of the WREA, including associated limitations and uncertainties, considerations and staff conclusions and associated rationales presented in the PA, views expressed by CASAC, and public comments that had been offered up to that point. In the paragraphs below, we summarize the proposal presentation of the PA considerations with regard to adequacy of the current secondary standard, advice from the CASAC, and the Administrator's proposed conclusions, drawing from section IV.D of the proposal, where a fuller discussion is presented.

##### a. Considerations and Conclusions in the PA

The PA evaluation is based on the longstanding evidence for O<sub>3</sub> effects and the associated conclusions in the current review of causal and likely causal relationships between O<sub>3</sub> in ambient air and an array of welfare effects at a range of biological and ecological scales of organization, as summarized in section IV.A.1 above (and described in detail in the ISA). Drawing from the ISA and CASAC advice, the PA emphasizes the strong support in the evidence for the conclusion that effects on vegetation are attributable to cumulative seasonal O<sub>3</sub> exposures, taking note of the improved "explanatory power" (for effects on vegetation) of the W126 index over other exposure metrics, as summarized in section IV.A.1.c above. The PA further recognizes the strong basis in the evidence for the conclusion that it is appropriate to use a cumulative

seasonal exposure metric, such as the W126 index, to judge impacts of O<sub>3</sub> on vegetation; related effects on ecosystems and services, such as carbon storage; and the level of public welfare protection achieved for such effects (U.S. EPA, 2014c, p. 5–78). As a result, based on the strong support in the evidence and advice from CASAC in the current and past reviews, the PA concludes that the most appropriate and biologically relevant way to relate O<sub>3</sub> exposure to plant growth, and to determine what would be adequate protection for public welfare effects attributable to the presence of O<sub>3</sub> in ambient air, is to characterize exposures in terms of a cumulative seasonal form, and in particular the W126 metric (U.S. EPA, 2014c, pp. 5–7 and 5–78). Accordingly, in considering the evidence with regard to level of protection provided by the current secondary standard, the PA considers air quality data and exposure-response relationships for vegetation effects, particularly those related to forest tree growth, productivity and carbon storage, in terms of the W126 index (U.S. EPA, 2014c, section 5.2; 79 FR 75330–75333, December 17, 2014).

In considering the extent to which such growth-related effects might be expected to occur under conditions that meet the current secondary standard, the PA focused particularly on tree seedling RBL estimates for the 11 species for which robust E–R functions have been developed, noting the CASAC concurrence with use of O<sub>3</sub>-related tree biomass loss as a surrogate for related effects extending to the ecosystem scale (U.S. EPA, 2014c, p. 5–80, Frey, 2014c, p. 10). The PA evaluation relied on RBL estimates for these 11 species derived using the robust OTC-based E–R functions, noting that analyses newly performed in this review have reduced the uncertainty associated with using OTC E–R functions to predict tree growth effects in the field (U.S. EPA, 2014c, section 5.2.1; U.S. EPA, 2013, section 9.6.3.2).

In considering the RBL estimates for different O<sub>3</sub> conditions associated with the current standard, the PA focused primarily on the median of the species-specific (composite) E–R functions. In so doing, in the context of considering the adequacy of protection afforded by the current standard, the PA takes note of CASAC's view regarding a 6% median RBL (Frey, 2014c, p. 12). Based on the summary of RBL estimates in the PA, the PA notes that the median species RBL estimate, across the 11 estimates derived from the robust species-specific E–R functions, is at or above 6% for W126 index values of 19

ppm-hrs and higher (U.S. EPA, 2014c, Tables 6–1 and 5C–3).

In recognition of the potential significance to public welfare of vegetation effects in Class I areas, the proposal described in detail findings of the PA analysis of the occurrence of O<sub>3</sub> concentrations associated with the potential for RBL estimates above benchmarks of interest in Class I areas that meet the current standard, focusing on 22 Class I areas for which air quality data indicated the current standard was met and cumulative seasonal exposures, in terms of a 3-year average W126 index, were at or above 15 ppm-hrs (79 FR 75331–75332, Table 7, December 17, 2014; U.S. EPA, 2014c, Table 5–2). The PA noted that W126 index values (both annual and 3-year average values) in many such areas, distributed across multiple states and NOAA climatic regions, were above 19 ppm-hrs. The highest 3-year average value was over 22 ppm-hrs and the highest annual value was over 27 ppm-hrs, exposure values for which the corresponding median species RBL estimates markedly exceed 6%, which CASAC has termed "unacceptably high" (U.S. EPA, 2014c, section 5.2). The PA additionally considered the species-specific RBL estimates for two tree species (quaking aspen and ponderosa pine) that are found in many of these Class I areas and that have a sensitivity to O<sub>3</sub> exposure that places them slightly more sensitive than the median of the group for which robust E–R functions have been established (U.S. EPA, 2014c, sections 5.2 and 5.7). As further summarized in the proposal, the PA describes the results of this analysis, particularly in light of advice from CASAC regarding the significance of the 6% RBL benchmark, as evidence of the occurrence in Class I areas, during periods when the current standard is met, of cumulative seasonal O<sub>3</sub> exposures of a magnitude for which the tree growth impacts indicated by the associated RBL estimates might reasonably be concluded to be important to public welfare (79 FR 75332; U.S. EPA, 2014c, sections 5.2.1 and 5.7).

The proposal also noted that the PA additionally considered findings of the WREA analyses of O<sub>3</sub> effects on tree growth and an array of ecosystem services provided by forests, including timber production, carbon storage and air pollution removal (79 FR 75332–75333; U.S. EPA, 2014b, sections 6.2–6.8; U.S. EPA, 2014c, section 5.2). While recognizing that these analyses provide quantitative estimates of impacts on tree growth and associated services for several different air quality scenarios,

the PA takes note of the large uncertainties associated with these analyses (see U.S. EPA, 2014b, Table 6–27) and the potential for these findings to underestimate the response at the national scale. While noting the potential usefulness of considering predicted and anticipated impacts to these services in assessing the extent to which the current information supports or calls into question the adequacy of the protection afforded by the current standard, the PA also recognizes significant uncertainties associated with the absolute magnitude of the estimates for these ecosystem service endpoints which limited the weight placed on these results (U.S. EPA, 2014c, sections 5.2 and 5.7).

As described in the proposal, the PA also considered O<sub>3</sub> effects on crops, taking note of the extensive and long-standing evidence of the detrimental effect of O<sub>3</sub> on crop production, which continues to be confirmed by evidence newly available in this review (79 FR 75333; U.S. 2014c, sections 5.3 and 5.7). With regard to consideration of the quantitative impacts of O<sub>3</sub> exposures under exposure conditions associated with the current standard, the PA focused on RYL estimates that had strong support in the current evidence (as characterized in the ISA, section 9.6) in light of CASAC comments regarding RYL benchmarks (Frey, 2014c, pp. iii and 14). In considering such evidence-based analyses, as well as the exposure/risk-based information for crops, the PA notes the CASAC comments regarding the use of crop yields as a surrogate for consideration of public welfare impacts, which noted that “[c]rops provide food and fiber services to humans” and that “[e]valuation of market-based welfare effects of O<sub>3</sub> exposure in forestry and agricultural sectors is an appropriate approach to take into account damage that is adverse to public welfare” (Frey, 2014c, p. 10; U.S. EPA, 2014c, section 5.7). The PA additionally notes, however, as recognized in section IV.A.3 above that the determination of the point at which O<sub>3</sub>-induced crop yield loss becomes adverse to the public welfare is still unclear, given that crops are heavily managed (*e.g.*, with fertilizer, irrigation) for optimum yields, have their own associated markets and that benefits can be unevenly distributed between producers and consumers (79 FR 75322; U.S. EPA, 2014c, sections 5.3 and 5.7).

With regard to visible foliar injury, as summarized in the proposal, the PA recognizes the long-standing evidence that has established that O<sub>3</sub> causes diagnostic visible foliar injury symptoms on studied bioindicator

species and also recognizes that such O<sub>3</sub>-induced impacts have the potential to impact the public welfare in scenic and/or recreational areas, with visible foliar injury associated with important cultural and recreational ecosystem services to the public, such as scenic viewing, wildlife watching, hiking, and camping, that are of significance to the public welfare and enjoyed by millions of Americans every year, generating millions of dollars in economic value (U.S. EPA, 2014b, section 7.1). In addition, several tribes have indicated that many of the O<sub>3</sub>-sensitive species (including bioindicator species) are culturally significant (U.S. EPA, 2014c, Table 5–1). Similarly, the PA notes CASAC comments that “visible foliar injury can impact public welfare by damaging or impairing the intended use or service of a resource,” including through “visible damage to ornamental or leafy crops that affects their economic value, yield, or usability; visible damage to plants with special cultural significance; and visible damage to species occurring in natural settings valued for scenic beauty or recreational appeal” (Frey, 2014c, p. 10). Given the above, and taking note of CASAC views, the PA recognizes visible foliar injury as an important O<sub>3</sub> effect which, depending on severity and spatial extent, may reasonably be concluded to be of public welfare significance, especially when occurring in nationally protected areas, such as national parks and other Class I areas.

As summarized in the proposal, the PA additionally takes note of the evidence described in the ISA regarding the role of soil moisture conditions that can decrease the incidence and severity of visible foliar injury under dry conditions (U.S. EPA, 2014c, sections 5.4 and 5.7). As recognized in the PA, this area of uncertainty complicates characterization of the potential for visible foliar injury and its severity or extent of occurrence for given air quality conditions and thus complicates identification of air quality conditions that might be expected to provide a specific level of protection from this effect (U.S. EPA, 2014c, sections 5.4 and 5.7). While noting the uncertainties associated with describing the potential for visible foliar injury and its severity or extent of occurrence for any given air quality conditions, the PA notes the occurrence of O<sub>3</sub>-induced visible foliar injury in areas, including federally protected Class I areas that meet the current standard, and suggests it may be appropriate to consider revising the standard for greater protection. In so doing, however, the PA recognizes that

the degree to which O<sub>3</sub>-induced visible foliar injury would be judged important and potentially adverse to public welfare is uncertain (U.S. EPA, 2014c, section 5.7).

As noted in the proposal, with regard to other welfare effects, for which the ISA determined a causal or likely causal relationships with O<sub>3</sub> in ambient air, such as alteration of ecosystem water cycling and changes in climate, the PA concludes there are limitations in the available information that affect our ability to consider potential impacts of air quality conditions associated with the current standard.

Based on the considerations described in the PA, summarized in the proposal and outlined here, the PA concludes that the currently available evidence and exposure/risk information call into question the adequacy of the public welfare protection provided by the current standard and provide support for considering potential alternative standards to provide increased public welfare protection, especially for sensitive vegetation and ecosystems in federally protected Class I and similarly protected areas. In this conclusion, staff gives particular weight to the evidence indicating the occurrence in Class I areas that meet the current standard of cumulative seasonal O<sub>3</sub> exposures associated with estimates of tree growth impacts of a magnitude that may reasonably be considered important to public welfare.

#### b. CASAC Advice

The proposal also summarized advice offered by the CASAC in the current review, based on the updated scientific and technical record since the 2008 rulemaking. The CASAC stated that it “[supports] the conclusion in the Second Draft PA that the current secondary standard is not adequate to protect against current and anticipated welfare effects of ozone on vegetation” (Frey, 2014c, p. iii) and that the PA “clearly demonstrates that ozone-induced injury may occur in areas that meet the current standard” (Frey, 2014c, p. 12). The CASAC further stated “[w]e support the EPA’s continued emphasis on Class I and other protected areas” (Frey, 2014c, p. 9). Additionally, the CASAC indicated support for the concept of ecosystem services “as part of the scope of characterizing damage that is adverse to public welfare” and “concur[red] that trees are important from a public welfare perspective because they provide valued services to humans, including aesthetic value, food, fiber, timber, other forest products, habitat, recreational opportunities, climate regulation, erosion control, air

pollution removal, and hydrologic and fire regime stabilization” (Frey, 2014c, p. 9). Similar to comments from CASAC in the last review, and comments on the proposed reconsideration, the current CASAC also endorsed the PA discussions and conclusions on biologically relevant exposure metrics and the focus on the W126 index accumulated over a 12-hour period (8 a.m.–8 p.m.) over the 3-month summation period of a year resulting in the maximum value (Frey, 2014c, p. iii).

In addition, CASAC stated that “relative biomass loss for tree species, crop yield loss, and visible foliar injury are appropriate surrogates for a wide range of damage that is adverse to public welfare,” listing an array of related ecosystem services (Frey, 2014c, p. 10). With respect to RBL for tree species, CASAC states that it is appropriate to identify in the PA “a range of levels of alternative W126-based standards that include levels that aim for not greater than 2% RBL for the median tree species” and that a median tree species RBL of 6% is “unacceptably high” (Frey, 2014c, pp. 13 and 14). With respect to crop yield loss, CASAC points to a benchmark of 5%, stating that a crop RYL for median species over 5% is “unacceptably high” and described crop yield as a surrogate for related services (Frey, 2014c, p. 13).

### c. Administrator’s Proposed Conclusions

At the time of proposal, the Administrator took into account the information available in the current review with regard to the nature of O<sub>3</sub>-related effects on vegetation and the adequacy of protection provided by the current secondary standard. The Administrator recognized the appropriateness and usefulness of the W126 metric in evaluating O<sub>3</sub> exposures of potential concern for vegetation effects, additionally noting support conveyed by CASAC for such a use for this metric. Further, the Administrator took particular note of (1) the PA analysis of the magnitude of tree seedling growth effects (biomass loss) estimated for different cumulative, seasonal, concentration-weighted exposures in terms of the W126 metric; (2) the monitoring analysis in the PA of cumulative exposures (in terms of W126 index) occurring in locations where the current standard is met, including those locations in or near Class I areas, and associated estimates of tree seedling growth effects; and (3) the analyses in the WREA illustrating the geographic distribution of tree species for which E–R functions are available and estimates of O<sub>3</sub>-related growth impacts for

different air quality scenarios, taking into account the identified potential for the WREA’s existing standard scenario to underestimate the highest W126-based O<sub>3</sub> values that would be expected to occur.

With regard to considering the adequacy of public welfare protection provided by the current secondary standard at the time of proposal, the Administrator focused first on welfare effects related to reduced native plant growth and productivity in terrestrial systems, taking note of the following: (a) The ISA conclusion of a causal relationship between O<sub>3</sub> in the ambient air and these welfare effects, and supporting evidence related to O<sub>3</sub> effects on vegetation growth and productivity, including the evidence from OTC studies of tree seedling growth that support robust E–R functions for 11 species; (b) the evidence, described in section IV.D.1 of the proposal and summarized above, of the occurrence of cumulative seasonal O<sub>3</sub> exposures for which median species RBL estimates are of a magnitude that CASAC has termed “unacceptably high” in Class I areas during periods where the current standard is met; (c) actions taken by Congress to establish public lands that are set aside for specific uses intended to provide benefits to the public welfare, including lands that are to be protected so as to conserve the scenic value and the natural vegetation and wildlife within such areas for the enjoyment of future generations, such as national parks and forests, wildlife refuges, and wilderness areas (many of which have been designated Class I areas); and (d) PA conclusions that the current information calls into question the adequacy of the current standard, based particularly on impacts on tree growth (and the potential for associated ecosystem effects), estimated for Class I area conditions meeting the current standard, that are reasonably concluded to be important from a public welfare standpoint in terms of both the magnitude of the vegetation effects and the significance to public welfare of such effects in such areas.

At the time of proposal, the Administrator also recognized the causal relationships between O<sub>3</sub> in the ambient air and visible foliar injury, reduced yield and quality of agricultural crops, and alteration of below-ground biogeochemical cycles associated with effects on growth and productivity. As to visible foliar injury, she took note of the complexities and limitations in the evidence base regarding characterizing air quality conditions with respect to the magnitude and extent of risk for visible foliar injury, and she

additionally recognized the challenges of associated judgments with regard to adversity of such effects to public welfare. In taking note of the conclusions with regard to crops, she recognized the complexity of considering adverse O<sub>3</sub> impacts to public welfare due to the heavy management common for achieving optimum yields and market factors that influence associated services and additionally took note of the PA conclusions that placing emphasis on the protection afforded to trees inherently also recognizes a level of protection afforded for crops.

Based on her consideration of the conclusions in the PA, and with particular weight given to PA findings pertaining to tree growth-related effects, as well as with consideration of CASAC’s conclusion that the current standard is not adequate, the Administrator proposed to conclude that the current standard is not requisite to protect public welfare from known or anticipated adverse effects and that revision is needed to provide the requisite public welfare protection, especially for sensitive vegetation and ecosystems in federally protected Class I areas and in other areas providing similar public welfare benefits. The Administrator further concluded that the scientific evidence and quantitative analyses on tree growth-related effects provide strong support for consideration of alternative standards that would provide increased public welfare protection beyond that afforded by the current O<sub>3</sub> secondary standard. She further noted that a revised standard would provide increased protection for other growth-related effects, including for carbon storage and for areas for which it is more difficult to determine public welfare significance, as recognized in section IV.B.2 of the proposal, as well as other welfare effects of O<sub>3</sub>, including visible foliar injury and crop yield loss.

### 2. Comments on the Need for Revision

In considering comments on the need for revision, we first note the advice and recommendations from CASAC with regard to the adequacy of the current standard. In its review of the second draft PA, CASAC stated that it “supports the scientific conclusion in the Second Draft PA that the current secondary standard is not adequate to protect against current and anticipated welfare effects of ozone on vegetation” (Frey, 2014c).

General comments received from the public on the proposal that are based on relevant factors and either supported or opposed the proposed decision to revise

the current O<sub>3</sub> secondary standard are addressed in this section. Comments on specific issues or information that relate to consideration of the appropriate elements of a revised secondary standard are addressed below in section IV.C. Other specific comments related to standard setting, as well as general comments based on implementation-related factors that are not a permissible basis for considering the need to revise the current standard, are addressed in the Response to Comments document.

Public comments on the proposal were divided with regard to support for the Administrator's proposed decision to revise the current secondary standard. Many state and local environmental agencies or government bodies, tribal agencies and organizations, and environmental organizations agreed with the EPA's proposed conclusion on the need to revise the current standard, stating that the available scientific information shows that O<sub>3</sub>-induced vegetation and ecosystem effects are occurring under air quality conditions allowed by the current standard and, therefore, provides a strong basis and support for the conclusion that the current secondary standard is not adequate. In support of their view, these commenters relied on the entire body of evidence available for consideration in this review, including evidence assessed previously in the 2008 review. These commenters variously pointed to the information and analyses in the PA and the conclusions and recommendations of CASAC as providing a clear basis for concluding that the current standard does not provide adequate protection of public welfare from O<sub>3</sub>-related effects. Many of these commenters generally noted their agreement with the rationale provided in the proposal with regard to the Administrator's proposed conclusion on adequacy of the current standard, and some gave additional emphasis to several aspects of that rationale, including the appropriateness of the EPA's attention to sensitive vegetation and ecosystems in Class I areas and other public lands that provide similar public welfare benefits and of the EPA's reliance on the strong evidence of impacts to tree growth and growth-related effects.

Comments from tribal organizations additionally noted that many Class I areas are of sacred value to tribes or provide treaty-protected benefits to tribes, including the exercise of gathering rights. Tribal organizations also noted the presence in Class I areas of large numbers of culturally important plant species, which they indicate to be impacted by air quality conditions

allowed by the current standard. The impacts described include visible foliar injury, loss in forest growth and crop yield loss, which these groups describe as especially concerning when occurring on lands set aside for the benefit of the public or that are of sacred value to tribes or provide treaty-protected benefits to tribes.

As described in section IV.B.3 below, the EPA generally agrees with the view of these commenters regarding the need for revision of the current secondary standard and with CASAC that the evidence provides support for the conclusions that the current secondary standard is not adequate to protect public welfare from known or anticipated adverse effects, particularly with respect to effects on vegetation.

A number of industries, industry associations, or industry consultants, as well as some state governors, attorneys general and environmental agencies, disagreed with the EPA's proposed conclusion on the adequacy of the current standard and recommended against revision. In support of their position, these commenters variously stated that the available evidence is little changed from that available at the time of the 2008 decision, and that the evidence is too uncertain, including with regard to growth-related effects and visible foliar injury, to support revision, and does not demonstrate adverse effects to public welfare for conditions associated with the current standard, with some commenters stating particularly that the EPA analysis of Class I areas did not document adverse effects to public welfare. They also cited the WREA modeling analyses as indicating that any welfare improvements associated with a revised standard would be marginal; in particular, compared to the benefits of achieving the current standard. Further, they state that, because of long-range transport of O<sub>3</sub> and precursors, it is not appropriate for the EPA to draw conclusions about the level of protection offered by the current standard based on current air quality conditions; in support of this view, these commenters point to different modeling analyses as demonstrating that under conditions where the current standard is met throughout the U.S., the associated W126 values would all be below the upper end of the range proposed as providing requisite public welfare protection and nearly all below the lower end of 13 ppm-hrs.

As an initial matter, we note that, as noted in sections I.C and IV.A above, the EPA's 2008 decision on the secondary standard was remanded back to the Agency because in setting the

2008 secondary standard, the EPA failed to specify what level of air quality was requisite to protect public welfare from known or anticipated adverse effects or explain why any such level would be requisite. So, in addressing the court remand, the EPA has more explicitly considered the extent to which protection is provided from known or anticipated effects that the Administrator may judge to be adverse to public welfare, and has described how the air quality associated with the revised standard would provide requisite public welfare protection, consistent with CAA section 109(b)(2) and the court's decision remanding the 2008 secondary standard. In undertaking this review, consistent with the direction of the CAA, the EPA has considered the current air quality criteria.

While we recognize, as stated in the proposal, that the evidence newly available in this review is largely consistent with the evidence available at the time of the last review (completed in 2008) with regard to the welfare effects of O<sub>3</sub>, we disagree with the commenters' interpretations of the evidence and analyses available in this review and with their views on the associated uncertainties. As summarized in section IV.A above, the ISA has determined causal relationships to exist between several vegetation and ecosystem endpoints and O<sub>3</sub> in ambient air (U.S. 2013, section 9.7). The ISA characterized the newly available evidence as largely consistent with and supportive of prior conclusions, as summarized in section IV.A above. This is not to say, however, that there is no newly available evidence and information in this review or that it is identical to that available in the last review. In some respects, the newly available evidence has strengthened the evidence available in the last review and reduced important uncertainties. As summarized in section IV.A.1.b above, newly available field studies confirm the cumulative effects and effects on forest community composition over multiple seasons. Additionally, among the newly available evidence for this review are analyses documented in the ISA that evaluate the RBL and RYL E-R functions for aspen and soybean, respectively, with experimental datasets that were not used in the derivation of the functions (U.S. 2013, section 9.6.3). These evaluations confirm the pertinence of the tree seedling RBL estimates for aspen, a species with sensitivity roughly midway in the range of sensitivities for the studied species, across multiple years in older trees.

With regard to crops, the ISA evaluations demonstrate a robustness of the E-R functions to predict O<sub>3</sub>-attributable RYL and confirm the relevance of the crop RYL estimates for more recent cultivars currently growing in the field. Together, the information newly available in this review confirms the basis for the E-R functions and strengthens our confidence in interpretations drawn from their use in other analyses newly available in this review that have been described in the WREA and PA.

With regard to comments on uncertainties associated with estimates of RBL, we first note that these established, robust E-R functions, which the EPA gave particular emphasis in this review, are available for seedling growth for 11 tree species native to the U.S., as summarized in section IV.A.1.b above and described in the proposal. These E-R functions are based on studies of multiple genotypes of 11 tree species grown for up to three years in multiple locations across the U.S. (U.S. EPA, 2013, section 9.6.1). We have recognized the uncertainty regarding the extent to which the studied species encompass the O<sub>3</sub> sensitive species in the U.S. and also the extent to which they represent U.S. vegetation as a whole (U.S. EPA, 2014b, section 6.9). However, the studied species include both deciduous and coniferous trees with a wide range of sensitivities and species native to every region across the U.S. and in most cases are resident across multiple states and NOAA climatic regions (U.S. EPA, 2014b, Appendix 6A). While the CASAC stated that there is “considerable uncertainty in extrapolating from the [studied] forest tree species to all forest tree species in the U.S.,” it additionally expressed the view that it should be anticipated that there are highly sensitive vegetation species for which we do not have E-R functions and others that are insensitive.<sup>187</sup> In so doing, the CASAC stated that it “should not be assumed that species of unknown sensitivity are tolerant to ozone” and “[i]t is more appropriate to assume that the sensitivity of species without E-R functions might be similar to the range of sensitivity for those species with E-R functions” (Frey, 2014c, p. 11). Accordingly, we disagree with commenters’ view that effects on these species are not appropriate

<sup>187</sup> Use of RBL estimates in the proposal, and in this final decision, focuses on the RBL for the studied species as a surrogate for a broad array of growth-related effects of potential public welfare significance, consistent with the CASAC advice.

considerations for evaluation of the adequacy of the current standard.

In support of their view that RBL estimates are too uncertain to inform a conclusion that the current standard is not adequately protective of public welfare, some commenters state that some of the 11 E-R functions are based on as few as one study. The EPA agrees that there are two species for which there is only one study supporting the E-R function (Virginia pine and red maple). We also note, however, that those two species are appreciably less sensitive than the median (Lee and Hogsett, 1996; U.S. EPA, 2014c, Table 5C-1). Thus, in the relevant analyses, they tend to influence the median toward a relatively less (rather than more) sensitive response. Further, there are four species for which the E-R functions are based on more than five studies,<sup>188</sup> contrary to the commenters’ claims of there being no functions supported by that many studies. That said, the EPA has noted the relatively greater uncertainty in the species for which fewer studies are available, and it is in consideration of such uncertainties that the EPA focused in the proposal on the median E-R function across the 11 species, rather than a function for a species much more (or less) sensitive than the median. The EPA additionally notes that it gave less emphasis to the E-R function available for one species, eastern cottonwood, based on CASAC advice that the study results supporting that E-R function were not as strong as the results of the other experiments that support the other, robust E-R functions and that the eastern cottonwood study results showed extreme sensitivity to O<sub>3</sub> compared to other studies (Frey, 2014c, p. 10). Accordingly, the EPA has appropriately considered the strength of the scientific evidence and the associated uncertainties in considering revision of the secondary standard.

Other commenters stated that the scientific evidence does not support revising the NAAQS, pointing to uncertainty related to interpretation of the RBL estimates (based on tree seedling studies) with regard to effects on older tree lifestages. Some of these commenters’ claim that mature canopy trees experience reduced O<sub>3</sub> effects. The EPA agrees that the quantitative information for O<sub>3</sub> growth effects on older tree lifestages is available for a more limited set of species than that available for tree seedlings. We note,

<sup>188</sup> These four species, aspen, Douglas fir, ponderosa pine and red alder, range broadly in sensitivities that fall above, below and at the median for the 11 species (Lee and Hogsett, 1996; U.S. EPA, 2014c, Table 5C-1).

however, that this is an area for which there is information newly available in this review. A detailed analysis of study data for seedlings and older lifestages of aspen shows close agreement between the O<sub>3</sub>-attributable reduced growth observed in the older trees and reductions predicted from the seedling E-R function (U.S. EPA, 2013, section 9.6.3.2; discussed in the PA, section 5.2.1 as noted in the proposal, p. 75330). This finding, newly available in this review and documenting impacts on mature trees, improves our confidence in conclusions drawn with regard to the significance of RBL estimates for this species, which is prevalent across multiple regions of the U.S.<sup>189</sup> It is also noteworthy that this species is generally more sensitive to O<sub>3</sub> effects on growth than the median of the 11 species with robust E-R functions (as shown in U.S. EPA 2014c, Table 5C-1). Other newly available studies, summarized in section IV.A.1.b above and section IV.B.1.b of the proposal, provide additional evidence of O<sub>3</sub> impacts on mature trees, including a meta-analysis reporting older trees to be more affected by O<sub>3</sub> than younger trees (U.S. EPA, 2013, p. 9-42; Wittig et al., 2007). We additionally note that CASAC “concur[red] that biomass loss in trees is a relevant surrogate for damage to tree growth that affects ecosystem services such as habitat provision for wildlife, carbon storage, provision of food and fiber, and pollution removal” additionally stating that “[b]iomass loss may also have indirect process-related effects such as on nutrient and hydrologic cycles” leading them to conclude that “[t]herefore, biomass loss is a scientifically valid surrogate of a variety of adverse effects to public welfare” (Frey, 2014c, p. 10).

As noted in section IV.A above and discussed below, the Administrator’s final decision on the adequacy of the current standard draws upon, among other things, the available evidence and quantitative analyses as well as judgments about the appropriate weight to place on the range of uncertainties inherent in the evidence and analyses. The strengthening in this review, as compared with the last review, of the basis for the robust E-R functions for tree seedling RBL, as well as other newly available quantitative analyses,

<sup>189</sup> The WREA notes a few additional, limited analyses using modeling tools and data from previous publications that indicate there may be species-specific differences in the extent of similarities between seedling and adult growth response to O<sub>3</sub>, with some species showing greater and some lesser response for seedlings as compared to mature tree, but a general comparability (U.S. EPA 2014b, section 6.2.1.1 and p. 6-67).

will, accordingly, contribute to judgments made by the Administrator with regard to these effects in reaching her final decisions in this review.

Amongst the newly available information in this review is a new analysis describing W126-based exposures occurring in counties containing Class I areas for which monitoring data indicated compliance with the current standard. The PA gave particular attention to this analysis in consideration of the adequacy of the current standard, and this analysis was also described in the proposal (U.S. EPA, 2014c, Appendix 5B and pp. 5–27 to 5–29; 79 FR 75331–75332, December 17, 2014). Some of the commenters who disagreed with the EPA’s conclusion on adequacy of the current standard variously stated that this analysis does not demonstrate growth effects are occurring in Class I areas and that the analysis is too uncertain for reliance on by the Administrator in her judgment on adequacy of the current standard. While the EPA agrees with commenters that data on the occurrence of growth effects in the areas and time periods identified are not part of this analysis, we note that this is because such data have not been collected and consequently cannot be included. As a result, the EPA has utilized measurements of O<sub>3</sub> in or near these areas in combination with the established E–R functions to estimate the potential for growth impacts in these areas under conditions where the current standard is met. The EPA additionally notes that species for which E–R functions have been developed have been documented to occur within these areas (see Table 3).

The EPA disagrees with commenters regarding the appropriateness of this analysis for the Administrator’s consideration. This analysis documents the occurrence of cumulative growing

season exposures in these ecosystems which the EPA and CASAC have interpreted, through the use of the established E–R functions for tree seedling growth effects summarized in section IV.A.1.b above (and described in the ISA, PA and proposal), as indicating the potential for growth effects of significance in these protected areas. To the extent that these comments imply that the Administrator may only consider welfare effects that are certain in judging the adequacy of the current standard, we note that section 109(b)(2) of the CAA plainly provides for consideration of both known and anticipated adverse effects in establishing or revising secondary NAAQS.

In support of some commenters’ view that this analysis is too uncertain to provide a basis for the Administrator’s proposed conclusion that the current standard is not adequate, one commenter observed that the O<sub>3</sub> monitors used for six of the 22 Class I areas in the analysis, although in the same county, were sited outside of the Class I areas. This was the case due to the analysis being focused on the highest monitor in the county that met the current standard. To clarify the presentation, however, we have refocused the presentation, restricting it to data for monitors sited in or within 15 kilometers of a Class I area,<sup>190</sup> and note that the results are little changed, continuing to call into question the adequacy of the current standard. As shown in Table 3, the dataset in the refocused presentation, which now spans 1998 up through 2013, includes 17 Class I areas for which monitors were identified in this manner. For context, we note that this represents nearly a quarter of the Class I areas for which there are O<sub>3</sub> monitors within 15 km.<sup>191</sup>

In recognition of the influence that other environmental factors can exert in the natural environment on the relationship between ambient O<sub>3</sub> exposures and RBL, potentially modifying the impact predicted by the E–R functions, the PA and proposal took particular note of the occurrence of 3-year average W126 index values at or above 19 ppm-hrs. In the re-focused analysis in Table 3, there are 11 areas, distributed across four states in two NOAA climatic regions, for which the 3-year W126 exposure index values ranged at or above 19 ppm-hrs, a value for which the corresponding median species RBL estimate for a growing season’s exposure is 6%, a magnitude termed “unacceptably high” by CASAC (Frey, 2014c, p. 13). The highest 3-year W126 index values in these 11 areas ranged from 19.0 up to 22.2 ppm-hrs, a cumulative seasonal exposure for which the median species RBL estimate is 9% for a single growing season. The annual W126 index values range above 19 ppm-hrs in 15 of the areas in the re-focused table provided here; these areas are distributed across six states (AZ, CA, CO, KY, SD, UT) and four regions (West, Southwest, West North Central and Central).<sup>192</sup> The highest index values in the areas with annual index values above 19 ppm-hrs range from 19.1 to 26.9 ppm-hrs. As is to be expected from the focus on a smaller dataset, the number of states with 1-year W126 index values above 19 ppm-hrs is smaller in the refocused analysis (15 as compared to 20), although the number of regions affected is the same. More importantly, however, the number of areas with 3-year W126 index values at or above 19 ppm-hrs is the same, 11 Class I areas across two regions, supporting the prior conclusions.

TABLE 3—O<sub>3</sub> CONCENTRATIONS FOR CLASS I AREAS DURING PERIOD FROM 1998 TO 2013 THAT MET THE CURRENT STANDARD AND WHERE 3-YEAR AVERAGE W126 INDEX VALUE WAS AT OR ABOVE 15 ppm-hrs

Class I area (distance away, if monitor is not at/within boundaries)	State/County	Design value (ppb)*	3-Year average W126 (ppm-hrs)* (# ≥ 19 ppm-hrs, range)	Annual W126 (ppm-hrs)* (# ≥ 19 ppm-hrs, range)	Number of 3-year periods
Bridger Wilderness Area <sup>QA, DF</sup> (8.9 km).	WY/Sublette .....	70–72	16.2–17.0	13.9–18.8	4
Canyonlands National Park <sup>QA, DF, PP</sup> .	UT/San Juan .....	70–73	15.4–19.5 (2, 19.1–19.5)	9.6–23.6 (4, 19.2–23.6)	8
Chiricahua National Monument <sup>DF, PP</sup> (12 km).	AZ/Cochise .....	69–73	15.2–19.8 (1, 19.8)	11.7–21.9 (2, 19.8–21.9)	10
Grand Canyon National Park <sup>QA, DF, PP</sup> .	AZ/Coconino .....	68–74	15.3–22.2 (7, 19.1–22.2)	10.1–26.9 (6, 19.8–26.9)	12
Desolation Wilderness <sup>PP</sup> (3.9 km) ..	CA/EI Dorado .....	75	19.8 (1, 19.8)	15.6–22.9 (2, 21.0–22.9)	1

<sup>190</sup> The 15 km distance was selected as a natural breakpoint in distance of O<sub>3</sub> monitoring sites from Class I areas and as still providing similar surroundings to those occurring in the Class I area. We note that given the strict restrictions on

structures and access within some of these areas, it is common for monitors intended to collect data pertaining to air quality in these types of areas to be sited outside their boundaries.

<sup>191</sup> There is an O<sub>3</sub> monitor within fewer than 15% of all Class I areas, and fewer than half of all Class I areas have a monitor within 15 km.

<sup>192</sup> This compares to 20 areas in eight states and four regions in the earlier analysis.

TABLE 3—O<sub>3</sub> CONCENTRATIONS FOR CLASS I AREAS DURING PERIOD FROM 1998 TO 2013 THAT MET THE CURRENT STANDARD AND WHERE 3-YEAR AVERAGE W126 INDEX VALUE WAS AT OR ABOVE 15 ppm-hrs—Continued

Class I area (distance away, if monitor is not at/ within boundaries)	State/ County	Design value (ppb)*	3-Year average W126 (ppm-hrs)* (# ≥ 19 ppm-hrs, range)	Annual W126 (ppm-hrs)* (# ≥ 19 ppm-hrs, range)	Number of 3-year periods
Lassen Volcanic National Park DF, PP	CA/Shasta .....	72–74	15.3–15.6	11.5–19.1 (1, 19.1)	2
Mammoth Cave National Park BC, C, LP, RM, SM, VP, YP (0.1 km).	KY/Edmonson .....	74	15.7	12.3–22.0 (1, 22.0)	1
Maroon Bells-Snowmass Wilderness Area QA, DF (0.8 km).	CO/Gunnison .....	68–73	15.6–20.2 (1, 20.2)	13.0–23.8 (3, 21.3–23.8)	8
Mazatzal Wilderness DF, PP (10.9 km).	AZ/Maricopa .....	74–75	17.8–19.9 (1, 19.9)	10.3–26.2 (3, 19.7–26.2)	2
Mesa Verde National Park DF .....	CO/Montezuma .....	67–73	15.4–20.7 (1, 20.7)	10.7–23.4 (4, 19.5–23.4)	11
Petrified Forest National Park C .....	AZ/Navajo .....	70	15.4–16.9	12.7–18.6	2
Rocky Mountain National Park QA, DF, PP (0.9 km).	CO/Larimer .....	73–74	15.3–18.4	8.3–26.2 (4, 19.4–26.2)	5
Saguaro National Park DF, PP (0.1 km)**.	AZ/Pima .....	69–74	15.4–19.0 (1, 19.0)	7.3–22.9 (3, 19.6–22.9)	6
Superstition Wilderness Area PP (6.3, 14.9 km and 7.2 km)**.	AZ/Gila .....	72–75	16.6–20.9 (2, 19.0–20.9)	13.8–25.5 (4, 19.0–25.5)	5
	AZ/Maricopa .....	70–75	15–20.2 (1, 20.2)	6.3–23.9 (4, 19.6–23.9)	4
	AZ/Pinal .....	72–75	15.3–21.1 (1, 21.1)	10.2–24.7 (4, 21.4–24.7)	7
Weminuche Wilderness Area QA, DF, PP (14.9 km).	CO/La Plata .....	70–74	15.1–19.1 (1, 19.1)	10.8–21.0 (2, 20.8–21.0)	6
Wind Cave National Park QA, PP .....	SD/Custer .....	70	15.4	12.3–20.5 (1, 20.5)	1
Zion National Park QA, DF, PP (3.6 km).	UT/Washington .....	70–73	17.0–20.1 (2, 19.4–20.1)	14.2–23.2 (3, 19.8–23.2)	6

\*Based on hourly O<sub>3</sub> concentration data retrieved from AQS on June 25, 2014, and additional CASTNET data downloaded from [http://java.epa.gov/castnet/epa\\_jsp/prepackageddata.jsp](http://java.epa.gov/castnet/epa_jsp/prepackageddata.jsp) on June 25, 2014. Design values shown above are derived in accordance with Appendix P to 40 CFR Part 50. Annual W126 index values are derived as described in section IV.A.1 above; three consecutive year annual values are averaged for 3-year averages. Prior to presentation, both types of W126 index values are rounded to one decimal place. The full list of monitoring site identifiers and individual statistics is available in the docket for this rulemaking.

\*\*No monitor was sited within these Areas and multiple monitors were sited within 15 km. Data for the closest monitor per county are presented.

Superscript letters refer to species present for which E–R functions have been developed. QA=Quaking Aspen, BC=Black Cherry, C=Cottonwood, DF=Douglas Fir, LP=Loblolly Pine, PP=Ponderosa Pine, RM=Red Maple, SM=Sugar Maple, VP=Virginia Pine, YP=Yellow (Tulip) Poplar. Sources include USDA–NRCS (2014, <http://plants.usda.gov>), USDA–FS (2014, <http://www.fs.fed.us/foresthealth/technology/nidrm2012.shtml>) UM–CFCWI (2014, <http://www.wilderness.net/printFactSheet.cfm?WID=583>), NPS (<http://www.nps.gov/pefo/planyourvisit/upload/Common-Plants-Site-Bulletin-sb-2013.pdf>) and Phillips and Comus (2000).

As support for their view that the Class I area analysis is too uncertain to provide a basis for the Administrator's proposed conclusion that the current standard is not adequate, some commenters stated that forests in Class I areas were composed of mature trees and that the tree seedling E–R functions do not predict growth impacts in mature forests. The EPA disagrees with the commenters' statement that Class I areas are only made up of mature trees. Seedlings exist throughout forests as part of the natural process of replacing aging trees and overstory trees affected by periodic disturbances.<sup>193</sup> Seedlings also tend to occur in areas affected by natural disturbances, such as fires, insect infestations and flooding, and such disturbances are common in many natural forests. As noted above, information newly available in this review strengthens our understanding regarding O<sub>3</sub> effects on mature trees for

<sup>193</sup> Basic information on forest processes, including the role of seedlings is available at: [http://www.na.fs.fed.us/stewardship/pubs/NE\\_forest\\_regeneration\\_handbook\\_revision\\_130829\\_desktop.pdf](http://www.na.fs.fed.us/stewardship/pubs/NE_forest_regeneration_handbook_revision_130829_desktop.pdf).

aspen, an important and O<sub>3</sub>-sensitive species (U.S. EPA, 2013, section 9.6.3.2).

One commenter additionally stated that the EPA has not shown reduced biomass to be adverse to public welfare, variously citing individual studies, most of which are not considering O<sub>3</sub>, as support for their view that such an effect of O<sub>3</sub> may not occur in the environment and may be of no significance if it does. With regard to the occurrence of O<sub>3</sub>-related reduced growth in the field, we note the strength of the evidence from field OTC studies on which the E–R functions are based, and evidence from comparative studies with open-air chamberless control treatments suggests that characteristics particular to the OTC did not significantly affect plant response (U.S. EPA, 2013, p. 9–5). Thus, we view the OTC systems as combining aspects of controlled exposure systems with field conditions to facilitate a study providing data that represent the role of the studied pollutant in a natural system.

Further, we disagree with the commenters on the significance of O<sub>3</sub>-

attributable reduced growth in natural ecosystems. Even in the circumstances cited by the commenter (e.g., subsequent to large-scale disturbances, nutrient limited system, multigeneration exposure), O<sub>3</sub> can affect growth of seedlings and older trees, with the potential for effects on ecosystem productivity, handicapping the sensitive species and affecting community dynamics and associated community composition, as well as ecosystem hydrologic cycles (U.S. EPA, 2013, p. 1–8). For example, two recent studies report on the role of O<sub>3</sub> exposure in affecting water use in a mixed deciduous forest and indicated that O<sub>3</sub> increased water use in the forest and also reduced growth rate (U.S. EPA, 2013, p. 9–43, McLaughlin, 2007a, 2007b). Contrary to the lesser effects implied by the commenters, the authors of these two studies noted implications of their findings with regard to the potential for effects to be amplified under conditions of increased temperature and associated reduced water availability (McLaughlin, 2007a). We additionally note comments from



the CASAC, summarized above, in which it concurs with a focus on biomass loss and the use of RBL estimates, calling biomass loss in trees a “relevant surrogate for damage to tree growth” that affects an array of ecosystem services (Frey, 2014c, p. 10), and identifies 6% RBL as “unacceptably high” (Frey, 2014c, p. 13). The evidence we presented includes evidence related to RBL estimates above that benchmark. Thus, while we agree that some reductions in tree growth may not be concluded to be adverse to public welfare, we disagree with commenters that we have not presented the evidence, which includes RBL estimates well above the 6% magnitude identified by CASAC, that supports the Administrator’s judgments on adversity that may be indicated by such estimates and her conclusion that adequate protection is not provided by the current standard, as described in section IV.B.3 below.

Some commenters disagree with the EPA’s consideration of the Class I areas analysis, stating that it is not appropriate for the EPA to evaluate the level of protection offered by the current primary O<sub>3</sub> standard under current conditions due to the long-range transport of O<sub>3</sub> and O<sub>3</sub> precursors to Class I areas from upwind non-attainment areas. It is the view of these commenters that once the upwind areas make emissions reductions to attain the current standard, downwind areas will see improvements in air quality and decreasing W126 levels. In support of this view, commenters point to several modeling analyses. Some commenters point to air quality modeling conducted by an environmental consultant that projects all sites to have W126 index values below 13 ppm-hrs when emissions are adjusted such that all upwind monitors are modeled to meet the current standard. Detailed methodology, results and references for the commenter’s modeling analysis were not provided, precluding a thorough evaluation and comparison to the EPA’s modeling. While the EPA agrees that transport of O<sub>3</sub> and O<sub>3</sub> precursors can affect downwind monitors, we disagree with commenters regarding the conclusions that are appropriate to draw from modeling simulations for the reasons noted below.

As support for their view that the current standard provides adequate protection, some commenters pointed to estimates drawn from the EPA’s air quality modeling performed for the RIA, stating that this modeling for an alternative standard level of 70 ppb indicates “only a handful” of monitoring sites approaching as high as

13 ppm-hrs as a 3-year average (*e.g.*, UARG, p. 76). These commenters further point to the WREA modeling, noting that those estimates project that attainment of the current standard would result in only 5 sites above 15 ppm-hrs. Based on these statements, these commenters state that the current standard is likely to provide conditions with no site having a monitor over 17 ppm-hrs and a “minimal number” likely exceeding 13 ppm-hrs (*e.g.*, UARG, p. 77). We disagree with commenters’ interpretation of the modeling information from the two different assessments. As we summarized in section IV.C.1 of the proposal with regard to the WREA modeling, the modeling estimates are each based on a single set of precursor emissions reductions that are estimated to achieve the desired target conditions, which is also the case for the RIA modeling<sup>194</sup> (U.S. EPA, 2014c, pp. 5–40 to 5–41; see also section 1.2.2 of the 2014 RIA).

As noted in section IV.A.2 above, and in the proposal, the model-adjusted air quality in the WREA scenario for the current standard does not represent an optimized control scenario that just meets the current standard, but rather characterizes one potential distribution of air quality across a region when all monitor locations meet the standard (79 FR 75322; U.S. EPA, 2014b, section 4.3.4.2). Alternate precursor emissions reductions would be expected to produce different patterns of O<sub>3</sub> concentrations and associated differences in W126 index values. Specifically, the precursor emissions reductions scenarios examined in the WREA focuses on regional reductions over broad areas rather than localized cuts that may focus more narrowly on areas violating the current standard (U.S. EPA, 2014b, p. 4–35). The assumption of regionally determined across-the-board emissions reductions is a source of potential uncertainty with the potential to overestimate W126 scenario benefits (U.S. EPA, 2014b, Table 4–5 [row G]). The application of emissions reductions to all locations in each region to bring down the highest monitor in the region to meet the

<sup>194</sup> Although commenters cite to both analyses as if providing the same information, there are many differences in specific aspects of the RIA approach from that of the WREA, which derive, at least in part, from their very different purposes. The RIA is not developed for consideration in the NAAQS review. Rather, it is intended to provide insights and analysis of an illustrative control strategy that states might adopt to meet the revised standard. The EPA does not consider this analysis informative to consideration of the protection provided by the current standard, and the results of the RIA have not been considered in the EPA’s decisions on the O<sub>3</sub> standards.

current standard could potentially lead to W126 index underestimates at some locations, as noted in the WREA: “[w]hile the scenarios implemented in this analysis show that [] bringing down the highest monitor in a region would lead to reductions below the targeted level through the rest of the region, to the extent that the regional reductions from on-the-books controls are supplemented with more local controls the additional benefit may be overestimated” (U.S. EPA, 2014b, p. 4–36; U.S. EPA, 2014c, pp. 5–40 to 5–41). This point was emphasized by CASAC in their comments on the 2nd draft WREA. CASAC noted that, “[m]eeting a target level at the highest monitor requires substantial reductions below the targeted level through the rest of the region” and stated that “[t]his artificial simulation does not represent an actual control strategy and may conflate differences in control strategies required to meet different standards” (Frey, 2014b, p. 2).

Due to the uncertainty about what actual future emissions control strategies might be and their associated emissions reductions, and the impact such uncertainty might have on modeling estimates involving reductions from recent conditions, we believe it is important to place weight on ambient air monitoring data for recent conditions in drawing conclusions regarding W126 index values that would be expected in areas that meet the current standard. The analysis of air quality data for Class I areas described in the proposal, and updated in Table 3 above (1998–2013), indicates the occurrence of 3-year W126 exposure index values well above 19 ppm-hrs, a cumulative exposure value for which CASAC termed the associated median RBL estimate “unacceptably high,” in multiple Class I areas that meet the current standard (79 FR 75312, December 17, 2014, Table 7; updated in Table 3 above). Additionally, analysis of recent air quality data (2011–2013) for all locations across the U.S. indicates 10 monitor locations distributed across two NOAA climatic regions that meet the current standard and at which 3-year W126 index values are above 19 ppm-hrs, with the highest values extending up to 23 ppm-hrs (Wells, 2015b).

In support of their view that the EPA’s modeling supports the conclusion that W126 index values of interest are achieved under the current secondary standard, some commenters additionally state that the W126 values in the WREA are overestimated in unmonitored rural areas due to the much greater prevalence of urban monitors across the U.S. The EPA

disagrees with this conclusion. In order to estimate O<sub>3</sub> concentrations in grid cells across a national-scale spatial surface, the WREA applied the VNA spatial interpolation technique after applying the HDDM technique to adjust O<sub>3</sub> concentrations at monitoring sites based on the emissions reductions necessary to just meet the current standard. In estimating concentrations in unmonitored areas, the VNA method considers only the “neighboring” monitors, using an inverse distance squared weighting formula, which assigns the greatest influence to the nearest neighboring monitor (U.S. EPA, 2014b, p. 4A–6). By this approach, monitors in less-densely monitored areas contribute to the concentration estimates over much larger areas than do monitors in more-densely monitored areas. In an urban area, neighboring monitors may be quite close to one another, such that any one monitor may only be influencing concentration estimates for a handful of spatial grid cells in the immediate vicinity. By contrast, monitors in rural areas may influence hundreds of grid cells. A specific example of this is the monitor in Great Basin National Park in eastern Nevada. The VNA algorithm assigns very high weights to this monitor for all of the grid cells covering a 100 km radius around it, simply because there are no other monitors in that area and it is the closest. On the other hand, a monitor near downtown Las Vegas may only get a high weight for, and thus exert influence on the concentration estimate in, the one grid cell containing it. We agree with the commenter that urban monitors may influence the spatial surface for some distance away from the urban areas, although the influence wanes with increasing distance from that area and decreasing distance to the next closest monitor. As we lack data for the intervening locations, however, we have no reason to conclude that the VNA surface is overestimating the W126 index values. Further, as was summarized in section IV.A.2 above, and in the WREA, the PA and the proposal (U.S. EPA, 2014b, Table 6–27, section 8.5; U.S. EPA, 2014c, p. 5–49; 79 FR 75323, December 17, 2014), the VNA approach results in a lowering of the highest W126 index values at monitoring sites, which contributes to underestimates of the highest W126 index values in each region.

In support of their view that the current standard is adequate, some industry commenters additionally cite WREA analyses for the current standard scenario, including the W126 index

estimates in national parks, as showing that the current standard provides more than adequate protection, with alternative scenarios providing only marginal and increasingly uncertain benefits. As we noted in the proposal and section IV.A.2 above, there are an array of uncertainties associated with the W126 index estimates, in the current standard scenario and in the other scenarios, which, as they are inputs to the vegetation risk analyses, are propagated into those analyses (79 FR 75323; December 17, 2014). As a result, consistent with the approach in the proposal, the Administrator has not based her decision with regard to adequacy of the current standard in this review on these air quality scenario analyses.

In support of their view that the current standard provides adequate protection and should not be revised, some commenters described their concerns with any consideration of visible foliar injury in the decision regarding the secondary standard. These commenters variously stated that visible foliar injury cannot be reliably evaluated for adversity given lack of available information, is not an adverse effect on public welfare that must be addressed through a secondary standard, and is not directly relatable to growth suppression (and the EPA’s use of RBL captures that effect anyway). Additionally, some state that any associated ecosystem services effects are not quantifiable. In sum, the view of these commenters is that it is not appropriate for the Administrator to place any weight on this O<sub>3</sub> effect in determining the adequacy of the current standard. As an initial matter, the EPA agrees with the comment that the current evidence does not include an approach for relating visible foliar injury to growth suppression,<sup>195</sup> as recognized in section IV.A.1.b above. Further, we note that, similar to decisions in past O<sub>3</sub> reviews, the Administrator’s proposed decision in this review recognized the “complexities and limitations in the evidence base regarding characterizing air quality conditions with respect to

<sup>195</sup> The current evidence indicates that “[t]he significance of O<sub>3</sub> injury at the leaf and whole plant levels depends on how much of the total leaf area of the plant has been affected, as well as the plant’s age, size, developmental stage, and degree of functional redundancy among the existing leaf area” and “in some cases, visible foliar symptoms have been correlated with decreased vegetative growth . . . and with impaired reproductive function” (U.S. EPA, 2013, p. 9–39). The ISA concludes, however, “it is not presently possible to determine, with consistency across species and environments, what degree of injury at the leaf level has significance to the vigor of the whole plant” (U.S. EPA, 2013, p. 9–39).

the magnitude and extent of risk for visible foliar injury” and the “challenges of associated judgments with regard to adversity of such effects to public welfare” (79 FR 75336; December 17, 2014). Contrary to the implications of the commenters, although the Administrator took into consideration the potential for adverse effects on public welfare from visible foliar injury, she placed weight primarily on growth-related effects of O<sub>3</sub>, both in her proposed decision on adequacy and with regard to proposed judgments on what revisions would be appropriate. Although visible foliar injury may impact the public welfare and accordingly has the potential to be adverse to the public welfare (as noted in section IV.B.2 of the proposal), the Administrator placed less weight on visible foliar injury considerations in identifying what revisions to the standard would be appropriate to propose. In considering these effects for this purpose, she recognized “significant challenges” in light of “the variability and the lack of clear quantitative relationship with other effects on vegetation, as well as the lack of established criteria or objectives that might inform consideration of potential public welfare impacts related to this vegetation effect” (79 FR 75349; December 17, 2014). As summarized in section IV.A.1.a above, the evidence demonstrates a causal relationship of O<sub>3</sub> with visible foliar injury. Accordingly, we note that the uncertainty associated with visible foliar injury is not with regard to whether O<sub>3</sub> causes visible foliar injury. Rather, the uncertainty is, as discussed in sections IV.A.1.b and IV.A.3 above, with the lack of established, quantitative exposure-response functions that document visible foliar injury severity and incidence under varying air quality and environmental conditions and information to support associated judgments on the significance of such responses with regard to associated public welfare impacts. As with the Administrator’s proposed decisions on the standard, such considerations also informed her final decisions, described in sections IV.B.3 and IV.C.3 below.

In support of their view that the current standard should be retained, some commenters note the WREA finding for the current standard scenario of no U.S. counties with RYL estimates at or above 5%, the RYL value emphasized by CASAC and state that policy reasons provide support for not focusing on crops in the decision; other commenters state that additional studies on crops and air quality are needed. As

described previously in this section, and in section IV.A.2 above, an aspect of uncertainties associated with the WREA air quality scenarios, including the current standard scenario, is underestimation of the highest W126 index values, contributing to underestimates in the effects associated with the current standard scenario. The EPA agrees with commenters that additional studies on crops and air quality will be useful to future reviews. Additionally, however, as noted above, the Administrator's proposed conclusion on adequacy of the current standard, as well as her final decision described in section IV.B.3 below, gives less weight to consideration of effects on agricultural crops in recognition of the complicating role of heavy management in that area.

Lastly, we note that many commenters cited the costs of compliance as supporting their view that the standard should not be revised, although as we have described in section I.B above, the EPA may not consider the costs of compliance in determining what standard is requisite to protect public welfare from known or anticipated adverse effects.

### 3. Administrator's Conclusions on the Need for Revision

Having carefully considered the advice from CASAC and public comments, as discussed above, the Administrator believes that the fundamental scientific conclusions on the welfare effects of O<sub>3</sub> in ambient air reached in the ISA and summarized in the PA and in section IV.B of the proposal remain valid. Additionally, the Administrator believes the judgments she reached in the proposal (section IV.D.3) with regard to consideration of the evidence and quantitative assessments and advice from CASAC remain appropriate. Thus, as described below, the Administrator concludes that the current secondary standard is not requisite to protect public welfare from known and anticipated adverse effects associated with the presence of O<sub>3</sub> in the ambient air and that revision is needed to provide additional protection.

In considering the adequacy of the current secondary O<sub>3</sub> standard, the Administrator has carefully considered the available evidence, analyses and conclusions contained in the ISA, including information newly available in this review; the information, quantitative assessments, considerations and conclusions presented in the PA; the advice and recommendations from CASAC; and public comments. The Administrator gives primary consideration to the evidence of growth

effects in well-studied tree species and information, presented in the PA and represented with a narrower focus in section IV.B.2 above, on cumulative exposures occurring in Class I areas when the current standard is met. This information indicates the occurrence of exposures associated with Class I areas during periods when the current standard is met for which associated estimates of growth effects, in terms of the tree seedling RBL in the median species for which E-R functions have been established, extend above a magnitude considered to be "unacceptably high" by CASAC. This analysis estimated such cumulative exposures occurring under the current standard for nearly a dozen areas, distributed across two NOAA climatic regions of the U.S. The Administrator gives particular weight to this analysis, given its focus in Class I areas. Such an emphasis on lands afforded special government protections, such as national parks and forests, wildlife refuges, and wilderness areas, some of which are designated Class I areas under the CAA, is consistent with such emphasis in the 2008 revision of the secondary standard (73 FR 16485, March 27, 2008). As noted in section IV.A above, Congress has set such lands aside for specific uses that are intended to provide benefits to the public welfare, including lands that are to be protected so as to conserve the scenic value and the natural vegetation and wildlife within such areas, and to leave them unimpaired for the enjoyment of future generations. The Administrator additionally recognizes that states, tribes and public interest groups also set aside areas that are intended to provide similar benefits to the public welfare for residents on those lands, as well as for visitors to those areas.

As noted in prior reviews, judgments regarding effects that are adverse to public welfare consider the intended use of the ecological receptors, resources and ecosystems affected. Thus, the Administrator recognizes that the median RBL estimate for the studied species is a quantitative tool within a larger framework of considerations pertaining to the public welfare significance of O<sub>3</sub> effects on the public welfare. Such considerations include effects that are associated with effects on growth and that the ISA has determined to be causally or likely causally related to O<sub>3</sub> in ambient air, yet for which there are greater uncertainties affecting our estimates of impacts on public welfare. These other effects include reduced productivity in terrestrial ecosystems, reduced carbon

sequestration in terrestrial ecosystems, alteration of terrestrial community composition, alteration of below-grown biogeochemical cycles, and alteration of terrestrial ecosystem water cycles, as summarized in section IV.A.1. Thus, in her attention to CASAC's characterization of a 6% estimate for tree seedling RBL in the median studied species as "unacceptably high", the Administrator, while mindful of uncertainties with regard to the magnitude of growth impact that might be expected in mature trees, is also mindful of related, broader, ecosystem-level effects for which our tools for quantitative estimates are more uncertain and those for which the policy foundation for consideration of public welfare impacts is less well established. She finds her consideration of tree growth effects consistent with CASAC advice regarding consideration of O<sub>3</sub>-related biomass loss as a surrogate for the broader array of O<sub>3</sub> effects at the plant and ecosystem levels.

The Administrator also recognizes that O<sub>3</sub>-related effects on sensitive vegetation can occur in other areas that have not been afforded special federal protections, including effects on vegetation growing in managed city parks and residential or commercial settings, such as ornamentals used in urban/suburban landscaping or vegetation grown in land use categories that are heavily managed for commercial production of commodities such as timber. In her consideration of the evidence and quantitative information of O<sub>3</sub> effects on crops, the Administrator recognizes the complexity of considering adverse O<sub>3</sub> impacts to public welfare due to the heavy management common for achieving optimum yields and market factors that influence associated services. In so doing, she notes that her judgments that place emphasis on the protection of forested ecosystems inherently also recognize a level of protection for crops. Additionally, for vegetation used for residential or commercial ornamental purposes, the Administrator believes that there is not adequate information specific to vegetation used for those purposes, but notes that a secondary standard revised to provide protection for sensitive natural vegetation and ecosystems would likely also provide some degree of protection for such vegetation.

The Administrator also takes note of the long-established evidence of consistent association of the presence of visible foliar injury with O<sub>3</sub> exposure and the currently available information that indicates the occurrence of visible foliar injury in sensitive species of

vegetation during recent air quality in public forests across the U.S. She additionally notes the PA conclusions regarding difficulties in quantitatively relating visible foliar injury symptoms to vegetation effects such as growth or related ecosystem effects. As at the time of the last review, the Administrator believes that the degree to which such effects should be considered to be adverse depends on the intended use of the vegetation and its significance. The Administrator also believes that the significance of O<sub>3</sub>-induced visible foliar injury depends on the extent and severity of the injury and takes note of studies in the evidence base documenting increased severity and/or prevalence with higher O<sub>3</sub> exposures. However, the Administrator takes note of limitations in the available information with regard to judging the extent to which the extent and severity of visible foliar injury occurrence associated with conditions allowed by the current standard may be considered adverse to public welfare.

Based on these considerations, and taking into consideration the advice and recommendations of CASAC, the Administrator concludes that the protection afforded by the current secondary O<sub>3</sub> standard is not sufficient and that the standard needs to be revised to provide additional protection from known and anticipated adverse effects to public welfare, related to effects on sensitive vegetation and ecosystems, most particularly those occurring in Class I areas. The Administrator additionally recognizes that states, tribes and public interest groups also set aside areas that are intended to provide similar benefits to the public welfare for residents on those lands, as well as for visitors to those areas. Given the clear public interest in and value of maintaining these areas in a condition that does not impair their intended use, and the fact that many of these areas contain O<sub>3</sub>-sensitive vegetation, the Administrator further concludes that it is appropriate to revise the secondary standard in part to provide increased protection against O<sub>3</sub>-caused impairment to vegetation and ecosystems in such areas, which have been specially protected to provide public welfare benefits. She further notes that a revised standard would provide increased protection for other growth-related effects, including for crop yield loss, reduced carbon storage and for areas for which it is more difficult to determine public welfare significance, as recognized in section IV.A.3 above, as well other welfare

effects of O<sub>3</sub>, such as visible foliar injury.

### *C. Conclusions on Revision of the Secondary Standard*

The elements of the standard—indicator, averaging time, form, and level—serve to define the standard and are considered collectively in evaluating the welfare protection afforded by the secondary standard. Section IV.C.1 below summarizes the basis for the proposed revision. Significant comments received from the public on the proposal are discussed in section IV.C.2 and the Administrator's final decision on revisions to the secondary standard is described in section IV.C.3.

#### 1. Basis for Proposed Revision

At the time of proposal, in considering what revisions to the secondary standard would be appropriate, the Administrator considered the ISA conclusions regarding the weight of the evidence for a range of welfare effects associated with O<sub>3</sub> in ambient air and associated areas of uncertainty; quantitative risk and exposure analyses in the WREA for different adjusted air quality scenarios and associated limitations and uncertainties; staff evaluations of the evidence, exposure/risk information and air quality information in the PA; additional air quality analyses of relationships between air quality metrics based on form and averaging time of the current standards and a cumulative seasonal exposure index; CASAC advice; and public comments received as of that date in the review. In the paragraphs below, we summarize the proposal presentation with regard to key aspects of the PA considerations, advice from the CASAC, air quality analyses of different air quality metrics and the Administrator's proposed conclusions, drawing from section IV.E of the proposal.

#### a. Considerations and Conclusions in the PA

As summarized in the proposal, in identifying alternative secondary standards appropriate to consider in this review, the PA focused on standards based on a cumulative, seasonal, concentration-weighted form consistent with the CASAC advice in the current and last review. Based on conclusions of the ISA, as also summarized in section IV.A above, the PA considered a cumulative, seasonal, concentration-weighted exposure index to provide the most scientifically defensible approach for characterizing vegetation response to ambient O<sub>3</sub> and comparing study findings, as well as for defining indices

for vegetation protection, as summarized in the proposal section IV.E.2.a. With regard to the appropriate index, the PA considered the evidence for a number of different such indices, as described in the proposal, and noted the ISA conclusion that the W126 index has some important advantages over other similarly weighted indices. The PA additionally considered the appropriate diurnal and seasonal exposure periods in a given year by which to define the seasonal W126 index and based on the evidence in the ISA and CASAC advice, as summarized in the proposal, decided on the 12-hour daylight window (8:00 a.m. to 8:00 p.m.) and the 3-consecutive-month period providing the maximum W126 index value.

Based on these considerations, the PA concluded it to be appropriate to retain the current indicator of O<sub>3</sub> and to consider a secondary standard form that is an average of the seasonal W126 index values (derived as described in section IV.A.1.c above) across three consecutive years (U.S. EPA, 2014c, section 6.6). In so doing, the PA recognized that there is limited information to discern differences in the level of protection afforded for cumulative growth-related effects by potential alternative W126-based standards of a single-year form as compared to a 3-year form (U.S. EPA, 2014c, pp. 6–30). The PA concluded a 3-year form to be appropriate for a standard intended to provide the desired level of protection from longer-term effects, including those associated with potential compounding, and that such a form might be concluded to contribute to greater stability in air quality management programs, and thus, greater effectiveness in achieving the desired level of public welfare protection than might result from a single-year form. (U.S. EPA, 2014c, section 6.6).

As summarized in the proposal, the PA noted that, due to the variability in the importance of the associated ecosystem services provided by different species at different exposures and in different locations, as well as differences in associated uncertainties and limitations, it is essential to consider the species present and their public welfare significance, together with the magnitude of the ambient concentrations in drawing conclusions regarding the significance or magnitude of public welfare impacts. Therefore, in development of the PA conclusions, staff took note of the complexity of judgments to be made by the Administrator regarding the adversity of known and anticipated effects to the

public welfare and recognized that the Administrator's ultimate judgments on the secondary standard will most appropriately reflect an interpretation of the available scientific evidence and exposure/risk information that neither overstates nor understates the strengths and limitations of that evidence and information. In considering an appropriate range of levels to consider for an alternative standard, the PA primarily considered tree growth, crop yield loss, and visible foliar injury, as well as impacts on the associated ecosystem services, while noting key uncertainties and limitations.

In specifically evaluating exposure levels, in terms of the W126 index, as to their appropriateness for consideration in this review with regard to providing the desired level of vegetation protection for a revised secondary standard, the PA focused particularly on RBL estimates for the median across the 11 tree species for which robust E-R functions are available. Table 4 below presents these estimates (U.S. EPA, 2014c, Appendix 5C, Table 5C-3; also summarized in Table 8 of the proposal). In so doing and recognizing the longstanding, strong evidence base supporting these relationships, the PA also noted

uncertainties regarding inter-study variability for some species, as well as with regard to the extent to which tree seedling E-R functions can be used to represent mature trees. As summarized in the proposal, the PA conclusions on a range of W126 levels appropriate to consider are based on specific advice from CASAC with regard to median tree seedling RBL estimates that might be considered unacceptably high (6%), as well as its judgment on a RBL benchmark (2%) for identification of the lower end of a W126 index value range for consideration that might give more emphasis to the more sensitive tree seedlings (Frey, 2014c, p. 14).<sup>196</sup>

TABLE 4—TREE SEEDLING BIOMASS LOSS AND CROP YIELD LOSS ESTIMATED FOR O<sub>3</sub> EXPOSURE OVER A SEASON

W126 index value for exposure period	Tree seedling biomass loss <sup>A</sup>		Crop yield loss <sup>B</sup>	
	Median value	Individual species	Median value	Individual species
23 ppm-hrs .....	Median species w. 7.6% loss	≤ 2% loss: 3/11 species .... ≤ 5% loss: 4/11 species .... ≤ 10% loss: 8/11 species ... ≤ 15% loss: 10/11 species ... >40% loss: 1/11 species ...	Median species w. 8.8% loss	≤ 5% loss: 4/10 species >5, <10% loss: 1/10 species >10, <20% loss: 4/10 species >20: 1/10 species
22 ppm-hrs .....	Median species w. 7.2% loss	≤ 2% loss: 3/11 species .... ≤ 5% loss: 4/11 species .... ≤ 10% loss: 7/11 species ... ≤ 15% loss: 10/11 species ... >40% loss: 1/11 species ...	Median species w. 8.2% loss	≤ 5% loss: 4/10 species >5, <10% loss: 1/10 species >10, <20% loss: 4/10 species >20: 1/10 species
21 ppm-hrs .....	Median species w. 6.8% loss	≤ 2% loss: 3/11 species .... ≤ 5% loss: 4/11 species .... ≤ 10% loss: 7/11 species ... ≤ 15% loss: 10/11 species ... >40% loss: 1/11 species ...	Median species w. 7.7% loss	≤ 5% loss: 4/10 species >5, <10% loss: 3/10 species >10, <20% loss: 3/10 species
20 ppm-hrs .....	Median species w. 6.4% loss	≤ 2% loss: 3/11 species .... ≤ 5% loss: 5/11 species .... ≤ 10% loss: 7/11 species ... ≤ 15% loss: 10/11 species ... >40% loss: 1/11 species ...	Median species w. 7.1% loss	≤ 5% loss: 5/10 species >5, <10% loss: 3/10 species >10, <20% loss: 2/10 species
19 ppm-hrs .....	Median species w. 6.0% loss	≤ 2% loss: 3/11 species .... ≤ 5% loss: 5/11 species .... ≤ 10% loss: 7/11 species ... ≤ 15% loss: 10/11 species ... >30% loss: 1/11 species ...	Median species w. 6.4% loss	≤ 5% loss: 5/10 species >5, <10% loss: 3/10 species >10, <20% loss: 2/10 species
18 ppm-hrs .....	Median species w. 5.7% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 5/11 species .... ≤ 10% loss: 7/11 species ... ≤ 15% loss: 10/11 species ... >30% loss: 1/11 species ...	Median species w. 5.7% loss	≤ 5% loss: 5/10 species >5, <10% loss: 3/10 species >10, <20% loss: 2/10 species
17 ppm-hrs .....	Median species w. 5.3% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 5/11 species .... ≤ 10% loss: 9/11 species ... ≤ 15% loss: 10/11 species ... >30% loss: 1/11 species ...	Median species w. 5.1% loss	≤ 5% loss: 5/10 species >5, <10% loss: 3/10 species >10, <20% loss: 2/10 species
16 ppm-hrs .....	Median species w. 4.9% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 6/11 species .... ≤ 10% loss: 10/11 species ... >30% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: 5/10 species >5, <10% loss: 4/10 species >10, <20% loss: 1/10 species
15 ppm-hrs .....	Median species w. 4.5% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 6/11 species .... ≤ 10% loss: 10/11 species ... >30% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: 6/10 species >5, <10% loss: 4/10 species
14 ppm-hrs .....	Median species w. 4.2% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 6/11 species .... ≤ 10% loss: 10/11 species ... >30% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: 6/10 species >5, <10% loss: 4/10 species
13 ppm-hrs .....	Median species w. 3.8% loss	≤ 2% loss: 5/11 species .... <5% loss: 7/11 species .... <10% loss: 10/11 species ... >20% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: 6/10 species >5, <10% loss: 4/10 species

<sup>196</sup> The CASAC provided several comments related to 2% RBL for tree seedlings both with

regard to its use in summarizing WREA results and with regard to consideration of the potential

significance of vegetation effects, as summarized in sections IV.D.2 and IV.E.3 of the proposal.

TABLE 4—TREE SEEDLING BIOMASS LOSS AND CROP YIELD LOSS ESTIMATED FOR O<sub>3</sub> EXPOSURE OVER A SEASON—Continued

W126 index value for exposure period	Tree seedling biomass loss <sup>A</sup>		Crop yield loss <sup>B</sup>	
	Median value	Individual species	Median value	Individual species
12 ppm-hrs .....	Median species w. 3.5% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 8/11 species .... ≤ 10% loss: 10/11 species .... >20% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: 8/10 species >5, <10% loss: 2/10 species
11 ppm-hrs .....	Median species w. 3.1% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 8/11 species ..... ≤ 10% loss: 10/11 species .... >20% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: 9/10 species >5, <10% loss: 1/10 species
10 ppm-hrs .....	Median species w. 2.8% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 9/11 species .... <10% loss: 10/11 species .... >20% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: 9/10 species >5, <10% loss: 1/10 species
9 ppm-hrs .....	Median species w. 2.4% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 10/11 species .. >20% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: all species
8 ppm-hrs .....	Median species w. 2.0% loss	≤ 2% loss: 5/11 species .... ≤ 5% loss: 10/11 species .. >15% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: all species
7 ppm-hrs .....	Median species w. <2.0% loss	≤ 2% loss: 7/11 species .... ≤ 5% loss: 10/11 species ... >15% loss: 1/11 species ...	Median species w. ≤5.0% loss	≤ 5% loss: all species

<sup>A</sup> Estimates here are based on the E–R functions for 11 species described in the WREA, section 6.2 and discussed in the PA, section 5.2.1. The cottonwood was excluded to address CASAC comments (Frey, 2014c; U.S. EPA, 2014b, U.S. EPA, 2014c, Appendix 6F). The median is the median of the 11 composite E–R functions (U.S. EPA, 2014c, Appendix 5C).

<sup>B</sup> Estimates here are based on the 10 E–R functions for crops described in the WREA, section 6.2 and discussed in the PA, section 5.3.1. The median is the median of the 10 composite E–R functions (U.S. EPA, 2014b; U.S. EPA, 2014c, Appendix 5C).

With regard to secondary standard revisions appropriate to consider in this review, as summarized in the proposal, the PA concluded it to be appropriate to consider a W126-based secondary standard with index values within the range of 7 to 17 ppm-hrs and a form averaged over 3 years (U.S. EPA, 2014c, section 6.7). The PA additionally recognized the role of policy judgments required of the Administrator with regard to the public welfare significance of identified effects, the appropriate weight to assign the range of uncertainties inherent in the evidence and analyses, and ultimately, in identifying the requisite protection for the secondary O<sub>3</sub> standard.

The PA additionally recognized that to the extent the Administrator finds it useful to consider the public welfare protection that might be afforded by revising the level of the current standard, this is appropriately judged by evaluating the impact of associated O<sub>3</sub> exposures in terms of the cumulative seasonal W126-based index, an exposure metric considered appropriate for evaluating impacts on vegetation (U.S. EPA, 2014c, section 6.7). Accordingly, the PA included several air quality data analyses that might inform such consideration (U.S. EPA, 2014c, section 6.4). Additional air quality analyses were performed subsequent to the PA, described in the proposal and are summarized below.

b. CASAC Advice

Advice received from the CASAC during the current review, similar to that in the last review, recommended retaining O<sub>3</sub> as the indicator, while also recommending consideration of a secondary standard with a revised form and averaging time based on the W126 index (Frey, 2014c, p. iii). The CASAC concurred with the 12-hour period (8 a.m. to 8 p.m.) and 3-month summation period resulting in the maximum W126 index value, as described in the PA, while recommending a somewhat narrower range of levels from 7 ppm-hrs to 15 ppm-hrs. While the CASAC recommended a W126 index limited to a single year, in contrast with the PA’s conclusion that it was appropriate to consider the W126 index averaged across three years, it also noted that the Administrator may prefer, as a policy matter, to base the secondary standard on a 3-year averaging period. In such a case, the CASAC recommended revising downward the level for such a metric to avoid a seasonal W126 index value above a level in their recommended range in any given year of the 3-year period, indicating an upper end of 13 ppm-hrs as an example for such a 3-year average W126 index range (Frey, 2014c, p. iii and iv).

c. Air Quality Analyses

The proposal additionally summarized several analyses of air quality that considered relationships

between metrics based on a 3-year W126 index and based on the form and averaging time of the current standard, the “fourth-high” metric (U.S. EPA, 2014c, Chapter 2, Appendix 2B and section 6.4; Wells, 2014a), as well as describing the uncertainties and limitations associated with these analyses. The proposal concluded that these analyses suggest that, depending on the level, a standard of the current averaging time and form can be expected to control cumulative seasonal O<sub>3</sub> exposures to such that they may meet specific 3-year average W126 index values. The fourth-high and W126 metrics, and changes in the two metrics over the past decade, were found to be highly correlated (U.S. EPA, 2014c, section 6.4 and Appendix 2B; Wells, 2014a). From these analyses, it was concluded that future control programs designed to help meet a standard based on the fourth-high metric are also expected to result in reductions in values of the W126 metric (Wells, 2014a). Further, the second analysis also found that the Southwest and West NOAA climatic regions, which showed the greatest potential for sites to measure elevated cumulative, seasonal O<sub>3</sub> exposures without the occurrence of elevated daily maximum 8-hour average O<sub>3</sub> concentrations, exhibited the greatest reduction in W126 metric value per unit reduction in fourth-high metric (Wells, 2014a, Figures 5b and 12 and Table 6).

Analyses of the most recent periods studied in the two analyses (2009–2011 and 2011–2013) had similar findings regarding the highest W126 metric values occurring at monitoring sites that meet alternative levels of the fourth-high metric (U.S. EPA, 2014c, section 6.4; Wells, 2014a). In both analyses, the highest W126 metric values were in the Southwest and West NOAA climatic regions. In both analyses, no monitoring sites for which the fourth-high metric was at or below 70 ppb had a W126 metric value above 17 ppm-hrs (U.S. EPA, 2014c, Figure 2B–3b; Wells, 2014a, Table 4). All U.S. regions were represented in these subsets. In the 2011–2013 subset of sites for which the fourth-high metric was at or below a potential alternative primary standard level of 65 ppb, no monitoring sites had W126 metric values above 11 ppm-hrs (Wells, 2014a, Table 4).

#### d. Administrator's Proposed Conclusions

At the time of proposal, the Administrator concluded it to be appropriate to continue to use O<sub>3</sub> as the indicator for a secondary standard that is intended to address effects associated with exposure to O<sub>3</sub> alone and in combination with related photochemical oxidants. While the complex atmospheric chemistry in which O<sub>3</sub> plays a key role has been highlighted in this review, no alternatives to O<sub>3</sub> have been advanced as being a more appropriate surrogate for ambient photochemical oxidants and their effects on vegetation. The CASAC agreed that O<sub>3</sub> should be retained as the indicator for the standard (Frey, 2014c, p. iii). In proposing to retain O<sub>3</sub> as the indicator, the Administrator recognized that measures leading to reductions in ecosystem exposures to O<sub>3</sub> would also be expected to reduce exposures to other photochemical oxidants.

The Administrator proposed to retain the current averaging time and form and to revise the level of the current secondary standard to a level within the range of 0.065 to 0.070 ppm. She based this proposal on her provisional conclusions regarding the level of cumulative seasonal O<sub>3</sub> exposures that would provide the requisite protection against known or anticipated adverse effects to the public welfare and on a policy option that would provide this level of protection. With regard to the former, the Administrator concluded that in judging the extent of public welfare protection that might be afforded by a revised standard and whether it meets the appropriate level of protection, it is appropriate to use a cumulative, seasonal concentration-

weighted exposure metric. For this purpose, the Administrator concluded it to be appropriate to use the W126 index value, averaged across three years, with each year's value identified as that for the 3-month period yielding the highest seasonal value and with daily O<sub>3</sub> exposures within a 3-month period cumulated for the 12-hour period from 8:00 a.m. to 8:00 p.m.

To identify the range of cumulative seasonal exposures, in terms of the W126 index, expected to be associated with the appropriate degree of public welfare protection, the Administrator gave primary consideration to growth-related impacts, using tree seedling RBL estimates for a range of W126 exposure index values and CASAC advice regarding such estimates. Additionally taking into account judgments on important uncertainties and limitations inherent in the current available scientific evidence and quantitative assessments, and judgments regarding the extent to which different RBL estimates might be considered indicative of effects adverse to public welfare, the Administrator proposed that ambient O<sub>3</sub> concentrations resulting in cumulative seasonal O<sub>3</sub> exposures of a level within the range from 13 ppm-hrs to 17 ppm-hrs, in terms of a W126 index averaged across three consecutive years, would provide the requisite protection against known or anticipated adverse effects to the public welfare. In identifying policy options for a revised secondary standard that would control exposures to such an extent, the Administrator considered the results of air quality analyses that examined the responsiveness of cumulative exposures (in terms of the W126 index) to O<sub>3</sub> reductions in response to the current and prior standard for which the form and averaging time are summarized as a fourth-high metric, and also examined the extent to which cumulative exposures (in terms of the W126 index) may be limited by alternative levels of a metric based on the current standard averaging time and form. Based on the results of these analyses, she proposed that revision of the level of the current secondary standard to within the range of 0.065 to 0.070 ppm would be expected to provide the requisite public welfare protection, depending on final judgments concerning such requisite protection.

#### 2. Comments on Proposed Revision

Significant comments from the public regarding revisions to the secondary standard are addressed in the subsections below. We first discuss comments related to our consideration of growth-related effects and visible

foliar injury in identifying appropriate revisions to the standard (sections IV.C.2.a and IV.C.2.b). Next, we address comments related to the use of the W126 metric in evaluating vegetation effects and public welfare protection and comments related to the form and averaging time for the revised standard (sections IV.C.2.c and IV.C.2.d). Comments on revisions to the level of the standard are described in section IV.C.2.e, and those related to the way in which today's rulemaking addresses the 2013 court remand are addressed in section IV.C.2.f. Other significant comments related to consideration of a revised secondary standard, and that are based on relevant factors, are addressed in the Response to Comments document.

#### a. Consideration of Growth-Related Effects

In considering public comments received on the consideration of growth-related effects of O<sub>3</sub> in the context of the proposed decision on a revised secondary standard, we first note related advice and comments from the CASAC provided during development of the PA, stating, as summarized in section IV.B.1.b above, that "relative biomass loss for tree species, crop yield loss, and visible foliar injury are appropriate surrogates for a wide range of damage that is adverse to public welfare" (Frey, 2014c, p. 10). Additionally, in the context of different standard levels they considered appropriate for the EPA to consider, CASAC stated that it is appropriate to "include[] levels that aim for not greater than 2% RBL for the median tree species" and that a median tree species RBL of 6% is "unacceptably high" (Frey, 2014c, p. 14).<sup>197</sup> With respect to crop yield loss, CASAC points to a benchmark of 5%, stating that a crop RYL for median species over 5% is "unacceptably high" (Frey, 2014c, p. 13).

In addition, regarding consideration of RBL benchmarks for tree seedlings, the CASAC stated that "[a] 2% biomass loss is an appropriate scientifically based value to consider as a benchmark of adverse impact for long-lived perennial species such as trees, because effects are cumulative over multiple

<sup>197</sup> The CASAC made this comment while focusing on Table 6–1 in the second draft PA and the entry for 17 ppm-hrs (Frey, 2014c, p. 14). That table was revised for inclusion in the final PA in consideration of CASAC comments on the E–R function for eastern cottonwood, and after that revision, the median RBL estimate for 17 ppm-hrs in the final table (see Table 4 above) is below the value of 6% that CASAC described in this way.

years” (Frey, 2014c, p. 14).<sup>198</sup> With regard to this benchmark, the CASAC also commented that “it is appropriate to identify a range of levels of alternative W126-based standards that includes levels that aim for not greater than 2% RBL for the median tree species” in the PA (Frey, 2014c, p. 14). The CASAC noted that the “level of 7 ppm-hrs is the only level analyzed for which the relative biomass loss for the median tree species is less than or equal to 2 percent,” indicating that 7 ppm was appropriate as a lower bound for the recommended range (Frey, 2014c, p. 14).<sup>199</sup>

With regard to consideration of effects on crops, in addition to their comments regarding a median species RYL over 5% yield loss, noted above (Frey, 2014c, p. 13), the CASAC further noted that “[c]rop loss appears to be less sensitive than these other indicators, largely because of the CASAC judgment that a 5% yield loss represents an adverse impact, and in part due to more opportunities to alter management of annual crops” (Frey, 2014c, p. 14).

Comments from the public with regard to how the EPA considered growth-related effects in the proposed decision on a revised secondary standard varied. Generally, those commenters who recommended against revision of the standard expressed the view that RBL estimates based on the established E-R functions for the 11 studied species, and their pertinence to mature trees, were too uncertain to serve as a basis for judgments regarding public welfare protection afforded by the secondary standard. The EPA generally disagrees with this view, as discussed in section IV.B.2 above, and addressed in more detail in the Response to Comments document.

Some commenters also took note of the unclear basis for CASAC’s 2% benchmark, stating that the CASAC advice on this point is “not wholly scientific,” given that it referenced the 1996 workshop, which provided little specificity as to scientific basis for such a benchmark; based on this, the

commenters described this CASAC advice as a policy judgment and described the important role of the EPA’s judgment in such instances. As noted in section IV.E.3 of the proposal, we generally agree with these commenters regarding the unclear scientific basis for the 2% value. Consistent with this advice from CASAC, however, the range of levels for a revised secondary standard that the PA concluded was appropriate for the Administrator to consider did include a level for which the estimated median RBL across the 11 studied tree species would be 2%, as well as a level for which the median RBL would be below 2% (U.S. EPA, 2014c, section 6.7 and Tables 6–1 and 5C–3), and, as described in the proposal, the Administrator considered the conclusions of the PA in reaching her proposed decision that it was appropriate to consider a range for the revised secondary standard that did not focus on this benchmark. The Administrator has further considered and explained any differences from CASAC’s recommendations on this point in her final decision, as described in section IV.C.3 below.

Some of the state and local environmental agencies and organizations and environmental groups that supported the EPA’s proposed decision to revise the secondary standard additionally indicated their view that the EPA should give more weight to growth-related effects by setting the standard at a level for which the estimated RBL would be at or below 2% in the median studied species. In support of this recommendation, the commenters cited the CASAC advice and stated that the EPA’s rationale deviates from that advice with regard to consideration of RBL. In so doing, the commenters implied incorrectly that the EPA’s proposal did not put the most weight on the median RBL. In fact, in considering RBL as a metric for growth effects, the Administrator’s proposed conclusions focused solely on the median RBL estimates, indicating that appreciable weight was given to growth-related effects and on the median RBL. Additionally, the commenters implied that the EPA misconstrued the CASAC comment on 6% RBL to indicate that it was acceptable. Yet, the proposal notes CASAC’s view that a 6% RBL is “unacceptably high” nine times, and, in section IV.B.3 above, the Administrator takes note of this view in reaching the decision that the current standard should be revised. The EPA considers this statement from CASAC, provided in the context of considering effects related to different W126 index values, to be of

a different nature than CASAC advice discussed above that options for the EPA consideration “include” a level that aims for median RBL at or below 2%.

The comments that state that the standard should control cumulative exposures to levels for which the estimated median species RBL is at or below 2% provided little rationale beyond citing to CASAC advice. We note, however, that the CASAC did not specify that the revised secondary standard be set to limit cumulative exposures to that extent. Nor, in identifying a range of alternatives for the EPA to consider, did CASAC recommend that the EPA consider *only* W126 index levels associated with median RBL estimates at or below 2%. Rather, the CASAC stated that “it is appropriate to identify a range of levels of alternative W126-based standards that *includes* {emphasis added} levels that aim for not greater than 2% RBL for the median tree species” (Frey, 2014c, p. 14) and seven of the nine levels in the CASAC-recommended range of W126 index levels were associated with higher RBL estimates (as shown in Table 4 above).

In citing to CASAC advice, commenters quoted the CASAC characterization of a 2% RBL as “an appropriate scientifically based value to consider as a benchmark of adverse impact for long-lived perennial species such as trees, because effects are cumulative over multiple years” (Frey, 2014, p. 14). Presumably to indicate reasoning for this statement, the subsequent sentence in the same CASAC letter referenced findings for biomass loss in aspen exposed to elevated O<sub>3</sub> over seven years, citing Wittig et al., 2009. As noted in the proposal, however, the way in which these findings would provide a basis for CASAC’s view with regard to 2% is unclear, as the original publication that is the source for the 7-year biomass loss value (King, et al., 2005) and which is cited in Wittig et al. (2009) indicates yearly RBL values during this 7-year exposure that are each well above 2%, and, in fact, are all above 20% (King, et al., 2005). In the same paragraph, the CASAC letter additionally referenced the report of the 1996 workshop sponsored by the Southern Oxidants Study group (Heck and Cowling, 1997, noted in section IV.A.3 above). The workshop report identified 1–2% per year growth reduction (based on a stated interest in avoiding 2% cumulative effects) as an appropriate endpoint for consideration of growth effects in trees, although an explicit rationale for the identified percentages is not provided

<sup>198</sup> The CASAC provided several comments related to 2% RBL for tree seedlings both with regard to its use in summarizing WREA results and with regard to consideration of the potential significance of vegetation effects, as summarized in sections IV.D.2 and IV.E.3 of the proposal.

<sup>199</sup> The CASAC made this comment while focusing on Table 6–1 in the second draft PA, which included odd-numbered W126 index values and in which the median RBL values were based on 12 species. That table was revised for inclusion in the final PA in consideration of CASAC comments on the E-R function for eastern cottonwood, such that the median RBL species estimate for both 7 ppm-hrs and 8 ppm-hrs are less than or equal to 2.0% in the final table (see Table 4 above and Table 5C–3 of the final PA).



(Frey, 2014c, p. 14).<sup>200</sup> Like the 1996 workshop, the CASAC describes 2% RBL as providing the basis for consideration of 7 ppm-hrs, the lower end of their recommended W126 range (Frey, 2014c, p. 14). As a result, the specific scientific basis for judging a value of 2% RBL in the median studied species as an appropriate benchmark of adverse impact for trees and other long-lived perennials is not clear, which, as described in the proposal, contributed to the Administrator noting the greater uncertainty regarding the extent to which estimates of benefits in terms of ecosystem services and reduced effects on vegetation at O<sub>3</sub> exposures below her identified range of 13 to 17 ppm-hrs might be judged significant to the public welfare.

Some commenters recommended revision of the standard to 7 ppm-hrs as a W126 form stating that such a change is needed to protect against climate change. In so doing, one commenter expressed the view that the relatively lesser weight the EPA placed on the WREA estimates of carbon storage (in terms of CO<sub>2</sub>) in consideration of a proposed revision to the secondary standard is inconsistent with the emphasis that the EPA placed on CO<sub>2</sub> emissions reductions estimated for the proposed Clean Power Plan (79 FR 34830, 34931–33). As support for this view of inconsistency, the commenter compared the WREA 30-year estimate of the amount of CO<sub>2</sub> removed from the air and stored in vegetation with estimated reductions in CO<sub>2</sub> emissions from power plants over a 4-year period. We note, however, some key distinctions between the two types of estimates which appropriately lead to different levels of emphasis by the EPA in the two actions. First, we note that the lengths of time pertaining to the two estimates that the commenter states to be “roughly equal” (e.g., ALA et al., p. 211) differ by more than a factor of seven (4 years compared to 30). Second, the CPP estimates are for reductions in CO<sub>2</sub> produced and emitted from power plants, while the WREA estimates are for amounts of CO<sub>2</sub> removed from the air and stored in vegetation as a result of plant photosynthesis occurring across the U.S. This leads to two important differences. The first is whether a ton of additional carbon uptake by plants is equal to a ton of reduced emissions from fossil fuels. This is still an active area of discussion due in part to the potentially transient

nature of the carbon storage in vegetation. The second is that there are much larger uncertainties involved in attempting to quantify the additional carbon uptake by plants which requires complex modeling of biological and ecological processes and their associated sources of uncertainty. Therefore, as summarized in section IV.C.3 below, the Administrator is judging, as at the time of proposal, that the quantitative uncertainties are too great to support identification of a revised standard based specifically on the WREA quantitative estimates of carbon storage benefits to climate. In so doing, she notes that a revised standard, established primarily based on other effects for which our quantitative estimates are less uncertain, can be expected to also provide increased protection in terms of carbon storage.

#### b. Consideration of Visible Foliar Injury

In considering public comments received on the EPA’s consideration of visible foliar injury in its decision on a revised secondary standard, the EPA first notes related advice and comments from the CASAC received during development of the PA. The CASAC stated that “[w]ith respect to the secondary standard, the CASAC concurs with the EPA’s identification of adverse welfare effects related to . . . damage to resource use from foliar injury” (Frey, 2014, p. iii). In its comments on levels of a W126-based standard, the CASAC, seemingly in reference to the WREA visible foliar injury analyses, additionally stated that “[a] level below 10 ppm-hrs is required to reduce foliar injury” (Frey, 2014, pp. iii and 15), with “W126 values below 10 ppm-hr required to reduce the number of sites showing visible foliar injury” (Frey, 2014, p. 14).

Public comments were generally split between two views, either that visible foliar injury was not appropriate to consider in decisions regarding the standard, based on variously identified reasons, or that it should be considered and it would lead the EPA to focus on a W126 value below approximately 10 ppm-hrs. Comments of the former type are discussed in section IV.B.2 above, with, in some cases, additional detail in the Response to Comments document. Commenters expressing the latter view variously cite CASAC advice and figures from the WREA cumulative analysis of USFS biosite data with WREA W126 index value estimates. The EPA disagrees that only a reduction in cumulative exposures to W126 index values below 10 ppm-hrs will affect the occurrence or extent of visible foliar injury. In so doing, we note that the

extensive evidence, which is summarized in the ISA (including studies of the USFS biomonitoring program), analyses in the 2007 Staff Paper and also observations based on the WREA dataset do not support this conclusion.

The evidence regarding visible foliar injury as an indicator of O<sub>3</sub> exposure is well established and generally documents a greater extent and severity of visible foliar injury with higher O<sub>3</sub> exposures and a modifying role of soil moisture conditions (U.S. EPA, 2013, section 9.4.2). As stated in the ISA, “[v]isible foliar injury resulting from exposure to O<sub>3</sub> has been well characterized and documented over several decades of research on many tree, shrub, herbaceous and crop species” and “[o]zone-induced visible foliar injury symptoms on certain bioindicator plant species are considered diagnostic as they have been verified experimentally” (U.S. EPA, 2013, p. 9–41). Further, a recent study highlighted in the ISA, which analyzed trends in the incidence and severity of foliar injury, reported a declining trend in the incidence of foliar injury as peak O<sub>3</sub> concentrations declined (U.S. EPA, 2013, p. 9–40; Smith, 2012). Another study available in this review that focused on O<sub>3</sub>-induced visible foliar injury in forests of west coast states observed that both percentage of biosites with injury and average biosite index were higher for sites with average cumulative O<sub>3</sub> concentrations above 25 ppm-hrs in terms of SUM06 (may correspond to W126 of approximately 21 ppm-hrs [U.S. EPA, 2007, p. 8–26, Appendix 7B]) as compared to groups of sites with lower average cumulative exposure concentrations, with much less clear differences between the two lower exposure groups (Campbell et al., 2007, Figures 27 and 28 and p. 30). A similar finding was reported in the 2007 Staff Paper which reported on an analysis that showed a smaller percentage of injured sites among the group of sites with O<sub>3</sub> exposures below a SUM06 metric of 15 ppm-hrs or a fourth-high metric of 74 ppb as compared to larger groups that also included sites with SUM06 values up to 25 ppm-hrs or fourth-high metric up to 84 ppb, respectively (U.S. EPA 2007, pp. 7–63 to 7–64).

With regard to the comments referencing the WREA cumulative analysis of USFS FHM/FIA biosite data or related CASAC comments, we note some clarification of this analysis. This analysis does not show, as implied by the comments, that at W126 index values above 10 ppm-hrs, there is little change with increasing W126 index in

<sup>200</sup> The report of the 1996 workshop provides no more explicit rationale for the percentages identified or specification with regard to number or proportion of species for which such percentages should be met (Heck and Cowling, 1997).

the proportion of records with any visible foliar injury (biosite index above 0). As the analysis is a cumulative analysis, each point graphed in the analysis includes the records for the same and lower W126 index values, so the analysis does not compare results for groups of records with differing, non-overlapping W126 index values. Rather, the points represent groups with records (and W126 index values) in common and the number of records in the groups is greater for higher W126 index values (U.S. EPA, 2014b, section 7.2). Additionally, we note that the pattern observed in the cumulative analysis is substantially influenced by the large number of records for which the W126 index estimates are at or below 11 ppm-hrs, more than two thirds of the dataset (Smith and Murphy, 2015, Table 1).

To more fully address the comments related to this WREA analysis, we have drawn several additional observations from the WREA dataset, re-presenting the same data in a different format in a technical memorandum to the docket (Smith and Murphy, 2015). Contrary to the implication of the statements from the commenters and CASAC that no reduction in the occurrence of visible foliar injury can be achieved with exposures above 10 ppm-hrs, both the proportion of records with injury and the average biosite index are lower for groups of records with W126 index estimates at or below 17 ppm-hrs compared to the group for the highest W126 index range. This is true when considered regardless of soil moisture conditions (all records), as well as for dry, normal and wet records, separately (Smith and Murphy, 2015, Table 2). The pattern of the two measures across record groups with lower W126 index values differs with moisture level, with the wetter than normal records generally showing decreasing proportions of injured sites and decreasing average biosite index with lower W126 index values, while little difference in these measures is seen among the middle W126 values although they are lower than the highest W126 index group and higher than the lowest W126 index group (Smith and Murphy, 2015, Table 2). In summary, the EPA disagrees with commenters, noting that the available information, including additional observations from the WREA dataset, indicate declines in the occurrence of visible foliar injury across decreasing W126 index values that are higher than 10 ppm-hrs.

#### c. Use of W126 Metric in Evaluating Vegetation Effects and Public Welfare Protection

In considering public comments received on the EPA's use of the W126 exposure index in its decision on a revised secondary standard, the EPA first notes related advice and comments from the CASAC received during development of the PA. Although we recognize that CASAC's comments on the W126 index were provided in the context of its recommendation for a secondary standard of that form, we find them to also relate to our use of the W126 metric in evaluating the magnitude and extent of vegetation effects that might be expected and conversely the level of protection that might be provided under different air quality conditions. In comments on the first draft PA, the CASAC stated that "discussions and conclusions on biologically relevant exposure metrics are clear and compelling and the focus on the W126 form is appropriate" (Frey and Samet, 2012a). With regard to specific aspects of the W126 index, the CASAC concurred with the second draft PA focus on "the biologically-relevant W126 index accumulated over a 12-hour period (8 a.m.–8 p.m.) over the 3-month summation period of a single year resulting in the maximum value of W126" (Frey, 2014c, p. iii).

The CASAC advice on levels of the W126 index on which to focus for public welfare protection recommended a level within the range of 7 ppm-hrs to 15 ppm-hrs (Frey, 2014c, p. iii). We note, however, as summarized in section IV.E.3 of the proposal, that this advice was provided in the context of the CASAC review of the second draft PA, which concluded that a range from 7 to 17 ppm-hrs was appropriate to consider. In considering the upper end of this range, the CASAC consulted Table 6–1 of the second draft PA which indicated for a W126 index value of 17 ppm-hrs an RBL estimate of 6%, a magnitude that CASAC described as "unacceptably high" and that contributed to a lack CASAC support for W126 exposures values higher than 15 ppm-hrs (Frey, 2014c, p. 14; U.S. EPA 2014d, Table 6–1). As noted in section IV.E.3 of the proposal, revisions to the RBL estimate table in the final PA, which were made in consideration of other CASAC comments, have resulted in changes to the median species RBL estimate associated with each W126 index value, such that the median species RBL estimate for a W126 index value of 17 ppm-hrs in this table in the final PA was 5.3%, rather than the "unacceptably high" value of 6% (U.S.

EPA, 2014c, Table 6–1; U.S. EPA, 2014d, Table 6–1; Frey, 2014c, p. 14).<sup>201</sup> Additionally, the CASAC recognized that the Administrator may, as a policy matter, prefer to use a 3-year average, and stated that in that case, the range of levels should be revised downward (Frey, 2014c, p. iii–iv).

The majority of comments on the W126 index concurred with its use for assessing O<sub>3</sub> exposures, while some commenters additionally expressed the view that this index should be used as the form of the secondary standard (as discussed in section IV.C.2.d below). Most submissions from state and local environmental agencies or governments, as well as organizations of state agencies, that provided comments on the magnitude of cumulative exposure, in terms of the W126 index, appropriate to consider for a revised secondary standard, recommended that the EPA focus on an index value within the EPA's proposed range of 13 to 17 ppm-hrs, as did the industry commenters. These commenters variously noted their agreement with the rationale provided by the EPA in the proposal or cited to CASAC comments, including for a downward adjustment of its recommended values if a 3-year average W126 was used rather than a single year index. Some other commenters, including two groups of environmental organizations, submitted comments recommending a focus on a W126 index level as low as 7 ppm-hrs based on reasons generally focused on consideration of visible foliar injury.

Some aspects of these comments have been addressed in sections IV.C.2.a and IV.C.2.b above. In the Response to Comments document, we have additionally addressed other comments that recommend a focus on W126 index values for specific reasons other than generally citing the CASAC recommended range. Further, in her consideration of a target level of protection for the revised secondary standard in section IV.C.3 below, the Administrator has considered comments from the CASAC regarding the basis for their recommended range.

An additional comment from an organization of western state air quality managers indicated a concern with the use of W126 for vegetation in arid and high altitude regions, such as those in the western states, which the

<sup>201</sup> We additionally note that the median species RBL estimate for 17 ppm-hrs in the final PA is nearly identical to the estimate for 15 ppm-hrs (the value corresponding to the upper end of the CASAC-identified range) that was in the second draft PA (5.2%) which was the subject of the CASAC review (U.S. EPA, 2014c, Table 6–1; U.S. EPA, 2014d, Table 6–1).

commenter hypothesized may have reduced sensitivity. The commenters did not provide evidence of this hypothesis, calling for further research in order to characterize the sensitivity of vegetation in such areas. The EPA agrees that additional research would be useful in more completely characterizing the response of species in such areas, as well as other less well studied areas, but does not find support in the currently available evidence for the commenter's suggestion that species in arid and high altitude regions may be less sensitive than those in other areas.<sup>202</sup>

Among the small number of commenters recommending against using the W126 metric to assess O<sub>3</sub> exposure, a few expressed the view that some other, not-yet-identified cumulative exposure metric should be used. These commenters cited a variety of concerns that they state are not addressed by the W126 index: that plant exposure to and uptake of O<sub>3</sub> are not always equivalent because of variations in stomatal conductance and plant defenses and their respective diel patterns, which will also influence plant response; that the duration between harmful O<sub>3</sub> exposures affects the plant's ability to repair damage; and, that nighttime exposures may be important. These commenters do not identify an alternative to the W126 index that they conclude to better represent exposures relevant to considering O<sub>3</sub> effects on vegetation and particularly for growth effects. The EPA has considered the items raised by these commenters, recognizing some as areas of uncertainty (U.S. EPA, 2013, pp. 9–109 to 9–113), yet has concluded that based on the information available at this time, exposure indices that cumulate and differentially weight the higher hourly average concentrations while also including the “mid-level” values offer the most appropriate approach for use in developing response functions and comparing studies of O<sub>3</sub> effects on vegetation (U.S. EPA, 2013, p. 9–117). When considering the response of vegetation to O<sub>3</sub> exposures represented by the threshold (*e.g.*, SUM06) and non-threshold (*e.g.*, W126) indices, the ISA notes that “the W126 metric does not have a cut-off in the weighting scheme as does SUM06 and thus it includes consideration of potentially damaging exposures below 60 ppb” and that “[t]he

W126 metric also adds increasing weight to hourly concentrations from about 40 ppb to about 100 ppb” (U.S. EPA, 2013, p. 9–104). This aspect of W126 is one way it differs from cut-off metrics such as the SUM06 where all concentrations above 60 ppb are treated equally and is identified by the ISA as “an important feature of the W126 since as hourly concentrations become higher, they become increasingly likely to overwhelm plant defenses and are known to be more detrimental to vegetation” (U.S. EPA, 2013, p. 9–104). Further, we note the concurrence by CASAC with the EPA's focus on the W126 exposure index, as noted above.

Some commenters also raised concerns regarding the sensitivity of vegetation in desert areas where plants take in ambient air during nighttime rather than daylight hours, such that little exposure occurs from 8 a.m. to 8 p.m., stating that the W126 index as defined by the EPA to cumulate hourly O<sub>3</sub> from 8 a.m. to 8 p.m. may result in an overly stringent exposure level in areas with such vegetation. The EPA recognizes that plants, such as cacti, that commonly occur in desert systems exhibit a particular type of metabolism (referred to as CAM photosynthesis) such that they only open their stomata at night (U.S. EPA, 2013, p. 9–109). We note, however, that few if any O<sub>3</sub> exposure studies of these species are available<sup>203</sup> to further inform our characterization of these species' responses to O<sub>3</sub>, and we have no basis on which to conclude that an exposure level based on the studied species and a daylight exposure metric would be overly or underly stringent in areas where only species utilizing CAM photosynthesis occur. As summarized above, the CASAC advice concurred with the use of an 8am to 8pm diurnal period for the W126 exposure index. Thus, we conclude that for our purposes in this review the focus on daylight hours is appropriate. Our use of the W126 index in this review has been for purposes of characterizing the potential harm and conversely the potential protection that might be afforded from the well-characterized effects of O<sub>3</sub> on vegetation, while recognizing associated uncertainties and limitations. We note that different ecosystems across the U.S. will be expected to be of varying sensitivities with regard to the effects of O<sub>3</sub>. For example, large water bodies without vegetation extending above the water's surface would be expected to be less sensitive than forests of sensitive

species. The EPA notes, however, that the NAAQS are set with applicability to all ambient air in the U.S., such that the secondary O<sub>3</sub> standard provides protection in areas across the U.S. regardless of site-specific aspects of vegetation sensitivity to O<sub>3</sub>. In considering the evidence on O<sub>3</sub> and associated welfare effects, we recognize variability in sensitivity that may relate to a number of factors, as discussed in the ISA (U.S. EPA, 2013, section 9.4.8). This variability is among the Administrator's considerations in setting the secondary standard for O<sub>3</sub> that is requisite to protect public welfare against anticipated or known adverse effects.

Further, some commenters who agreed with a focus on the W126 exposure index also stated that the EPA's definition of the index for the daylight hours of 8 a.m. to 8 p.m. and a 3-month period was not appropriate, stating that derivation of the W126 metric should involve summing concentrations for all 24 hours in each day and all months in each year to avoid underestimating O<sub>3</sub> exposure that the commenters viewed as pertinent. Support for the EPA's definition of the W126 index, with which CASAC concurred (Frey, 2014c, p. iii), is based on the assessment of the evidence in the ISA (U.S. EPA, 2013, section 9.5.3.2) and the context for use of the W126 index in relating O<sub>3</sub> exposure to magnitude and/or extent of O<sub>3</sub> response. This context has a particular focus on growth effects for the purposes of judging the potential for public welfare impacts, as well as the level of protection, associated with different exposure circumstances. We note that the ISA stated there is a lack of information that would allow consideration of the extent to which nocturnal exposures that may be of interest occur (U.S. EPA, 2013, p. 9–109). Additionally, in our use of the W126 index, we are relying on E–R functions based on studies that were generally of 3-month duration and involved controlled exposures during the daylight period. Accordingly we have relied on the E–R function derived for 12-hour and 3-month W126 indices, as described in section IV.A.1 above. To apply these E–R functions to the W126 estimates derived using 24 hours-per-day index values would inaccurately represent the response observed in the study (producing an overestimate). Similarly, with regard to the 3-month duration, “[d]espite the possibility that plants may be exposed to ambient O<sub>3</sub> longer than 3 months in some locations, there is generally a lack of exposure experiments conducted for longer than

<sup>202</sup> For example, we note that among the 11 species for which robust E–R functions have been established for O<sub>3</sub> effects on tree seedling growth, the sensitivity of ponderosa pine, a species occurring in arid and high altitude regions of the western U.S., is similar to the median (U.S. EPA, 2014c, Table 5C–1).

<sup>203</sup> No O<sub>3</sub> exposure studies on cacti or other species that utilize CAM photosynthesis are reported in the ISA (U.S. EPA, 2013).

3 months” (U.S. EPA, 2014c, p. 9–112). Thus, in consideration of the lack of support in the current evidence for characterizing exposure for purposes of estimating RBL based on cumulative exposures derived from a combination of daytime and nighttime exposures and consideration of year-round O<sub>3</sub> concentrations across the U.S., we disagree with the commenters’ view of the appropriateness of using an exposure index based on 24-hour, year-round O<sub>3</sub> concentrations.

The commenters supporting the use of the W126 exposure index were divided with regard to whether the EPA should focus on an annual index or one averaged over three years. Some of the commenters indicating support for the EPA’s proposed focus on a 3-year average W126 index stated that this was appropriate in light of the wide variations in W126 index values that can occur on a year-to-year basis as a result of the natural variation of climatic conditions that have a direct impact on O<sub>3</sub> formation; in their view, these factors are mitigated by use of a 3-yr average, which thus provides “stability” in the assessment dampening out the natural variation of climatic conditions that have a direct impact on O<sub>3</sub> formation. Others noted that use of a 3-year average may be supported as matter of policy. We generally concur with the relevance of these points, among others, to a focus on the 3-year average W126. Other commenters expressed the view that the EPA should focus on an annual W126 index, generally making these comments in the context of expressing their support for a secondary standard with a W126 form. These commenters variously cited CASAC advice and its rationale for preferring a single year W126 form, stated that vegetation damage occurs on an annual basis, and/or questioned the EPA’s statements of greater confidence in conclusions as to O<sub>3</sub> impacts based on a 3-year average exposure metric.

The EPA agrees with commenters that, as discussed in the PA and the proposal, depending on the exposure conditions, O<sub>3</sub> can contribute to measurable effects on vegetation in a single year. We additionally recognize that, as described in the PA and proposal, there is generally a greater significance for effects associated with multiple-year exposures. The proposal described a number of considerations raised in the PA as influencing the Administrator’s decision to focus on a 3-year average W126 index (79 FR 75347, December 17, 2014). These included, among others, the observation of a greater significance for effects associated with multiple-year exposures, and the

uncertainties associated with consideration of annual effects relative to multiple-year effects.

Further, we note that among the judgments contributing to the Administrator’s decision on the level of protection appropriate for the secondary standard are judgments regarding the weight to place on the evidence of specific vegetation-related effects estimated to result across a range of cumulative seasonal concentration-weighted O<sub>3</sub> exposures and judgments on the extent to which such effects in such areas may be considered adverse to public welfare (79 FR 75312, December 17, 2014). Thus, conclusions regarding the extent to which the size and/or prevalence of effects on vegetation in a single year and any ramifications for future years represent an adverse effect to the public welfare, conclusions that are also inherently linked to overall magnitudes of exposures, are dependent on the Administrator’s judgment. Accordingly, the decision regarding the need to focus on a 1-year or 3-year W126 index value is also a judgment of the Administrator, informed by the evidence, staff evaluations and advice from CASAC, as described in section IV.C.3 below.

#### d. Form and Averaging Time

In considering comments received on the proposed form for the revised standard, the EPA first notes the advice and comments from the CASAC, received in its review of the second draft PA. Similar to its advice in the last review, the CASAC recommended “establishing a revised form of the secondary standard to be the biologically relevant W126 index” (Frey, 2014c, p. iii). With regard to its reasons for this view, the CASAC cites the PA in stating that it “concur[s] with the justification in [section 5.7] that the form of the standard should be changed from the current 8-hr form to the cumulative W126 index” (Frey, 2014c, p. 12). In addressing specific aspects of this index, the CASAC concurred with the EPA’s focus on the 3-month period with the highest index value and further states that “[a]ccumulation over the 08:00 a.m.–08:00 p.m. daytime 12-hour period is a scientifically acceptable and recommended means of generalizing across latitudes and seasons” (Frey, 2014c, p. 13). As section 5.7 of the PA discusses the W126 index in the context of the support in the evidence for use of the W126 exposure index for assessing impacts of O<sub>3</sub> on vegetation and the extent of protection from such impacts, we interpret CASAC’s statement on this point to indicate that the basis for CASAC’s view with regard to the form

for the secondary standard relates to the appropriateness of the W126 exposure index for those assessment purposes.<sup>204</sup> <sup>205</sup>

The public comments on the form for a revised secondary standard were divided. Most of the state and local environmental agencies or governments, and all of the tribal agencies and organizations that provided comments on the form for the secondary standard concurred with the EPA’s proposed decision, as did the industry commenters. These commenters generally indicated agreement with the rationale provided in the proposal that drew from the EPA analyses of recent air quality data examining relationships at sites across the U.S. between values of the fourth-high metric (the current design value) and values of a 3-year average W126-based metric, stating that this analysis showed that a standard in the form of the fourth-high metric, as proposed, can provide air quality consistent with or below the range of 3-year W126 exposure index values identified in the proposal. Some commenters additionally stated that the choice of form was a policy decision for the EPA and that little or no additional protection of public welfare would be gained by adopting a W126-based form. Some of these commenters provided analyses of data for their state or region that further supported this view. As

<sup>204</sup> Section 5.7 of the PA states that “the evidence continues to provide a strong basis for concluding that it is appropriate to judge impacts of O<sub>3</sub> on vegetation, related effects and services, and the level of public welfare protection achieved, using a cumulative, seasonal exposure metric, such as the W126-based metric,” references the support of CASAC for a W126-based secondary standard, and then concludes that “based on the consistent and well-established evidence described above, . . . the most appropriate and biologically relevant way to relate O<sub>3</sub> exposure to plant growth, and to determine what would be adequate protection for public welfare effects attributable to the presence of O<sub>3</sub> in the ambient air, is to characterize exposures in terms of a cumulative seasonal form, and in particular the W126 metric” (U.S. EPA, 2014c, p. 5–78).

<sup>205</sup> The CASAC also mentioned its support for revising the secondary standard to a W126 index-based form in its review of Chapter 6 of the second draft PA (Frey, 2014c, p. 13). Similar to section 5.7, in that chapter of the PA staff concluded that “specific features associated with the W126 index still make it the most appropriate and biologically relevant cumulative concentration-weighted form for use in the context of the secondary O<sub>3</sub> NAAQS review” (U.S. EPA, 2014c, p. 6–5) and also concluded that “it is appropriate to consider a revised secondary standard in terms of the cumulative, seasonal, concentration-weighted form, the W126 index” (U.S. EPA, 2014c, p. 6–57).

<sup>206</sup> The term design value is commonly used to refer to the metric for the standard. Consistent with the summary in section I.D above, a design value is the statistic that describes the air quality of a given location in terms of the indicator, form and averaging time of the standard such that it can then be compared to the level of the standard.

described in section IV.C.3 below, the EPA generally agrees with these commenters.

Some commenters, including a regional organization of state agencies and two groups of environmental organizations, submitted comments recommending revision of the standard to a cumulative, seasonal form based on the W126 index. In support of their position, these commenters generally cited CASAC advice, variously additionally indicating their view that the standard form should be a metric described as biologically relevant, and that the existing form, with a level in the proposed range, would not provide adequate ecosystem protection. Some commenters additionally suggested that the EPA cannot lawfully retain the form and averaging time that were initially established for purposes of the primary standard when the EPA has identified the W126 index as a metric appropriate for judging vegetation-related effects on public welfare. With regard to the EPA air quality analyses, summarized in the proposal, of the W126 index values at sites where O<sub>3</sub> concentrations met different levels of fourth-high metric, some of these commenters stated that the analyses showed widespread variation in W126 values for each fourth-high metric examined. Further, some commenters disagreed with the EPA that the analyses indicated that a revised standard level within the proposed range would be expected to limit W126 exposures in the future to the extent suggested by the analyses of data from the past.

We agree with public commenters and CASAC regarding the appropriateness of the W126 index (the sum of hourly concentrations over a specified period) as a biologically relevant metric for assessing exposures of concern for vegetation-related public welfare effects, as discussed in the proposal, PA and ISA. Accordingly, we agree that this metric is appropriate for use in considering the protection that might be expected to be afforded by potential alternative secondary standards, as discussed in section IV.C.2.c above. We disagree with commenters, however, that use of the W126 metric for this purpose dictates that we must establish a secondary standard with a W126 index form.

In support of this position, we note the common use, in assessments conducted for NAAQS reviews, of exposure metrics that differ in a variety of ways from the ambient air concentration metrics of those

standards.<sup>206</sup> Across reviews for the various NAAQS pollutants, we have used a variety of exposure metrics to evaluate the protection afforded by the standards. These exposure metrics are based on the health or welfare effects evidence for the specific pollutant and commonly, in assessments for primary standards, on established exposure-response relationships or health-based benchmarks (doses or exposures of concern) for effects associated with specific exposure circumstances. Some examples of exposure metrics used to evaluate health impacts in primary standard reviews include the concentration of lead in blood of young children and a 5-minute exposure concentration for sulfur dioxide. In contrast, the health-based standards for these two pollutants are the 3-month concentration of lead in total suspended particles and the average across three years of the 99th percentile of 1-hour daily maximum concentration of sulfur dioxide in ambient air, respectively (73 FR 66964, November 12, 2008; 75 FR 35520, June 22, 2010). In somewhat similar manner, in the 2012 PM review, the EPA assessed the extent to which the existing 24-hour secondary standard for PM<sub>2.5</sub>, expressed as a 24-hour concentration (of PM<sub>2.5</sub> mass per cubic meter of air) not to be exceeded more than once per year on average over three years, could provide the desired protection from effects on visibility in terms of the 90th percentile, 24-hour average PM<sub>2.5</sub> light extinction, averaged over three years, based on speciated PM<sub>2.5</sub> mass concentrations and relative humidity data (79 FR 3086, January 15, 2013). Additionally, in the case of the screening-level risk analyses in the 2008 review of the secondary standard for lead, concentrations of lead in soil, surface water and sediment were evaluated to assess the potential for welfare effects related to lead deposition from air, while the standard is expressed in terms of the concentration of lead in particles suspended in air (73 FR 67009, November 12, 2008).

Further, depending on the evidence base, some NAAQS reviews may consider multiple exposure metrics in assessing risks associated with a particular pollutant in ambient air in order to judge the adequacy of an existing standard in providing the required level of protection. And a standard with an averaging time of one

<sup>206</sup>The term design value is commonly used to refer to the metric for the standard. Consistent with the summary in section I.D above, a design value is the statistic that describes the air quality of a given location in terms of the indicator, form and averaging time of the standard such that it can then be compared to the level of the standard.

duration may provide protection against effects elicited by exposures of appreciably shorter or longer durations. For example, in the current review of the primary O<sub>3</sub> standard, as described in section II above, we have considered the potential for effects associated with both short- and long-term exposures and concluded, based on a combination of air quality and risk analyses and the health effects evidence, that the existing standard with its short (8-hour) averaging time provides control of both the long and short term exposures (*e.g.*, from one hour to months or years) that may be of concern to public health. Similarly, during the 1996 review of the NO<sub>2</sub> primary standard, while health effects were recognized to result from both long-term and short-term exposures to NO<sub>2</sub>, the primary standard, which was a long-term (annual) standard, was concluded to provide the requisite protection against both long- and short-term exposures (61 FR 52852, Oct 8 1996). In the subsequent review of the NO<sub>2</sub> primary standard in which the available air quality information indicated that the annual standard was not providing the needed control of the shorter term exposures, an additional short-term standard was established (75 FR 6474, February 9, 2010).

Thus, we note that different metrics may logically, reasonably, and for technically sound reasons, be used in assessing exposures of concern or characterizing risk as compared to the metric of the standard which is used to control air quality to provide the desired degree of protection. That is, exposure metrics are used to assess the likely occurrence and/or frequency and extent of effects under different air quality conditions, while the air quality standards are intended to control air quality to the extent requisite to protect from the occurrence of public health or welfare effects judged to be adverse. In this review of the secondary standard for O<sub>3</sub>, the EPA agrees that, for the reasons summarized in section IV.A.1 above and described in the ISA, the W126 index—and not an 8-hour daily maximum concentration that has relevance in human health risk characterization, as described in section II above—is the appropriate metric for assessing exposures of concern for vegetation, characterizing risk to public welfare, and evaluating what air quality conditions might provide the desired degree of public welfare protection. We disagree, however, that the secondary standard must be established using that same metric.

Moreover, we note that the CAA does not require that the secondary O<sub>3</sub> standard be established in a specific

form. Section 109(b)(2) provides only that any secondary NAAQS “shall specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator, based on [the air quality] criteria, is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air. . . . [S]econdary standards may be revised in the same manner as promulgated.” The EPA interprets this provision to leave it considerable discretion to determine whether a particular form is appropriate, in combination with the other aspects of the standard (averaging time, level and indicator), for specifying the air quality that provides the requisite protection, and to determine whether, once a standard has been established in a particular form, that form must be revised. Moreover, nothing in the Act or the relevant case law precludes the EPA from establishing a secondary standard equivalent to the primary standard in some or all respects, as long as the Agency has engaged in reasoned decision-making.<sup>207</sup>

With regard to the commenter’s emphasis on advice from CASAC on the form of the secondary standard, the EPA agrees with the importance of giving such advice careful consideration. The EPA further notes, however, that the Administrator is not legally precluded from departing from CASAC’s recommendations, when she has provided an explanation of the reasons for such differences.<sup>208</sup> Accordingly, in reaching conclusions on the revised secondary standard in this review, the Administrator has given careful consideration to the CASAC advice in this review and, when she has differed from CASAC recommendations, she has fully explained the reasons and judgments that led her to a different conclusion, as described in section IV.C.3 below.

In disagreeing with the EPA’s conclusions drawn from analyses of recent air quality data on the extent to which cumulative seasonal exposures might be limited to within or below the identified 3-year average W126 index values by controlling air quality using different values for the fourth-high

metric, one group of environmental organizations emphasized the range of W126 index values that occur at monitors with concentrations at or below specific values for the fourth-high metric. For monitor observations for which the fourth-high metric was at or below 70 ppb, this commenter group stated that some sites have 3-year average W126 index values above 17 ppm-hrs and noted a maximum 3-year W126 index value of 19.1 ppm-hrs, while additionally noting occurrences of other W126 values above the CASAC range of 7 to 15 ppm-hrs. This commenter additionally stated that the air quality data “do not support a claim of congruence” between the fourth-high and W126 metrics (e.g., ALA et al., p. 196), that there is no basis for concluding that there is some fundamental underlying relationship that assures meeting the fourth-high metric will mean meeting any of the W126 options, and that the relationship between the metrics is non-linear with significant spread in the data (citing visual inspection of a graph).

The EPA does not agree with the commenter’s statements regarding the relationship between the two metrics.<sup>209</sup> We have not, as stated by the commenter, claimed there to be “congruence” between the two metrics (e.g., ALA et al., p. 196), or that the two metrics coincide exactly. Rather, at any location, values of both metrics are a reflection of the temporal distribution of hourly O<sub>3</sub> concentrations across the year and both vary in response to changes in that distribution. While the EPA’s air quality analysis shows that the specific relationship differs among individual sites, it documents an overall strong, positive, non-linear relationship between the two metrics (Wells, 2014a, p. 6, Figures 5a and 5b; Wells, 2015b). Further, this analysis finds the amount of year-to-year variability in the two metrics tended to decrease over time with decreasing O<sub>3</sub> concentrations, especially for the W126 metric, as described in section IV.E.4 of the proposal (Wells, 2014a; Wells, 2015b).

With regard to the highest 3-year average W126 exposure index values that might reasonably be expected in the future in areas where a revised standard with a fourth-high form is met, we disagree with the commenters as to the

significance of the W126 index value of 19.1 ppm-hrs in the 13-year dataset. This value, for a site during the period 2006–2008, is the only occurrence at or above 19 ppm-hrs in the nearly 4000 3-year W126 index values—across the 11 3-year periods extending back in time from 2013—for which the fourth-high metric for the same monitor location is at or below 70 ppb. This is clearly an isolated occurrence.

In considering this comment, we have expanded the technical memorandum that was available at the time of proposal (Wells, 2014a). The expanded memorandum describes the same air quality analyses for 3-year periods from 2001 through 2013 as the 2014 memorandum, and includes additional summary tables for all 3-year periods from 2001 through 2013 as well as tables for the most recent period, 2011–2013 (Wells, 2015b). After the 3-year W126 index value of 19 ppm-hrs, the next three highest 3-year average W126 index values, which are the only other such values above 17 ppm-hrs in the 13-year dataset, and which also occur during periods in the past, round to 18 ppm-hrs (Wells, 2015b). Additionally, we note that reductions in the fourth-high metric over the 13-year period analyzed are strongly associated with reductions in the cumulative W126 index (Wells, 2014a, Figure 11, Table 6; Wells, 2015b). Specifically, the regression analysis of changes in W126 index between the 2001–2003 period and the 2011–2013 period with changes in the fourth-high metric across the same periods indicates a fairly linear and positive relationship between reductions of the two types of metrics, with, on average, a change of approximately 0.7 ppm-hr in the W126 index per ppb change in the fourth-high metric value. From this information we conclude that W126 exposures above 17 ppm-hrs at sites for which the fourth-high metric is at or below 70 ppb would be expected to continue to be rare in the future, particularly as steps are taken to meet a 70 ppb standard.

With regard to the comment that the relationship between the two metrics varies across locations, the EPA agrees that there is variation in cumulative seasonal O<sub>3</sub> exposure (in terms of a 3-year average W126 index) among locations that are at or below the same fourth-high metric. As noted in the proposal, the analysis illustrates this variation, with the locations in the West and Southwest NOAA climatic regions tending to have the highest cumulative seasonal exposures for the same fourth-high metric value. In considering expectations for the future in light of this observation, however, we note that

<sup>207</sup> In fact, the D.C. Circuit has upheld secondary NAAQS that were identical to the corresponding primary standard for the pollutant (e.g., *ATA III*, 283 F.3d at 375, 380 [D.C. Cir. 2002, upholding secondary standards for PM<sub>2.5</sub> and O<sub>3</sub> that were identical to primary standards]).

<sup>208</sup> See CAA sections 307(d)(3) and 307(d)(6)(A); see also *Mississippi v. EPA*, 744 F.3d 1334, 1354 (D.C. Cir. 2013) (“Although EPA is not bound by CASAC’s recommendations, it must fully explain its reasons for any departure from them”).

<sup>209</sup> The EPA additionally notes that commenters contradict their own assertion when, after stating their view that no relationship exists between the 4th high and W126 metrics, the commenter then states that there is a nonlinear relationship and yet then relies on a predicted *linear* relationship to estimate W126 values occurring when air quality meets different values for the 4th high metric at 11 national parks.

the regional regressions of reductions in W126 metric with reductions in the fourth-high metric indicate that the Southwest and West regions, which had the greatest potential for sites having 3-year W126 index values greater than the various W126 values of interest when fourth-high values are less than or equal to the various fourth-high metric values of interest, also exhibited the greatest reduction in the W126 index values per unit reduction in the fourth-high values (Wells, 2015b). Thus, in considering the potential for occurrences of values above 17 ppm-hrs in the future in areas that meet a fourth-high of 70 ppb, the EPA notes that the analysis indicates that those areas that exhibited the greatest likelihood of occurrence of a 3-year W126 index above a level of interest (e.g., the commenters' example in the Southwest region of a value of 19.1 ppm-hrs [2006–2008] in comparison to the W126 level of 17 ppm-hrs) also exhibit the greatest improvement in W126 per unit decrease in fourth-high metric.<sup>210</sup> It is expected that future control programs designed to meet a standard with a fourth-high form would provide similar improvements in terms of the W126 metric.

As part of their rationale in support of revising the current form and averaging time, one commenter pointed to the regional variation in the highest W126 index values expected at sites that just meet a fourth-high metric of 70 ppb, based on the EPA's analysis of recent air quality data available at the time of the proposal (Wells, 2014a). This commenter observed that, while in some U.S. regions, locations that meet a potential alternative standard with the current form and a level of 70 ppb also have 3-year average W126 index values no higher than 17 ppm-hrs, the highest W126 index values in other parts of the country are lower. As a result, the commenter concluded that such a standard would result in regionally differing levels of welfare protection. The commenter additionally states that, for extreme values, a W126 form for the secondary standard would also offer different levels of protection, although with the primary standard setting the upper boundary for such values.

The EPA recognizes that a standard with the current form might be expected to result in regionally differing

distributions of W126 exposure index values (including different maximum values) depending on precursor sources, local meteorology, and patterns of O<sub>3</sub> formation. Variation in exposures is to be expected with any standard (secondary or primary) of any form. In fact, variation in exposures and any associated variation in welfare or health risk is generally an inherent aspect of the Administrator's judgment on a specific standard, and any associated variation in welfare or health protection may play a role in the Administrator's judgment with regard to public welfare or public health protection objectives for a national standard. In considering the comment, however, we have focused only on the extent to which the commenter's conclusion that a secondary standard of the current form and averaging time would provide regionally varying welfare protection might indicate that the specified air quality is more (or less) than necessary to achieve the purposes of the standard. In so doing, we additionally respond to a separate comment that the EPA needs to address how the revised secondary standard is neither more or less than necessary to protect the public welfare.

The CAA requirement in establishing a standard is that it be set at a level of air quality that is requisite, meaning "sufficient, but not more than necessary" (*Whitman v. American Trucking Ass'n*, 531 U.S. 457, 473 [2001]). We note that the air quality that is specified by the revised primary standard has been concluded to be "necessary" and it may be reasonable and appropriate to consider the stringency of the secondary standard in light of what is identified as "necessary" for the primary standard. The EPA considered the stringency of the O<sub>3</sub> secondary standard in this way in the 1979 decision (44 FR 8211, February 8, 1979), which was upheld in subsequent litigation (*API v. Costle*, 665 F.2d 1176 [D.C. Cir. 1991]). We note that, in similar manner, the commenter considered public welfare protection that might be afforded by the primary standard in noting that the primary standard would be expected to provide welfare protection from extreme values.<sup>211</sup>

<sup>211</sup> As described earlier in this section, the EPA has also considered the air quality specified by one secondary standard in a decision on the need for a second secondary standard. In the decision not to adopt a second PM<sub>2.5</sub> secondary standard specific to visibility-related welfare effects, the Administrator, after describing the public welfare protection objective related to visibility effects, considered analyses that related air quality associated with the existing secondary standard to that expected for the proposed visibility-focused secondary standard. From these analyses, she

In addressing the remand of the 2008 secondary standard in this rulemaking, as discussed in section IV.C.2.e below, the EPA recognizes that it must explain the basis for concluding that the standard selected by the Administrator specifies air quality that will provide the degree of public welfare protection needed from the secondary standard (*Mississippi v. EPA*, 744 F.3d 1334, 1360–61 [D.C. Cir. 2013]). In this review, the Administrator describes the degree or level of public welfare protection needed from the secondary standard and fully explains the basis for concluding that the standard selected specifies air quality that will provide that degree of protection. If the Administrator concludes that the level of air quality specified by the primary standard would provide sufficient protection against known or anticipated adverse public welfare effects, the EPA believes that a secondary standard with that indicator, level, form and averaging time could be considered to be requisite. If the level of air quality that areas will need to achieve or maintain for purposes of the primary standard also provides a level of air quality that is adequate to provide the level of protection identified for the secondary standard, there would be little purpose in requiring the EPA to establish a less stringent secondary standard. For these reasons, the expectation of regionally differing cumulative exposures under a secondary standard of the current form and averaging time does not lead us to conclude that the air quality specified by such a standard would be more (or less) than necessary (and thus not requisite) for the desired level of public welfare protection.

#### e. Revisions to the Standard Level

Some comments specifically addressed the level for a revised secondary standard of the current form and averaging time. Of the comments that addressed this, some from states or industry groups generally supported a level within the proposed range, frequently specifying the upper end of the range (70 ppb), while comments

concluded sufficient protection against visibility effects would be provided by the existing standard, and to the extent that the existing standard would provide more protection than had been her objective for such effects, adoption of a second secondary standard focused on visibility would not change that result (78 FR 3227–3228, January 15, 2013). This decision responded to a court remand of the prior EPA decision that visibility protection would be afforded by a secondary standard set equal to the primary standard based on the court's conclusion that the EPA had not adequately described the Administrator's objectives for visibility-related public welfare protection under the standard (*American Farm Bureau*, 559 F.3d at 530–531).

<sup>210</sup> Additionally, O<sub>3</sub> levels at any location are influenced by upwind precursor emissions, and many rural areas, including the site referenced by the commenter, are impacted by precursor emissions from upwind urban areas, such that as emissions are reduced to meet a revised standard in the upwind locations, reductions in those upwind emissions will contribute to reductions at the downwind sites (Wells, 2014a; ISA, pp. 3–129 to 3–133).

from tribes and tribal organizations, and a few others, recommended a level no higher than 65 ppb. The Administrator has considered such comments in reaching her decision on the appropriate revisions to the standard, described in section IV.C.3. Detailed aspects of these comments are discussed in the Response to Comments document.

#### f. 2013 Court Remand and Levels of Protection

Both industry groups and a group of environmental advocacy organizations submitted comments on the extent to which the proposal addressed the July 2013 remand of the secondary standard by the U.S. Court of Appeals for the D.C. Circuit. The former generally concluded that the proposal had adequately addressed the remand, while the latter expressed the view that the EPA had failed to comply with the court's remand because it had failed to identify the target levels of vegetation protection for which the proposed range of standards would provide the requisite protection, claiming that the identified W126 index range of 13–17 ppm-hrs was not based on a proposed level of protection against biomass loss, carbon storage loss, or foliar injury that the EPA had identified as requisite for public welfare.

We agree with the comments that state that we have addressed the court's remand. More specifically, with this rulemaking, including today's decision and the Administrator's conclusions described in section IV.C.3 below, the EPA has fully addressed the remand of the 2008 secondary O<sub>3</sub> standard. In *Mississippi v. EPA*, the D.C. Circuit remanded the 2008 secondary O<sub>3</sub> standard to the EPA for reconsideration because it had not adequately explained why that standard provided the requisite public welfare protection. 744 F.3d 1334, 1360–61 (D.C. Cir. 2013). In doing so, the court relied on the language of CAA section 109(b)(2), and the court's prior decision, *American Farm Bureau Federation v. EPA*, 559 F.3d 512, 528–32 (D.C. Cir. 2009), which came to the same conclusion for the 2006 secondary PM<sub>2.5</sub> standard. Both decisions recognize that the plain language of section 109(b)(2) requires the EPA to “specify a level of air quality the maintenance of which . . . is requisite to protect the public welfare from any known or anticipated adverse effects” (*Mississippi*, 744 F.3d at 1360 [citing *American Farm Bureau*, 559 F.3d at 530]). Further, explaining that it was insufficient for the EPA “merely to compare the level of protection afforded by the primary standard to possible secondary standards and to find the two

roughly equivalent” (*Mississippi*, 744 F.3d at 1360), the court rejected the EPA's justification for setting the secondary standard equivalent to the primary standard because that justification was based on comparing the protection from the primary standard to that expected from one possible standard with a cumulative, seasonal form (21 ppm-hrs) without stating that such a cumulative seasonal standard would be requisite to protect welfare or explaining why that would be so. Because the EPA had “failed to determine what level of protection was ‘requisite to protect the public welfare’” (*Mississippi*, 744 F.3d at 1362), the court found that the EPA's rationale failed to satisfy the requirements of the Act.

Today's rulemaking both satisfies the requirements of section 109(b)(2) of the Act and addresses the issues raised in the court's remand. In this rulemaking, the Administrator has established a revised secondary standard that replaces the remanded 2008 secondary standard. In so doing, based on her consideration of the currently available evidence and quantitative exposure and air quality information, as well as advice from CASAC and input from public comments, the Administrator has described the requisite public welfare protection for the secondary standard and explained how the standard selected specifies air quality that will provide that protection. As explained in detail in IV.C.3 below, in this review the Administrator is describing the public welfare protection she finds requisite in terms of seedling RBL in the median species, which serves as a surrogate for a broader array of O<sub>3</sub> effects at the plant and ecosystem levels. This description of the desired protection sufficiently articulates the standard that the Administrator is using to evaluate welfare protection. Further, the Administrator has considered air quality analyses in determining how to achieve the air quality conditions associated with the desired protection. Based on these analyses, the Administrator is determining that revising the level of the secondary standard to 70 ppb, while retaining the current form, averaging time, and indicator, specifies a level of air quality that will provide the requisite public welfare protection.

To the extent the comments suggest that the EPA is required in establishing a standard to identify a precise and quantified level of public welfare protection that is requisite with respect to every potentially adverse public welfare impact (e.g., visible foliar injury, crop yield loss) that is considered in establishing the standard, we disagree. While the D.C. Circuit has required the

EPA to “qualitatively describe the standard governing its selection of particular NAAQS,” it has expressly “rejected the notion that the Agency must establish a measure of the risk to safety it considers adequate to protect public health every time it establishes a NAAQS” (*ATA III*, 283 F.3d at 369 [internal marks and citations omitted]). That is, the EPA must “engage in reasoned decision-making,” but is not required to “definitively identify pollutant levels below which risks to public health are negligible” (*ATA III*, 283 F.3d at 370). This principle recognizes that the Act requires the EPA to establish NAAQS even when the risks or effects of a pollutant cannot be quantified or precisely identified because of scientific uncertainty concerning such effects at atmospheric concentrations (*ATA III*, 283 F.3d at 370). Though these decisions specifically address setting a primary standard under CAA section 109(b)(1), we believe the same principles apply to the parallel provision in section 109(b)(2) governing secondary standards. Accordingly, while the EPA recognizes that it must explain the basis for concluding that the standard selected by the Administrator specifies air quality that will provide the protection against adverse effects on public welfare needed from the secondary standard (*Mississippi v. EPA*, 744 F.3d 1334, 1360–61 [D.C. Cir. 2013]), the CAA does not require the EPA to precisely quantify the measure of protection that is necessary to protect the public welfare in establishing a secondary standard. In light of the Administrator's description of the desired public welfare protection in IV.C.3 below, which has both qualitative and quantitative components, the EPA is not required to further reduce this description to a precise, quantitative target level of vegetation protection. Moreover, nothing in the CAA or in case law requires the EPA to identify a target level of protection for any particular public welfare effect, such as vegetation effects, but rather leaves the Administrator discretion in judging how to describe the public welfare protection that she concludes is requisite. In IV.C.3 below, the Administrator explains her reasoning for giving primary focus to growth-related effects in describing the requisite welfare protection, rather than to other welfare effects such as foliar injury, for which there are more uncertainties and less predictability with respect to the severity of the effects that would be expected from varying O<sub>3</sub> exposures in the natural environment



and the significance of the associated impacts to public welfare.

### 3. Administrator's Conclusions on Revision

In reaching her decision on the appropriate revisions to the secondary standard, the Administrator has drawn on (1) the ISA conclusions regarding the weight of the evidence for a range of welfare effects associated with O<sub>3</sub> in ambient air, quantitative findings regarding air quality and ecosystem exposures associated with such effects, and associated limitations and uncertainties; (2) staff evaluations in the PA of the evidence summarized in the ISA, the exposure/risk information developed in the WREA and analyses of air quality monitoring information; (3) additional air quality analyses of relationships between air quality metrics based on form and averaging time of the current standard and the W126 cumulative seasonal exposure index; (4) CASAC advice; and (5) consideration of public comments. After giving careful consideration to all of this information, the Administrator believes that the conclusions and policy judgments supporting her proposed decision remain valid.

The Administrator concludes it is appropriate to continue to use O<sub>3</sub> as the indicator for a secondary standard intended to address adverse effects to public welfare associated with exposure to O<sub>3</sub> alone and in combination with related photochemical oxidants. In this review, no alternatives to O<sub>3</sub> have been advanced as being a more appropriate surrogate for ambient photochemical oxidants. Advice from CASAC concurs with the appropriateness of retaining the current indicator. Thus, as is the case for the primary standard (discussed above in section II.C.1), the Administrator has decided to retain O<sub>3</sub> as the indicator for the secondary standard. In so doing, she recognizes that measures leading to reductions in ecosystem exposures to O<sub>3</sub> would also be expected to reduce exposures to other photochemical oxidants.

In her decision on the other elements of the standard, the Administrator has considered the body of evidence and information in a systematic fashion, giving appropriate consideration to the important findings of the ISA as to the effects of O<sub>3</sub> in ambient air that may present risks to the public welfare, measures of exposure best formulated for assessment of these effects, associated evidence regarding ecosystem exposures and air quality associated with such effects; judgments regarding the weight to place on strengths, limitations and uncertainties

of this full body of information; and public welfare policy judgments on the appropriate degree of protection and the form and level of a revised standard that will provide such protection. In reaching her decision, the Administrator recognizes that the Act does not require that NAAQS be set at zero-risk or background levels, but rather at levels that reduce risk sufficiently to protect public welfare from known or anticipated adverse effects. In addition, we note that the elements of the standard (indicator, level, form, and averaging time) are considered together in assessing the protection provided by a new or revised standard, and the EPA's approach for considering the elements of a new or revised standard is part of the exercise of the judgment of the Administrator.

As an initial matter, the Administrator recognizes the robustness of the longstanding evidence, described in the ISA, of O<sub>3</sub> effects on vegetation and associated terrestrial ecosystems. The newly available studies and analyses have strengthened the evidence for the current review that provides the foundation for the Administrator's consideration of O<sub>3</sub> effects, associated public welfare protection objectives, and the revisions to the current standard needed to achieve those objectives. In light of the extensive evidence base in this regard, the Administrator focuses on protection against adverse public welfare effects of O<sub>3</sub> related effects on vegetation. In so doing, she takes note of effects that compromise plant function and productivity, with associated effects on ecosystems. She is particularly concerned about such effects in natural ecosystems, such as those in areas with protection designated by Congress for current and future generations, as well as areas similarly set aside by states, tribes and public interest groups with the intention of providing similar benefits to the public welfare. She additionally recognizes that providing protection for this purpose will also provide a level of protection for other vegetation that is used by the public and potentially affected by O<sub>3</sub> including timber, produce grown for consumption and horticultural plants used for landscaping.

A central issue in this review of the secondary standard, as in the last review (completed in 2008), has been consideration of the role for a cumulative seasonal exposure index. In the last review, the Administrator proposed such an index as one of two options for the form of a revised standard. The Administrator's decision in that review was to retain the existing

form and averaging time, while revising the standard level to provide the desired level of protection. As described in section IV.A above, this decision was remanded to the EPA in 2013 by the DC Circuit. In the current review, the ISA evaluates the evidence and concludes that, among the approaches investigated, quantifying exposure with a cumulative seasonal index best captures the aspects of exposure that relate to effects on vegetation, particularly those related to growth and yield. The PA considered this finding both in the context of assessing potential impacts, and, conversely, the protection from such impacts that might be realized, as well as in the context of using a cumulative seasonal exposure index as a form for the secondary standard. In the proposal, the Administrator focused on the former context, as an exposure index, while additionally soliciting comment on use of the index as the form for the revised standard. Advice from CASAC, all of which was received prior to the proposal, has largely emphasized the latter context, and that was also the focus of some comments.

In considering revisions to the secondary standard that will specify a level of air quality to provide the necessary public welfare protection, the Administrator focuses on use of a cumulative seasonal exposure index, including specifically the W126 index as defined in the proposal, for assessing exposure, both for making judgments with regard to the potential harm to public welfare posed by conditions allowed by various levels of air quality and for making the associated judgments regarding the appropriate degree of protection against such potential harm. In so doing, the Administrator takes note of the conclusions in the ISA and PA, with which the CASAC concurred, that, based on the currently available evidence, a cumulative seasonal concentration-weighted index best captures the aspects of ecosystem exposure to O<sub>3</sub> in ambient air that impact vegetation. In considering the public comments in this area, she notes the broad support for use of such a metric as an exposure index, with many additionally supporting its use as the form for a revised standard, in light of CASAC advice on that point. Thus, based on the substantial support in the evidence and CASAC advice, and in consideration of public comments, the Administrator concludes that it is appropriate to use such a cumulative seasonal concentration-weighted index for purposes of assessing the potential

public welfare risks, and similarly, for assessing the potential protection achieved against such risks on a national scale.

The Administrator has considered conclusions of the ISA and PA, as well as advice from CASAC and public comments, regarding different cumulative, concentration-weighted metrics, and different temporal definitions of aspects of these metrics. The Administrator takes note of the PA conclusions in support of the W126 exposure index, recognized by the ISA for its strength in weighting potentially damaging O<sub>3</sub> concentrations that contributes to the advantages it offers over other weighted cumulative indices. With regard to the relevant definitions for the temporal aspects of this index, conclusions in the ISA and PA, and such considerations in the last review, have led to a focus on a maximum 3-month, 12-hour index, defined by the 3-consecutive-month period within the O<sub>3</sub> season with the maximum sum of W126-weighted hourly O<sub>3</sub> concentrations during the period from 8:00 a.m. to 8:00 p.m. each day (as explained in section IV.A.1.c above). The Administrator takes note of the support in the ISA and PA, as well as CASAC recommendations for consideration of the W126 index defined in this way. While recognizing that no one definition of an exposure metric used for the assessment of protection for multiple effects at a national scale will be exactly tailored to every species or each vegetation type, ecosystem and region of the country, as discussed in section IV.C.2 above, the Administrator judges that on balance, a W126 index derived in this way, and averaged over three years, as discussed below, will be appropriate for such purposes.

In considering the appropriate exposure index to facilitate assessment of the level of protection afforded to the public welfare by alternative secondary standards in the proposal, the Administrator concluded that a 3-year average W126 index was appropriate for these purposes. A number of considerations raised in the PA influenced the Administrator's conclusion at the time of proposal, in combination with public welfare judgments regarding the weight to place on the evidence of specific vegetation-related effects estimated to result across a range of cumulative seasonal concentration-weighted O<sub>3</sub> exposures and judgments on the extent to which such effects in such areas may be considered adverse to public welfare (79 FR 76347, 75312, December 17, 2014.). Some comments were received from the

public on this aspect of the proposed decision, as discussed in section IV.C.2 above, and have been considered in the conclusions reached here.

The Administrator continues to place weight on key aspects raised in the PA and summarized in the proposal on the appropriateness of considering a 3-year average index. The Administrator notes the PA consideration of the potential for multiple consecutive years of critical O<sub>3</sub> exposures to result in larger impacts on forested areas than intermittent occurrences of such exposures due to the potential for compounding effects on tree growth. The Administrator additionally notes the evidence, as considered in the PA and summarized in the proposal, for some perennial species of some effects associated with a single year's exposure of a critical magnitude that may have the potential for some "carry over" of effects on plant growth or reproduction in the subsequent season. Further, the Administrator notes the occurrence of visible foliar injury and growth or yield loss in annual plants or crops associated with exposures of a critical magnitude. While the Administrator appreciates that the scientific evidence documents the effects on vegetation resulting from individual growing season exposures of specific magnitude, including those that can affect the vegetation in subsequent years, she is also mindful, both of the strengths and limitations of the evidence, and of the information on which to base her judgments with regard to adversity of effects on the public welfare. The Administrator also recognizes uncertainties associated with interpretation of the public welfare significance of effects resulting from a single-year exposure, and that the public welfare significance of effects associated with multiple years of critical exposures are potentially greater than those associated with a single year of such exposure.

As she did for the proposal, the Administrator has considered advice from CASAC in this area, including the CASAC comments that it favors a W126-based secondary standard with a single year form, that its recommended range of levels relates to such a form, and that a lower range (e.g., with 13 ppm-hrs at the upper end) would pertain to a 3-year form. The Administrator also notes CASAC's recognition that her decision on use of a 3-year average over a single-year W126 index may be a matter of policy. While recognizing the potential for effects on vegetation associated with a single-year exposure, the Administrator concludes that use of a 3-year average metric can address the potential for adverse effects to public

welfare that may relate to shorter exposure periods, including a single year.

While the Administrator recognizes the scientific information and interpretations, as well as CASAC advice, with regard to a single-year exposure index, she also takes note of uncertainties associated with judging the degree of vegetation impacts for annual effects that would be adverse to public welfare. Even in the case of annual crops, the assessment of public welfare significance is unclear for the reasons discussed below related to agricultural practices. The Administrator is also mindful of the variability in ambient air O<sub>3</sub> concentrations from year to year, as well as year-to-year variability in environmental factors, including rainfall and other meteorological factors, that influence the occurrence and magnitude of O<sub>3</sub>-related effects in any year, and contribute uncertainties to interpretation of the potential for harm to public welfare over the longer term. As noted above, the Administrator also recognizes that the public welfare significance of effects associated with multiple years of critical exposures are potentially greater than those associated with a single year of such exposure. Based on all of these considerations, the Administrator recognizes greater confidence in judgments related to public welfare impacts based on a 3-year average metric. Accordingly, the considerations identified here lead the Administrator to conclude it is appropriate to use an index averaged across three years for judging public welfare protection afforded by a revised secondary standard.

In reaching a conclusion on the amount of public welfare protection from the presence of O<sub>3</sub> in ambient air that is appropriate to be afforded by a revised secondary standard, the Administrator has given particular consideration to the following: (1) The nature and degree of effects of O<sub>3</sub> on vegetation, including her judgments as to what constitutes an adverse effect to the public welfare; (2) the strengths and limitations of the available and relevant information; (3) comments from the public on the Administrator's proposed decision, including comments related to identification of a target level of protection; and (4) CASAC's views regarding the strength of the evidence and its adequacy to inform judgments on public welfare protection. The Administrator recognizes that such judgments include judgments about the interpretation of the evidence and other information, such as the quantitative analyses of air quality monitoring,

exposure and risk. She also recognizes that such judgments should neither overstate nor understate the strengths and limitations of the evidence and information nor the appropriate inferences to be drawn as to risks to public welfare. The CAA does not require that a secondary standard be protective of all effects associated with a pollutant in the ambient air but rather those known or anticipated effects judged adverse to the public welfare (as described in section IV.A.3 above). The Administrator additionally recognizes that the choice of the appropriate level of protection is a public welfare policy judgment entrusted to the Administrator under the CAA taking into account both the available evidence and the uncertainties.

The Administrator finds the coherence and strength of the weight of evidence concerning effects on vegetation from the large body of available literature compelling. The currently available evidence addresses a broad array of O<sub>3</sub>-induced effects on a variety of tree species across a range of growth stages (*i.e.*, seedlings, saplings and mature trees) using diverse field-based (*e.g.*, free air, gradient and ambient) and OTC exposure methods. The Administrator gives particular attention to the effects related to native tree growth and productivity, recognizing their relationship to a range of ecosystem services, including forest and forest community composition. She is also mindful of the significance of community composition changes, particularly in protected areas, such as Class I areas. At the same time, she recognizes, while the evidence strongly supports conclusions regarding O<sub>3</sub> impacts on growth and the evidence showing effects on tree seedlings, as well as on older trees, there are limitations in our ability to predict impacts in the environment or to estimate air quality or exposures that will avoid such impacts. Such limitations relate to the variability of environmental factors or characteristics that can influence the extent of O<sub>3</sub> effects.

In recognition of the CASAC advice and the potential for adverse public welfare effects, the Administrator has considered the nature and degree of effects of O<sub>3</sub> on the public welfare. In so doing, the Administrator recognizes that the significance to the public welfare of O<sub>3</sub>-induced effects on sensitive vegetation growing within the U.S. can vary, depending on the nature of the effect, the intended use of the sensitive plants or ecosystems, and the types of environments in which the sensitive vegetation and ecosystems are located.

Any given O<sub>3</sub>-related effect on vegetation and ecosystems (*e.g.*, biomass loss, visible foliar injury), therefore, may be judged to have a different degree of impact on the public depending, for example, on whether that effect occurs in a Class I area, a residential or commercial setting, or elsewhere. The Administrator notes that such a distinction is supported by CASAC advice in this review. In her judgment, like those of the Administrator in the last review, it is appropriate that this variation in the significance of O<sub>3</sub>-related vegetation effects should be taken into consideration in making judgments with regard to the level of ambient O<sub>3</sub> concentrations that is requisite to protect the public welfare from any known or anticipated adverse effects. As a result, the Administrator concludes that of those known and anticipated O<sub>3</sub>-related vegetation and ecosystem effects identified and discussed in this notice, particular significance should be ascribed to those that may occur on sensitive species that are known to or are likely to occur in federally protected areas such as Class I areas or on lands set aside by states, tribes and public interest groups to provide similar benefits to the public welfare, for residents on those lands, as well as visitors to those areas.

Likewise, the Administrator also notes that less protection related to growth effects may be called for in the case of other types of vegetation or vegetation associated with other uses or services. For example, the maintenance of adequate agricultural crop yields is extremely important to the public welfare and currently involves the application of intensive management practices. With respect to commercial production of commodities, the Administrator notes that judgments about the extent to which O<sub>3</sub>-related effects on commercially managed vegetation are adverse from a public welfare perspective are particularly difficult to reach, given that the extensive management of such vegetation (which, as CASAC noted, may reduce yield variability) may also to some degree mitigate potential O<sub>3</sub>-related effects. The management practices used on these lands are highly variable and are designed to achieve optimal yields, taking into consideration various environmental conditions. In addition, changes in yield of commercial crops and commercial commodities, such as timber, may affect producers and consumers differently, further complicating the question of assessing overall public welfare impacts. Thus, the Administrator

concludes, while research on agricultural crop species remains useful in illuminating mechanisms of action and physiological processes, information from this sector on O<sub>3</sub>-induced effects is considered less useful in informing judgments on what specific standard would provide the appropriate public welfare protection. In so doing, the Administrator notes that a standard revised to increase protection for forested ecosystems would also be expected to provide some increased protection for agricultural crops and other commercial commodities, such as timber.

The Administrator also recognizes that O<sub>3</sub>-related effects on sensitive vegetation can occur in other areas that have not been afforded special federal or other protections, including effects on vegetation growing in managed city parks and residential or commercial settings, such as ornamentals used in urban/suburban landscaping or vegetation grown in land use categories involving commercial production of commodities, such as timber. For vegetation used for residential or commercial ornamental purposes, the Administrator believes that there is not adequate information at this time to establish a secondary standard based specifically on impairment of these categories of vegetation, but notes that a secondary standard revised to provide protection for sensitive natural vegetation and ecosystems would likely also provide some degree of protection for such vegetation.

Based on the above considerations, in identifying the appropriate level of protection for the secondary standard, the Administrator finds it appropriate to focus on sensitive trees and other native species known or anticipated to occur in protected areas such as Class I areas or on other lands set aside by the Congress, states, tribes and public interest groups to provide similar benefits to the public welfare, for residents on those lands, as well as visitors to those areas. In light of their public welfare significance, the Administrator gives particular weight to protecting such vegetation and ecosystems. Given the reasons for the special protection afforded such areas (identified in section I.A.3 above), she recognizes the importance of protecting these natural forests from O<sub>3</sub>-induced impacts, including those related to O<sub>3</sub> effects on growth, and including those extending in scale from individual plants to the ecosystem. The Administrator also recognizes that the impacts identified for O<sub>3</sub> range from those for which the public welfare significance may be more easily judged, but for which quantitative relationships

with O<sub>3</sub> in ambient air are less well established, such as impacts on forest community composition in protected wilderness areas, carbon storage and other important ecosystem services, to specific plant-level effects, such as growth impacts (in terms of RBL) in tree seedlings, for which our quantitative estimates are more robust.

For considering the appropriate public welfare protection objective for a revised standard, the Administrator finds appropriate and useful the estimates of tree seedling growth impacts (in terms of RBL) associated with a range of W126-based index values developed from the robust E-R functions for 11 tree species, that were described in the PA and proposal and are summarized in Table 4 above. In making judgments based on those observations, however, the Administrator has considered the broader evidence base and public welfare implications, including associated strengths, limitations and uncertainties. Thus, in drawing on estimates from this table, she is not making judgments simply about a specific magnitude of growth effect in seedlings that would be acceptable or unacceptable in the natural environment. Rather, the Administrator is using the estimates in the table, as suggested by CASAC and emphasized by some commenters, as a surrogate or proxy for consideration of the broader array of vegetation-related effects of potential public welfare significance, that include effects on growth of individual sensitive species and extend to ecosystem-level effects, such as community composition in natural forests, particularly in protected public lands, as well as forest productivity. In so doing, she notes that CASAC similarly viewed biomass loss as “a scientifically valid surrogate of a variety of adverse effects to public welfare” (Frey, 2014c, p. 10). Thus, in considering the appropriate level of public welfare protection for the revised standard, the Administrator gives primary attention to the relationship between W126 exposures and estimates of RBL in tree seedlings in Table 4, finding this to be a useful quantitative tool to inform her judgments in this matter.

In considering the RBL estimates in Table 4 above (drawn from the final PA), the Administrator takes note of comments from CASAC that also give weight to these relationships in formulating its advice and notes the CASAC comments on specific RBL values (Frey, 2014c). In so doing, she considers and contrasts comments and

their context on RBL estimates of 2% and 6% for the median studied species.

With regard to the CASAC advice regarding 2% RBL for the median studied tree species, the Administrator notes, as an initial matter, the unclear basis for such a focus, as described in section IV.C.2 above and in the proposal. Further, she notes that the CASAC advice related to this RBL value was that it would be appropriate for the range of levels identified in the PA for the Administrator’s consideration to “include[] levels that aim for not greater than 2% RBL for the median tree species” (Frey, 2014c, p. 14). As described in the proposal, the range identified in the PA, which the Administrator considered, extended down to W126 index levels for which the estimated RBL in the median tree species is less than or equal to 2%, consistent with the CASAC advice. In addition, the Administrator notes that only the lowest portion of this range (7–8 ppm-hrs) corresponds to an estimated RBL for the median tree species of less than or equal to 2%, with the remainder of CASAC’s range (up to 15 ppm-hrs) associated with higher median RBL estimates. Thus, the Administrator understands CASAC to have identified 2% RBL for the median tree species as a benchmark falling within, and at one end of, the range of levels of protection that the CASAC considers appropriate for the revised standard to provide. However, the fact that the CASAC range included levels for which the RBL estimates were appreciably greater than 2% indicates that CASAC did not judge it necessary that the revised standard be based on the 2% RBL benchmark. Accordingly, the Administrator proposed revisions to the secondary standard based on options related to higher RBL estimates and associated exposures. After also considering public comments, the Administrator continues to consider the uncertainty regarding the extent to which associated effects on vegetation at lower O<sub>3</sub> exposures would be adverse to public welfare to be too great to provide a foundation for public welfare protection objectives for a revised secondary standard.

With regard to the CASAC comments on a 6% RBL estimate, the Administrator takes particular note of their characterization of this level of effect in the median studied species as “unacceptably high” (Frey, 2014c, pp. iii, 13, 14). These comments were provided in the context of CASAC’s considering the significance of effects associated with a range of alternatives for the secondary standard. Moreover, the range recommended by CASAC excluded W126 index values for which

the median species was estimated to have a 6% RBL,<sup>212</sup> based on the information before CASAC at the time (Frey, 2014c, p. 12–13). Accordingly, the EPA interprets these comments regarding 6% RBL to be of a different nature than the CASAC advice regarding a 2% median RBL, both because these two comments are framed to address different questions and because CASAC treated them differently in its recommended range.

In the Administrator’s consideration of the RBL estimates to inform judgments on O<sub>3</sub> exposures of concern to public welfare and the appropriate protection that the secondary standard should provide from such exposures, she has given particular consideration to the current evidence for the relationship of reduced growth of sensitive tree species with ecosystem effects (as described in the ISA), CASAC’s view of 6% RBL for the median studied species as unacceptably high, and the role of the Administrator’s judgments regarding public welfare impacts of effects in specially protected natural systems, such as Class I areas. With regard to a point of focus among the median RBL estimates extending below 6% for purposes of judging the appropriate public welfare protection objectives for a revised secondary standard, the Administrator is mindful of the CASAC advice to consider lower levels if using a 3-year average, rather than annual, W126 index value.

In considering the CASAC advice, the Administrator notes that her judgments on a 3-year average index focus on the level of confidence in conclusions that might be drawn with regard to single as compared to multiple year impacts, as described above. For example, the Administrator, while recognizing the strength of the evidence with regard to quantitative characterization of O<sub>3</sub> effects on growth of tree seedlings and crops, and in addition to noting the additional difficulties for assessing the welfare impacts of O<sub>3</sub> on crops, takes note of the uncertainty associated with

<sup>212</sup> As summarized in IV.C.2 above (and noted in section IV.E.3 of the proposal), revisions to this table in the final PA, made in consideration of other CASAC comments, have resulted in changes to the median species RBL estimates such that the median species RBL estimate for a W126 index value of 17 ppm-hrs in this table in the final PA (5.3%) is nearly identical to the median species estimate for 15 ppm-hrs (the value corresponding to the upper end of the CASAC-identified range) in the second draft PA (5.2%), the review of which was the context for CASAC’s advice on this point (Frey, 2014c). The median RBL estimate ranges from 5.3% to 3.8% across the range of W126 exposures (17 ppm-hrs to 13 ppm-hrs) that the Administrator proposed to conclude would provide the appropriate public welfare protection for a revised secondary standard.

drawing conclusions with regard to the extent to which small percent reductions in annual growth contribute to adverse effects on public welfare and the role of annual variability in environmental factors that affect plant responses to O<sub>3</sub>. Moreover, as explained above, the Administrator concludes that concerns related to the possibility of a single unusually damaging year, inclusive of those described by the CASAC, can be addressed through use of a 3-year average metric. Thus, similar to the CASAC's view that a lower level would be appropriate with a 3-year form, the Administrator considers it appropriate to focus on a standard that would generally limit cumulative exposures to those for which the median RBL estimate would be somewhat lower than 6%.

In focusing on cumulative exposures associated with a median RBL estimate somewhat below 6%, the Administrator considers the relationships in Table 4, noting that the median RBL estimate is 6% for a cumulative seasonal W126 exposure index of 19 ppm-hrs. Considering somewhat lower values, the median RBL estimate is 5.7% (which rounds to 6%) for a cumulative seasonal W126 exposure index of 18 ppm-hrs and the median RBL estimate is 5.3% (which rounds to 5%) for 17 ppm-hrs. In light of her decision that it is appropriate to use a 3-year cumulative exposure index for assessing vegetation effects (described above), the potential for single-season effects of concern, and CASAC comments on the appropriateness of a lower value for a 3-year average W126 index, the Administrator concludes it is appropriate to identify a standard that would restrict cumulative seasonal exposures to 17 ppm-hrs or lower, in terms of a 3-year W126 index, in nearly all instances. In reaching this conclusion, based on the current information to inform consideration of vegetation effects and their potential adversity to public welfare, she additionally judges that the RBL estimates associated with marginally higher exposures in isolated, rare instances are not indicative of effects that would be adverse to the public welfare, particularly in light of variability in the array of environmental factors that can influence O<sub>3</sub> effects in different systems and uncertainties associated with estimates of effects associated with this magnitude of cumulative exposure in the natural environment.

While giving primary consideration to growth effects using the surrogate of RBL estimates based on tree seedling effects, the Administrator also

recognizes the longstanding and robust evidence of O<sub>3</sub> effects on crop yield. She takes note of CASAC concurrence with the PA description of such effects as of public welfare significance and agrees. As recognized in the proposal, the maintenance of adequate agricultural crop yields is extremely important to the public welfare. Accordingly, research on agricultural crop species remains important for further illumination of mechanisms of action and physiological processes. Given that the extensive management of such vegetation, which as CASAC noted may reduce yield variability, may also to some degree mitigate potential O<sub>3</sub>-related effects, however, judgments about the extent to which O<sub>3</sub>-related effects on crop yields are adverse from a public welfare perspective are particularly difficult to reach. Further, management practices for agricultural crops are highly variable and generally designed to achieve optimal yields, taking into consideration various environmental conditions. As a result of this extensive role of management in optimizing crop yield, the Administrator notes the potential for greater uncertainty with regard to estimating the impacts of O<sub>3</sub> exposure on agricultural crop production than that associated with O<sub>3</sub> impacts on vegetation in natural forests. For all of these reasons, the Administrator is not giving the same weight to CASAC's statement regarding crop yield loss as a surrogate for adverse effects on public welfare, or the magnitude that would represent an adverse impact to public welfare, as to the CASAC's comments on RBL as a surrogate for an array of growth-related effects. Similarly, given the considerations summarized above and in the proposal, the Administrator concludes that agricultural crops do not have the same need for additional protection from the NAAQS as forested ecosystems and finds protection of public welfare from crop yield impacts to be a less important consideration in this review for the reasons identified, including the extensive management of crop yields and the dynamics of agricultural markets. Thus, the Administrator is not giving a primary focus to crop yield loss in selecting a revised secondary standard. She notes, however, that a standard revised to increase protection for forested ecosystems would also be expected to provide some increased protection for agricultural crops.

The Administrator has additionally considered the evidence and analyses of visible foliar injury. In so doing, the Administrator notes the ISA conclusion

that "[e]xperimental evidence has clearly established a consistent association of visible injury with O<sub>3</sub> exposure, with greater exposure often resulting in greater and more prevalent injury" (U.S. EPA, 2013, section 9.4.2, p. 9–41). The Administrator also recognizes the potential for this effect to affect the public welfare in the context of affecting values pertaining to natural forests, particularly those afforded special government protection, as discussed in section IV.A.3 above. However, she recognizes significant challenges in judging the specific extent and severity at which such effects should be considered adverse to public welfare, in light of the variability in the occurrence of visible foliar injury and the lack of clear quantitative relationships with other effects on vegetation, as well as the lack of established criteria or objectives that might inform consideration of potential public welfare impacts related to this vegetation effect.

Further, the Administrator takes note of the range of evidence on visible foliar injury and the various related analyses, including additional observations drawn from the WREA biosite dataset in response to comments, as summarized in section IV.C.2 above. In so doing, she does not agree with CASAC's comment that a level of W126 exposure below 10 ppm-hrs is required to reduce foliar injury, noting some lack of clarity in the WREA and PA presentations of the WREA cumulative proportion analysis findings and their meaning (described in section IV.C.2.b above). She notes that the additional observations summarized in section IV.C.2 above indicate declines in proportions of sites with any visible foliar injury and biosite index scores with reductions in cumulative W126 exposure across a range of values extending at the high end well above 20 ppm-hrs, down past and including 17 ppm-hrs. In considering this information, however, the Administrator takes note of the current lack of robust exposure-response functions that would allow prediction of visible foliar injury severity and incidence under varying air quality and environmental conditions, as recognized in section IV.A.1.b above. Thus, while the Administrator notes that the evidence is not conducive to use for identification of a specific quantitative public welfare protection objective, due to uncertainties and complexities described in sections IV.A.1.b and IV.A.3 above, she concludes that her judgments above, reached with a focus on RBL estimates, would also be expected to provide an additional

desirable degree of protection against visible foliar injury in sensitive vegetation. Accordingly, she considers a conclusion on the appropriateness of selecting a standard that will generally limit cumulative exposures above 17 ppm-hrs to be additionally supported by evidence for visible foliar injury, while not based on specific consideration of this effect.

With the public welfare protection objectives identified above in mind, the Administrator turns to her consideration of form and level for the revised secondary standard. In considering whether the current form should be retained or revised in order to provide the appropriate degree of public welfare protection, the Administrator has considered the analyses of air quality data from the last 13 years that describe the cumulative exposures, in terms of a 3-year W126 index, occurring at monitoring sites across the U.S. when the air quality metric at that location, in terms of the current standard's form and averaging time, is at or below different alternative levels. The Administrator notes both the conclusions drawn from analyses of the strong, positive relationship between these metrics and the findings that indicate the amount of control provided by the fourth-high metric.

The Administrator has also considered advice from CASAC and public commenters that support revision of the form to the W126 exposure index. The Administrator concurs with the underlying premise that O<sub>3</sub> effects on vegetation are most directly assessed using a cumulative seasonal exposure index, specifically the W126 exposure index. The Administrator additionally recognizes, based on analyses of the last 13 years of monitoring data, and consideration of modeling analyses with associated limitations and uncertainties, that cumulative seasonal exposures appear to have a strong relationship with design values based on the current form and averaging time. She additionally notes the correlation of reductions in W126 index values with reductions in precursor emissions over the past decade that were targeted at meeting the current O<sub>3</sub> standards (with fourth-high form), which indicate the control of cumulative seasonal exposures that can be achieved with a standard of the current form and averaging time.

With regard to recommendations from the CASAC that the form for the revised secondary standard should be the biologically relevant exposure metric, and related comments from the public indicating that the secondary standard must have such a form, the

Administrator disagrees. In so doing, she notes that CAA section 109 does not impose such a requirement on the form or averaging time for the NAAQS, as explained in IV.C.2 above. She further notes that the averaging time and form of primary standards are often not the same as the exposure metrics used in reviews of primary standards, in which specific information on quantitative relationships between different exposure metrics and health risk is more often available than it is in reviews of secondary NAAQS. As discussed in section IV.C.2 above, with examples, a primary standard with a particular averaging time and form may provide the requisite public health protection from health effects that are most appropriately assessed using an exposure metric of a different averaging time and form and indicator, and the same principle can apply when establishing or revising secondary standards. The Administrator recognizes that the exposure metric and the standard metric can be quite similar, as in the case of consideration of short-term health effects with the primary O<sub>3</sub> standard. She also notes, however, as illustrated by the examples described in section IV.C.2 above, that it is not uncommon for the EPA to retain or adopt elements of an existing standard that the Administrator judges in combination across all elements, including in some cases a revised level, to provide the requisite protection under the Act, even if those elements do not neatly correspond to the exposure metric. Accordingly, she concludes that the Act does not require that the secondary O<sub>3</sub> standard be revised to match the exposure metric identified as biologically relevant in this review, as long as the revised standard provides the degree of protection required under CAA section 109(b)(2).

Based on the considerations described here, including the use of an exposure metric that CASAC has agreed to be biologically relevant and appropriate, related considerations summarized in the proposal with regard to air quality analyses and common uses of exposure metrics in other NAAQS reviews, the Administrator finds that, in combination with a revised level, the current form and averaging time for a revised secondary standard can be expected to provide the desired level of public welfare protection. Accordingly, she next turns to the important consideration of a level that, in combination with the form and averaging time, will yield a standard that specifies the requisite air quality for protection of public welfare. In so

doing, she has recognized the recommendation by CASAC for revision of the form and averaging time and provided the basis for her alternative view, as described above. Further, in the context of the Administrator's decision on objectives for public welfare protection of a revised secondary standard, and with consideration of the advice from CASAC on levels for a W126-based standard, the Administrator has also reached the conclusion, as described above, that in order to provide the appropriate degree of public welfare protection, the revised secondary standard should restrict cumulative seasonal exposures to 17 ppm-hrs or lower, in terms of a 3-year average W126 index, in nearly all instances. Thus, the Administrator finds it appropriate to revise the standard level to one that, in combination with the form and averaging time, will exert this desired degree of control for cumulative seasonal exposures.

In considering a revised standard level, the Administrator has, in light of public comments, revisited the information she considered in reaching her proposed decision on a level within the range of 65 to 70 ppb, and additional information or insights conveyed with public comments. The primary focus of the Administrator's considerations in reaching her proposed decision was the multi-faceted analysis of air quality data from 2001 through 2013 documented in the technical memo in the docket (Wells, 2014a), as well as the earlier analyses and related information described in the PA (as summarized in section IV.E.4 of the proposal). This analysis describes the occurrences of 3-year W126 index values of a magnitude from 17 ppm-hrs through 7 ppm-hrs at monitor locations where O<sub>3</sub> concentrations met different alternative standards with the current form and averaging time, and has been expanded in consideration of public comments to present in summary form the more extensive historical dataset accompanying this analysis (Wells, 2015b). Focusing first on the air quality analyses for the most recent period for which data are available (2011–2013) and with the protection objectives identified above in mind, the Administrator observes that across the sites meeting the current standard of 75 ppb, the analysis finds 25 sites distributed across different NOAA climatic regions with 3-year average W126 index values above 17 ppm-hrs, with the values at nearly half of the sites extending above 19 ppm-hrs, with some well above. In comparison, she observes that across sites meeting an alternative

standard of 70 ppb, the analysis for the period from 2011–2013 finds no occurrences of W126 metric values above 17 ppm-hrs and less than a handful of occurrences that equal 17 ppm-hrs. The more than 500 monitors that would meet an alternative standard of 70 ppb during the 2011–2013 period are distributed across all nine NOAA climatic regions and 46 of the 50 states (Wells, 2015b and associated dataset in the docket).

The Administrator notes that some public commenters, who disagreed with her proposed decision on form and averaging time, emphasized past occurrences of cumulative W126 exposure values above the range identified in the proposal (of 13 to 17 ppm-hrs). For example, these commenters emphasize data from farther back across the full time period of the dataset analyzed in the technical memorandum (2001–2013), identifying a value of 19.1 ppm-hrs at a monitor for which the fourth-high metric is 70 ppb for the 3-year period of 2006–2008. The Administrator notes, as discussed in section IV.C.2 above, that this was one of fewer than a handful of isolated occurrences of sites for which the fourth-high was at or below 70 ppb and the W126 index value was above 17 ppm-hrs, all but one of which were below 19 ppm-hrs. The Administrator additionally recognizes her underlying objective of a revised secondary standard that would limit cumulative exposures in nearly all instances to those for which the median RBL estimate would be somewhat lower than 6%. She observes that the single occurrence of 19 ppm-hrs identified by the commenter among the nearly 4000 3-year W126 index values from across the most recently available 11 3-year periods of data at monitors for which the fourth-high metric is at or below 70 ppb is reasonably regarded as an extremely rare and isolated occurrence (Wells, 2015b). As such, it is unclear whether it would recur, particularly as areas take further steps to reduce O<sub>3</sub> to meet revised primary and secondary standards. Further, based on the currently available information, the Administrator does not judge RBL estimates associated with marginally higher exposures in isolated, rare instances to be indicative of adverse effects to the public welfare. Thus, the Administrator concludes that a standard with a level of 70 ppb and the current form and averaging time may be expected to limit cumulative exposures, in terms of a 3-year average W126 exposure index, to values at or below 17 ppm-hrs, in nearly all instances, and

accordingly, to eliminate or virtually eliminate cumulative exposures associated with a median RBL of 6% or greater.

The Administrator recognizes that any standard intended to exert a very high degree of control on cumulative seasonal exposures, with the objective of limiting exposures above 17 ppm-hrs across the U.S., in nearly all instances, will, due to regional variation in meteorology and sources of O<sub>3</sub> precursors, result in cumulative seasonal exposures well below 17 ppm-hrs in many areas. Even implementation of a standard set in terms of the cumulative seasonal exposure metric, while limiting the highest exposures, would, due to regional variation in meteorology and sources of O<sub>3</sub> precursors, result in many areas with much lower exposures. Such variation in exposures occurring under a specific standard is not unexpected and the overall distribution of exposures estimated to occur with air quality conditions associated with different alternative standards is a routine part of the consideration of public health protection in reviews of primary standards, and can also play a role in the review of secondary standards. For these reasons, and in light of the discussion in section IV.C.2.d above on consideration of “necessary” protection, the Administrator notes that an expectation of differing exposures is not, in itself, a basis for concluding that the air quality would be more (or less) than necessary (and thus not requisite) for the desired level of public welfare protection.

The Administrator has also considered the protection afforded by a revised standard against other effects studied in this review, such as visible foliar injury and reduced yield for agricultural crops, and also including those associated with climate change. While noting the evidence supporting a relationship of O<sub>3</sub> in ambient air with climate forcing effects, as concluded in the ISA, the Administrator judges the quantitative uncertainties to be too great to support identification of a standard specific to such effects such that she concludes it is more important to focus, as she has done above, on setting a standard based on providing protection against vegetation-related effects which would be expected to also have positive implications for climate change protection through the protection of ecosystem carbon storage.

The Administrator additionally considers the extent of control for cumulative seasonal exposures exerted by a revised standard level of 65 ppb, the lower end of the proposed range. In

focusing on the air quality analyses for the most recent 3-year period for which data are available, the Administrator observes that across the sites meeting a fourth-high metric of 65 ppb, the analysis finds no occurrences of W126 metric values above 11 ppm-hrs and 35 occurrences of a value between 7 ppm-hrs and 11 ppm-hrs, scattered across NOAA climatic regions. The Administrator finds these magnitudes of cumulative seasonal exposures to extend appreciably below the objectives she identified above for affording public welfare protection. In considering this alternative level, she additionally notes that data for only 276 monitors (less than 25 percent of the total with valid fourth-high and W126 metric values) were at or below a fourth-high value of 65 ppb during the period from 2011–2013. In so noting, she recognizes the appreciably smaller and less geographically extensive dataset available and the associated uncertainty for conclusions based on such an analysis.

Thus, based on the support provided by currently available information on air quality, the evidence base of O<sub>3</sub> effects on vegetation and her public welfare policy judgments, and after carefully taking the above comments and considerations into account, fully considering the scientific views of the CASAC, and also taking note of CASAC’s policy views, the Administrator has decided to retain the current indicator, form and averaging time and to revise the secondary standard level to 70 ppb. In the Administrator’s judgment, based on the currently available evidence and quantitative exposure and air quality information, a standard set at this level, in combination with the currently specified form, averaging time and indicator would be requisite to protect the public welfare from known or anticipated adverse effects. A standard set at this level provides an appreciable increase in protection compared to the current standard. The Administrator judges that such a standard would protect natural forests in Class I and other similarly protected areas against an array of adverse vegetation effects, most notably including those related to effects on growth and productivity in sensitive tree species. The Administrator believes that a standard set at 70 ppb would be sufficient to protect public welfare from known or anticipated adverse effects and believes that a lower standard would be more than what is necessary to provide such protection. This judgment by the Administrator appropriately recognizes

that the CAA does not require that standards be set at a zero-risk level, but rather at a level that reduces risk sufficiently so as to protect the public welfare from known or anticipated adverse effects. Accordingly, the Administrator concludes that it is appropriate to revise the level for the secondary standard to 70 ppb (0.070 ppm), in combination with retaining the current form, indicator, and averaging time, in order to specify the level of air quality that provides the requisite protection to the public welfare from any known or anticipated adverse effects associated with the presence of O<sub>3</sub> in the ambient air.

#### D. Decision on the Secondary Standard

For the reasons discussed above, and taking into account information and assessments presented in the ISA and PA, the advice and recommendations of CASAC, and the public comments, as well as public welfare judgments, the Administrator is revising the level of the current secondary standard. Specifically, the Administrator has decided to revise the level of the secondary standard to a level of 0.070 ppm, in conjunction with retaining the current indicator, averaging time and form. Accordingly the revised secondary standard is 0.070 ppm O<sub>3</sub>, as the annual fourth-highest daily maximum 8-hour average concentration, averaged over three years.

### V. Appendix U: Interpretation of the Primary and Secondary NAAQS for O<sub>3</sub>

#### A. Background

The EPA is finalizing the proposed Appendix U to 40 CFR part 50: Interpretation of the Primary and Secondary National Ambient Air Quality Standards for Ozone. The proposed Appendix U addressed the selection of ambient O<sub>3</sub> monitoring data to be used in making comparisons with the NAAQS, data reporting and data handling conventions for comparing ambient O<sub>3</sub> monitoring data with the level of the NAAQS, and data completeness requirements. The EPA solicited public comment on four elements where the proposed Appendix U differed from Appendix P to 40 CFR part 50, which addressed data handling conventions for the previous O<sub>3</sub> NAAQS. These included the following: (1) the addition of a procedure to combine data collected from two or more O<sub>3</sub> monitors operating simultaneously at the same physical location, (2) the addition of a provision allowing the Regional Administrator to approve "site combinations", or the combination of data from two nearby

monitoring sites for the purpose of calculating a valid design value, (3) a change from the use of one-half of the method detection limit (½ MDL) to zero (0.000 ppm) as the substitution value in 8-hour average data substitution tests, and 4) a new procedure for calculating daily maximum 8-hour average O<sub>3</sub> concentrations for the revised NAAQS.

The EPA is also finalizing, as proposed, exceptional events scheduling provisions in 40 CFR 50.14 that will apply to the submission of information supporting claimed exceptional events affecting pollutant data that are intended to be used in the initial area designations for any new or revised NAAQS. The new scheduling provisions will apply to initial area designations for the 2015 O<sub>3</sub> NAAQS.

#### B. Data Selection Requirements

The EPA proposed this section in Appendix U to clarify which data are to be used in comparisons with the revised O<sub>3</sub> NAAQS. The EPA is finalizing this section in Appendix U as proposed.

First, the EPA proposed to combine data at monitoring sites with two or more O<sub>3</sub> monitoring instruments operating simultaneously into a single site-level data record for determining compliance with the NAAQS, and proposed an analytical approach to perform this combination (79 FR 75351–75352, December 17, 2014). Several commenters supported the EPA's proposed approach, including the State of Iowa, where 15 of the 20 monitoring sites currently operating two O<sub>3</sub> monitors simultaneously are located. Commenters supporting the proposal noted that a similar approach is already being used for lead and particulate monitoring, and that the proposed approach will help states meet data completeness requirements.

A few commenters supported the EPA's proposed approach with the additional restrictions that the monitoring instruments must use identical methods and be operated by the same monitoring agency. The EPA notes that at the time of this rulemaking, all monitors reporting O<sub>3</sub> concentration data to the EPA for regulatory use were FEMs. All current O<sub>3</sub> FEMs use an ultraviolet photometry sampling methodology and have been found to meet the performance criteria in 40 CFR part 53. Therefore, the EPA has no reason to believe that O<sub>3</sub> concentration data should not be combined across monitoring methods at the site level. Regarding the commenters' suggestion that data should not be combined when two or more monitors at the same site are operated by different monitoring agencies, the EPA is aware of only one

instance where this presently occurs. In this instance, the monitors have been assigned distinct site ID numbers in the AQS database, so that data will not be combined across these monitors. Should future instances arise where two or more monitoring agencies decide to operate O<sub>3</sub> monitors at the same site, the EPA encourages these agencies to work together to establish a plan for how the data collected from these monitors should be used in regulatory decision making.

One state objected to combining data across monitors because the secondary monitors at their sites were used only for quality assurance purposes and data from these monitors should not be combined with data reported from the primary monitors. The EPA notes that concentration data collected to meet quality assurance requirements (*i.e.* precision and bias data) are reported and stored in a separate location within the AQS database and are not used for determining compliance with the NAAQS. The required quality assurance data are derived from O<sub>3</sub> standards and not from a separate O<sub>3</sub> monitor. However, if a separate O<sub>3</sub> monitor is used strictly for quality assurance purposes and does not meet the applicable monitoring requirements, it can be distinguished in AQS in such a manner that data from the secondary monitor would not be combined with data from the primary monitor.

Another commenter objected to the proposal because it would reduce the total number of comparisons made with the NAAQS. While this is true, the number of physical locations being compared with the NAAQS will not decrease under the proposed approach, and in fact may increase due to additional sites meeting the data completeness requirements.

Finally, two commenters submitted similar comments citing the EPA's evaluation of collocated O<sub>3</sub> monitoring data and precision data in the ISA (U.S. EPA, 2013, section 3.5.2), and stated that although the median differences in concentrations reported by the pairs of monitoring instruments were near zero, the extreme values were close to +/– 3.5%. The commenter argued that since the O<sub>3</sub> NAAQS are based on the fourth-highest annual value, data should not be combined across monitors because of the imprecision in the extreme values. The EPA disagrees, noting that the data presented in the ISA are based on hourly concentrations, while design values for the O<sub>3</sub> NAAQS are based on a 3-year average of 8-hour average concentrations. Thus, the random variability in the hourly O<sub>3</sub> concentration data due to monitoring



imprecision will be reduced when concentrations are averaged for comparison with the NAAQS. Additionally, the precision data are typically collected at concentrations at or above the level of the NAAQS, thus the EPA expects that the level of precision documented in the ISA analysis is consistent with the level of precision in the fourth-highest daily maximum concentrations used for determining compliance with the NAAQS.

The EPA is finalizing this addition in Appendix U as proposed. In addition, the AQS database will be updated to require state agencies to designate a primary monitor at O<sub>3</sub> monitoring sites that report data under more than one Pollutant Occurrence Code (POC), a numeric indicator in AQS used to identify individual monitoring instruments. O<sub>3</sub> design value calculations in AQS will be updated so that the data will automatically be combined across POCs at a site, and a single design value will be reported for each site. The EPA notes that the substitution approach described above will only be applied to design value calculations for the revised O<sub>3</sub> standards, and that design values for previous O<sub>3</sub> standards will continue to be calculated at the monitor level, in accordance with the applicable appendices of 40 CFR part 50.

Second, the EPA proposed to add a provision in Appendix U that would allow the Regional Administrator to approve "site combinations", or to combine data across two nearby monitors for the purpose of calculating a valid design value. Although data handling appendices for previous O<sub>3</sub> standards do not explicitly mention site combinations, the EPA has approved over 100 site combinations since the promulgation of the first 8-hour O<sub>3</sub> NAAQS in 1997. Thus, the EPA's intention in proposing this addition was merely to codify an existing convention, and to improve transparency by implementing site combinations in AQS design value calculations.

Public commenters unanimously supported this proposed addition. Two commenters suggested that the EPA should require monitoring agencies to provide technical documentation supporting the similarities between sites approved for combining data, including a requirement for simultaneous monitoring whenever possible. One state requested that the EPA provide more detailed acceptability criteria for approving site combinations, while another state urged the EPA not to create a regulatory burden by

prescribing detailed requirements codified in regulations.

The EPA is finalizing this addition as proposed in Appendix U. The EPA believes that approval of site combinations should be handled on a case-by-case basis, and that any requests for supporting documentation should be left to the discretion of the Regional Administrator. The EPA may issue future guidance providing general criteria for determining an acceptable level of similarity in air quality concentrations between monitored locations, but is not prescribing detailed criteria for approval of site combinations in this rulemaking.

Additionally, the AQS database will be updated with new fields for monitoring agencies to request site combinations, and an additional field indicating Regional Administrator approval. All pre-existing site combinations will be initially entered into the database as having already been approved by the Regional Administrator. Since this provision has already been used in practice under previous O<sub>3</sub> standards, site combinations will be applied to AQS design value calculations for both the revised O<sub>3</sub> standards and previous O<sub>3</sub> standards.

### *C. Data Reporting and Data Handling Requirements*

First, the EPA proposed a change in Appendix U to the pre-existing 8-hour average data substitution test (40 CFR part 50, Appendix P, section 2.1) which is used to determine if a site would have had a valid 8-hour average greater than the NAAQS when fewer than 6 hourly O<sub>3</sub> concentration values are available for a given 8-hour period. The EPA proposed to change the value substituted for the missing hourly concentrations from one-half of the method detection limit of the O<sub>3</sub> monitoring instrument (1/2 MDL) to zero (0.000 ppm).

Several commenters supported the proposed change, stating that the use of a constant substitution value instead of 1/2 MDL, which can vary across O<sub>3</sub> monitoring methods, would simplify design value calculations. One commenter noted that with a substitution value of zero, the data substitution test for an 8-hour average value greater than the NAAQS is equivalent to a sum of hourly O<sub>3</sub> concentrations greater than 0.567 ppm (*i.e.*, if the sum is 0.568 ppm or higher, the resulting 8-hour average must be at least 0.071 ppm, which is greater than the revised O<sub>3</sub> NAAQS of 0.070 ppm). Finally, one commenter opposed the proposed change in favor of some type

of mathematical or statistical interpolation approach, but did not provide a specific recommendation.

The EPA is finalizing the proposed change in Appendix U, with the addition of a short clause making note of the equivalent summation approach described above. The purpose of the data substitution test is to identify 8-hour periods that do not meet the requirements for a valid 8-hour average, yet the reported hourly concentration values are so high that the NAAQS would have been exceeded regardless of the magnitude of the missing concentration values. The EPA believes that zero, being the lowest measured O<sub>3</sub> concentration physically possible, is the most appropriate value to substitute in this situation. Additionally, the EPA does not support the use of interpolation or other means of filling in missing monitoring data for O<sub>3</sub> NAAQS comparisons. Such an approach would be contrary to the EPA's long-standing policy of using only quality-assured and certified ambient air quality measurement data to determine compliance with the O<sub>3</sub> NAAQS.

Second, the EPA proposed a new procedure in Appendix U for determining daily maximum 8-hour O<sub>3</sub> concentrations for the revised NAAQS.<sup>213</sup> The EPA proposed to determine the daily maximum 8-hour O<sub>3</sub> concentration based on 17 consecutive moving 8-hour periods in each day, beginning with the 8-hour period from 7:00 a.m. to 3:00 p.m., and ending with the 8-hour period from 11:00 p.m. to 7:00 a.m. In addition, the EPA proposed that a daily maximum value would be considered valid if 8-hour averages were available for at least 13 of the 17 consecutive moving 8-hour periods, or if the daily maximum value was greater than the level of the NAAQS. This procedure is designed to eliminate "double counting" exceedances of the NAAQS based on overlapping 8-hour periods from two consecutive days with up to 7 hours in common, which was allowed under previous 8-hour O<sub>3</sub> NAAQS. A dozen public commenters expressed support for the proposed procedure, including several states.

One regional air quality management organization and three of its member states submitted similar comments stating that they agreed with the principle of eliminating "double counting" exceedances of the NAAQS

<sup>213</sup> This procedure will be adopted only for the revised O<sub>3</sub> NAAQS. Design values for the 1997 8-hour O<sub>3</sub> NAAQS and the 2008 8-hour O<sub>3</sub> NAAQS will continue to be calculated according to Appendix I and Appendix P of 40 CFR part 50, respectively.

based on overlapping 8-hour periods, but suggested an alternative calculation procedure that would accomplish the same objective. The alternative procedure iteratively finds the highest 8-hour period in a given year, then removes this 8-hour period and all other 8-hour periods associated with that day, including any overlapping 8-hour periods on adjacent days, from the data until a daily maximum value is determined for each day of the year with sufficient monitoring data. The EPA examined a similar iterative procedure in a previous data analysis supporting the proposal (Wells, 2014b, Method 1). The EPA compared this procedure to the procedure proposed by the commenters using the data from the original analysis and found the resulting daily maximum 8-hour values to be nearly identical (Wells, 2015a). Additionally, the commenters' procedure suffers from the same limitations the EPA identified previously in the original analysis: added complexity in design value calculations, longer computational time, and challenges to real-time O<sub>3</sub> data reporting systems, which would have to re-calculate daily maximum 8-hour values for the entire year each time the system was updated with new data.

Three states submitted comments stating that they agreed with the proposed calculation procedure, but disagreed with the proposed requirements for determining a valid daily maximum 8-hour O<sub>3</sub> concentration. These states were primarily concerned that the proposed requirements would only allow a monitoring site to have four missing 8-hour averages during a day before the entire day would be invalidated, compared with six missing 8-hour averages allowed previously. Two of these states also stated concerns that the proposed requirements would be more difficult to meet while maintaining compliance with existing monitoring requirements such as biweekly quality assurance checks. The EPA compared annual data completeness rates calculated using the Appendix U requirements to annual data completeness rates calculated using the requirements under the previous O<sub>3</sub> standards across all U.S. monitoring sites based on data from 2004–2013 (Wells, 2015a). The national mean annual data completeness rate was 0.1% higher under the proposed Appendix U requirements than under the previous O<sub>3</sub> standards, and the national median annual data completeness rates were identical. In addition, the EPA notes that the Appendix U requirements allow

for biweekly quality assurance checks and other routine maintenance to be performed between 5:00 a.m. and 9:00 a.m. local time without affecting data completeness. Thus, the EPA does not believe that the proposed daily data completeness requirements in Appendix U will be more difficult for monitoring agencies to meet.

Finally, two public commenters opposed the proposed procedures for determining daily maximum 8-hour concentrations. These commenters expressed similar concerns, primarily that not considering 8-hour periods starting midnight to 6:00 a.m. is less protective of public health than the procedure used to determine daily maximum 8-hour concentrations for the previous O<sub>3</sub> standards. The EPA believes that this approach provides the appropriate degree of protection for public health, noting that the hourly concentrations from midnight to 7:00 a.m. are covered under the 8-hour period from 11:00 p.m. to 7:00 a.m., which is included in the design value calculations proposed in Appendix U. At the same time, the proposed approach ensures that individual hourly concentrations may not contribute to multiple exceedances of the NAAQS, which the EPA believes is inappropriate given that people are only exposed once.

The EPA is finalizing as proposed in Appendix U the procedure for determining daily maximum 8-hour concentrations. The EPA does not believe that daily maximum 8-hour concentrations for two consecutive days should be based on overlapping 8-hour periods, since the exposures experienced by individuals only occur once. The EPA believes that the new procedure will avoid this outcome while continuing to make use of all hourly concentrations in determining attainment of the standards, without introducing unnecessary complexity into design value calculations, and without creating additional difficulties for monitoring agencies to meet the data completeness requirements.

#### *D. Exceptional Events Information Submission Schedule*

The "Treatment of Data Influenced by Exceptional Events; Final Rule" (72 FR 13560, March 22, 2007), known as the Exceptional Events Rule and codified at 40 CFR 50.14, contains generic deadlines for an air agency to submit to the EPA specified information about exceptional events and associated air pollutant concentration data. As discussed in this section and in more detail in the O<sub>3</sub> NAAQS proposal, without revisions to 40 CFR 50.14, an

air agency may not be able to flag and submit documentation for some relevant data either because the generic deadlines may have already passed by the time a new or revised NAAQS is promulgated or because the generic deadlines require submission of documentation at least 12 months prior to the date by which the EPA must make a regulatory decision, which may be before air agencies have collected some of the potentially affected data. Specific to the revised O<sub>3</sub> NAAQS, revisions to 40 CFR 50.14 are needed because it is not possible for air agencies to flag and submit documentation for any exceptional events that occur in October through December of 2016 by 1 year before the designations are made in October 2017, as is required by the existing generic schedule.

The EPA is finalizing exceptional events scheduling provisions in 40 CFR 50.14, as proposed and as supported by multiple commenters, that will apply to the submission of information supporting claimed exceptional events affecting pollutant data that are intended to be used in the initial area designations for any new or revised NAAQS. The new scheduling provisions will apply to initial area designations for the revised O<sub>3</sub> NAAQS. The provisions that we are promulgating use a "delta schedule" that calculates the timelines associated with flagging data potentially influenced by exceptional events, submitting initial event descriptions and submitting exceptional events demonstrations based on the promulgation date of a new or revised NAAQS. The general data flagging deadlines in the Exceptional Events Rule at 40 CFR 50.14(c)(2)(iii) and the general schedule for submission of demonstrations at 40 CFR 50.14(c)(3)(i) continue to apply to data used in regulatory decisions other than those related to the initial area designations process under a new or revised NAAQS.<sup>214</sup>

The EPA acknowledges the concern raised by several commenters that a strengthened O<sub>3</sub> NAAQS may result in numerous demonstrations for exceptional events occurring between 2014 and 2016, the data years that the EPA will presumably use for initial area designation decisions made in October 2017.<sup>215</sup> Commenters noted that the proposed schedule is particularly burdensome for agencies needing to submit exceptional events packages for

<sup>214</sup> The EPA intends to consider changes to these retained scheduling requirements as part of the planned notice and comment rulemaking revisions to the 2007 Exceptional Events Rule.

<sup>215</sup> Governors may also use 2013 data to formulate their recommendations regarding designations.

the third year to be used in a 3-year design value (*i.e.*, 2016 data). Several commenters recommended that the EPA either establish no defined schedule for data flagging and exceptional events demonstration submittal or allow a minimum of 2 years from the setting of any new or revised NAAQS for air agencies to provide a complete exceptional events demonstration. Given the CAA requirement that the EPA follow a 2-year designations schedule, the EPA cannot remove submittal schedules entirely for data influenced by exceptional events or provide a minimum 2-year period from the setting of a new or revised NAAQS for documentation submittal. Neither of these options would ensure that the EPA has time to consider event-influenced data in initial area designation decisions. Rather, the EPA is promulgating in this action an exceptional events schedule that provides air agencies with the maximum amount of time available to prepare exceptional events demonstrations and will still allow the EPA sufficient time to consider such exceptional events demonstrations in the designations process in advance of the date by which the EPA must send 120-day notification letters to states.<sup>216</sup> The EPA recognizes that the schedule promulgated in this action is compressed, particularly for the third year of data to be used in a 3-year design value, and we will work cooperatively with air agencies to accommodate this scenario.

Under the schedule promulgated in this action and assuming initial area designation decisions in October 2017 for the revised O<sub>3</sub> NAAQS, affected air agencies would need to flag data, submit initial event descriptions and submit demonstrations for exceptional events occurring in 2016 by May 31, 2017. This schedule provides approximately 5 months between the EPA's receipt of the demonstration package and the expected date of designation decisions and approximately 1 month between the EPA's receipt of a package and the date by which the EPA must notify states and tribes of intended modifications to the Governors' recommendations for designations (*i.e.*, 120-day letters).

While, for the third year of data anticipated to be used in a 3-year design value for the revised O<sub>3</sub> NAAQS, the promulgated schedule provides for demonstration submission 5 months after the end of the calendar year, the EPA expects that most submitting

agencies will have additional time to prepare documentation as we expect the majority of potential O<sub>3</sub>-related exceptional events to occur during the warmer months (*e.g.*, March through October). Additionally, the EPA will soon propose rule revisions to the 2007 Exceptional Events Rule and will release through a **Federal Register** Notice of Availability a draft guidance document to address Exceptional Events Rule criteria for wildfires that could affect O<sub>3</sub> concentrations. We expect to promulgate Exceptional Events Rule revisions and finalize the new guidance document before the October 2016 date by which states, and any tribes that wish to do so, are required to submit their initial designation recommendations for the revised O<sub>3</sub> NAAQS. Considered together, the EPA believes the exceptional events scheduling dates promulgated in this action, the upcoming Exceptional Events Rule revisions, the forthcoming guidance, and the existing guidance and examples of submitted demonstrations currently on the EPA's exceptional events Web site at <http://www2.epa.gov/air-quality-analysis/treatment-data-influenced-exceptional-events>, will help air agencies submit information in a timely manner.

Applying the "delta schedule" promulgated in this action for air quality data collected in 2013 through 2014 that could be influenced by exceptional events and be considered during the initial area designations process for the revised O<sub>3</sub> NAAQS, results in extending to July 1, 2016, the otherwise applicable generic deadlines of July 1, 2014, and July 1, 2015, respectively, for flagging data and providing an initial description of an event (40 CFR 50.14(c)(2)(iii)). The schedule promulgated in this action also results in a July 1, 2016, date for flagging data and providing an initial description of an event for air quality data collected in 2015. The July 1, 2016, date for data collected in 2015 is the same as that which would apply under the existing generic deadline in the 2007 Exceptional Events Rule. Under the schedule promulgated in this action, October 1, 2016 is the deadline for submitting exceptional events demonstrations for data years 2013 through 2015. As noted previously, under the schedule promulgated in this action, affected air agencies would need to flag, submit initial event descriptions and submit demonstrations for exceptional events occurring in 2016 by May 31, 2017. The EPA believes these revisions will provide adequate time for air agencies to review potential O<sub>3</sub>

exceptional events influencing compliance with the revised O<sub>3</sub> NAAQS, to notify the EPA by flagging the relevant data and providing an initial event description in AQS, and to submit documentation to support exceptional events demonstrations. The schedule revisions promulgated in this action will also allow the EPA to consider and act on the submitted information during the initial area designation process.

While the EPA will make every effort to designate areas for any new or revised NAAQS on a 2-year schedule, the EPA recognizes that under some circumstances we may need up to an additional year for the designations process to ensure that air agencies and the EPA base designations decisions on complete and sufficient information. The promulgated schedule accounts for the possibility that the EPA might announce after promulgating a new or revised NAAQS that we are extending the designations schedule beyond 2 years using authority provided in CAA section 107(d)(B)(i). If the EPA determines that we will follow a 3-year designation schedule, the deadline is 2 years and 7 months after promulgation of a new or revised NAAQS for states to flag data influenced by exceptional events, submit initial event descriptions and submit exceptional events demonstrations for the last year of data that will be used in the designations (*e.g.*, if the EPA were to designate areas in October 2018, the exceptional events submittal deadline for 2017 data would be May 31, 2018). If the EPA notifies states and tribes of a designations schedule between 2 and 3 years, the deadline for states to flag data affected by exceptional events, submit initial event descriptions, and submit exceptional events demonstrations associated with data from the last year to be considered would be 5 months prior to the date specified for designation decisions.

Therefore, using the authority provided in CAA section 319(b)(2) and in the 2007 Exceptional Events Rule at 40 CFR 50.14(c)(2)(vi), the EPA is modifying the schedule for flagging data and submitting exceptional events demonstrations considered for initial area designations by replacing the deadlines and information in Table 1 in 40 CFR 50.14 with the deadlines and information presented in Table 5. As we did in the O<sub>3</sub> NAAQS proposal, we are also providing Table 6 to illustrate how the promulgated schedule might apply to the designations process for the revised O<sub>3</sub> NAAQS and to designations

<sup>216</sup> See Section VIII.B for additional detail on the initial area designations process for the revised O<sub>3</sub> NAAQS.

processes for other future new or revised NAAQS. <sup>217</sup> Additionally, in conjunction with promulgating exceptional events	schedules for initial area designations for new or revised NAAQS, the EPA, as proposed, is removing obsolete regulatory language in 40 CFR	50.14(c)(2)(iv) and (v) and 40 CFR 50.14(c)(3)(ii) and (iii) associated with exceptional events schedules for all historical standards.
--	--	---

TABLE 5—SCHEDULE FOR FLAGGING AND DOCUMENTATION SUBMISSION FOR DATA INFLUENCED BY EXCEPTIONAL EVENTS FOR USE IN INITIAL AREA DESIGNATIONS

Exceptional events/Regulatory action	Exceptional events deadline schedule <sup>d</sup>
Flagging and initial event description deadline for data years 1, 2 and 3 <sup>a</sup> .	If state and tribal initial designation recommendations for a new/revised NAAQS are due August through January, then the flagging and initial event description deadline will be the July 1 prior to the recommendation deadline. If state and tribal recommendations for a new/revised NAAQS are due February through July, then the flagging and initial event description deadline will be the January 1 prior to the recommendation deadline.
Exceptional events demonstration submittal deadline for data years 1, 2 and 3 <sup>a</sup> .	No later than the date that state and tribal recommendations are due to the EPA.
Flagging, initial event description and exceptional events demonstration submittal deadline for data year 4 <sup>b</sup> and, where applicable, data year 5 <sup>c</sup> .	By the last day of the month that is 1 year and 7 months after promulgation of a new/revised NAAQS, unless either option a or b applies. a. If the EPA follows a 3-year designation schedule, the deadline is 2 years and 7 months after promulgation of a new/revised NAAQS. b. If the EPA notifies the state/tribe that it intends to complete the initial area designations process according to a schedule between 2 and 3 years, the deadline is 5 months prior to the date specified for final designations decisions in such EPA notification.

<sup>a</sup> Where data years 1, 2, and 3 are those years expected to be considered in state and tribal recommendations.

<sup>b</sup> Where data year 4 is the additional year of data that the EPA may consider when it makes final area designations for a new/revised NAAQS under the standard designations schedule.

<sup>c</sup> Where data year 5 is the additional year of data that the EPA may consider when it makes final area designations for a new/revised NAAQS under an extended designations schedule.

<sup>d</sup> The date by which air agencies must certify their ambient air quality monitoring data in AQS is annually on May 1 of the year following the year of data collection as specified in 40 CFR 58.15(a)(2). In some cases, however, air agencies may choose to certify a prior year's data in advance of May 1 of the following year, particularly if the EPA has indicated its intent to promulgate final designations in the first 8 months of the calendar year. Data flagging, initial event description and exceptional events demonstration deadlines for "early certified" data will follow the deadlines for "year 4" and "year 5" data.

<sup>217</sup> The range of dates identified in Table 6 is illustrative of the dates for the revised O<sub>3</sub> NAAQS. Users could increment these dates by any constant

number (for example by 6 years for a hypothetical NAAQS promulgated in 2021) to develop a table

with dates relevant to NAAQS promulgated in the future.

Table 6. Examples by Month of Applying the Promulgated Revised Schedule for Flagging and Documentation Submission for Data Influenced by Exceptional Events for Use in Initial Area Designations

Exceptional Events / Regulatory Action	Exceptional Events Deadline Schedule <sup>c</sup>	Month of NAAQS Promulgation, State and Tribal Recommendation, and Final Designations													
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May <sup>d</sup>	Jun <sup>d</sup>	Jul <sup>d</sup>	Aug <sup>d</sup>	Sep	Oct	
		Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	
Flagging and initial event description deadline for data years 1, 2, and 3. <sup>a</sup>	If state and tribal initial designation recommendations for a new/revised NAAQS are due August through January, then the flagging and initial event description deadline will be the July 1 prior to the recommendation deadline. If state and tribal recommendations for a new/revised NAAQS are due February through July, then the flagging and initial event description deadline will be the January 1 prior to the recommendation deadline.	July 1, 2016 (data years 2013, 2014, 2015)	July 1, 2016 (data years 2013, 2014, 2015)	July 1, 2016 (data years 2013, 2014, 2015)	July 1, 2016 (data years 2013, 2014, 2015)	Jan 1, 2017 (data years 2013, 2014, 2015)	Jan 1, 2017 (data years 2013, 2014, 2015)	Jan 1, 2017 (data years 2013, 2014, 2015)	Jan 1, 2017 (data years 2013, 2014, 2015)	Jan 1, 2017 (data years 2013, 2014, 2015)	Jan 1, 2017 (data years 2013, 2014, 2015)	July 1, 2017 (data years 2014, 2015, 2016)	July 1, 2017 (data years 2014, 2015, 2016)	July 1, 2017 (data years 2014, 2015, 2016)	
Exceptional events demonstration submittal deadline for data years 1, 2, and 3. <sup>a</sup>	No later than the date that state and tribal recommendations are due to EPA.	by Oct 2016 (data years 2013, 2014, 2015)	by Nov 2016 (data years 2013, 2014, 2015)	by Dec 2016 (data years 2013, 2014, 2015)	by Jan 2017 (data years 2013, 2014, 2015)	by Feb 2017 (data years 2013, 2014, 2015)	by Mar 2017 (data years 2013, 2014, 2015)	by Apr 2017 (data years 2013, 2014, 2015)	by May 2017 (data years 2013, 2014, 2015)	by June 2017 (data years 2013, 2014, 2015)	by July 2017 (data years 2013, 2014, 2015)	by Aug 2017 (data years 2013, 2014, 2015)	by Sep 2017 (data years 2013, 2014, 2015)	by Oct 2017 (data years 2013, 2014, 2015)	
AQS quality assurance and data certification	Annually on May 1 of the year following the year of data collection	May 1	May 1	May 1	May 1	May 1	May 1	May 1	May 1	May 1	May 1	May 1	May 1	May 1	
Flagging, initial event description and exceptional events demonstration submittal deadline for data year 4 <sup>b</sup> and, where applicable, data year 5. <sup>c</sup>	By the last day of the month that is 1 year and 7 months after promulgation of a new/revised NAAQS, unless either option a or b applies. a. If the EPA follows a 3 year designation schedule, the deadline is 2 years and 7 months after promulgation of a new/revised NAAQS. b. If the EPA notifies the state/tribe that it intends to complete the initial area designations process according to a schedule between 2 and 3 years, the deadline is 5 months prior to the date specified for final designations decisions in such EPA notification.	by May 31, 2017 (data year 2016)	by June 30, 2017 (data year 2016)	by July 31, 2017 (data year 2016)	by Aug 31, 2017 (data year 2016) and potentially (data year 2017)	by Sep 30, 2017 (data year 2016) and potentially (data year 2017)	by Oct 31, 2017 (data year 2016) and potentially (data year 2017)	by Nov 30, 2017 (data year 2016) and potentially (data year 2017)	by Dec 31, 2017 (data year 2016) and potentially (data year 2017)	by Jan 31, 2018 (data year 2017)	by Feb 28/29, 2018 (data year 2017)	by Mar 31, 2018 (data year 2017)	by Apr 30, 2018 (data year 2017)	by May 31, 2018 (data year 2017)	
<b>State &amp; Tribal Recommendations to EPA</b>		<b>Oct 2016</b>	<b>Nov 2016</b>	<b>Dec 2016</b>	<b>Jan 2017</b>	<b>Feb 2017</b>	<b>Mar 2017</b>	<b>Apr 2017</b>	<b>May 2017</b>	<b>June 2017</b>	<b>July 2017</b>	<b>Aug 2017</b>	<b>Sep 2017</b>	<b>Oct 2017</b>	
<b>EPA notifies States/Tribes of intended modifications to recommendations (EPA sends 120-day letters)</b>		<b>June 2017</b>	<b>July 2017</b>	<b>Aug 2017</b>	<b>Sep 2017</b>	<b>Oct 2017</b>	<b>Nov 2017</b>	<b>Dec 2017</b>	<b>Jan 2018</b>	<b>Feb 2018</b>	<b>Mar 2018</b>	<b>Apr 2018</b>	<b>May 2018</b>	<b>June 2018</b>	
<b>Administrator Promulgates Final Designations</b>		<b>Oct 2017</b>	<b>Nov 2017</b>	<b>Dec 2017</b>	<b>Jan 2018</b>	<b>Feb 2018</b>	<b>Mar 2018</b>	<b>Apr 2018</b>	<b>May 2018</b>	<b>June 2018</b>	<b>July 2018</b>	<b>Aug 2018</b>	<b>Sep 2018</b>	<b>Oct 2018</b>	

<sup>a</sup> Where data years 1, 2, and 3 are those years expected to be considered in state and tribal recommendations.

<sup>b</sup> Where data year 4 is the additional year of data that the EPA may consider when it makes final area designations for a new/revised NAAQS under the standard designations schedule.

<sup>c</sup> Where data year 5 is the additional year of data that the EPA may consider when it makes final area designations for a new/revised NAAQS under an extended designations schedule.

<sup>d</sup> The date by which air agencies must certify their ambient air quality monitoring data in AQS is annually on May 1 of the year following the year of data collection as specified in 40 CFR 58.15(a)(2). In some cases, however, air agencies may choose to certify a prior year's data in advance of May 1 of the following year, particularly if the EPA has indicated its intent to promulgate final designations in the first 8 months of the calendar year. Data flagging, initial event description and exceptional events demonstration deadlines for "early certified" data will follow the deadlines for "year 4" and "year 5" data.

## VI. Ambient Monitoring Related to O<sub>3</sub> Standards

### A. Background

The EPA proposed to revise the state-by-state O<sub>3</sub> monitoring seasons; the PAMS monitoring requirements; the FRM for measuring O<sub>3</sub>; and the FEM performance requirement specifications for automated O<sub>3</sub> analyzers. The EPA also proposed to make additional minor changes to the FEM analyzer performance testing requirements for NO<sub>2</sub> and particulate matter in part 53.

The EPA is finalizing changes to the length of the required O<sub>3</sub> monitoring season for 32 states and the District of Columbia. Section VI.B of this preamble provides an overview of the proposed changes to the length of the required O<sub>3</sub> monitoring seasons, a summary of significant public comments and our responses, and a summary of the final decisions made to the O<sub>3</sub> monitoring seasons for each state.

The EPA is finalizing changes to the PAMS monitoring requirements in 40 CFR part 58, Appendix D Section 5. Section VI.C of this preamble provides background on the PAMS program and current monitoring requirements, a summary of the proposed changes to the PAMS requirements, a summary of significant public comments and our responses, and a summary of the changes to the PAMS requirements in this final rule.

The EPA is finalizing changes to the FRM for O<sub>3</sub> in Section VI.D of this preamble and to the associated FEM performance requirement specifications for automated O<sub>3</sub> analyzers in Section VI.E. A summary of significant public comments and our responses are provided and a summary of the final changes to the FRM and FEM requirements in this final rule. The EPA is also finalizing minor additional changes to Part 53 including conforming changes to the FEM performance testing requirements in Table B-1 and Figure B-5 for NO<sub>2</sub>; extending the period of time for the Administrator to take action on a request for modification of a FRM or FEM from 30 days to 90 days in part 53.14; and removing an obsolete provision for manufacturers to submit Product Manufacturing Checklists for fine and coarse particulate matter monitors in part 53.9.

### B. Revisions to the Length of the Required O<sub>3</sub> Monitoring Seasons

Unlike the ambient monitoring requirements in 40 CFR part 58 for other criteria pollutants that mandate year-round monitoring at State and Local Air Monitoring Stations (SLAMS), O<sub>3</sub> monitoring is only required during the

seasons of the year that are conducive to O<sub>3</sub> formation. These seasons vary in length from place-to-place as the conditions conducive to the formation of O<sub>3</sub> (*i.e.*, seasonally-dependent factors such as ambient temperature, strength of solar insolation, and length of day) differ by location. In some locations, conditions conducive to O<sub>3</sub> formation are limited to the summer months of the year. In other states with warmer climates (*e.g.*, California, Nevada, and Arizona), the currently required O<sub>3</sub> season is year-round. Elevated levels of winter-time O<sub>3</sub> have also been measured in some western states where precursor emissions can interact with sunlight off the snow cover under very shallow, stable boundary layer conditions (U.S. EPA 2013).

The EPA has determined that the proposed lengthening of the O<sub>3</sub> monitoring seasons in 32 states and the District of Columbia is appropriate. Ambient O<sub>3</sub> concentrations in these areas could approach or exceed the level of the NAAQS, more frequently and during more months of the year compared with the current season lengths. It is important to monitor for O<sub>3</sub> during the periods when ambient concentrations could approach the level of the NAAQS to ensure that the public is informed when exposure to O<sub>3</sub> could reach or has reached a level of concern.

The EPA completed an analysis to address whether extensions of currently required monitoring seasons are appropriate (Rice, 2014). In this analysis, we used all available data in AQS, including data from monitors that collected O<sub>3</sub> data year-round during 2010–2013. More than half of O<sub>3</sub> monitors are voluntarily operated on a year-round basis by monitoring agencies. We determined the number of days where one or more monitors had a daily maximum 8-hour O<sub>3</sub> average equal to or above 0.060 ppm in the months outside each state's current O<sub>3</sub> monitoring season and the pattern of those days in the out-of-season months. We believe that a threshold of 0.060 ppm, taking into consideration reasonable uncertainty, serves as an appropriate indicator of ambient conditions that may be conducive to the formation of O<sub>3</sub> concentrations that approach or exceed the NAAQS. We also considered regional consistency, particularly for those states with little available data. We note that seasonal O<sub>3</sub> patterns vary year-to-year due primarily to highly variable meteorological conditions conducive to the formation of elevated O<sub>3</sub> concentrations early or late in the season in some years and not others. The EPA believes it is important that O<sub>3</sub> monitors operate during all

periods when there is a reasonable possibility of ambient levels approaching the level of the NAAQS.

Basing O<sub>3</sub> monitoring season requirements on the goal of ensuring monitoring when ambient O<sub>3</sub> levels approach or exceed the level of the NAAQS supports established monitoring network objectives described in Appendix D of Part 58, including the requirement to provide air pollution data to the general public in a timely manner<sup>218</sup> and to support comparisons of an area's air pollution levels to the NAAQS. The operation of O<sub>3</sub> monitors during periods of time when ambient levels approach or exceed the level of the NAAQS ensures that unusually sensitive people and sensitive groups are alerted to O<sub>3</sub> levels of potential health concern allowing them to take precautionary measures. The majority of O<sub>3</sub> monitors in the U.S. report to AIRNOW,<sup>219</sup> as well as to state-operated Web sites and automated phone reporting systems. These programs support many objectives including real-time air quality reporting to the public, O<sub>3</sub> forecasting, and the verification of real-time air quality forecast models.

#### 1. Proposed Changes to the Length of the Required O<sub>3</sub> Monitoring Seasons

The EPA proposed to extend the length of the required O<sub>3</sub> monitoring season in 32 states and the District of Columbia. The proposed changes were an increase of one month for 22 states (Connecticut, Delaware, Idaho, Illinois, Iowa, Kansas, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas (northern portion only), Virginia, and West Virginia) and the District of Columbia, an increase of one and one half months for Wisconsin, an increase of two months for four states (Indiana, Michigan, Montana, and North Dakota), an increase of four months for Florida and South Dakota, an increase of five months for Colorado, and an increase of seven months for Utah. For Wyoming, we proposed to add three months at the beginning of the season and remove one month at the end of the season, resulting in a net increase of two months. Ozone season requirements are currently split by Air Quality Control Region (AQCR) in Louisiana and Texas. We proposed lengthening the required season in the northern part of Texas (AQCR 022, 210,

<sup>218</sup> Public reporting requirements are detailed in 40 CFR part 58 Appendix G, Uniform Air Quality Index (AQI) and Daily Reporting.

<sup>219</sup> See <http://airnow.gov/>.

211, 212, 215, 217, and 218) by one month and leaving the year-round O<sub>3</sub> season in the southern part of Texas (AQCRs 106, 153, 213, 214, and 216) unchanged. No changes were proposed for the AQCRs in Louisiana. As noted earlier, in a few states with limited available data and few exceedance days outside the currently-required season (Iowa, Missouri, and West Virginia), the proposed changes were made by considering supporting information from the surrounding states. These changes involved the proposed addition of one month (March) to the currently-required O<sub>3</sub> seasons for these states.

The EPA also proposed that O<sub>3</sub> monitors at all National Core Multipollutant Monitoring Stations (NCore) be operated year-round, January through December, regardless of the length of the required O<sub>3</sub> season for the remainder of the SLAMS within each state.

We noted that the EPA Regional Administrators have previously approved deviations from the required O<sub>3</sub> monitoring seasons as allowed by paragraph 4.1(i) of 40 CFR part 58, Appendix D. We proposed to retain the rule language permitting such deviations from the required O<sub>3</sub> monitoring seasons, but note that finalized changes to O<sub>3</sub> monitoring season requirements would revoke all existing Regional Administrator-granted waiver approvals. As appropriate, monitoring agencies could seek new approvals for seasonal deviations. Any seasonal deviations based on the Regional Administrator's waiver of requirements must be described in the state's annual monitoring network plan and updated in the AQS.

Given the timing of the final rulemaking and any associated burden on state/local monitoring agencies to implement the extended O<sub>3</sub> seasons, we proposed that implementation of the revised O<sub>3</sub> seasons would become effective at SLAMS (including NCore sites) on January 1, 2017. We solicited comment on whether the revised seasons could be implemented beginning January 1, 2016, for all monitors or for a subset of monitors, such as those currently operating year-round or on a schedule that corresponds to the proposed O<sub>3</sub> season.

## 2. Comments on the Length of the Required O<sub>3</sub> Monitoring Seasons

We received several comments on the proposed revisions to O<sub>3</sub> monitoring seasons. Several commenters supported the proposed O<sub>3</sub> season length changes and agreed that O<sub>3</sub> monitoring seasons should reflect the times of year when O<sub>3</sub> may approach or exceed the level of the

NAAQS. A few commenters noted the complexities that would arise in the implementation of multi-state planning agreements if states that shared an MSA had different required O<sub>3</sub> monitoring seasons. Two state agencies that supported season length changes also recommended changes to neighboring states' O<sub>3</sub> seasons. New York recommended that Connecticut's proposed O<sub>3</sub> season be further extended (adding the month of October) to match the proposed season in New York (March–October) because they share a major MSA and nonattainment area, and the highest design value monitor in the nonattainment area is often in Connecticut. The results from the EPA's analysis did not support the addition of October for Connecticut. The EPA recognizes that there may be value in having a consistent O<sub>3</sub> season across multi-state planning areas. We recommend that monitoring agency representatives from New York and Connecticut contact their respective EPA Regional Office to jointly develop a monitoring plan to provide coverage of the MSA for a longer period of time. Consistent with the results from the EPA's analysis and consistent with our proposal, the EPA is finalizing the March–October season in New York and the March–September season in Connecticut.

Although no changes were proposed for Arkansas, the Arkansas Department of Environmental Quality recommended that the O<sub>3</sub> season in the nonattainment area that includes Crittenden County, Arkansas (March–November) be consistent with the O<sub>3</sub> seasons in Tennessee (March–October) and Mississippi (March–October) by either shortening the O<sub>3</sub> season in Arkansas or lengthening the O<sub>3</sub> season by one month in Tennessee and Mississippi. Based on the results from the EPA's analysis and consistent with our proposal, the EPA is not finalizing any changes to the current O<sub>3</sub> seasons in Arkansas, Tennessee, or Mississippi. There is currently one monitor operating in Crittenden County. We recommend that Arkansas work with their EPA Regional Administrator to consider a waiver for the monitor(s) in Crittenden County to allow a deviation (shortened season) from the required O<sub>3</sub> season if the agency demonstrates that such a deviation is appropriate for consistency in the nonattainment area.

Two commenters noted the need to extend seasons to capture wintertime O<sub>3</sub> events. One commenter urged the EPA to extend monitoring to year-round in the intermountain west (specifically Wyoming) to adequately capture summer and winter O<sub>3</sub> problem days

and noted especially two monitors in the Pinedale area of Wyoming that should be operated year-round. The EPA's analysis showed that there were no days that were  $\geq 0.060$  ppm in Wyoming for the months of October–December and that the Wyoming Department of Environmental Quality is currently operating about 70% of their O<sub>3</sub> monitors year-round including all O<sub>3</sub> monitors in Sublette County, which includes the Pinedale area. Another commenter supported lengthening the seasons for states in the western U.S. where wintertime O<sub>3</sub> could be an issue in light of the unique and growing O<sub>3</sub> pollution problems caused by oil and gas development activities. They also recommended that the EPA expand the O<sub>3</sub> monitoring season to year-round for North Dakota, South Dakota, and Montana beyond what was proposed. The number of observed days that were  $\geq 0.060$  ppm in the months outside the season proposed for these states (one day for North Dakota and no days observed for South Dakota and Montana) do not support a further extension to the length of the O<sub>3</sub> monitoring season beyond what was proposed. These states are already operating a large percentage of their monitors year-round (89% in North Dakota, 100% in South Dakota, and 78% in Montana). The EPA is finalizing the seasons as proposed in Wyoming (January–September), North Dakota (March–September), South Dakota (March–October), and Montana (April–September). The EPA encourages these states to continue year-round operation of their monitors to determine what areas are affected by elevated levels of winter-time O<sub>3</sub>.

The commenters who opposed lengthening the O<sub>3</sub> monitoring seasons noted concerns with the threshold (0.060 ppm) used as the basis for the changes and the length of time (2010–2013) for which ambient data were retrieved and analyzed. Many of those with concerns recommended that levels in the proposed range (e.g., 0.065 ppm or 0.070 ppm) or the current NAAQS level of 0.075 ppm be used as the appropriate threshold for determining the O<sub>3</sub> season. With regard to the 0.060 ppm threshold used, this value is consistent with the 85 percent threshold used to require additional O<sub>3</sub> monitoring based on Appendix D requirements, which include the MSA population and design value.<sup>220</sup> As noted previously, year-to-year variability occurs in seasonal O<sub>3</sub> patterns based on highly variable and unpredictable meteorological

<sup>220</sup> See 40 CFR part 58, appendix D, Table D–2.

conditions, which can support the formation of early or late season elevated O<sub>3</sub> concentrations in some years and not in other years. This threshold serves as an appropriate indicator of ambient conditions that may be conducive to the formation of O<sub>3</sub> concentrations that approach or exceed the level of the NAAQS.

Certain logistical complexities were noted if longer seasons were required, including site access during winter and the challenge of getting the monitoring equipment ready in time. Four states noted concerns with operator safety and anticipated their inability to access sites due to early spring snowfall. The EPA agrees that site access could be an issue depending on weather conditions and notes that specific site monitoring season deviations may be appropriate. We suggest that this be addressed through the monitoring season waiver process with the EPA Regional Administrator. Any deviations based on the Regional Administrator's waiver of requirements must be described in the state's annual monitoring network plan and updated in AQS.

Several commenters had concerns about the additional cost and resources needed to expand the O<sub>3</sub> monitoring seasons. There was some disagreement with the EPA's total annual average cost estimate of \$230,000 which took into account the number of O<sub>3</sub> monitors already operating year-round across the country. Commenters noted specifically that the proposed extension of required monitoring seasons would increase operational costs and potentially impact the resources available for other monitoring efforts. The added cost of operating O<sub>3</sub> monitors over a longer period was noted by some commenters, referencing both the cost of staff to operate the monitors, as well as the additional wear and tear those O<sub>3</sub> monitors would experience over a longer operational period. They noted that extending their required monitoring season by adding the month of March would increase staffing requirements for monitor operation and quality assurance. They also noted that the life expectancy of equipment would be reduced due to increased wear and tear. The EPA acknowledges that operational costs for O<sub>3</sub> monitoring networks will incrementally increase in states where required seasons have been lengthened. We encourage monitoring agencies to review available technology and operational procedures to institute practices that could potentially reduce such costs, such as the automation of quality control and calibration checks and remote access to evaluate monitor operations. As noted earlier, all states

operated at least a portion of their O<sub>3</sub> monitoring network outside of the required O<sub>3</sub> season during the 2010–2013 data period and reported the data to AQS. In addition, many states are operating more than the minimum number of monitors required to support the basic monitoring objectives described in 40 CFR part 58, Appendix D. Some states have a large percentage of their total O<sub>3</sub> monitors operating outside the currently-required O<sub>3</sub> season and some states have a small percentage. In situations where states are already operating a large number of their O<sub>3</sub> monitors outside their current O<sub>3</sub> season, the actual cost increase will be less. In cases where states have a small number of monitors operating outside their current O<sub>3</sub> season, in addition to automation and remote access, those states could investigate with their Regional Administrator the process in 40 CFR part 58.14 for reducing the total number of operating monitors that are above the number required by 40 CFR, part 58, appendix D to offset the cost of extending the O<sub>3</sub> monitoring season in their state.

Two commenters had concerns about the 4-year period of time evaluated in the EPA's analysis and noted that the 4-year period of time evaluated does not take into account meteorological anomalies and other weather induced situations and is not consistent with the 3 years used to calculate design values. One state agency's comments referenced their own analysis showing concentrations going back 20 years. They noted that 2010 was an unusual year and inclusion of such an unusual year in the 4-year period (2010–2013) of the EPA's analysis provides too much weight on those data. As noted earlier, year-to-year variability occurs in seasonal O<sub>3</sub> patterns based on variable meteorological conditions and given the impracticality of forecasting such conditions that affect O<sub>3</sub> photochemistry, the EPA believes it is important that O<sub>3</sub> monitors operate when there is a reasonable possibility of ambient levels approaching the level of the NAAQS. Another state agency commented that 4 years appeared to be an unusual number of years given that design values are based on 3 years. To support the proposed rule in 2014, the EPA's analysis of O<sub>3</sub> seasons began in 2013. At that time the EPA's analysis considered the most recent 3 years of certified data (2010–2012) and updated the analysis to add a fourth year (2013) when the data were quality-assured, certified, and available in AQS. We used 4 years of data, including the most recent year (2013) to include an

additional year of potentially-variable meteorological conditions to propose changes to the seasons. The EPA treated all years equally and did not put any more weight on the 2010 data than any of the other years used in the analysis. The EPA believes that using recently-available data across multiple years to capture varying meteorological conditions was appropriate to support the decisions on extending the O<sub>3</sub> seasons. One commenter disagreed with the EPA's definition of year-round (at least 20 daily observations in all 12 months of at least 1 year of the 4-year period). The definition of year-round was used to estimate the number of monitors being operated outside a state's required O<sub>3</sub> season and also used for the EPA's Information Collection Request (ICR). All available data in AQS were used for the O<sub>3</sub> season analysis, including data from year-round monitors.

Two commenters noted that "regional consistency" is not a scientific reason and is not needed for making changes to the O<sub>3</sub> seasons. One commenter noted that significant geographical, meteorological and demographic differences exist between neighboring states that may not warrant identical monitoring seasons. The EPA notes that regional consistency was considered, but only important for a few states where little data were available and the neighboring states had more available data and a sufficient number of days that were  $\geq 0.060$  ppm to support the proposed O<sub>3</sub> season changes. Regional consistency was not important for other states.

Some commenters expressed support for the proposed requirement that NCore O<sub>3</sub> sites operate year-round. They questioned whether data from NCore stations outside the O<sub>3</sub> season will be used for designations and requested that the EPA exclude those data from the designations process. Consistent with the designations process for all criteria pollutants, the states, tribes, and the EPA use all data available in AQS that meet the quality assurance requirements in 40 CFR part 58, Appendix A for the designations process. Given that O<sub>3</sub> data from NCore stations will meet these requirements, there is no rational basis for excluding these data from comparison to the NAAQS. Accordingly, such data from NCore stations cannot be excluded and will be treated in a manner equivalent to all other O<sub>3</sub> data in AQS. The EPA expects that the highest O<sub>3</sub> values will occur during the required O<sub>3</sub> season; therefore, we don't anticipate that NCore data from the out-of-season months will contribute to the design value used in



the designations process. The EPA is finalizing the requirement for year-round O<sub>3</sub> monitoring at NCore stations.

The EPA Regional Administrators have previously approved deviations from the required O<sub>3</sub> monitoring seasons through rulemakings (64 FR 3028, January 20, 1999; 67 FR 57332, September 10, 2002; and 69 FR 52836, August 30, 2004). The current ambient monitoring rule, in paragraph 4.1(i) of 40 CFR part 58, Appendix D (71 FR 61319, October 17, 2006), allows the EPA Regional Administrators to approve changes to the O<sub>3</sub> monitoring season without rulemaking. The EPA is retaining the rule language allowing such deviations from the required O<sub>3</sub> monitoring seasons without rulemaking. In the finalized revision to paragraph 4.1(i) of 40 CFR part 58, Appendix D, the EPA is clarifying the minimum considerations that should be taken into account when reviewing requests, and clarifying that changes to the O<sub>3</sub> seasons finalized in this rule revoke all previously approved seasonal deviations. The EPA clarifies that all O<sub>3</sub> season waivers will be revoked when this final rule becomes effective. We encourage monitoring agencies with existing waivers to engage their EPA Regions as soon as possible to evaluate whether new or continued waivers are appropriate given the level of the revised O<sub>3</sub> NAAQS.

We received three comments for and three comments against early implementation of the revised O<sub>3</sub> seasons by the start of the applicable O<sub>3</sub> season in each state by January 1, 2016. Those commenters in favor of early implementation of the revised O<sub>3</sub> seasons are already operating a large percentage of O<sub>3</sub> monitors year-round or outside the current O<sub>3</sub> monitoring season in their state. Those commenters against early implementation cited concerns with the need for additional time to implement the revised O<sub>3</sub> seasons, especially in areas where access in order to service and support the monitoring equipment may be problematic during winter weather conditions, and the undue burden on already constrained state resources. One commenter noted that given the date for the final rule (October 1, 2015) that there is insufficient time for public review of their annual monitoring network plan due July 1, 2015, for early implementation in 2016. The EPA encourages those agencies who are able to implement the O<sub>3</sub> season changes early to do so by the start of the applicable O<sub>3</sub> season in their state in 2016. However, taking into consideration the timing and potential burden on monitoring agencies, the EPA

is finalizing the requirement for implementing the revised O<sub>3</sub> seasons no later than the start of the applicable O<sub>3</sub> monitoring season in 2017, as proposed.

### 3. Final Decisions on the Length of the Required O<sub>3</sub> Monitoring Seasons

Final changes to the required O<sub>3</sub> monitoring seasons are summarized in this section as well as in revised Table D-3 in 40 CFR part 58, Appendix D.

Detailed state-by-state technical information has been placed in the docket to document the basis for the EPA's decision on each state. This information includes state-by-state maps and number of days that were  $\geq 0.060$  ppm; distribution charts of the number of days that were  $\geq 0.060$  ppm by month and state; and detailed information regarding AQS site IDs, dates and concentrations of all occurrences of the 8-hour daily maximum of at least 0.060 ppm between 2010 and 2013. Summaries have also been prepared for each state including the former and proposed O<sub>3</sub> monitoring seasons.

No changes to the required O<sub>3</sub> monitoring season were proposed or finalized for these states: Alabama, Alaska, Arizona, Arkansas, California, Georgia, Hawaii, Kentucky, Northern Louisiana (AQCR <sup>221</sup> 019, 022), Southern Louisiana (AQCR 106), Maine, Mississippi, Nevada, New Mexico, Oklahoma, Oregon, Tennessee, Southern Texas (AQCR 106, 153, 213, 214, 216), Vermont, Washington, Puerto Rico, Virgin Islands, Guam, and American Samoa. All existing O<sub>3</sub> season deviations or waivers are revoked.

Changes to the required O<sub>3</sub> monitoring seasons are finalized as follows for these states and the District of Columbia and all existing O<sub>3</sub> season deviations or waivers are revoked.

Colorado: Proposed addition of January, February, October, November, and December is finalized. The required season is revised to January–December.

Connecticut: Proposed addition of March is finalized, revising season to March–September.

Delaware: Proposed addition of March is finalized, revising season to March–October.

District of Columbia: Proposed addition of March is finalized, revising season to March–October.

Florida: Proposed addition of January, February, November, and December is finalized. The required season is revised to January–December.

Idaho: Proposed addition of April is finalized, revising season to April–September.

Illinois: Proposed addition of March is finalized, revising season to March–October.

Indiana: Proposed addition of March and October, revising season to March–October.

Iowa: Proposed addition of March is finalized, revising season to March–October.

Kansas: Proposed addition of March is finalized, revising season to March–October.

Maryland: Proposed addition of March is finalized, revising season to March–October.

Massachusetts: Proposed addition of March is finalized, revising season to March–September.

Michigan: Proposed addition of March and October is finalized, revising season to March–October.

Minnesota: Proposed addition of March is finalized, revising season to March–October.

Missouri: Proposed addition of March is finalized, revising season to March–October.

Montana: Proposed addition of April and May is finalized, revising season to April–September.

Nebraska: Proposed addition of March is finalized, revising season to March–October.

New Hampshire: Proposed addition of March is finalized, revising season to March–September.

New Jersey: Proposed addition of March is finalized, revising season to March–October.

New York: Proposed addition of March is finalized, revising season to March–October.

North Carolina: Proposed addition of March is finalized, revising season to March–October.

North Dakota: Proposed addition of March and April is finalized, revising season to March–September.

Ohio: Proposed addition of March is finalized, revising season to March–October.

Pennsylvania: Proposed addition of March is finalized, revising season to March–October.

Rhode Island: Proposed addition of March is finalized, revising season to March–September.

South Carolina: Proposed addition of March is finalized, revising season to March–October.

South Dakota: Proposed addition of March, April, May, and October is finalized, revising season to March–October.

Texas (Northern AQCR 022, 210, 211, 212, 215, 217, 218): Proposed addition of November is finalized, revising season to March–November.

Utah: Proposed addition of January, February, March, April, October,

<sup>221</sup> Air Quality Control Region.

November, and December is finalized. The required season is revised to January–December.

Virginia: Proposed addition of March is finalized, revising season to March–October.

West Virginia: Proposed addition of March is finalized, revising season to March–October.

Wisconsin: Proposed addition of March and April 1–15 is finalized, revising season to March–October 15.

Wyoming: Proposed addition of January, February, March, and removal of October is finalized, revising season to January–September.

Finally, we are finalizing the required O<sub>3</sub> monitoring season for all NCore stations to be year-round (January–December) regardless of the required monitoring season for the individual state in which the NCore station is located.

### C. Revisions to the PAMS Network Requirements

Section 182 (c)(1) of the CAA required the EPA to promulgate rules for enhanced monitoring of O<sub>3</sub>, NO<sub>x</sub>, and VOCs for nonattainment areas classified as serious (or above) to obtain more comprehensive and representative data on O<sub>3</sub> air pollution. In addition, Section 185B of the CAA required the EPA to work with the National Academy of Sciences (NAS) to conduct a study on the role of O<sub>3</sub> precursors in tropospheric O<sub>3</sub> formation and control. As a result of this study, the NAS issued the report entitled, “Rethinking the Ozone Problem in Urban and Regional Air Pollution”, (NAS, 1991).

In response to the CAA requirements and the recommendations of the NAS report, on February 12, 1993 (58 FR 8452), the EPA revised the ambient air quality surveillance regulations to require PAMS in each O<sub>3</sub> nonattainment area classified as serious, severe, or extreme (“PAMS areas”). As noted in the EPA’s Technical Assistance Document (TAD) for Sampling and Analysis of Ozone Precursors (U.S. EPA, 1998), the current objectives of the PAMS program are to: (1) Provide a speciated ambient air database that is both representative and useful in evaluating control strategies and understanding the mechanisms of pollutant transport by ascertaining ambient profiles and distinguishing among various individual volatile organic compounds (VOCs); (2) provide local, current meteorological and ambient data to serve as initial and boundary condition information for photochemical grid models; (3) provide a representative, speciated ambient air database that is characteristic of source

emission impacts to be used in analyzing emissions inventory issues and corroborating progress toward attainment; (4) provide ambient data measurements that would allow later preparation of unadjusted and adjusted pollutant trends reports; (5) provide additional measurements of selected criteria pollutants for attainment/nonattainment decisions and to construct NAAQS maintenance plans; and (6) provide additional measurements of selected criteria and non-criteria pollutants to be used for evaluating population exposure to air toxics as well as criteria pollutants.

The original requirements called for two to five fixed sites per PAMS area depending on the area’s population. Four types of PAMS sites were identified including upwind (Type 1), maximum precursor emission rate (Type 2), maximum O<sub>3</sub> concentration (Type 3), and extreme downwind (Type 4) sites. Each PAMS site was required to measure O<sub>3</sub>, nitrogen oxide (NO), NO<sub>2</sub>, speciated VOCs, selected carbonyl compounds, and selected meteorological parameters. In addition, upper air meteorological monitoring was required at one site in each PAMS area.

In the October 17, 2006 monitoring rule (71 FR 61236), the EPA revised the PAMS requirements to only require two sites per PAMS area. The intent of the revision was to “allow PAMS monitoring to be more customized to local data needs rather than meeting so many specific requirements common to all subject O<sub>3</sub> nonattainment areas; the changes also gave states the flexibility to reduce the overall size of their PAMS programs—within limits—and to use the associated resources for other types of monitoring they consider more useful.” In addition to reducing the number of required sites per PAMS area, the 2006 revisions also limited the requirement for carbonyl measurements (specifically formaldehyde, acetaldehyde, and acetone) to areas classified as serious or above for the 8-hour O<sub>3</sub> standards. This change was made in recognition of carbonyl sampling issues which were believed to cause significant uncertainty in the measured concentrations.

Twenty-two areas were classified as serious or above O<sub>3</sub> nonattainment at the time the PAMS requirements were promulgated in 1993. On July 18, 1997 (62 FR 38856), the EPA revised the averaging time of the O<sub>3</sub> NAAQS from a 1-hour averaging period to an 8-hour averaging period. On June 15, 2005 (70 FR 44470), the EPA revoked the 1-hour; however, PAMS requirements were identified as requirements that had to be

retained in the anti-backsliding provisions included in that action. Therefore, PAMS requirements continue to be applicable to areas that were classified as serious or above nonattainment for the 1-hour O<sub>3</sub> standards as of June 15, 2004. Currently, 25 areas are subject to the PAMS requirements with a total of 75 sites. As will be discussed in detail later, the current PAMS sites are concentrated in the Northeast U.S. and California with relatively limited coverage in the rest of the country (Cavender, 2014).

The first PAMS sites began operation in 1994, and have been in operation for over 20 years. Since the start of the program, there have been many changes to the nature and scope of the O<sub>3</sub> problem in the U.S. as well as to our understanding of it. The O<sub>3</sub> standards has been revised multiple times since the PAMS program was first implemented. On July 18, 1997, the EPA revised the O<sub>3</sub> NAAQS to a level of 0.08 parts per million (ppm), with a form based on the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration. On March 28, 2008 (73 FR 16436), the EPA revised the O<sub>3</sub> standards to a level of 0.075 ppm, with a form based on the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration. These changes in the level and form of the O<sub>3</sub> NAAQS, along with notable decreases in O<sub>3</sub> levels in most parts of the U.S., have changed the landscape of O<sub>3</sub> NAAQS violations in the U.S. At the time of the first round of designations for the 8-hour standards (June 15, 2005), only 5 areas were classified as serious or above for the 8-hour standards as compared to 22 areas that were classified as serious or above for the 1-hour standards. While the number of serious and above areas decreased, the number of nonattainment areas remained nearly the same. In addition to the change in the landscape of O<sub>3</sub> nonattainment issues, much of the equipment used at PAMS sites is outdated and in need of replacement. New technologies have been developed since the inception of the PAMS program that should be considered for use in the network to simplify procedures and improve data quality. For these reasons, the EPA determined that it would be appropriate to re-evaluate the PAMS program as explained below.

In 2011, the EPA initiated an effort to re-evaluate the PAMS requirements in light of changes in the needs of PAMS data users and the improvements in monitoring technology. The EPA consulted with the Clean Air Science Advisory Committee (CASAC), Air

Monitoring and Methods Subcommittee (AMMS) to seek advice on potential revisions to the technical and regulatory aspects of the PAMS program; including changes to required measurements and associated network design requirements. The EPA also requested advice on appropriate technology, sampling frequency, and overall program objectives in the context of the most recently revised O<sub>3</sub> NAAQS and changes to atmospheric chemistry that have occurred over the past 10–15 years in the significantly impacted areas. The CASAC AMMS met on May 16 and May 17, 2011, and provided a report with their advice on the PAMS program on September 28, 2011 (U.S. EPA, 2011f). In addition, the EPA met multiple times with the National Association of Clean Air Agencies (NACAA) Monitoring Steering Committee (MSC) to seek advice on the PAMS program. The MSC includes monitoring experts from various State and local agencies actively engaged in ambient air monitoring and many members of the MSC have direct experience with running PAMS sites. Specific advice obtained from the CASAC AMMS and the MSC that was considered in making the proposed changes to the PAMS requirements is discussed in the appropriate sections below.

Based on the findings of the PAMS evaluation and the consultations with the CASAC AMMS and NACAA MSC, the EPA proposed to revise several aspects of the PAMS monitoring requirements including changes in (1) network design, (2) VOC sampling, (3) carbonyl sampling, (4) nitrogen oxides sampling, and (5) meteorology measurements. The following paragraphs summarize the proposed changes, the comments received, and the final changes and supporting rationale.

#### 1. Network Design

As discussed above, the current PAMS network design calls for two sites (a Type 2, and a Type 1 or Type 3) per PAMS area. In their report (U.S. EPA, 2011f), the CASAC AMMS found “that the existing uniform national network design model for PAMS is outdated and too resource intensive,” and recommended “that greater flexibility for network design and implementation of the PAMS program be transferred to state and local monitoring agencies to allow monitoring, research, and data analysis to be better tailored to the specific needs of each O<sub>3</sub> problem area.” While stating that the current PAMS objectives were appropriate, the AMMS report also stated that “objectives may need to be revised to include both a

national and regional focus because national objectives may be different from regional objectives.” The NACAA MSC also advised the EPA that the existing PAMS requirements were too prescriptive and may hinder state efforts to collect other types of data that were more useful in understanding their local O<sub>3</sub> problems.

The EPA agrees with CASAC that the PAMS objectives include both local and national objectives, and believes that the current PAMS network design is no longer suited for meeting either sets of objectives. As part of the PAMS evaluation, it was determined that at the national level the primary use of the PAMS data has been to evaluate photochemical model performance. Due to the locations of the current PAMS areas and the current network design, existing PAMS sites are clustered along the northeast and west coasts leading to significant redundancy in these areas and very limited coverage throughout the remainder of the country (Cavender, 2014). The resulting uneven spatial coverage greatly limits the value of the PAMS data for evaluation of model performance. CASAC (U.S. EPA, 2011f) noted the spatial coverage issue and advised that the EPA should consider requiring PAMS measurements in areas in addition to “areas classified as serious and above for the O<sub>3</sub> NAAQS to improve spatial coverage.” The EPA also agrees with CASAC and NACAA that the PAMS requirements should be revised to provide monitoring agencies greater flexibility in meeting local objectives.

The EPA proposed changes to the network design requirements to better serve both national and local objectives. The EPA proposed a two part network design. The first part of the design included a network of fixed sites (“required PAMS sites”) intended to support O<sub>3</sub> model development and the tracking of trends of important O<sub>3</sub> precursor concentrations. The second part of the network design required states with O<sub>3</sub> non-attainment areas to develop and implement Enhanced Monitoring Plans (EMPs) which were intended to allow monitoring agencies the needed flexibility to implement additional monitoring capabilities to suit the needs of their area.

To implement the fixed site portion of the network design, the EPA proposed to require PAMS measurements at any existing NCore site in an O<sub>3</sub> nonattainment area in lieu of the current PAMS network design requirements.<sup>222</sup>

<sup>222</sup> The EPA noted that the proposed change would expand the PAMS applicability beyond that required in 182(c)(1) of the CAA. Thus, in this final

The NCore network is a multi-pollutant monitoring network consisting of 80 sites (63 urban, 17 rural) sited in typical neighborhood scale locations and supports multiple air quality objectives including some of the objectives of the PAMS program including the development and evaluation of photochemical models (including both PM<sub>2.5</sub> and O<sub>3</sub> models), development and evaluation of control strategies, and the tracking of regional precursor trends.

The EPA recognized that in limited situations existing NCore sites may not be the most appropriate locations for making PAMS measurements. For example, an existing PAMS site in an O<sub>3</sub> nonattainment area may be sited at a different location than the existing NCore site. In this case, it may be appropriate to continue monitoring at the existing PAMS site to support ongoing research and to maintain trends information. To account for these situations, the EPA also proposed to provide the EPA Regional Administrator the authority to approve an alternative location for a required PAMS site where appropriate. The EPA also solicited comments on alternative frameworks using other benchmarks such as attainment status or population to ensure an appropriately sized fixed PAMS monitoring network. The EPA received several comments on the proposed changes to the network design, primarily from state and local monitoring agencies. The following paragraphs summarize the major comments made on the proposed network design, our response, and final network design requirements.

Most commenters agreed with the need to revise the existing network design. One commenter agreed that “requiring PAMS monitoring at already existing NCore locations will benefit national and local objectives to understand ozone formation and would also provide significant cost efficiencies.” Another commenter stated that they supported the proposed changes, “especially the flexibility provided by EMPs designed to meet local objectives and achieve a better understanding of photochemical precursors.” Another commenter supporting the changes stated that the “proposed network revision will provide states the flexibility to use their resources effectively.” One commenter stated that the proposed changes “reflect a more efficient use of state and local monitoring resources by availing

rule, the EPA is relying on the authority provided in Sections 103(c), 110(a)(2)(B), 114(a) and 301(a)(1) of the CAA to expand the PAMS applicability to areas other than those that are serious or above O<sub>3</sub> nonattainment.

monitoring agencies of existing NCore infrastructure to fulfill PAMS requirements.”

A number of concerns were also raised with the proposed network design. Several commenters stated that the proposal “would drastically reduce the PAMS network in the Northeast.” One commenter stated that “this is not acceptable for the Northeast and Mid-atlantic Corridor, which requires monitoring of the complex transport from multiple large metropolitan areas in the region.” One commenter recognized that the EPA had intended to allow states to use EMPs to address upwind and downwind data needs, but raised concerns that states with historically important upwind and downwind sites in the Ozone Transport Region <sup>223</sup> (OTR) may not be required to develop an EMP since those sites would be in states that are attaining the O<sub>3</sub> NAAQS. One commenter suggested that “the EPA consider the entire OTR when designing a PAMS network rather than pockets of nonattainment areas in the region.” The EPA agrees that the reduction of sites in the OTR is a potential issue and that many important existing PAMS sites would not be part of the required PAMS sites based on the proposed network design. As noted by several commenters, the EPA intended the state directed EMPs to give states flexibility in determining data needed to understand local O<sub>3</sub> formation, including transport in the Northeast. However, the EPA also agrees that as proposed many states in the OTR would not be required to develop EMPs and, therefore, may not be provided PAMS resources. To address these concerns and ensure adequate network coverage in the OTR, the EPA is adding a requirement that all states in the OTR develop and implement an EMP regardless of O<sub>3</sub> attainment status. This change will help ensure that an EMP appropriate for the entire OTR can be implemented.

Concerns were raised by some states that existing NCore sites may not be the most appropriate location for making PAMS measurements. One commenter noted that their NCore site was inland but that their “most significant ozone problems occur along the shoreline due to transport along the lake”, and that “the NCore site cannot provide insight into these important lakeshore ozone processes.” Another commenter stated that “while it was laudable to leverage

sites where data is already being collected, it is unclear whether NCore sites adequately meet the objectives of the PAMS program”, and that “the current NCore network may not be adequate to depict boundary conditions or areas of maximum emissions.” One commenter stated that “in some nonattainment areas an NCore site may be an appropriate location for a PAMS monitor, but in other areas it would be preferable to install the PAMS monitoring in a location downwind of a source region where higher ozone exposures occur” and that “State and local boundaries should not be part of the network design criteria.” One commenter noted that while the EPA had proposed to allow waivers, it was unclear if waivers would be allowed where the alternative site was in a different CBSA or state than the required PAMS site. As stated in our proposal, the EPA recognizes that in some cases existing PAMS sites (or other sites) may be better suited to meet local and national data needs. For this reason, we had proposed to allow waivers in these situations. We do agree that it is appropriate in some cases to allow these waivers to cross CBSA and state boundaries. Therefore, we have added specific language to the final waiver provisions to clarify that waivers can be allowed to cross CBSA and state boundaries. Where a monitoring agency receives a waiver from siting a monitor in reliance on a monitor operated by a different monitoring agency (*e.g.*, across state lines), the waiver will be conditioned on the monitor being properly included in the other agency’s network plan, and operated in accordance with the requirements of Part 58, including the relevant appendices.

In addition to the concerns raised about closing important existing PAMS sites discussed above, some commenters raised concerns that many of the newly required PAMS sites would be in locations that were expected to attain the revised O<sub>3</sub> NAAQS soon after the new sites would be installed. One commenter noted that “requiring marginal nonattainment areas to install PAMS sites would result in a large undertaking in an area that would most likely be back in attainment at or around the time the PAMS site started collecting data.” One commenter stated that by tying the network requirement to NAAQS attainment “threatens to underserve areas that are very close to exceeding the revised ozone NAAQS and results in significant gaps in the spatial coverage of the PAMS network” and “has the potential to introduce

undesirable uncertainty on the size and spatial extent of the PAMS network over the long term.” Another commenter was concerned that the proposed network would be unstable, and would experience frequent changes as areas came into attainment or went out of attainment thus reducing the value of the data collected, and resulting in inefficient use of resources. One commenter noted that “a more stable monitoring network design will allow for the examination of trends from spatially robust, long running sites and will allow states to firmly establish the infrastructure costs.”

The EPA noted in the proposal that the size and locations of the proposed required PAMS network is sensitive to the level of the revised O<sub>3</sub> NAAQS and future O<sub>3</sub> concentrations. We recognize and agree that if current downward trends in O<sub>3</sub> concentrations continue, many initially required sites may no longer be required to make PAMS measurements soon after the sites were installed. Non-required sites could be closed, soon after being installed, at the state’s discretion. We agree this would result in an inefficient use of resources. We also note that if these sites were closed following a potential reclassification to attainment, the loss of those sites could lead to a network with poor spatial coverage. Therefore, the EPA is making changes to the proposed revisions to the network design to improve the stability of the fixed site network. As explained below, the final requirements are based on options for which we requested comments in the proposal and the comments we have received.

We requested comments on additional options to define the fixed PAMS network component of the new network design. These options were further discussed in a memorandum to the docket (Cavender, 2014). One option discussed was to require PAMS measurements at all NCore sites irrespective of the O<sub>3</sub> attainment status of the area. One commenter noted that “requiring PAMS monitoring at all NCore sites, regardless of ozone attainment status, provides the most spatially robust and stable monitoring network.” We noted that this requirement would result in a network of approximately 80 sites, which would be larger than the current network. In the supporting memorandum, we noted that a fixed network of 80 sites would strain existing resources and would not allow adequate resources to implement the state directed EMPs.

Another option discussed in the proposal included requiring PAMS measurements at NCore sites in O<sub>3</sub>

<sup>223</sup> Section 184(c) of the CAA establishes the OTR as comprised of the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Consolidated Metropolitan Statistical Area that includes the District of Columbia.

nonattainment areas with a population greater than 1,000,000. We noted that this option would result in a network of between 31 and 37 sites depending on the level of the revised O<sub>3</sub> NAAQS. We also noted that focusing the applicability of PAMS to those NCore sites in larger CBSAs would still provide the desired improvement in geographic distribution while reducing the number of required sites down to a level that would provide sufficient resources to implement the state-directed EMP portion of the network. One commenter stated that they “supported a 1,000,000 population threshold because it would help prioritize resources to areas based on the greatest human health impacts.” In addition, a number of commenters, while not commenting on the need for a population limit, did raise concerns about their ability to acquire and retain staff with the necessary expertise to collect PAMS measurements in less urbanized areas. As with the proposed network design, we recognize that the total number of sites and the ultimate spatial coverage under this option is also sensitive to changes in O<sub>3</sub> concentrations. If current downward trends in O<sub>3</sub> concentrations continue, many initially required sites would not be required soon after they were installed. As with the proposed option, this option could result in an unstable network resulting in an inefficient use of resources and inadequate spatial coverage to meet the network goals discussed above.

Upon further consideration and in response to the comments received, we are finalizing a network design that includes a requirement for states to make PAMS measurements at all NCore sites in CBSAs with a population of 1,000,000 people or more, irrespective of O<sub>3</sub> attainment status. We believe this requirement will result in an appropriately sized network (roughly 40 sites) that will provide adequate spatial coverage to meet national model evaluation needs (Cavender, 2015). Redundancy is greatly reduced while important network coverage is added in the midwest, southeast, and mountain west. The improved spatial coverage will also strengthen the EPA’s ability to track trends in precursor concentrations regionally.

Because the network requirement is not tied to attainment status, this final requirement will ensure network stability and allows for more efficient use of available resources. This final requirement also removes uncertainty as to applicability and aids planning and logistics involved with implementing the new requirements. Monitoring

agencies can determine the applicability of the fixed site requirements to their areas today, and begin to make plans for investments in equipment, shelter improvements, and staffing and training needs necessary to implement the fixed site requirements without having to wait for the designations process to be completed. In addition, this final requirement should alleviate concerns raised by monitoring agencies in more rural locations over the ability to attract and retain staff with the skills necessary to make PAMS measurements.

By adding the PAMS measurements to existing NCore sites, significant efficiencies can be obtained which should further reduce the costs of the fixed site network as NCore sites currently make many of the PAMS measurements. Furthermore, adding the additional PAMS measurements (*e.g.*, speciated VOCs, carbonyls, and mixing height) to existing NCore sites will improve our ability to assess other pollutants (*e.g.*, air toxics and PM<sub>2.5</sub>).

Although, as discussed in comment and summarized above, we believe there are good reasons for not tying the requirement for fixed PAMS sites to O<sub>3</sub> attainment status, we continue to believe that requiring PAMS measurements in areas that historically have had low O<sub>3</sub> concentrations is unlikely to provide data of significant value to warrant the expense and effort of making such measurements. Therefore, we have included a provision that would allow a monitoring agency to obtain a waiver, based on Regional Administrator approval, in instances where CBSA-wide O<sub>3</sub> design values are equal to or less than 85% of the 8-hour O<sub>3</sub> NAAQS and where the site is not considered an important upwind or downwind site for other nonattainment areas. The EPA selected 85% as the threshold for this waiver provision as it has been used historically to identify locations needing additional monitoring for both the O<sub>3</sub> and PM<sub>2.5</sub> NAAQS. The EPA will work with the monitoring agencies and the Regions to help ensure consistent implementation of this waiver provision.

The second part of the proposed PAMS network design included monitoring agency directed enhanced O<sub>3</sub> monitoring activities intended to provide data needed to understand an area’s specific O<sub>3</sub> issues. To implement this part of the PAMS network design, the EPA proposed to add a requirement for states with O<sub>3</sub> nonattainment areas to develop an EMP. The purpose of the EMP was to improve monitoring for ambient concentrations of O<sub>3</sub>, NO<sub>x</sub>, total

reactive nitrogen (NO<sub>y</sub>)<sup>224</sup>, VOC, and meteorology. The EPA suggested that types of activities that might be included in the state’s EMP could include additional PAMS sites (*e.g.*, upwind or downwind sites), additional O<sub>3</sub> and NO<sub>x</sub> monitoring, ozonesondes or other aloft measurements, rural measurements, mobile PAMS sites, additional meteorological measurements, and episodic or intensive studies. The intent of the EMPs is to allow monitoring agencies flexibility in determining and collecting the information they need to understand their specific O<sub>3</sub> problems.

We received comments on the proposed requirement for an EMP in states with O<sub>3</sub> nonattainment areas. Most comments supported the requirement, but other comments raised a number of concerns. A number of commenters questioned the need for EMPs in Marginal and Moderate O<sub>3</sub> nonattainment areas. They noted that in most cases, Marginal O<sub>3</sub> nonattainment areas were expected to come into compliance without state-specific controls. One commenter stated that “nonattainment areas projected to attain the standard without additional state-level actions may not need the PAMS resources and additional monitoring to develop a better understanding of their ozone issues.” One commenter noted that “marginal ozone nonattainment areas are given only a few requirements because it is assumed that the areas will reach attainment within three years.” Another commenter stated “requiring enhanced monitoring for any marginal or moderate area should only be implemented where such analyses show the need for this data.” The EPA agrees that based on current trends in O<sub>3</sub> concentrations and the EPA’s own projections, states in Marginal nonattainment areas likely will comply with the revised NAAQS without additional state-directed controls, and as such, an EMP is not necessary in Marginal O<sub>3</sub> attainment areas. Accordingly, the EPA is finalizing a requirement for EMPs in areas classified as Moderate or above O<sub>3</sub> nonattainment and, thereby, removing the applicability of the requirement for Marginal areas. We believe this final requirement will provide the desired flexibility to allow states to identify enhanced monitoring needs while focusing resources for EMPs in areas of greater need of enhanced monitoring data.

Commenters expressed concerns over the lack of detail on what an approvable EMP would entail. As proposed, the

<sup>224</sup> NO<sub>y</sub> includes NO, NO<sub>2</sub>, and other oxidized nitrogen compounds (NO<sub>x</sub>).

EMPs would be reviewed and approved by the EPA Regional Administrator as part of the annual monitoring plan review process. One commenter recommended that the “EPA detail the requirements of the EMPs for ozone nonattainment areas in future implementation guidance.” One commenter stated that the “EPA should provide some coordination between regional offices and technical guidance to state agencies that would be of assistance in developing and executing the EMPs.” The requirements for the EMPs were intentionally left quite general in order to maximize the flexibility for states in identifying their specific data needs. Regional approval of the plans is required to ensure the enhanced monitoring planned will be commensurate with grant funds provided for EMPs. Nonetheless, the EPA understands the need for guidance on developing EMPs and commits to working with monitoring agencies and the regions to develop appropriate guidance on developing and reviewing EMPs.

## 2. Speciated VOC Measurements

Measurement of speciated VOCs important to O<sub>3</sub> formation is a key aspect of the PAMS program. The existing PAMS requirements allow for a number of options in measuring speciated VOCs at PAMS sites which include (1) hourly measurements using an automatic gas chromatograph (“autoGC”), (2) eight 3-hour samples daily using canisters, or (3) one morning and one afternoon sample with a 3-hour or less averaging time daily using canisters plus continuous Total Non-methane Hydrocarbon (TNMHC) measurements.

The EPA believes that the current options provided for VOC measurement limit the comparative value of the data being collected, and proposed that required PAMS sites must measure and report hourly speciated VOCs, which effectively would require them to use an autoGC to measure VOCs in lieu of canisters. More complete and consistent speciated VOC data nationally would better help meet certain objectives of the PAMS program described above (e.g., a speciated ambient air database useful in evaluating control strategies, analyzing emissions inventory issues, corroborating progress toward attainment, and evaluating population exposure to air toxics). Furthermore, as noted by the CASAC AMMS, hourly VOC data are “particularly useful in evaluating air quality models and performing diagnostic emission attribution studies. These data can be provided on a near real-time basis and

presented along with other precursor species (e.g., oxides of nitrogen and carbon monoxide) collected over similar averaging times.” Longer time-averaged data are of significantly lower value for model evaluation. In addition, creating consistent monitoring requirements across the network would provide better data for analyzing regional trends and spatial patterns.

At the time the original PAMS requirements were promulgated, the canister options were included because the EPA recognized that the technologies necessary to measure hourly average speciated VOCs concentrations were relatively new and may not have been suitable for broad network use. At that time, GCs designed for laboratory use were equipped with auto-samplers designed to “trap” the VOC compounds from a gas sample, and then “purge” the compounds onto the GC column. The EPA did not believe that autoGCs were universally appropriate due to the technical skill and effort necessary at that time to properly operate an autoGC.

While the basic principles of autoGC technology have not changed, the hardware and software of modern autoGCs are greatly improved over that available at the time of the original PAMS requirements. Based on advice from the CASAC AMMS, the EPA initiated an evaluation of current autoGCs potentially suitable for use in the PAMS network. Based on the preliminary results, the EPA believes that typical site operators, with appropriate training, will have the skill necessary to operate a modern autoGC successfully. Considering the advances in autoGC technology, the added value obtained from hourly data, and the proposed move of PAMS measurements to NCore sites in O<sub>3</sub> nonattainment areas, the EPA proposed to require hourly speciated VOC sampling at all PAMS sites. The EPA noted that this proposed requirement would effectively prevent the use of canisters to collect speciated VOCs at the required PAMS sites but that canister sampling may continue to be an appropriate method for collecting speciated VOCs at other locations as part of discretionary monitoring designed within the EMPs.

While the EPA believes that the proposed transition to hourly speciated VOC sampling is the appropriate strategy to take advantage of improved technology and to broaden the utility of collected data, we are also mindful of the additional rigidity that the proposed mandatory use of autoGCs may have for monitoring agencies, especially those that have experience with and have established effective and reliable

canister sampling programs. Therefore, the EPA requested comment on the proposed requirement for hourly VOC sampling as well as the range of alternatives that might be appropriate in lieu of a strict requirement.

The EPA received a number of comments on the requirement to measure hourly VOCs at required PAMS sites. Many commenters agreed with requiring hourly VOC data. One commenter agreed that “hourly VOC data collection is the most appropriate and useful for PAMS monitors” and that “it is only appropriate to approve an alternative data collection interval if it is believed that the high ozone in an area is due to other pollutants, such as NO<sub>x</sub> or methane.” One commenter stated they “supported the movement towards hourly PAMS VOC speciated measurements with flexibility to use canisters if programmatic or logistical needs indicate.”

However, some commenters raised concerns with the hourly VOC requirement. Some commenters questioned if autoGCs would be capable of measuring important VOC species in their environment. One commenter noted that in their location (high desert) “the largest VOC present in our inventory is creosote, a compound not commonly measured with this instrumentation.” One commenter stated that the “Southeastern United States is dominated by biogenic VOC emissions” and questioned “the benefits of an autoGC in understanding ozone formation in any potential nonattainment area in our State.”<sup>225</sup> Some questioned the detection capabilities of autoGCs as compared to canister sampling. One commenter found that the method detection limit (MDL) for their canister sampling was “consistently equal to or less than the autoGC instrumentation” based on the EPA’s autoGC evaluation laboratory report (RTI, 2014). Another commenter noted that the MDLs for many of the compounds and systems reported in the laboratory report were too high to be useful at PAMS sites. Another commenter stated that they found that “retention-time shifts made it difficult for instant identification of chemical peaks” and that “states should be allowed the flexibility to continue using canisters instead of autoGC.”

As noted in the preamble, and the comments received, the EPA is currently completing an evaluation of

<sup>225</sup> The EPA notes that isoprene (the dominant biogenic compound in the Southeast) is well measured using autoGCs. The EPA is also evaluating the potential of modern autoGCs to measure alpha and beta pinene; however that work is not complete.

commercially available autoGCs. A copy of the report for the laboratory phase of the study is available in the docket (RTI, 2014). As noted in the laboratory report, the MDL estimates made for the laboratory study were not conducted according to normal MDL testing procedures and as such the results should only be used to compare the various instruments being tested against each other.<sup>226</sup> As part of the evaluation, the EPA identified the manufacturer's specifications for MDL. Most of the systems that are being evaluated have a manufacturer's estimated MDL in the range of 0.1 ppb to 0.5 ppb. Based on the evaluation of MDL capabilities and typical ambient concentrations of O<sub>3</sub> precursors, the EPA believes that autoGCs are an appropriate method for gathering VOC data at most urban locations. However, canister sampling may be more appropriate in locations with low VOC concentrations.

For the reasons discussed above and in the proposed rule, the EPA is finalizing a requirement for hourly speciated VOC measurements at required PAMS sites. The EPA believes that hourly VOC measurements will provide a more complete and consistent speciated VOC database to help meet the PAMS program objectives described above. Hourly VOC data are particularly useful in evaluating air quality models and performing diagnostic emission attribution studies. Longer time-averaged data are of lower value for model evaluation. Consistent monitoring requirements across the network will provide better data for analyzing regional trends and spatial patterns.

However, the EPA agrees that there may be locations where an autoGC may not be the most appropriate method for VOC measurement and that it is appropriate to allow for canister sampling in limited situations. Accordingly, the EPA is adding a waiver option (to be approved by the EPA Regional Administrator) to allow three 8-hour average samples every 3rd day as an alternative in cases where VOCs are not well measured by autoGC due to low concentrations of target compounds

<sup>226</sup> Several factors combined to result in the high relative MDL estimates reported in laboratory report. The MDL testing in the laboratory was conducted during concurrent tests for interferences from humidity and temperature. In addition, the MDL testing was conducted at relatively high concentrations compared to the concentrations testing would be conducted at for conventional MDL testing. Finally, as noted in the laboratory report, a number of instruments were having technical difficulties during the testing which greatly impacted their MDL results. The EPA is continuing the autoGC evaluation and has conducted a field study during the summer of 2015. A final report is expected in early 2016.

or where the predominant VOC compounds cannot be measured using autoGC technology (e.g., creosote in high desert environments). This alternative sampling frequency was selected to be consistent with the sampling frequency selected for carbonyls, which is discussed later in this preamble.

### 3. Carbonyl Measurements

Carbonyls include a number of compounds important to O<sub>3</sub> formation that cannot currently be measured using the autoGCs or canisters used at PAMS sites to measure speciated VOCs. The current method for measuring carbonyls in the PAMS program is Compendium Method TO-11A (U.S. EPA, 1999). In this method, carbonyl compounds are adsorbed and converted into stable hydrazones using dinitrophenylhydrazine (DNPH) cartridges. These cartridges are then analyzed for the individual carbonyl compounds using liquid chromatography (LC) techniques. Three carbonyls are currently required to be measured in the PAMS program—formaldehyde, acetaldehyde, and acetone.

In 2006, the EPA revised the PAMS requirements such that carbonyl sampling was only required in areas classified as serious or above nonattainment for O<sub>3</sub> under the 8-hour O<sub>3</sub> standard which effectively reduced the applicability of carbonyl sampling to a few areas in California. This change was made in recognition that there were a number of issues with Method TO-11A that raised concerns with the uncertainty in the carbonyl data being collected. These issues include interferences (humidity and O<sub>3</sub>) and breakthrough (i.e., overloading of the DNPH cartridge) at high concentrations. While solutions for these issues have been investigated, these improvements have not been incorporated into Method TO-11A.

A recent evaluation of the importance of VOCs and carbonyls to O<sub>3</sub> formation determined that carbonyls, especially formaldehyde, are very important to O<sub>3</sub> formation (Cavender, 2013). CASAC AMMS (U.S. EPA, 2011f) also noted the importance of carbonyls stating that "There are many compelling scientific reasons to measure carbonyls. They are a very important part of O<sub>3</sub> chemistry almost everywhere." Although the EPA recognizes the issues that have been raised about the current method of measuring carbonyls, due to the importance of carbonyls to understanding O<sub>3</sub> chemistry, the EPA proposed to require all required PAMS sites to measure carbonyls.

Several commenters agreed with the need for carbonyl data at PAMS sites. However, a number of commenters questioned the proposed frequency of eight 3-hour samples every day during the PAMS sampling season (June through August). Several commenters indicated that the frequency was too high. One commenter noted that the requirement would require 800 samples per season at each PAMS site and pointed out that this requirement, which was required at the inception of the PAMS program in the 1990s was "found to be prohibitively expensive, technically unsustainable, and qualitatively compromised." Another commenter stated that "this level of sampling would require a substantial amount of agency resources and seems unduly burdensome." A number of commenters also questioned the commercial availability of an 8-channel carbonyl sampler that would be needed to take eight 3-hour samples daily. In light of the comments and upon further review, the EPA agrees that the proposed frequency is unduly burdensome and is finalizing a requirement with a lower frequency.

A number of alternative frequencies were suggested in the comments. Several commenters suggested a frequency of three 8-hour samples on either a 1-in-6 day or 1-in-3 day basis. Another commenter suggested a frequency of eight 3-hour samples on a 1 in 6 day basis. The EPA notes that sampling on a 1-in-6 day frequency would lead to as little as 15 sampling days per PAMS sampling season. The EPA believes that 15 sampling days is too few to provide a meaningful representation of carbonyl concentrations over the PAMS sampling period. A sampling frequency of 1-in-3 days would lead to 30 sampling days per season with each day of the week being represented at least 4 times per sampling season. With regards to samples per day, a 3-hour sampling duration provides a better diurnal representation of carbonyl sampling compared with an 8-hour sampling duration; however 8-hour sampling can provide information useful for evaluating diurnal differences in carbonyl concentrations. Upon further consideration and in light of the comments received, the EPA is finalizing a carbonyl sampling requirement with a frequency of three 8-hour samples on a 1-in-3 day basis. This final requirement will result in approximately 90 samples per PAMS sampling season which the EPA believes is not unduly burdensome and

will provide a reasonable representation of carbonyl concentrations.

A number of commenters noted the ongoing development of continuous formaldehyde instruments, and recommended that EPA allow for continuous formaldehyde measurements as an alternative to the manual cartridge based TO-11A method. The EPA agrees that continuous formaldehyde, with the ability to obtain hourly averaged measurements, would be a significantly more valuable than the longer averaged measurements. As a result, the EPA has added an option to allow for continuous formaldehyde as an alternative to the carbonyl measurements using TO-11A.

#### 4. Nitrogen Oxides Measurements

It is well known that NO and NO<sub>2</sub> play important roles in O<sub>3</sub> formation (U.S. EPA, 2013, Section 3.2.2). Under the current network design, Type 2 PAMS sites are required to measure NO<sub>x</sub> (which by definition is the sum of NO and NO<sub>2</sub>), and Types 1, 3, and 4 sites are required to measure NO<sub>y</sub>. NCore sites are currently required to measure NO<sub>y</sub> but are not required to measure NO<sub>2</sub> separately.

In conventional NO<sub>x</sub> analyzers, NO<sub>2</sub> is determined as the difference between the measured NO and NO<sub>x</sub> concentrations. However, due to the non-selective reduction of oxidized nitrogen compounds by the molybdenum converter used in conventional NO<sub>x</sub> monitors, the NO<sub>2</sub> measurement made by conventional NO<sub>x</sub> monitors can be biased high due to the varying presence of NO<sub>z</sub> compounds that may be reported as NO<sub>2</sub>. The unknown bias from the NO<sub>z</sub> compounds is undesirable when attempting to understand O<sub>3</sub> chemistry.

Improvements in reactive nitrogen measurements have been made since the original PAMS requirements were promulgated that allow for improved NO<sub>2</sub> measurements. Selective photolytic converters have been developed that are not significantly biased by NO<sub>z</sub> compounds (Ryerson et al., 2000). Monitors using photolytic converters are commercially available and have been approved as FEMs for the measurement of NO<sub>2</sub>. In addition, methods that directly read NO<sub>2</sub> have been developed that allow for very accurate readings of NO<sub>2</sub> without some of the issues inherent to the "difference method" used in converter-based NO<sub>x</sub> analyzers. However, these direct reading NO<sub>2</sub> analyzers generally do not provide an NO estimate, and would need to be paired with a converter-based NO<sub>x</sub> monitor or NO<sub>y</sub> monitor in order to also measure NO.

As discussed above, the EPA is finalizing a PAMS network design such that PAMS measurements will be required at existing NCore sites in CBSAs with a population of 1,000,000 people or more. NCore sites currently are required to measure NO and NO<sub>y</sub>. NCore sites are not currently required to measure NO<sub>2</sub>. Due to the importance of accurate NO<sub>2</sub> data to the understanding of O<sub>3</sub> formation, the EPA proposed to require NO<sub>2</sub> measurements at required PAMS sites. Since existing NCore sites currently measure NO<sub>y</sub>, either a direct reading NO<sub>2</sub> analyzer or a photolytic-converter NO<sub>x</sub> analyzer could be used to meet the proposed requirement. The EPA believes conventional NO<sub>x</sub> analyzers would not be appropriate for making PAMS measurements due to the uncertainty caused by interferences from NO<sub>z</sub> compounds.

A number of commenters questioned the need for both NO<sub>y</sub> and NO<sub>2</sub> measurements at PAMS sites. One commenter stated that "in dense urban areas an NO/NO<sub>2</sub>/NO<sub>x</sub> instrument may be adequate but in a more rural area an NO/NO<sub>y</sub> instrument may be preferable." Another commenter stated that due to the size of the grid cells used in grid models that "the impact of NO<sub>z</sub> interferences would be very small compared to other modeling uncertainties such as emission inventories and mixing heights." Another commenter suggested that "EPA should provide clear and specific guidance on how agencies can request that the NO<sub>y</sub> monitoring be eliminated from the NCore suite based on comparative data between the NO<sub>2</sub> and NO<sub>y</sub> monitors."

The comments suggest that the model's ability to simulate the partitioning of reactive nitrogen is unimportant because there may be other errors in the model. The EPA believes that measurements should be routinely collected so that it can be demonstrated that the chemistry, meteorology, and emissions in the model are all of sufficient reliability for use in informing air quality management decisions. Monitoring sites rarely fall into simple categories of urban or rural, and the speciation of NO<sub>y</sub> varies considerably as a function of meteorology and time of day at a given site. The state-of-the-science in regulatory air quality modeling is such that accurate measurements of key O<sub>3</sub> precursors must be available to demonstrate the credibility of the model predictions. The increased availability of special field study observations is leading to increased scrutiny of the chemical mechanisms used in regulatory modeling. Comprehensive and accurate

measurement sites are needed to demonstrate the adequacy of the models and to respond to these challenges.

Measurements of NO, NO<sub>2</sub>, and NO<sub>y</sub> concentrations are critical to understanding atmospheric aging and photochemistry. These measurements will provide essential information about whether NO<sub>y</sub> compounds are fresh or aged which is important for understanding both local photochemistry (*i.e.* through indicator ratios to distinguish NO<sub>x</sub> vs VOC limited conditions) as well as for characterizing transport from upwind regions. These evaluations may be conducted using observations, box modeling or through complex photochemical grid based modeling. Accurate speciated and total NO<sub>y</sub> measurements are necessary for all three types of analysis. For these reasons, the EPA is finalizing the requirement for required PAMS sites to measure true NO<sub>2</sub> in addition to NO and NO<sub>y</sub>.

#### 5. Meteorology Measurements

The current PAMS requirements require monitoring agencies to collect surface meteorology at all required PAMS sites. As noted in the EPA's Technical Assistance Document (U.S. EPA, 1998) for the PAMS program, the PAMS requirements do not provide specific surface meteorological parameters to be monitored. As part of the implementation efforts for the original PAMS program, a list of recommended parameters was developed and incorporated into the TAD which includes wind direction, wind speed, temperature, humidity, atmospheric pressure, precipitation, solar radiation, and ultraviolet (UV) radiation. Currently, NCore sites are required to measure the above parameters with the exceptions of atmospheric pressure, precipitation, solar radiation, and UV radiation. In recognition of the importance of these additional measurements for understanding O<sub>3</sub> formation, the EPA proposed to specify that required PAMS sites are required to collect wind direction, wind speed, temperature, humidity, atmospheric pressure, precipitation, solar radiation, and UV radiation. Since NCore sites are currently required to measure several of these surface meteorological parameters, the net impact of the proposal was to add the requirement for the monitoring of atmospheric pressure, precipitation, solar radiation, and UV radiation at affected NCore sites. The EPA received no significant comments on this portion of the proposal, and therefore is finalizing the requirement as proposed.



The existing PAMS requirements also require the collection of upper air meteorological measurements at one site in each PAMS area. The term upper air meteorological is not well defined in the existing PAMS requirements. As part of the implementation efforts for the original PAMS program, mixing height was added to the PAMS TAD as a recommended meteorological parameter to be monitored. Most monitoring agencies installed radar profilers to meet the requirement to collect upper air meteorology. Radar profilers provide data on wind direction and speed at multiple heights in the atmosphere. Radio acoustic sounding system (RASS) profilers are often included with radar profilers to obtain atmospheric temperature at multiple heights in the atmosphere and to estimate mixing height. The EPA recognizes that the upper air data on wind speed and wind direction from radar profilers can be very useful in O<sub>3</sub> modeling. However, many of the current PAMS radar profilers are old and in need of replacement or expensive maintenance. In addition, the cost to install and operate radar profilers at all required PAMS sites would be prohibitive. Therefore, the EPA did not propose to add upper air wind speed and direction as required meteorological parameters to be monitored at required PAMS sites. Where monitoring agencies find the radar profiler data valuable, continued operation of existing radar profilers or the installation of new radar profilers would be appropriate to consider as part of the state's EMP.

As discussed above, mixing height is one upper air meteorological measurement that has historically been measured at PAMS sites. A number of methods can be used to measure mixing height in addition to radar profiler technology discussed above. Recent developments in ceilometer technology allow for the measurement of mixing height by changes in particulate concentrations at the top of the boundary layer (Eresmaa et al., 2006). Ceilometers provide the potential for continuous mixing height data at a fraction of the cost of radar profilers. Due to the importance of mixing height measurements for O<sub>3</sub> modeling, the EPA proposed to add the requirement for monitoring agencies to measure mixing height at required PAMS sites.

A number of commenters questioned the need for mixing height measurements at PAMS sites. One commenter stated, "the photochemical modeling community has a long history of relying upon National Weather Service measurements for mixing height." Another commenter stated that

"in some areas of the country the models used to predict mixing height are adequate, but in other mountainous or marine areas model-predicted mixing height data is inadequate." Accurate estimates of mixing height are important for appropriately characterizing concentrations of O<sub>3</sub> and O<sub>3</sub> precursors. Mixing height is also important for characterizing how modeled O<sub>3</sub> may change as a result of changing NO<sub>x</sub> and VOC concentrations. For instance, if the modeled mixing height is too low causing unrealistically high concentration of NO<sub>x</sub>, then O<sub>3</sub> destruction could be predicted when O<sub>3</sub> production may be happening in the atmosphere. When this or the opposite situation exists in modeling it may lead O<sub>3</sub> response to emissions changes that are less reliable for air quality planning purposes. While models are believed to do a reasonable job of predicting mixing height during the day, there is considerably more uncertainty in predicting this parameter during morning and evening transition periods and at night. Model O<sub>3</sub> predictions are particularly sensitive to mixing height during the time periods for which uncertainty in this parameter is greatest.

Several commenters noted that nearby National Oceanic and Atmospheric Administration (NOAA) Automated Surface Observing System (ASOS) sites may be a better alternative for collection of mixing height data. As indicated in the proposal, the EPA is aware of the network of ceilometers operated by NOAA as part of ASOS. The EPA has been in discussions with NOAA regarding the potential for these systems to provide the needed mixing height data. However, the ASOS ceilometers are not currently equipped to provide mixing height data and NOAA has no current plans to measure continuous mixing height in the future. Nonetheless, the EPA will continue to work with NOAA to determine if the ASOS ceilometers can be upgraded to meet the need for mixing height data, and included proposed regulatory language that will allow states a waiver to use nearby mixing height data from ASOS (or other sources) to meet the requirement to collect mixing height data at required PAMS sites when such data are suitable and available.

The EPA is finalizing the requirement for the measurement of mixing height at required PAMS sites due to the importance of mixing height in O<sub>3</sub> modeling. A waiver option, to be approved by the Regional Administrator, is also being included to allow mixing height measurements to be obtained from other nearby sites (e.g., NOAA ASOS sites).

## 6. PAMS Season

Currently, PAMS measurements are required to be taken during the months of June, July, and August. This 3-month period is referred to as the "PAMS Season." As part of the PAMS re-evaluation, the EPA considered changes to the PAMS season. The 3-month PAMS season was originally selected to represent the most active period for O<sub>3</sub> formation. However, the EPA notes that in many areas the highest O<sub>3</sub> concentrations are observed outside of the PAMS season. As an example, the highest O<sub>3</sub> concentrations in the mountain-west often occur during the winter months. Data collected during the current PAMS season would have limited value in understanding winter O<sub>3</sub> episodes.

The CASAC AMMS (U.S. EPA, 2011f) noted in their report to the EPA that "it would be desirable to extend the PAMS monitoring season beyond the current June, July, August sampling period." But that "the monitoring season should not be mandated and rigid; it should be flexible and adopted and coordinated on a regional airshed basis." The EPA agrees with CASAC on the need for flexibility in determining when PAMS measurements should be taken to meet local monitoring needs but also agrees with CASAC that the flexibility "should not conflict with national goals for the PAMS program." A significant benefit of the standard PAMS season is that it ensures data availability from all PAMS sites for national- or regional-scale modeling efforts.

While the EPA agrees with the potential benefit of extending the availability of PAMS measurements outside of the current season, we also considered the burden of requiring monitoring agencies to operate additional PAMS measurements (e.g., hourly speciated VOC) for periods that in some cases, might be much longer than the current 3-month season, for example, if the PAMS season was extended to match each state's required O<sub>3</sub> monitoring season. Being mindful of the potential burden associated with a lengthening of the PAMS season as well as the potential benefits of the additional data, the EPA proposed to maintain the current 3-month PAMS monitoring season for required PAMS sites rather than extending the PAMS season to other periods where elevated O<sub>3</sub> may be expected. No significant comments were received on the proposed PAMS season, and as such, for the reasons stated here and in the proposal, the EPA is not changing the 3-month PAMS season of June, July, and August.

The EPA believes that the 3-month PAMS season will provide a consistent data set of O<sub>3</sub> and O<sub>3</sub> precursor measurements for addressing the national PAMS objectives. Monitoring agencies are strongly encouraged to consider collecting PAMS measurements in additional periods beyond the required PAMS season as part of their EMP. The monitoring agencies should consider factors such as the periods of expected peak O<sub>3</sub> concentrations and regional consistency when determining potential expansion of their specific monitoring periods beyond the required PAMS season.

#### 7. Timing and Other Implementation Issues

The EPA recognizes that the changes to the PAMS requirements will require resources and a reasonable timeline in order to be successfully implemented. The PAMS program is funded, in part, as part of the EPA's section 105 grants. The EPA believes that the current national funding level of the PAMS program is sufficient to support these final changes, but changes in the distribution of PAMS funds will need to be made. The network design changes will require some monitoring agencies to start collection of new PAMS measurements, while other monitoring agencies will see reductions in PAMS measurement requirements. The EPA will work with the NAACA, AAPCA, and other monitoring agencies to develop an appropriate PAMS grant distribution strategy.

In addition to resources, the affected monitoring agencies will need time to implement the revised PAMS requirements. For the required PAMS sites, monitoring agencies can determine now which NCore sites will be required to make PAMS measurements based on readily available census data. However, monitoring agencies will still need time to evaluate and seek approval for alternative sites or alternative VOC methods. In addition, monitoring agencies will need time to make capital investments (primarily for the installation of autoGCs, NO<sub>2</sub> monitors, and ceilometers), prepare appropriate QA documents, and develop the expertise needed to successfully collect PAMS measurements via training or otherwise. In order to ensure monitoring agencies have adequate time to plan and successfully implement the revised PAMS requirements, the EPA is requiring that monitoring agencies identify their plans to implement the PAMS measurements at NCore sites in their Annual Network Plan due July 1, 2018, and to begin making PAMS

measurements at NCore sites by June 1, 2019. The EPA believes some monitoring agencies may be able to begin making PAMS measurements sooner than June 2019 and encourages early deployment where possible.

Monitoring agencies will need to wait until O<sub>3</sub> designations are made to officially determine the applicability of the EMP requirement. The EPA proposed to allow two years after designations to develop EMPs, and that the EMPs would be submitted as part of their Annual Network Plan. Several commenters stated that due to the level of planning and coordination required for the EMPs, that the plans should instead be included as part of the 5-year network assessment. While the EPA agrees that the EMPs will require a substantial amount of planning and coordination, the next 5 year network assessment will not be due until July 1, 2020—nearly 5 years from the date of this final rulemaking. The EPA believes that it would be inappropriate to wait 5-years from the date of this rulemaking to develop plans for enhanced O<sub>3</sub> monitoring. In addition, the EPA believes that the first round of EMP development should receive additional focus and review that may not be afforded as part of the larger network assessment. Finally, most monitoring agencies will be aware of their likely O<sub>3</sub> attainment status well in advance of the official designations. In order to ensure timely development of the initial EMPs, the EPA is requiring affected monitoring agencies to submit their initial EMPs no later than two years following designations. States in the OTR do not need to wait until designations to determine EMP applicability and may not be classified as Moderate or above. As such, the final rule includes a requirement for states in the OTR to submit their initial EMPs by October 1, 2019 (which is consistent with the expected timeline for the remaining EMPs). However, subsequent review and revisions to the EMPs are to be made as part of the 5-year network assessments beginning with the assessments due in 2025.

#### D. Addition of a New FRM for O<sub>3</sub>

The use of FRM analyzers for the collection of air monitoring data provides uniform, reproducible measurements of concentrations of criteria pollutants in ambient air. FRMs for various pollutants are described in several appendixes to 40 CFR part 50. For most gaseous criteria pollutants (including O<sub>3</sub> in Appendix D of part 50), the FRM is described as a particular measurement principle and calibration procedure to be implemented, with

further reference to specific analyzer performance requirements specified in 40 CFR part 53.

The EPA allows new or alternative monitoring technologies—identified as FEMs—to be used in lieu of FRMs, provided that such alternative methods produce measurements closely comparable to corresponding FRM measurements. Part 53 sets forth the specific performance requirements as well as the performance test procedures required by the EPA for determining and designating both FRM and FEM analyzers by brand and model.

To be used in a determination of compliance with the O<sub>3</sub> NAAQS, ambient O<sub>3</sub> monitoring data must be obtained using either a FRM or a FEM, as defined in parts 50 and 53. For O<sub>3</sub>, nearly all the monitoring methods currently used by state and local monitoring agencies are FEM (not FRM) continuous analyzers that utilize an alternative measurement principle based on quantitative measurement of the absorption of UV light by O<sub>3</sub>. This type of O<sub>3</sub> analyzer was introduced into monitoring networks in the 1980s and has since become the predominant type of method used because of its all-optoelectronic design and its ease of installation and operation.

The existing O<sub>3</sub> FRM specifies a measurement principle based on quantitative measurement of chemiluminescence from the reaction of ambient O<sub>3</sub> with ethylene (ET-CL). Ozone analyzers based on this FRM principle were once widely deployed in monitoring networks, but now they are no longer used for routine O<sub>3</sub> field monitoring because readily available UV-type FEMs are substantially less difficult to install and operate. In fact, the extent of the utilization of UV-type FEMs over FRMs for O<sub>3</sub> monitoring is such that FRM analyzers have now become commercially unavailable. The last new commercial FRM analyzer was designated by the EPA in 1979. The current list of all approved FRMs and FEMs capable of providing ambient O<sub>3</sub> data for use in NAAQS attainment decisions may be found on the EPA's Web site and in the docket for this action (U.S. EPA, 2014e). However, that list does not indicate whether or not each listed method is still commercially available.

#### 1. Proposed Changes to the FRM for O<sub>3</sub>

Although the existing O<sub>3</sub> FRM is still a technically sound methodology, the lack of commercially available FRM O<sub>3</sub> analyzers severely impeded the use of FRM analyzers, which are needed for quality control purposes and as the standard to which candidate FEMs are

required to be compared. Therefore, the EPA proposed to establish a new FRM measurement technique for O<sub>3</sub> based on NO-chemiluminescence (NO-CL) methodology. This new chemiluminescence technique is very similar to the existing ET-CL methodology with respect to operating principle, so the EPA proposed to incorporate it into the existing O<sub>3</sub> FRM as a variation of the existing ET-CL methodology, coupled with the same existing FRM calibration procedure.

A revised Appendix D to 40 CFR part 50 was proposed to include both the original ET-CL methodology as well as the new NO-CL methodology, such that use of either measurement technique would be acceptable for implementation in commercial FRM analyzers. Currently, two O<sub>3</sub> analyzer models (from the same manufacturer) employing the NO-CL methodology have been designated by the EPA as FEMs and would qualify for re-designation as FRMs under the revised O<sub>3</sub> FRM. The rationale for selecting the new NO-CL FRM methodology, including what other methodologies were also considered, and additional information to support its selection are discussed in the preamble to the proposal for this action (79 FR 75366–75368). No substantive change was proposed to the existing O<sub>3</sub> FRM calibration procedure, which would be applicable to both chemiluminescence FRM methodologies.

The proposed FRM in part 50, Appendix D also included numerous editorial changes to provide clarification of some provisions, some revised wording, additional details, and a more refined numbering system and format consistent with that of two other recently revised FRMs (for SO<sub>2</sub> and CO).

As noted in the proposal, there is substantial similarity between the new and previously existing FRM measurement techniques, and comparative field data show excellent agreement between ambient O<sub>3</sub> measurements made with the two techniques (U.S. EPA 2014f). Therefore, the EPA believes that there will be no significant impact on the comparability between existing ambient O<sub>3</sub> monitoring data based on the original ET-CL methodology and new monitoring data that may be based on the NO-CL methodology.

The proposed FRM retains the original ET-CL methodology, so all existing FEMs, which were designated under part 53 based on demonstrated comparability to that ET-CL methodology, will retain their FEM designations. Thus, there will be no negative consequences or disruption to

monitoring agencies, which will not be required to make any changes to their O<sub>3</sub> monitors due to the revised O<sub>3</sub> FRM. New FEMs would be designated under part 53, based on demonstrated acceptable comparability to either FRM methodology.

## 2. Comments on the FRM for O<sub>3</sub>

Comments that were received from the public on the proposed new O<sub>3</sub> FRM technique are addressed in this section. Most commenters expressed general support for the proposed changes, although a few commenters expressed some concerns. The most significant issue discussed in comments was the relatively small but nevertheless potentially significant interference of water vapor observed in the ET-CL technique. As some comments pointed out, this interference is positive and could possibly affect NAAQS attainment decisions. The available NO-CL FEM analyzers include a sample dryer, which minimizes this interference. As noted previously, very few, if any, ET-CL FRM analyzers are still in operation. The ET-CL (with and without a sample dryer), the proposed NO-CL FRM, and all designated FEM analyzers have demonstrated compliance with the substantially reduced water vapor interference equivalent limit specified in 40 CFR part 53.

The proposed FRM mentioned the need for a sample air dryer for both ET-CL and NO-CL FRM analyzers. In response to these comments, the wording of the ET-CL FRM has been augmented to clarify the requirement for a dryer in all newly designated FRMs (the only change being made by the EPA to the existing ET-CL FRM as proposed). Also, the interference equivalent limit for water vapor in part 53 was proposed to be substantially reduced from the current 0.02 ppm to 0.002 ppm. The interference equivalent test for water vapor applicable to the new NO-CL candidate FRM analyzers (specified in Table B–3 of part 53) was proposed to be more stringent than the corresponding existing test for ET-CL FRM analyzers by requiring that water vapor be mixed with O<sub>3</sub>. This mixing requirement was not part of the existing test for ET-CL candidate analyzers (denoted by footnote 3 in Table B–3). However, in further response to these commenters' concerns, the EPA has modified Table B–3 to extend this water vapor mixing requirement to newly designated ET-CL analyzers, as well. These measures should insure that potential water vapor interference is minimized in all newly designated FRM analyzers.

Several comments indicated concern that currently-designated FEM analyzers retain their designation without retesting if the new FRM were promulgated. The current ET-CL FRM is being retained; therefore, it is not necessary to make these new requirements retroactive to existing designated FEM analyzers. The existing FEM analyzers will not be required to be retested, and their FEM designation will be retained so that there will be no disruption to current monitoring networks.

Although beyond the scope of this rulemaking, other comments concerned potential hazards of the NO compressed gas supply required for NO-CL analyzer operation, and the current non-availability of a photolytic converter to provide an alternative source of NO from a less hazardous nitrous oxide gas supply. With regard to the photolytic converter, the EPA would approve such a converter as a source of NO if requested by an FRM analyzer manufacturer, upon demonstration of adequate functionality.

A few commenters liked the “scrubberless UV absorption” (SL-UV) measurement technique. The EPA has identified the SL-UV method as a potentially advantageous candidate for the O<sub>3</sub> FRM, but could not propose adopting it until additional test and performance information becomes available. A related comment requested clarification that promulgation of the proposed revised FRM would not preclude future consideration of other O<sub>3</sub> measurement techniques such as SL-UV. In response, the EPA can always consider new technologies for FRMs under 40 CFR 53.16 (Supersession of reference methods). However, a revised or amended FRM that included the SL-UV technique, as set forth in Appendix D of 40 CFR part 50, would have to be promulgated as part of a future rulemaking, before a SL-UV analyzer could be approved as an FRM under 40 CFR part 53.

One comment suggested that the value for the absorption cross section of O<sub>3</sub> at 254 nm used by the FRM's calibration procedure should be changed. The comment indicated that the nearly 2% difference effectively lowers the O<sub>3</sub> NAAQS by that amount. Using the corrected value would resolve much of the difference observed between O<sub>3</sub> measurements calibrated against the UV standard reference photometer versus those calibrated using NO gas phase titration and it would allow the EPA to adopt the less complex and more economical Gas Phase Titration (GPT) technique as the primary calibration standard for the

FRM. The EPA will await the results of further studies determining the value of the O<sub>3</sub> cross section at 254 nm before making a change to the calibration procedures and will not finalize changes to the calibration procedures in this final rule.

#### *E. Revisions to the Analyzer Performance Requirements*

##### 1. Proposed Changes to the Analyzer Performance Requirements

In close association with the proposed O<sub>3</sub> FRM, the EPA also proposed changes to the associated analyzer performance requirements for designation of FRMs and FEMs for O<sub>3</sub>, as set forth in 40 CFR part 53. These changes were largely confined to Table B-1, which specifies performance requirements for FRM and FEM analyzers for SO<sub>2</sub>, CO, O<sub>3</sub>, and NO<sub>2</sub>, and to Table B-3, which specifies test concentrations for the various interfering agent (interferent) tests. Minor changes were also proposed for Figure B-5 and the general provisions in subpart A of part 53. All of these proposed changes are described and discussed more fully in the preamble to the proposal for this action (79 FR 75368-75369).

Modest changes proposed for Table B-3 would add new interferent test concentrations specifically for NO-CL O<sub>3</sub> analyzers, which include a test for NO<sub>2</sub> interference.

Several changes to Table B-1 were proposed. Updated performance requirements for “standard range” analyzers were proposed to be more consistent with current O<sub>3</sub> analyzer performance capabilities, including reduced limits for noise allowance, lower detectable limit (LDL), interference equivalent, zero drift, span drift, and lag, rise, and fall times. The previous limit on the total of all interferents was proposed to be withdrawn as unnecessary and to be consistent with that same change made previously for SO<sub>2</sub> and CO analyzers. Also, the span drift limit at 20% of the upper range limit (URL) was proposed to be withdrawn because it has similarly been shown to be unnecessary and to maintain consistency with that same change made previously for SO<sub>2</sub> and CO analyzers.

The form of the precision limits at both 20% and 80% of the URL was proposed to be changed from ppm to percent. The proposed new limits (in percent) were set to be equivalent to the previously existing limits (in ppm) and thus remain effectively unchanged. This change in form of the precision limits in Table B-1 has been previously made for SO<sub>2</sub> and CO analyzers, and was

proposed to extend also to analyzers for NO<sub>2</sub>, (again with equivalent limits) for consistency and to simplify Table B-1 across all types of analyzers to which the table applies. A new footnote proposed for Table B-1 clarifies the new form for precision limits as “standard deviation expressed as percent of the URL.” Also proposed was a revision to Figure B-5 (Calculation of Zero Drift, Span Drift, and Precision) to reflect the changes proposed in the form of the precision limits and the withdrawal of the limits for total interference equivalent.

Concurrent with the proposed changes to the performance requirements for candidate O<sub>3</sub> analyzers, the EPA conducted a review of all designated FRM and FEM O<sub>3</sub> analyzers currently in production or being used, and verified that all meet the proposed new performance requirements. Therefore, none would require withdrawal or cancellation of their current FRM or FEM respective designations.

Finally, the EPA proposed new, optional, “lower range” performance limits for O<sub>3</sub> analyzers operating on measurement ranges lower (*i.e.*, more sensitive) than the standard range specified in Table B-1. The new performance requirements are listed in a new “lower range” column in Table B-1 and will provide for more stringent performance in applications where more sensitive O<sub>3</sub> measurements are needed.

Two minor changes were proposed to the general, administrative provisions in Subpart A of part 53. These include an increase in the time allowed for the EPA to process requests for approval of modifications to previously designated FRMs and FEMs in 53.14 and the withdrawal of a requirement for annual submission of Product Manufacturing Checklists associated with FRMs and FEMs for PM<sub>2.5</sub> and PM<sub>10-2.5</sub> in 53.9. No comments were received on these proposed changes and the EPA will be finalizing these revisions in this rulemaking.

##### 2. Comments on the Analyzer Performance Requirements

Several comments were received related to the proposed changes to the analyzer performance requirements of part 53, and most were supportive. Comments from a few monitoring agencies suggested that the more stringent performance requirements proposed might be difficult to achieve or would increase monitor maintenance and cost. The EPA is also clarifying that these requirements apply only to the performance qualification requirements for designations of new FRM and FEM

analyzers and will have no impact on a monitoring agency’s operation of existing O<sub>3</sub> analyzers.

More specific comments from an analyzer manufacturer pointed out that the proposed lower limits for noise and LDL may be too stringent, the former because low-cost portable analyzers may have shorter absorption cells, and the latter because of limitations of current calibration technology. After further consideration of available analyzer performance data in light of these comments, the EPA agrees and is changing the noise limits from the proposed values of 1 ppb and 0.5 ppb (for the standard and lower ranges, respectively) to 2.5 ppb and 1 ppb (respectively). The EPA is also changing the LDL limit from the proposed values of 3 ppb and 1 ppb (respectively) to 5 ppb and 2 ppb (respectively). These new limits are still considerably more stringent than the previous limits (for the standard range) and are also consistent with those recommended by the commenter and the current performance capabilities of existing analyzer/calibration technology.

This commenter also pointed out that the proposed lower limit for 12-hour zero drift, together with the way the prescribed test is carried out, resulted in the test being dominated by analyzer noise rather than drift. The EPA agrees with this comment in general but believes that further study is needed before any specific changes can be proposed for the 12-hour zero drift test, particularly since any such changes would affect analyzers for other gaseous pollutants, as well.

Other comments suggested that there was no need for the proposed new, low-range performance requirements, because of cost and that available calibrators would be inadequate for calibration of such low ranges. The EPA disagrees with these comments and believes, as noted in the proposal preamble, that there is a definite need for low-level O<sub>3</sub> measurements in some applications and that suitable calibration for such low-level measurement ranges can be adequately carried out. As stated previously, the new “low range” specifications for O<sub>3</sub> analyzers are optional.

Several comments pointed out some typographical errors related to footnotes in Table B-3, as proposed; these errors have been corrected in the version of Table B-3 being finalized today.

EPA is finalizing the proposed amendments to both the O<sub>3</sub> FRM in Appendix D of part 50 and provisions in part 53, modified as described above, in response to the comments received.

## VII. Grandfathering Provision for Certain PSD Permits

This section addresses the grandfathering provision for certain Prevention of Significant Deterioration (PSD) permit applications that is being finalized in this rule. Section VIII.C of this preamble contains a description of the PSD and Nonattainment New Source Review (NNSR) permitting programs and additional discussion of the implementation of those programs for the O<sub>3</sub> NAAQS.

### A. Summary of the Proposed Grandfathering Provision

The EPA proposed to amend the PSD regulations to add a transition plan that would address the extent to which the revised O<sub>3</sub> NAAQS will apply to pending PSD permit applications. This transition plan is reflected in a grandfathering provision that applies to permit applications that meet certain milestones in the review process prior to either the signature date or effective date of the revised O<sub>3</sub> NAAQS. Absent such a grandfathering provision in the EPA's regulations, the EPA interprets section 165(a)(3)(B) of the CAA and the implementing PSD regulations at 40 CFR 52.21(k)(1) and 51.166(k)(1) to require that PSD permit applications include a demonstration that emissions from the proposed facility will not cause or contribute to a violation of any NAAQS that is in effect as of the date the PSD permit is issued. The proposal included a grandfathering provision that would enable eligible PSD applications to make the demonstration that the proposed project would not cause or contribute to a violation of any NAAQS with respect to the O<sub>3</sub> NAAQS in effect at the time the relevant permitting benchmark for grandfathering was reached, rather than the revised O<sub>3</sub> NAAQS. We proposed that the grandfathering provision would apply specifically to either of two categories of pending PSD permit applications: (1) Applications for which the reviewing authority has formally determined that the application is complete on or before the signature date of the final rule revising the O<sub>3</sub> NAAQS; and (2) applications for which the reviewing authority has first published a public notice of the draft permit or preliminary determination before the effective date of the revised NAAQS.

In the proposal, we also noted that for sources subject to the federal PSD program under 40 CFR 52.21, the EPA and air agencies that have been delegated authority to implement the federal PSD program for the EPA would apply the grandfathering provision to

any PSD application that satisfies either of the two criteria that make an application eligible for grandfathering. Accordingly, if a particular application does not qualify under the first criterion based on a complete application determination, it may qualify under the second criterion based on a public notice announcing the draft permit or preliminary determination. Conversely, a source may qualify for grandfathering under the first criterion, even if it does not satisfy the second.

The EPA also proposed revisions to the PSD regulations at 40 CFR 51.166 that would afford air agencies that issue PSD permits under a SIP-approved PSD permit program the discretion to adopt provisions into the SIP that allow for grandfathering of pending PSD permits under the same circumstances as set forth in the federal PSD regulations. With regard to implementing the grandfathering provision, we also explained that air agencies with EPA-approved PSD programs in their SIPs would have additional flexibility for implementing the proposed grandfathering provision to the extent that any alternative approach is at least as stringent as the federal provision. In addition, the proposal recognized that some air agencies do not make formal completeness determinations; thus, only the latter criterion based on the issuance of a public notice would be relevant in such cases and the state could elect to adopt only that criterion into its SIP. Accordingly, the EPA proposed to add a grandfathering provision to 40 CFR 51.166 containing the same two criteria as proposed for 40 CFR 52.21.

### B. Comments and Responses

Many of the comments supported the concept of grandfathering. Some of these comments, mostly by state and local air agencies, supported the grandfathering provision as proposed. Many others recommended alternative approaches to grandfathering based on several different dates. Several comments recommended that air agencies be allowed to grandfather certain PSD permit applications and issue a PSD permit based on the 2008 O<sub>3</sub> NAAQS after the area is designated nonattainment for the revised O<sub>3</sub> NAAQS. An opposing set of comments, representing a coalition of eight environmental groups and one health advocacy group, strongly objected to the proposal for grandfathering, claiming that the EPA did not have any authority under the CAA to exempt or grandfather permit applicants from the statutory PSD permitting requirements. We are addressing some of these comments below and others in the Response to

Comment Document that is included in the docket for this rule.

Comments that recommended broadening the scope of the proposed grandfathering provision suggested a variety of approaches. Some air agency and industry comments recommended that the EPA adopt a grandfathering provision applicable only to those PSD applications for which the reviewing authority has determined the application to be complete on or before the signature date of the revised NAAQS. Other air agency and industry comments recommended that grandfathered status be determined only on the basis of whether the relevant permitting milestone has been achieved by the effective date of the revised NAAQS.

The EPA disagrees with these comments; the final rule uses separate dates for the two grandfathering milestones, as proposed. If the effective date of the revised NAAQS were used as the date for the complete application milestone, this could lead to pressure on state permitting authorities to prematurely issue completeness determinations in order to qualify for the grandfathering provision in the time period between signature of this final rule and the effective date. Using the signature date of the revised O<sub>3</sub> NAAQS as the date for the grandfathering milestone based on the completeness determination is thus intended to help preserve the integrity of the completeness determination process. Permit applications that have not yet been determined complete can be supplemented or revised to address the revised O<sub>3</sub> standards before the completeness determination is issued. Conversely, the amount and type of work required for a preliminary determination or a draft permit reduces the risk that such a document would be released prematurely merely to qualify for grandfathering. Similarly, because these documents are released for the purpose of providing an adequate opportunity for public participation in the permitting process, it would not behoove a reviewing authority to precipitately release such documents merely to satisfy the grandfathering milestone. Accordingly, the EPA does not have the same concerns about using the effective date of this final rule for the preliminary determination or draft permit milestone and further finds it reasonable to provide additional time for satisfying this milestone. Moreover, using the proposed milestones and corresponding dates is consistent with the milestones and corresponding dates that were used in the grandfathering provisions for the 2012 PM<sub>2.5</sub> NAAQS.

Several other comments recommended that the grandfathering provision apply to all PSD applications for which a final PSD permit will be issued prior to the effective date of the area designations for the revised NAAQS. Some of these comments explained that without some transition provisions in the final rule, it may be impossible for a source to demonstrate attainment if the current ambient air monitoring data indicates a revised, lowered standard is not being met. The comments also suggested that the extended period for grandfathering a source from the revised NAAQS would provide states with additional time to establish offset banks or similar systems for new nonattainment areas.

Other comments recommended that air agencies be allowed to grandfather either all or certain PSD permit applications received before the effective date of the final nonattainment designations for the revised O<sub>3</sub> NAAQS. These comments supported allowing air agencies to issue PSD permits to grandfathered sources even after the area in which the source proposes to locate is designated nonattainment for the revised O<sub>3</sub> NAAQS. One comment saw this as being necessary because the development of the regulatory framework that will support the revised NAAQS, such as development of a credit market or even a transition into NNSR permitting, does not instantaneously accompany the revised standard. Hence, the comment added that “[d]uring the Interim Period (the time between the revision of the NAAQS rule and development of the regulatory framework) the project may be unable to secure offsets and no offsets would be available for purchase.” Another comment explained that the extended period for grandfathering sources from the revised O<sub>3</sub> NAAQS was needed to “minimize disruption to complex projects that may have been under development since before the EPA published the proposed NAAQS revision.” This comment noted the “PSD projects commonly undergo years of engineering and other development resources before an air permit application can be prepared.”

The EPA does not agree with the comments recommending that the EPA use a date after the effective date of the revised O<sub>3</sub> NAAQS as the date by which the permit application must reach the relevant milestone to qualify for grandfathering. The EPA does not believe it is appropriate to unreasonably or unnecessarily delay implementation of these revised standards under the PSD program. As explained in more detail below, the purpose of the

grandfathering provision is to provide a reasonable transition mechanism for certain PSD applications and the EPA believes that the milestones proposed and finalized here strike the appropriate balance in providing for such a reasonable transition. Moreover, in some cases, some of these recommended approaches could enable a situation where a PSD permit would be issued to a source during a future period when the area is designated nonattainment for the revised O<sub>3</sub> NAAQS. As explained below, the EPA does not believe that this specific outcome is permissible under the CAA.

The EPA does not agree with the comments suggesting that the grandfathering provision should be expanded to apply to any PSD application received before the effective date of the final nonattainment designations for the revised O<sub>3</sub> NAAQS. Because the process for reviewing PSD permit applications and issuing a final PSD permit is time consuming, such an approach could allow issuance of PSD permits to grandfathered sources even after the area in which the source proposes to locate is designated nonattainment for the revised O<sub>3</sub> NAAQS. The EPA does not agree that grandfathering should be extended in a way that would allow a source located in an area designated as nonattainment for a pollutant at the time of permit issuance to obtain a PSD permit for that pollutant rather than a NNSR permit. The EPA does not interpret the CAA or its implementing regulations to allow such an outcome. The PSD requirements under CAA section 165 only apply in areas designated attainment or unclassifiable for the pollutant. *Alabama Power v. Costle*, 636 F.2d 323, 365–66, 368 (D.C. Cir. 1980). Accordingly, the PSD implementing regulations at 40 CFR 52.21(i)(2) contain an exemption that provides that the substantive PSD requirements shall not apply to a pollutant if the owner or operator demonstrates that the facility is located in an area designated nonattainment for that pollutant under CAA section 107 of the Act. *See also* 40 CFR 51.166(i)(2) (allowing for the same exemption in SIP-approved PSD permitting programs). In addition, under CAA section 172(c)(5) implementation plans must require that permits issued to new or modified stationary sources “anywhere in the nonattainment area” meet the requirements of CAA section 173, which contains the NNSR permit requirements. *See* 40 CFR part 51, Appendix S, IV.A (providing that, if a major new source or major modification that would locate in an area designated

as nonattainment for a pollutant for which the source or modification would be major, approval to construct may be granted only if the specific conditions for NNSR are met, including obtaining emission offsets and an emission limitation that specifies the lowest achievable emissions rate). Moreover, given the adverse air quality conditions that already exist in a nonattainment area and the congressional directive to reach attainment as expeditiously as practicable, construction of a major stationary source that significantly increases emissions in such an area should be expected to address all of the NNSR requirements, which are designed to ensure that a new or modified major stationary source will not interfere with reasonable progress toward attainment, even if this could cause delay to the permit applicant.

With respect to the comments that suggested the effective date of the NAAQS should be used as the date for both milestones, the EPA does not agree that such a change is necessary. The purpose of the grandfathering provision is to provide a reasonable transition mechanism in the following circumstances: first, the PSD application is one for which both the applicant and the reviewing authority have committed substantial resources; and, second, this situation is one where the need to satisfy the demonstration requirement under CAA section 165(a)(3) could impact the reviewing authority’s ability to meet the statutory deadline for issuing a permit within one year of the completeness determination. In situations where the reviewing authority has not yet issued a completeness determination as of the signature date of the revised O<sub>3</sub> NAAQS, both the permit applicant and the reviewing authority have sufficient notice of the revised standard so that it can be addressed before the completeness determination is issued and the one-year clock begins to run. The grandfathering provision issued in this rulemaking is crafted to draw a reasonable balance that accommodates the requirements under both CAA sections 165(a)(3) and 165(c). Any modification of the dates further than is necessary to accommodate these concerns could upset this balance.

With respect to the comments that suggested adopting a grandfathering provision applicable only to those PSD applications for which the reviewing authority has determined the application to be complete on or before the signature date of the revised NAAQS, the EPA is not making this change because we understand that not all reviewing authorities issue formal completeness determinations. Including

a grandfathering provision based on the publication of a public notice of the draft permit or preliminary determination provides a reasonable transition mechanism for PSD applications in situations where the reviewing authority does not issue formal completeness determinations, but the applicant and the reviewing authority have both committed substantial resources to the pending permit application at the time the revisions to the O<sub>3</sub> NAAQS are finalized.

An opposing set of comments—submitted by a consortium of eight environmental groups and one health advocacy group—challenged the proposed grandfathering provision on the basis that the EPA did not have the legal authority to grandfather sources from PSD requirements. These commenters argued that the plain language of CAA section 165 forecloses the EPA's proposed approach and raised several other legal considerations. The EPA disagrees with these comments, including the interpretations of the CAA that they offer. As summarized in the rationale for the final action below in section VII.C of this preamble, the EPA believes that the CAA provides it authority and discretion to establish a PSD grandfathering provision such as the one being adopted today through a rulemaking process. The EPA is providing a further, detailed analysis fully responding to this set of comments, as well as other comments related to the grandfathering provision, in the Response to Comment Document in the docket for this rule.

### C. Final Action and Rationale

After consideration and evaluation of all the public comments received on the grandfathering provision, the EPA is finalizing this provision as proposed, with minor revisions that enhance the clarity of the grandfathering provision, without changing its substantive effect. While these revisions lead to slight differences in wording for the grandfathering provision for the 2012 PM<sub>2.5</sub> NAAQS and the grandfathering provision finalized in this rulemaking, those differences are not intended to create a different meaning; rather, the grandfathering provision finalized in this rulemaking is intended to have the same substantive effect and meaning for the revised O<sub>3</sub> standards as the grandfathering provision for the 2012 PM<sub>2.5</sub> NAAQS had for the revised PM standards. Other than those clarifying revisions, this final rule includes the same rule language for the grandfathering provision as previously proposed for the PSD regulations at 40

CFR 52.21(i)(12) and 51.166(i)(11), respectively. The provision in the final rule reflects the same two milestones and corresponding dates as the proposed grandfathering provision. Thus, under the grandfathering provision as finalized, either of the following two categories of pending PSD permit applications would be eligible for grandfathering: (1) Applications for which the reviewing authority has formally determined that the application is complete on or before the signature date of the revised O<sub>3</sub> NAAQS, or (2) applications for which the reviewing authority has first published a notice of a draft permit or preliminary determination before the effective date of the revised O<sub>3</sub> NAAQS. The EPA believes that it continues to be appropriate to include the two proposed milestones for pending permit applications to be eligible for grandfathering. While a completeness determination is often the first event, some air agencies do not determine applications complete as part of their permit process.

Under 40 CFR 52.21, a permit application may qualify for grandfathering under either of the two sets of milestones and dates contained in the provision. Where the EPA is the reviewing authority, the EPA intends to apply the grandfathering provision to PSD applicants pursuant to PSD regulations at 40 CFR 52.21 primarily through the use of the completeness determination milestone because the EPA Regional Offices make a formal completeness determination for any PSD application that they receive and review. The EPA is including the second criterion in 40 CFR 52.21 so that pending applications can still qualify for grandfathering under the second criterion if any air agency that incorporates 40 CFR 52.21 into a SIP-approved program does not make formal completeness determinations as part of its permit review process.

The EPA is also amending the PSD regulations at 40 CFR 51.166 to enable states and other air agencies that issue PSD permits under SIP-approved PSD programs to adopt a comparable grandfathering provision. Nevertheless, such air agencies have discretion to not grandfather PSD applications or to apply grandfathering under their approved PSD programs in another manner as long as that program is at least as stringent as the provision being added to 40 CFR 51.166. Accordingly, an air agency may elect to rely on both sets of milestones and dates or it may grandfather on the sole basis of only one set. However, the EPA anticipates that once a decision is made concerning the

use of either set of milestones and dates, the air agency will apply grandfathering consistently to all pending PSD permit applications.

As explained in more detail in the proposal, absent a regulatory grandfathering provision, the EPA interprets section 165(a)(3)(B) of the CAA and the implementing PSD regulations at 40 CFR 52.21(k)(1) and 51.166(k)(1) to require that PSD permit applications include a demonstration that emissions from the proposed facility will not cause or contribute to a violation of any NAAQS that is in effect as of the date the PSD permit is issued. However, reading CAA section 165(a)(3)(B) in context with other provisions of the Act and the legislative history, the EPA interprets the Act to provide the EPA with authority to establish grandfathering provisions through regulation. The EPA has explained its interpretation of its authority to promulgate grandfathering provisions in previous rulemaking actions, most recently in the rule establishing the grandfathering provision for the 2012 PM<sub>2.5</sub> NAAQS (78 FR 3086, 3254–56, January 15, 2013), as well as in the proposal for this final action. The EPA is providing additional discussion of this authority in the Response to Comment Document contained in the docket for this final action.

To summarize briefly, the addition of this grandfathering provision is permissible under the discretion provided by the CAA for the EPA to craft a reasonable implementation regulation that balances competing objectives of the statutory PSD program found in CAA section 165. Specifically, section 165(a)(3) requires a permit applicant to demonstrate that its proposed project will not cause or contribute to a violation of any NAAQS, while section 165(c) requires that a PSD permit be granted or denied within one year after the permitting authority determines the application for such permit to be complete. Section 109(d)(1) of the CAA requires the EPA to review existing NAAQS and make appropriate revisions every five years. When these provisions are considered together, a statutory ambiguity arises concerning how the requirements under CAA section 165(a)(3)(B) should be applied to a limited set of pending PSD permit applications when the O<sub>3</sub> NAAQS is revised. The Act does not clearly address how the requirements of CAA section 165(a)(3)(B) should be met for PSD permit applications that are pending when the NAAQS are revised, particularly when the EPA also determines that complying with the

demonstration requirement for the revised NAAQS could hinder compliance with the requirement under section 165(c) to issue a permit within one year of the completeness determination for a certain subset of pending permits. The CAA also does not address how the requirements of CAA sections 165(a)(3) and 165(c) should be balanced in light of the statutory requirement to review the NAAQS every five years. As Congress has not spoken precisely to this issue, the EPA has the discretion to apply a permissible interpretation of the Act that balances the statutory requirements to make a decision on a permit application within one year and to ensure the new and modified sources will only be authorized to construct after showing they can meet the substantive permitting criteria. *See Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 843–44 (1984).

In addressing these gaps in the CAA and the tension that may arise in section 165 in these circumstances, the EPA also applies CAA section 301, where the Administrator is authorized “to prescribe such regulations as are necessary to carry out his functions under this chapter.” Sections 165(a)(3) and 165(c) of the CAA make clear that the interests behind CAA section 165 include both protection of air quality and timely decision-making on pending permit applications. The legislative history illustrates congressional intent to avoid delays in permit processing. S. Rep. No. 94–717, at 26 (1976) (“nothing could be more detrimental to the intent of this section and the integrity of this Act than to have the process encumbered by bureaucratic delay”). Thus, when read in combination, these provisions of the CAA provide the EPA with the discretion to issue regulations to grandfather pending permit applications from having to address a revised NAAQS where necessary to achieve both CAA objectives—to protect the NAAQS and to avoid delays in processing PSD permit applications. Accordingly, the EPA is seeking in this action to balance the requirements in the CAA to make a decision on a permit application within one year and to ensure that new and modified sources will only be authorized to construct after showing they can meet the substantive permitting criteria that apply to them. The EPA is achieving this balance by determining through rulemaking which O<sub>3</sub> NAAQS apply to certain permit applications that are pending when the EPA finalizes the revisions to the O<sub>3</sub> NAAQS in this final rule. We are clarifying, for the limited

purpose of satisfying the requirements under section 165(a)(3)(B) for those permits, which O<sub>3</sub> NAAQS are applicable to those permit applications and must be addressed in the source’s demonstration that its emissions do not cause or contribute to a violation of the NAAQS.

This approach is consistent with a recent opinion by the U.S. Court of Appeals for the Ninth Circuit, which recognized the EPA’s traditional exercise of grandfathering authority through rulemaking. The court observed that this approach was consistent with the statutory requirement to “enforce whatever regulations are in effect at the time the agency makes a final decision” because it involved identifying “an operative date, incident to setting the new substantive standard, and the grandfathering of pending permit applications was explicitly built into the new regulations.” *Sierra Club v. EPA*, 762 F.3d 971, 983 (9th Cir. 2014). As discussed in more detail in the EPA’s Response to Comment Document contained in the docket for this rule, this case supports the EPA’s action in this rulemaking. The court favorably discussed prior adoption of regulatory grandfathering provisions that are similar to the action in this rulemaking, such as the grandfathering provision that the EPA promulgated when revising the PM<sub>2.5</sub> NAAQS that became effective in 2013. *See id.* at 982–83.<sup>227</sup>

This adoption of a grandfathering provision in this action is also consistent with previous actions in which the EPA has recognized that the CAA provides discretion for the EPA to establish grandfathering provisions for PSD permit applications through regulations. Some examples of previous

<sup>227</sup> This case specifically involved an action by the EPA to issue an individual PSD permit, which grandfathered a specific permit applicant from certain requirements without any revision to the regulations that were in effect. The court’s reasoning in this case distinguishes that type of permit-specific grandfathering from establishing grandfathering provisions through a rulemaking process. While the court was not persuaded that there was a conflict between the requirements of sections 165(a)(3) and 165(c) of the CAA that supported the permit-specific grandfathering at issue in that case, it did not extend that uncertainty to its discussion of the EPA’s rulemaking authority. In fact, in its favorable discussion of the EPA’s authority to grandfather pending permit applications through regulation, the court noted that the power of an administrative agency “to administer a congressionally created and funded program necessarily requires the formulation of policy and the making of rules to fill any gap left, implicitly or explicitly, by Congress” though “such decision cannot be made on an ad hoc basis.” *Sierra Club v. EPA*, 762 F.3d 971, 983 (9th Cir. 2014) (internal quotations and marks omitted). This indicates that the court believed there is a gap in the CAA that supports including grandfathering provisions in regulations.

references to the EPA’s authority to grandfather certain applications through rulemaking include 45 FR 52683, August 7, 1980; 52 FR 24672, July 1, 1987; and most recently 78 FR 3086, January 15, 2013.

This grandfathering provision does not apply to any applicable PSD requirements related to O<sub>3</sub> other than the requirement to demonstrate that the proposed source does not cause or contribute to a violation of the revised O<sub>3</sub> NAAQS. Sources with projects qualifying under the grandfathering provision will be required to meet all the other applicable PSD requirements, including applying BACT to all applicable pollutants, demonstrating that emissions from the proposed facility will not cause or contribute to a violation of the O<sub>3</sub> NAAQS in effect at the time of the relevant grandfathering milestone, and addressing any Class I area and additional O<sub>3</sub>-related impacts in accordance with the applicable PSD requirements. In addition, this grandfathering provision would not apply to any permit application for a new or modified major stationary source of O<sub>3</sub> located in an area designated nonattainment for O<sub>3</sub> on the date the permit is issued.

## VIII. Implementation of the Revised O<sub>3</sub> Standards

This section provides background information for understanding the implications of the revised O<sub>3</sub> NAAQS and describes the EPA’s plans for providing revised rules or additional guidance on some subjects in a timely manner to assist states with their implementation efforts under the requirements of the CAA. This section also describes existing EPA rules, interpretations of CAA requirements, and other EPA guidance relevant to implementation of the revised O<sub>3</sub> NAAQS. Relevant CAA provisions that provide potential flexibility with regard to meeting implementation timelines are highlighted and discussed. This section also contains a discussion of how existing requirements to reduce the impact on O<sub>3</sub> concentrations from the stationary source construction in permit programs under the CAA are affected by the revisions to the O<sub>3</sub> NAAQS. These are the PSD and Nonattainment New Source Review (NNSR) programs. As discussed in section VII of this preamble, to facilitate a smooth transition to the PSD requirements for the revised O<sub>3</sub> NAAQS, the EPA is finalizing as part of this rulemaking a grandfathering provision that applies to certain PSD permit applications that are pending and have met certain milestones in the permitting process



when the revised O<sub>3</sub> NAAQS is signed or before the effective date of the revised O<sub>3</sub> NAAQS, depending on the milestone.

In the preamble for the O<sub>3</sub> NAAQS proposal, the EPA solicited comments on several issues related to implementing the revised O<sub>3</sub> NAAQS that the agency anticipated addressing in future guidance or regulatory actions, but for which the EPA was not at that time proposing any action. The EPA received numerous comments on those and other implementation issues. Consistent with what the EPA indicated in the O<sub>3</sub> NAAQS proposal (79 FR 75370), the agency is not responding to the implementation comments that are not related to a specific proposal. However, the EPA intends to take these comments under advisement as the agency develops rules and guidance to assist with implementation of the revised NAAQS. Because the EPA did specifically propose and is finalizing provisions in the regulations addressing grandfathering for certain PSD permit applications and requirements, as discussed in section VII of this preamble, the EPA is responding to comments on the proposed PSD grandfathering provisions.

#### A. NAAQS Implementation Plans

##### 1. Cooperative Federalism

As directed by the CAA, reducing pollution to meet national air quality standards always has been a shared task, one involving the federal government, states, tribes and local air quality management agencies. The EPA develops regulations and strategies to reduce pollution on a broad scale, while states and tribes are responsible for implementation planning and any additional emission reduction measures necessary to bring specific areas into attainment. The agency supports implementation planning with technical resources, guidance, and program rules where necessary, while air quality management agencies use their knowledge of local needs and opportunities in designing emission reduction strategies that will work best for their industries and communities.

This partnership has proved effective since the EPA first issued O<sub>3</sub> standards more than three decades ago. For example, 101 areas were designated as nonattainment for the 1-hour O<sub>3</sub> standards issued in 1979. As of the end of 2014, air quality in all but one of those areas meets the 1-hour standards. The EPA strengthened the O<sub>3</sub> standards in 1997, shifting to an 8-hour standard to improve public health protection, particularly for children, the elderly,

and other sensitive individuals. The 1997 standards drew significant public attention when they were proposed, with numerous parties voicing concerns about states' ability to comply. However, after close collaboration between the EPA, states, tribes and local governments to reduce O<sub>3</sub>-forming pollutants, significant progress has been made. Air quality in 108 of the original 115 areas designated as nonattainment for the 1997 O<sub>3</sub> NAAQS now meets those standards. Air quality in 18 of the original 46 areas designated as nonattainment for the 2008 O<sub>3</sub> NAAQS now meets those standards.

The revisions to the primary and secondary O<sub>3</sub> NAAQS discussed in sections II.D and IV.D of this preamble trigger a process under which states<sup>228</sup> make recommendations to the Administrator regarding area designations. Then, the EPA promulgates the final area designations. States also are required to review capacity and authorities in their existing SIPs to ensure the CAA requirements associated with the new standards can be carried out, and modify or supplement their existing SIPs as needed. The O<sub>3</sub> NAAQS revisions also apply to the transportation conformity and general conformity determinations, and affect which preconstruction permitting requirements apply to sources of O<sub>3</sub> precursor emissions, and the nature of those requirements.

The EPA has regulations in place addressing the general requirements for SIPs, and there are also provisions in these existing rules that cover O<sub>3</sub> SIPs (40 CFR part 51). States likewise have provisions in their existing SIPs to address air quality for O<sub>3</sub> and to implement the existing O<sub>3</sub> NAAQS. In the course of the past 45 years of regulating criteria pollutants, including O<sub>3</sub>, the EPA has also provided general guidance on the development of SIPs and administration of construction permitting programs, as well as specific guidance on implementing the O<sub>3</sub> NAAQS in some contexts under the CAA and the EPA regulations.

The EPA has considered the extent to which existing EPA regulations and guidance are sufficient to implement the revised standards. The CAA does not require that the EPA promulgate new implementing regulations or issue new guidance for states every time that a NAAQS is revised. Likewise, the CAA does not require the issuance of additional implementing regulations or

guidance by the EPA before a revised NAAQS becomes effective. It is important to note that the existing EPA regulations in 40 CFR part 51 applicable to SIPs generally and to particular pollutants, including O<sub>3</sub> and O<sub>3</sub> precursors, continue to apply unless and until they are updated.

Accordingly, the discussion below provides the EPA's current thoughts about the extent to which revisions to existing regulations and additional guidance are appropriate to aid in the implementation of the revised O<sub>3</sub> NAAQS.

##### 2. Additional New Rules and Guidance

The EPA has received comments from a variety of states and organizations asking for rules and guidance associated with a revised NAAQS to be issued in a timely manner. As explained above, and consistent with the proposal, the EPA is not responding to these comments at this time because they are not related to any changes to existing regulations that EPA proposed in this rule. Moreover, although issuance of such rules and guidance is not a part of the NAAQS review process, *National Ass'n of Manufacturers v. EPA*, 750 F.3d 921, 926–27 (D.C. Cir. 2014), toward that end, the EPA intends to develop appropriate revisions to necessary implementation rules and provide additional guidance in time frames that are useful to states when developing implementation plans that meet CAA requirements.

Certain requirements under the PSD preconstruction permit review program apply immediately to a revised NAAQS upon the effective date of that NAAQS, unless the EPA has established a grandfathering provision through rulemaking. To ensure a smooth transition to a revised O<sub>3</sub> NAAQS, the EPA is finalizing a grandfathering provision similar to the provision finalized in the 2012 PM<sub>2.5</sub> NAAQS Rule. See section VII.C of this preamble for more details on the PSD program and the final grandfathering provision.

Promulgation or revision of the NAAQS starts a clock for the EPA to designate areas as either attainment or nonattainment. State recommendations for area designations are due to the EPA within 12 months of promulgating or revising the NAAQS. In an effort to allow states to make more informed recommendations for these particular standards, the EPA intends to issue additional guidance concerning the designations process for these standards within four months of promulgation of the NAAQS, or approximately eight months before state recommendations are due. The EPA generally completes

<sup>228</sup>This and all subsequent references to "state" are meant to include state, local, and tribal agencies responsible for the implementation of an O<sub>3</sub> control program.

area designations two years after promulgation of a NAAQS. See section VIII.B of this preamble for additional information on the initial area designation process.

Under CAA section 110, a NAAQS revision triggers the review and, as necessary, revision of SIPs to be submitted within three years of promulgation of a revised NAAQS. These SIPs are referred to as “infrastructure SIPs.” The EPA issued general guidance on submitting infrastructure SIPs on September 13, 2013.<sup>229</sup> It should be noted that this guidance did not address certain state planning and emissions control requirements related to interstate pollution transport. This guidance remains relevant for the revised O<sub>3</sub> NAAQS. See section VIII.A.4 of this preamble for additional information on infrastructure SIPs.

While much of the existing rules and guidance for prior ozone standards remains applicable to the new standards, the EPA intends to propose to adopt revised rules on some subjects to facilitate air agencies’ efforts to implement the revised O<sub>3</sub> NAAQS within one year after the revised NAAQS is established. The rules would address nonattainment area classification methodologies and attainment dates, attainment plan and NNSR SIP submission due dates, and any other necessary revisions to existing regulations for other required implementation programs. The EPA anticipates finalizing these rules by the time areas are designated nonattainment. Finalizing rules and guidance on these subjects by this time would assist air quality management agencies with development of any CAA-required SIPs associated with nonattainment areas. See section VIII.A.5 of this preamble for additional information on nonattainment SIPs and section VIII.C.3 for additional information on nonattainment New Source Review requirements applicable to new major sources and major modifications of existing sources.

### 3. Background O<sub>3</sub>

The EPA and state, local and tribal air agencies, strive to determine how to most effectively and efficiently use the CAA’s various provisions to provide required public health and welfare

protection from the harmful effects of O<sub>3</sub>. In most cases, reducing man-made emissions of NO<sub>x</sub> and VOCs within the U.S. will reduce O<sub>3</sub> formation and provide additional health and welfare protection. The EPA recognizes, however, that there can be infrequent events where daily maximum 8-hour O<sub>3</sub> concentrations approach or exceed 70 ppb largely due to the influence of wildfires or stratospheric intrusions, which contribute to U.S. background (USB) levels but may also qualify for consideration under the Exceptional Events Rule. See section I.D; but see section II.A.2.a above (percentage of anthropogenic O<sub>3</sub> tends to increase on high O<sub>3</sub> days relative to percentage of background, including in intermountain west).

The term “background” O<sub>3</sub> is often used to refer to O<sub>3</sub> that originates from natural sources of O<sub>3</sub> (e.g., wildfires and stratospheric O<sub>3</sub> intrusions) and O<sub>3</sub> precursors, as well as from man-made international emissions of O<sub>3</sub> precursors. Using the term generically, however, can lead to confusion as to what sources of O<sub>3</sub> are being considered. Relevant to the O<sub>3</sub> implementation provisions of the CAA, we define background O<sub>3</sub> the same way the EPA defines USB: O<sub>3</sub> that would exist in the absence of any man-made emissions inside the U.S.

While the great majority of modeled O<sub>3</sub> exceedances have local and regional emissions as their primary cause, there can be events where O<sub>3</sub> levels approach or exceed the concentration level of the revised O<sub>3</sub> standards in large part due to background sources. These cases of high USB levels on high O<sub>3</sub> days typically result from stratospheric intrusions of O<sub>3</sub> or wildfire O<sub>3</sub> plumes. These events are infrequent and the CAA contains provisions that can be used to help deal, in particular, with stratospheric intrusion and wildfire events with O<sub>3</sub> contributions of this magnitude, including providing varying degrees of regulatory relief for air agencies and potential regulated entities. The EPA intends to work closely with states to identify affected locations and ensure that the appropriate regulatory mechanisms are employed.

Statutory and regulatory relief associated with U.S. background O<sub>3</sub> may include:<sup>230</sup>

- Relief from designation as a nonattainment area through exclusion of data affected by exceptional events;
- Relief from the more stringent requirements of higher nonattainment area classifications through treatment as a rural transport area, through exclusion of data affected by exceptional events, or through international transport provisions;
- Relief from having to demonstrate attainment and having to adopt more than reasonable controls on local sources through international transport provisions.

Further discussion of these mechanisms is provided in sections VIII.B.2 (exceptional events), VIII.B.1 (rural transport areas), and VIII.E.2 (international transport).

Although these relief mechanisms require some level of assessment or demonstration by a state and/or the EPA to invoke, they have been used successfully in the past under appropriate circumstances. For example, the EPA has historically acted on every exceptional events demonstration that has affected a regulatory decision regarding initial area designations. See e.g., *Idaho: West Silver Valley Nonattainment Area—Area Designations for the 2012 primary annual PM<sub>2.5</sub> NAAQS Technical Support Document*, pp. 10–14, December 2014. For the revised O<sub>3</sub> standards, the areas that would most likely need to use the mechanisms discussed in this section as part of attaining the revised O<sub>3</sub> standards are locations in the western U.S. where we have estimated the largest seasonal average values of background O<sub>3</sub> occur. We expect some of these areas to use the provisions in the Exceptional Events Rule during the designations process for the revised O<sub>3</sub> standards. The EPA will then give priority to exceptional events demonstrations submitted by air agencies with areas whose designation decision could be influenced by the exclusion of data under the Exceptional Events Rule. In addition, as discussed in more detail in sections V.D and VIII.B.2 of this action, to streamline the exceptional events process, the EPA will soon propose revisions to the 2007 Exceptional Events Rule and will release through a **Federal Register Notice of Availability** a draft guidance document to address Exceptional Events Rule criteria for wildfires that could affect O<sub>3</sub> concentrations. We expect to

commenters pointed to remote monitored locations having O<sub>3</sub> exceedances due to background O<sub>3</sub> in fact reflected sizeable contributions from domestic sources, including interstate contributions (including from the Los Angeles Basin and other California locations).

<sup>229</sup> See memorandum from Stephen D. Page to Regional Air Directors, “Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2)” September 13, 2013, which is available at [http://www3.epa.gov/airquality/urbanair/sipstatus/docs/Guidance\\_on\\_Infrastructure\\_SIP\\_Elements\\_Multipollutant\\_FINAL\\_Sept\\_2013.pdf](http://www3.epa.gov/airquality/urbanair/sipstatus/docs/Guidance_on_Infrastructure_SIP_Elements_Multipollutant_FINAL_Sept_2013.pdf).

<sup>230</sup> Note that the relief mechanisms discussed here do not include the CAA’s interstate transport provisions found in sections 110(a)(2)(D) and 126. The interstate transport provisions are intended to address the cross-state transport of O<sub>3</sub> and O<sub>3</sub> precursor emissions from man-made sources within the continental U.S. rather than background O<sub>3</sub> as it is defined in this section. As noted in section II.A.2.a above, many of the instances where

promulgate Exceptional Events Rule revisions and finalize the new guidance document before the October 2016 date by which states, and any tribes that wish to do so, are required to submit their initial designation recommendations for the revised O<sub>3</sub> NAAQS.

#### 4. Section 110 State Implementation Plans

The CAA section 110 specifies the general requirements for SIPs. Within three years after the promulgation of revised NAAQS (or such shorter period as the Administrator may prescribe<sup>231</sup>) each state must adopt and submit "infrastructure" SIPs to the EPA to address the requirements of section 110(a)(1) and (2), as applicable. These "infrastructure SIP" submissions establish the basic state programs to implement, maintain, and enforce revised NAAQS and provide assurances of state resources and authorities. States are required to develop and maintain an air quality management infrastructure that includes enforceable emission limitations, a permitting program, an ambient monitoring program, an enforcement program, air quality modeling capabilities, and adequate personnel, resources, and legal authority. Because the revised primary NAAQS and secondary NAAQS are identical, the EPA does not at present discern any need for there to be any significant substantive difference in the infrastructure SIP elements for the two standards and thus believes it would be more efficient for states and the EPA if each affected state submits a single section 110 infrastructure SIP that addresses both standards at the same time (*i.e.*, within three years of promulgation of the O<sub>3</sub> NAAQS). Accordingly the EPA is not extending the SIP deadline for purposes of a revised secondary standard.

It is the responsibility of each state to review its air quality management program's compliance with the infrastructure SIP provisions in light of each new or revised NAAQS. Most states have revised and updated their infrastructure SIPs in recent years to address requirements associated with the 2008 O<sub>3</sub> NAAQS. We expect that the result of these prior updates is that, in most cases, states will already have adequate state regulations previously adopted and approved into the SIP to address a particular requirement with respect to the revised O<sub>3</sub> NAAQS. For

such portions of the state's infrastructure SIP submission, the state may provide a "certification" specifying that certain existing provisions in the SIP are adequate to meet applicable requirements. Although the term "certification" does not appear in the CAA as a type of infrastructure SIP submittal, the EPA sometimes uses the term in the context of infrastructure SIPs, by policy and convention, to refer to a state's SIP submission. If a state determines that its existing EPA-approved SIP provisions are adequate in light of the revised O<sub>3</sub> NAAQS with respect to a given infrastructure SIP element (or sub-element), then the state may make a "certification" that the existing SIP contains provisions that address those requirements of the specific CAA section 110(a)(2) infrastructure elements. In the case of a certification, the submittal does not have to include another copy of the relevant provision (*e.g.*, rule or statute) itself. Rather, the submission may provide citations to the already SIP-approved state statutes, regulations, or non-regulatory measures, as appropriate, which meet the relevant CAA requirement. Like any other SIP submission, such certification can be made only after the state has provided reasonable notice and opportunity for public hearing. This "reasonable notice and opportunity for public hearing" requirement for infrastructure SIP submittals appears at section 110(a), and it comports with the more general SIP requirement at section 110(l) of the CAA. Under the EPA's regulations at 40 CFR part 51, if a public hearing is held, an infrastructure SIP submission must include documentation by the state that the public hearing was held in accordance with the EPA's procedural requirements for public hearings. See 40 CFR part 51, Appendix V, paragraph 2.1(g), and 40 CFR 51.102. In the event that a state's existing SIP does not already meet applicable requirements, then the infrastructure SIP submission must include the modifications or additions to the state's SIP in order to update it to meet the relevant elements of section 110(a)(2).

#### 5. Nonattainment Area Requirements

Part D of the CAA describes the various program requirements that apply to states with nonattainment areas for different NAAQS. Clean Air Act Section 182 (found in subpart 2 of part D) includes the specific SIP requirements that govern the O<sub>3</sub> program, and supplements the more general nonattainment area requirements in CAA sections 172 and 173. Under CAA section 182, states

generally are required to submit attainment demonstration SIPs within three or four years after the effective date of area designations promulgated by the EPA, depending on the classification of the area.<sup>232</sup> These SIP submissions need to show how the nonattainment area will attain the primary O<sub>3</sub> standard "as expeditiously as practicable," but no later than within the relevant time frame from the effective date of designations associated with the classification of the area.

The EPA believes that the overall framework and policy approach of the implementation rules associated with the 2008 O<sub>3</sub> NAAQS provide an effective and appropriate template for the general approach states would follow in planning for attainment of the revised O<sub>3</sub> standard.<sup>233</sup> However, to assist with the implementation of the revised O<sub>3</sub> standards, the EPA intends to develop and propose an additional O<sub>3</sub> NAAQS Implementation Rule that will address certain subjects specific to the new O<sub>3</sub> NAAQS finalized here. This will include establishing air quality thresholds associated with each nonattainment area classification (*i.e.*, Marginal, Moderate, etc.), associated attainment deadlines, and deadlines for submitting attainment planning SIP elements (*e.g.*, RACT for major sources, RACT VOC control techniques guidelines, etc.). The rulemaking will also address whether to revoke the 2008 O<sub>3</sub> NAAQS, and to impose appropriate anti-backsliding requirements to ensure that the protections afforded by that standard are preserved. The EPA intends to propose this implementation rule within one year after the revised O<sub>3</sub> NAAQS is promulgated, and finalize this implementation rule by no later than the time the area designations process is finalized (approximately two years after promulgation of the revised O<sub>3</sub> NAAQS).

We know that developing the implementation plans that outline the steps a nonattainment area will take to

<sup>232</sup> Section 181(a)(1) of the CAA establishes classification categories for areas designated nonattainment for the primary O<sub>3</sub> NAAQS. These categories range from "Marginal," the lowest O<sub>3</sub> classification with the fewest requirements associated with it, to "Extreme," the highest classification with the most required programs. Areas with worse O<sub>3</sub> problems are given more time to attain the NAAQS and more associated emission control requirements.

<sup>233</sup> Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule (80 FR 12264; March 6, 2015) and Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes (77 FR 30160; May 21, 2012).

<sup>231</sup> While the CAA allows the EPA to set a shorter time for submission of these SIPs, the EPA does not currently intend to do so for this revision to the O<sub>3</sub> NAAQS.

meet an air quality standard requires a significant amount of work on the part of state, tribal or local air agencies. The EPA routinely looks for ways to reduce this workload, including assisting with air quality modeling by providing inputs such as emissions, meteorological and boundary conditions; and sharing national-scale model results that states can leverage in their development of attainment demonstrations.

### B. O<sub>3</sub> Air Quality Designations

#### 1. Area Designation Process

After the EPA establishes or revises a NAAQS, the CAA directs the EPA and the states to take steps to ensure that the new or revised NAAQS is met. One of the first steps, known as the initial area designations, involves identifying areas of the country that either meet or do not meet the new or revised NAAQS, along with any nearby areas that contribute to areas that do not meet the new or revised NAAQS.

Section 107(d)(1) of the CAA provides that, "By such date as the Administrator may reasonably require, but not later than 1 year after promulgation of a new or revised national ambient air quality standard for any pollutant under section 109, the Governor of each state shall . . . submit to the Administrator a list of all areas (or portions thereof) in the state" that designates those areas as nonattainment, attainment, or unclassifiable. The EPA must then promulgate the area designations according to a specified process, including procedures to be followed if the EPA intends to modify a state's initial recommendation.

Clean Air Act Section 107(d)(1)(B)(i) further provides, "Upon promulgation or revision of a national ambient air quality standard, the Administrator shall promulgate the designations of all areas (or portions thereof) . . . as expeditiously as practicable, but in no case later than 2 years from the date of promulgation of the new or revised national ambient air quality standard. Such period may be extended for up to one year in the event the Administrator has insufficient information to promulgate the designations." By no later than 120 days prior to promulgating area designations, the EPA is required to notify states of any intended modifications to their recommendations that the EPA may deem necessary. States then have an opportunity to demonstrate why any proposed modification is inappropriate. Whether or not a state provides a recommendation, the EPA must timely

promulgate the designation that the agency deems appropriate.

While section 107 of the CAA specifically addresses states, the EPA intends to follow the same process for tribes to the extent practicable, pursuant to CAA section 301(d) regarding tribal authority and the Tribal Authority Rule (63 FR 7254, February 12, 1998). To provide clarity and consistency in doing so, the EPA issued a 2011 guidance memorandum on working with tribes during the designation process.<sup>234</sup>

As discussed in sections II and IV of this preamble, the EPA is revising both the primary and secondary O<sub>3</sub> NAAQS. Accordingly, the EPA intends to complete designations for both NAAQS following the standard 2-year process discussed above. In accordance with section 107(d)(1) of the CAA, state Governors (and tribes, if they choose) should submit their initial designation recommendations for a revised primary and secondary NAAQS by 1 year after October 1, 2015. If the EPA intends to modify any state recommendation, the EPA would notify the appropriate state Governor (or tribal leader) no later than 120 days prior to making final designation decisions. A state or tribe that believes the modification is inappropriate would then have the opportunity to demonstrate to the EPA why it believes its original recommendation (or a revised recommendation) is more appropriate. The EPA would take any additional input into account in making the final designation decisions.

The CAA defines an area as nonattainment if it is violating the NAAQS or if it is contributing to a violation in a nearby area. Consistent with previous area designations processes, the EPA intends to use area-specific analysis of multiple factors to support area boundary decisions. The EPA intends to evaluate information related to the following factors for designations: air quality data, emissions and emissions-related data, meteorology, geography/topography, and jurisdictional boundaries. Additional guidance on the designation process and how these factors may be evaluated and inform the process will be issued by the EPA early in 2016 to assist states in developing their recommendations.

<sup>234</sup> Page, S. (2011). Guidance to Regions for Working with Tribes during the National Ambient Air Quality Standards (NAAQS) Designations Process, Memorandum from Stephen D. Page, Director, EPA Office of Air Quality Planning and Standards to Regional Air Directors, Regions I–X, December 20, 2011. Available: [http://www.epa.gov/ttn/oarpg/t1/memoranda/20120117naaqs\\_guidance.pdf](http://www.epa.gov/ttn/oarpg/t1/memoranda/20120117naaqs_guidance.pdf).

Areas that are designated as nonattainment are also classified at the time of designation by operation of law according to the severity of their O<sub>3</sub> problem. The classification categories are Marginal, Moderate, Serious, Severe, and Extreme. Ozone nonattainment areas are subject to specific mandatory measures depending on their classification. As indicated previously, the thresholds for the classification categories will be established in a future O<sub>3</sub> implementation rule.

Clean Air Act section 182(h) authorizes the EPA Administrator to determine that an area designated nonattainment can be treated as a rural transport area. Regardless of its classification, a rural transport area is deemed to have fulfilled all O<sub>3</sub>-related planning and control requirements if it meets the CAA's requirements for areas classified Marginal, which is the lowest classification specified in the CAA. In accordance with the statute, a nonattainment area may qualify for this determination if it meets the following criteria:

- The area does not contain emissions sources that make a significant contribution to monitored O<sub>3</sub> concentrations in the area, or in other areas; and
- The area does not include and is not adjacent to a Metropolitan Statistical Area.

Historically, the EPA has listed four nonattainment areas as rural transport areas under this statutory provision.<sup>235</sup> The EPA has not issued separate written guidance to further elaborate on the interpretation of these CAA qualification criteria. However, the EPA developed draft guidance in 2005 that explains the kinds of technical analyses that states could use to establish that transport of O<sub>3</sub> and/or O<sub>3</sub> precursors into the area is so overwhelming that the contribution of local emissions to an observed 8-hour O<sub>3</sub> concentration above the level of the NAAQS is relatively minor and determine that emissions within the area do not make a significant contribution to the O<sub>3</sub> concentrations measured in the area or in other areas.<sup>236</sup> While this guidance

<sup>235</sup> For the 1979 1-hour O<sub>3</sub> standard, Door County Area, Wisconsin; Edmonson County Area, Kentucky; Essex County Area (Whiteface Mountain), New York; and Smyth County Area (White Top Mountain), Virginia were recognized by the EPA as rural transport areas. No rural transport areas were recognized for the 1997 or 2008 8-hour O<sub>3</sub> standards.

<sup>236</sup> U.S. Environmental Protection Agency (2005). Criteria For Assessing Whether an Ozone Nonattainment Area is Affected by Overwhelming Transport [Draft EPA Guidance]. U.S. Environmental Protection Agency, Research Triangle Park, NC. June 2005. Available at <http://>

was not prepared specifically for rural transport areas, it could be useful to states for developing technical information to support a request that the EPA treat a specific O<sub>3</sub> nonattainment area as a rural transport area. The EPA will work with states to ensure nonattainment areas eligible for treatment as rural transport areas are identified.

## 2. Exceptional Events

During the initial area designations process, the EPA intends to evaluate multiple factors, including air quality data, when identifying and determining boundaries for areas of the country that meet or do not meet the revised O<sub>3</sub> NAAQS. In some cases, these data may be influenced by exceptional events. Under the Exceptional Events Rule, an air agency can request and the EPA can agree to exclude data associated with event-influenced exceedances or violations of a NAAQS, including the revised O<sub>3</sub> NAAQS, provided the event meets the statutory requirements in section 319(b) of the CAA, which requires that:

- the event “affects air quality;”
- the event “is not reasonably controllable or preventable;”
- the event is “caused by human activity that is unlikely to recur at a particular location or [is] a natural event,”<sup>237</sup> and
- that “a clear causal relationship must exist between the measured exceedances of a [NAAQS] and the exceptional event. . . .”

The EPA’s implementing regulations, the Exceptional Events Rule, further specify certain requirements for air agencies making exceptional events demonstrations.<sup>238</sup>

The ISA contains discussions of natural events that may contribute to O<sub>3</sub> or O<sub>3</sub> precursors. These include stratospheric O<sub>3</sub> intrusion and wildfire events.<sup>239</sup> As indicated above, to satisfy the exceptional events requirements and to qualify for data exclusion under the Exceptional Events Rule, an air agency must develop and submit a

demonstration, including evidence, addressing each of the identified criteria. The extent to which a stratospheric O<sub>3</sub> intrusion event or a wildfire event contributes to O<sub>3</sub> levels can be uncertain, and in most cases requires detailed analyses to determine.

Strong stratospheric O<sub>3</sub> intrusion events, most prevalent at high elevation sites during winter or spring, can be identified based on measurements of low relative humidity, evidence of deep atmospheric mixing, and a low ratio of CO to O<sub>3</sub> based on ambient measurements. Accurately determining the extent of weaker intrusion events remains challenging (U.S. EPA 2013, p. 3–34). Although states have submitted only a few exceptional events demonstrations for stratospheric O<sub>3</sub> intrusion, the EPA recently approved a demonstration from Wyoming for a June 2012 stratospheric O<sub>3</sub> event.<sup>240</sup>

While stratospheric O<sub>3</sub> intrusions can increase monitored ground-level ambient O<sub>3</sub> concentrations, wildfire plumes can either suppress or enhance O<sub>3</sub> depending upon a variety of factors including fuel type, combustion stage, plume chemistry, aerosol effects, meteorological conditions and distance from the fire (Jaffe and Wigder, 2012). As a result, determining the impact of wildfire emissions on specific O<sub>3</sub> observations is challenging. The EPA recently approved an exceptional events demonstration for wildfires affecting 1-hour O<sub>3</sub> levels in Sacramento, California in 2008 that successfully used a variety of analytical tools (*e.g.*, regression modeling, back trajectories, satellite imagery, etc.) to support the exclusion of O<sub>3</sub> data affected by large fires.<sup>241</sup>

In response to previously expressed stakeholder feedback regarding implementation of the Exceptional Events Rule and specific stakeholder concerns regarding the burden of exceptional events demonstrations, the EPA is currently engaged in a rulemaking process to amend the Exceptional Events Rule. As part of an upcoming notice and comment rulemaking effort (and related activities, including the issuance of relevant guidance documents), the EPA sees opportunities to standardize best

practices for collaboration between the EPA and air agencies, clarify and simplify demonstrations, and improve tools and consistency.

Additionally, the EPA intends to develop guidance to address implementing the Exceptional Events Rule criteria for wildfires that could affect ambient O<sub>3</sub> concentrations. Wildfire emissions are a component of background O<sub>3</sub> (Jaffe and Wigder, 2012) and in some locations can significantly contribute to periodic high O<sub>3</sub> levels (Emery, 2012). The threat from wildfires can be mitigated through management of wildland vegetation. Planned and managed fires are one tool that land managers can use to reduce fuel load, unnatural understory and tree density, thus helping to reduce the risk of catastrophic wildfires. Allowing some wildfires to continue and the thoughtful use of prescribed fire can influence the occurrence of catastrophic wildfires, which may reduce the probability of fire-induced smoke impacts and subsequent health effects. Thus, appropriate use of prescribed fire may help manage the contribution of wildfires to both background and periodic peak O<sub>3</sub> air pollution. Several commenters expressed concern that the revised O<sub>3</sub> NAAQS could limit the future use of prescribed fire. Under the current Exceptional Events Rule, prescribed fires meeting the rule criteria may also qualify as exceptional events. The EPA intends to further clarify the Exceptional Events Rule criteria for prescribed fire on wildland in its upcoming rulemaking.

The EPA is committed to working with federal land managers, other federal agencies, tribes and states to effectively manage prescribed fire use to reduce the impact of wildfire-related emissions on O<sub>3</sub> through policies and regulations implementing these standards.

### C. How do the New Source Review (NSR) requirements apply to the revised O<sub>3</sub> NAAQS?

#### 1. NSR Requirements for Major Stationary Sources for the Revised O<sub>3</sub> NAAQS

The CAA, at parts C and D of title I, contains preconstruction review and permitting programs applicable to new major stationary sources and major modifications of existing major sources. The preconstruction review of each new major stationary source and major modification applies on a pollutant-specific basis, and the requirements that apply for each pollutant depend on whether the area in which the source is situated is designated as attainment (or

[www.epa.gov/scram001/guidance/guide/owt\\_guidance\\_07-13-05.pdf](http://www.epa.gov/scram001/guidance/guide/owt_guidance_07-13-05.pdf).

<sup>237</sup> A natural event is further described in 40 CFR 50.1(k) as “an event in which human activity plays little or no direct causal role.”

<sup>238</sup> 72 FR 13,560 (March 22, 2007), “Treatment of Data Influenced by Exceptional Events,” Final Rule; see also 40 CFR parts 50 and 51.

<sup>239</sup> The preamble to the Exceptional Events Rule (72 FR 13560) identifies both stratospheric O<sub>3</sub> intrusions and wildfires as natural events that could also qualify as exceptional events under the CAA and Exceptional Event Rule criteria. Note that O<sub>3</sub> resulting from routine natural emissions from vegetation, microbes, animals and lightning are not exceptional events authorized for exclusion under the section 319 of the CAA.

<sup>240</sup> U.S. EPA (2014) Treatment of Data Influenced by Exceptional Events: Examples of Reviewed Exceptional Event Submissions. U.S. Environmental Protection Agency, Research Triangle Park, NC, available at <http://www.epa.gov/ttn/analysis/exevents.htm>.

<sup>241</sup> U.S. EPA (2014) Treatment of Data Influenced by Exceptional Events: Examples of Reviewed Exceptional Event Submissions. U.S. Environmental Protection Agency, Research Triangle Park, NC. Examples of O<sub>3</sub>-related exceptional event submissions, available at <http://www.epa.gov/ttn/analysis/exevents.htm>.

unclassifiable) or nonattainment for that pollutant. In areas designated attainment or unclassifiable for a pollutant, the PSD requirements under part C apply to construction at major sources. In areas designated nonattainment for a pollutant, the NNSR requirements under part D apply to major source construction. Collectively, those two sets of permit requirements are commonly referred to as the “major New Source Review” or “major NSR” programs.

Until an area is formally designated with respect to the revised O<sub>3</sub> NAAQS, the NSR provisions applicable under that area’s current designation for the 2008 O<sub>3</sub> NAAQS (including any applicable anti-backsliding requirements) will continue to apply. That is, for areas designated as attainment/unclassifiable for the 2008 O<sub>3</sub> NAAQS, PSD will apply for new major stationary sources and major modifications that trigger major source permitting requirements for O<sub>3</sub>; areas designated nonattainment for the 2008 O<sub>3</sub> NAAQS must comply with the NNSR requirements for new major stationary sources and major modifications that trigger major source permitting requirements for O<sub>3</sub>. When the new designations for the revised O<sub>3</sub> NAAQS become effective, under the current rules, those designations will generally serve to determine whether PSD or NNSR applies to O<sub>3</sub> and its precursors. The PSD regulations at 40 CFR 51.166(i)(2) and 52.21(i)(2) provide that the substantive PSD requirements do not apply for a particular pollutant if the owner or operator of the new major stationary source or major modification demonstrates that the area in which the source is located is designated nonattainment for that pollutant under CAA section 107. Thus, new major sources and modifications will generally be subject to the PSD program requirements for O<sub>3</sub> if they are locating in an area that does not have a current nonattainment designation under CAA section 107 for O<sub>3</sub>. These rules further provide that nonattainment designations for a revoked NAAQS, as contained in 40 CFR part 81, are not viewed as current designations under CAA section 107 for purposes of determining the applicability of such PSD requirements.<sup>242</sup>

The EPA’s major NSR regulations define the term “regulated NSR pollutant” to include any pollutant for which a NAAQS has been promulgated

and any pollutant identified in EPA regulations as a constituent or precursor to such pollutant.<sup>243</sup> Both the PSD and NNSR regulations identify VOC and NO<sub>x</sub> as precursors to O<sub>3</sub>. Accordingly, the major NSR programs for O<sub>3</sub> are applied to emissions of VOC and NO<sub>x</sub> as precursors of O<sub>3</sub>.<sup>244</sup>

## 2. Prevention of Significant Deterioration (PSD) Program

The statutory requirements for a PSD permit program set forth under part C of title I of the CAA (sections 160 through 169) are addressed by the EPA’s PSD regulations found at 40 CFR 51.166 (minimum requirements for an approvable PSD SIP) and 40 CFR 52.21 (PSD permitting program for permits issued under the EPA’s federal permitting authority). Both sets of regulations already apply for O<sub>3</sub> when the area is designated attainment or unclassifiable for O<sub>3</sub> and when the new source or modification triggers PSD requirements for O<sub>3</sub>.

For PSD, a “major stationary source” is one that emits or has the potential to emit 250 tons per year (tpy) or more of any regulated NSR pollutant, unless the new or modified source is classified under a list of 28 source categories contained in the statutory definition of “major emitting facility” in section 169(1) of the CAA. For those 28 source categories, a “major stationary source” is one that emits or has the potential to emit 100 tpy or more of any regulated NSR pollutant. A “major modification” is a physical change or a change in the method of operation of an existing major stationary source that results first, in a significant emissions increase of a regulated NSR pollutant for the project, and second, in a significant net emissions increase of that pollutant at the source. *See* 40 CFR 51.166(b)(2)(i), 40 CFR 52.21(b)(2)(i).

Among other things, for each regulated NSR pollutant emitted or increased in significant amounts, the PSD program requires a new major stationary source or a major modification to apply Best Available Control Technology and to conduct an air quality impact analysis to demonstrate that the proposed source or project will not cause or contribute to a violation of any NAAQS or PSD increment (*see* CAA section 165(a)(3)–

(4), 40 CFR 51.166(j)–(k), 40 CFR 52.21(j)–(k)). The PSD requirements may also include, in appropriate cases, an analysis of potential adverse impacts on Class I areas (*see* CAA sections 162 and 165).<sup>245</sup> The EPA has generally interpreted the requirement for an air quality impact analysis under CAA section 165(a)(3) and the implementing regulations to include a requirement to demonstrate that emissions from the proposed facility will not cause or contribute to a violation of any NAAQS that is in effect as of the date a PSD permit is issued.<sup>246</sup> *See, e.g.*, 73 FR 28321, 28324, 28340 (May 16, 2008); 78 FR 3253 (Jan. 15, 2013); Memorandum from Stephen D. Page, Director, Office of Air Quality Planning & Standards, “Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards” (April 1, 2010). Consistent with this interpretation, the demonstration required under CAA section 165(a)(3) and 40 CFR 51.166(k) and 52.21(k) will apply to any revised O<sub>3</sub> NAAQS when such NAAQS become effective, except to the extent that a pending permit application is subject to a grandfathering provision that the EPA establishes through rulemaking. In addition, the other existing requirements of the PSD program will remain applicable to O<sub>3</sub> after the revised O<sub>3</sub> NAAQS takes effect.

Because the complex chemistry of O<sub>3</sub> formation in the atmosphere poses significant challenges for the assessing the impacts of individual stationary sources on O<sub>3</sub> formation, the EPA’s judgment historically has been that it is not technically sound to designate a

<sup>245</sup> Congress established certain Class I areas in section 162(a) of the CAA, including international parks, national wilderness areas, and national parks that meet certain criteria. Such Class I areas, known as mandatory federal Class I areas, are afforded special protection under the CAA. In addition, states and tribal governments may establish Class I areas within their own political jurisdictions to provide similar special air quality protection.

<sup>246</sup> An exception occurs in cases where the EPA has included a grandfathering provision in its PSD regulations for a particular pollutant. The EPA historically has exercised its discretion to transition the implementation of certain new requirements through grandfathering, under appropriate circumstances, either by rulemaking or through a case-by-case determination for a specific permit application. In 2014, the United States Court of Appeals for the Ninth Circuit vacated a decision by the EPA to issue an individual PSD permit grandfathering a permit applicant from certain requirements. *See Sierra Club v. EPA*, 762 F.3d 971 (9th Cir. 2014). In light of that decision, the EPA is no longer asserting authority to grandfather permit applications on a case-by-case basis. This decision is addressed in more detail in the discussion of the grandfathering provisions that the EPA is issuing through this rulemaking in section VII of this preamble.

<sup>243</sup> The definition of “regulated NSR pollutant” is found in the PSD regulations at 40 CFR 51.166(b)(49) and 52.21(b)(50), and in the NNSR regulations at 40 CFR 51.165(a)(1)(xxxvii).

<sup>244</sup> VOC and NO<sub>x</sub> are defined as precursors of ozone in the PSD regulations at 40 CFR 51.166(b)(49)(i)(b)(1) and 52.21(b)(50)(i)(b)(1), and in the NNSR regulations at 40 CFR 51.165(a)(1)(xxxvii)(B) and (C)(1) and part 51, Appendix S, II.A.31(ii)(b)(1).

<sup>242</sup> This description of paragraph (i)(2) of the PSD regulations at 40 CFR 51.166 and 52.21 reflects revisions made in the final 2008 O<sub>3</sub> NAAQS SIP Requirements Rule. *See* 80 FR 12264 at 12287 (March 6, 2015).

specific air quality model that must be used in the PSD permitting process to make this demonstration for O<sub>3</sub>. To address ambient impacts of emissions from proposed individual stationary sources on O<sub>3</sub>, the EPA proposed amendments to Appendix W to 40 CFR part 51 in July 2015 that would, among other things, revise the Appendix W provisions relating to the analytical techniques for demonstrating that an individual PSD source or modification does not cause or contribute to a violation of the O<sub>3</sub> NAAQS (80 FR 45340, July 29, 2015). Until any revisions are finalized and in effect, PSD permit applicants should continue to follow the current provisions in the applicable regulations and Appendix W in order to demonstrate that a proposed source or modification does not cause or contribute to a violation of the O<sub>3</sub> NAAQS.

a. What transition plan is the EPA providing for implementing the PSD requirements for the revised O<sub>3</sub> NAAQS?

In this rulemaking, the EPA is amending the PSD regulations at 40 CFR 51.166 and 40 CFR 52.21 to include a grandfathering provision that will allow reviewing authorities to continue to review certain pending PSD permit applications in accordance with the O<sub>3</sub> NAAQS that was in effect when a specific permitting milestone was reached, rather than the revised O<sub>3</sub> NAAQS. The EPA is finalizing the grandfathering provision as proposed with two trigger dates—the signature date of the revised O<sub>3</sub> NAAQS rule for complete applications and the effective date of the revised O<sub>3</sub> NAAQS for a draft permit or preliminary determination. A more detailed discussion of the final provision, comments received and our responses to those comments is provided in section VII of this preamble, which addresses this change to the PSD regulations, as well as the Response to Comment Document contained in the docket for this rulemaking.

b. What screening and compliance demonstration tools are used to implement the PSD program?

The EPA has historically allowed the use of screening and compliance demonstration tools to help facilitate the implementation of the NSR program by reducing the source's burden and streamlining the permitting process for circumstances where the emissions or ambient impacts of a particular pollutant could be considered *de minimis*. For example, the EPA has established significant emission rates, or SERs, that are used as screening tools to

determine when a pollutant would be considered to be emitted in a significant amount and, accordingly, when the NSR requirements should be applied to that pollutant. See 40 CFR 51.166(b)(23) and 52.21(b)(23). For O<sub>3</sub>, the EPA established a SER of 40 tpy for emissions of each O<sub>3</sub> precursor—VOC and NO<sub>x</sub>. For PSD, the O<sub>3</sub> SER applies independently to emissions of VOC and NO<sub>x</sub> (emissions of precursors are not added together) to determine when the proposed major stationary source or major modification must undergo PSD review for that precursor and whether individual PSD requirements, such as BACT, apply to that precursor.<sup>247</sup>

In the context of the PSD air quality impact analysis, the EPA has also used a value called a significant impact level (SIL) as a compliance demonstration tool. The SIL, expressed as an ambient concentration of a pollutant, may be used first to determine the geographical scope of the ambient impact analysis that must be completed for the applicable pollutant to satisfy the air quality demonstration requirement under CAA section 165(a)(3). A second use is to guide the determination of whether the impact of the source is considered to cause or contribute to a violation of any NAAQS. The EPA has not established a SIL for O<sub>3</sub>. The EPA is currently considering development of a SIL for O<sub>3</sub> through either guidance or a rulemaking process. Such a SIL would complement proposed revisions to Appendix W mentioned above (80 FR 45340, July 29, 2015) and would assist in the implementation of the PSD air quality analysis requirement for protection of the O<sub>3</sub> NAAQS. However, the EPA is not making revisions in this rulemaking to address the PSD air quality analysis for O<sub>3</sub>. Until any rulemaking to amend existing PSD regulations for O<sub>3</sub> is completed, permitting decisions should continue to be based on the existing provisions in the applicable regulations.

Several commenters addressed statements that the EPA made concerning screening tools for O<sub>3</sub> in the preamble to the O<sub>3</sub> NAAQS proposal. These statements were not linked to any proposed amendments to EPA regulations. Aside from adopting the grandfathering provision addressed in section VII of this preamble, the EPA is not revising the PSD requirements for O<sub>3</sub> in this final rule. Therefore, the EPA

<sup>247</sup> See *In re Footprint Power Salem Harbor Development, LP*, 16 E.A.D. \_\_\_, PSD Appeal No. 14–02, at 20–25 (EAB, Sept. 2, 2014) (including description of EPA's position on application of BACT to ozone precursors) available at [http://yosemite.epa.gov/oa/EAB\\_Web\\_Docket.nsf/PSD+Permit+Appeals+\(CAA\)?OpenView](http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/PSD+Permit+Appeals+(CAA)?OpenView).

is not responding to those comments at this time, consistent with the EPA's general approach to comments on implementation topics described above.

c. Other PSD Transition Issues

The EPA anticipates that the existing O<sub>3</sub> air quality in some areas currently designated attainment or unclassifiable for O<sub>3</sub> will not meet the revised O<sub>3</sub> NAAQS upon its effective date and that some of these areas will ultimately be designated “nonattainment” for the revised O<sub>3</sub> NAAQS through the formal area designation process set forth under the CAA (see section VIII.B above). However, until the EPA issues such nonattainment designations, proposed new major sources and major modifications situated in any area designated attainment or unclassifiable for the 2008 O<sub>3</sub> NAAQS will continue to be required to address O<sub>3</sub> in a PSD permit.<sup>248</sup> As mentioned above, the PSD permitting program requires that proposed new major stationary sources and major modifications must demonstrate that the emissions from the proposed source or modification will not cause or contribute to a violation of any NAAQS. In the notice of proposed rulemaking, the EPA provided information concerning its views on the possibility that some PSD permit applications could satisfy the air quality analysis requirements for O<sub>3</sub> by obtaining air quality offsets (called PSD offsets).<sup>249</sup> Several commenters expressed concern that without some transition provisions in the final rule exempting PSD permit applications for sources located in such areas from meeting the air quality analysis requirements for the revised O<sub>3</sub> NAAQS, such applications might not be able to satisfy the demonstration requirement, as the current ambient air monitoring data indicate the revised lower standards are not being met. The O<sub>3</sub> NAAQS proposal included no proposed revisions to PSD regulations on this

<sup>248</sup> Any proposed major stationary source or major modification subject to PSD for O<sub>3</sub> that does not receive its PSD permit by the effective date of a new O<sub>3</sub> nonattainment designation for the area where the source would locate would then be required to satisfy all of the applicable NNSR preconstruction permit requirements for O<sub>3</sub>, even if such source had been grandfathered under the PSD regulations from the demonstration requirement under CAA section 165(a)(3) for O<sub>3</sub>.

<sup>249</sup> The EPA has historically recognized in regulations and through other actions that sources applying for PSD permits may have the option of utilizing offsets as part of the required PSD demonstration under CAA section 165(a)(3)(B). See, e.g., *In re Interpower of New York, Inc.*, 5 E.A.D. 130, 141 (EAB 1994) (describing an EPA Region 2 PSD permit that relied in part on offsets to demonstrate the source would not cause or contribute to a violation of the NAAQS). 52 FR 24698 (July 1, 1987); 78 FR 3261–62 (Jan. 15, 2013).

topic and the EPA is not making any revisions to the PSD requirements for O<sub>3</sub> in this action to address this issue. Therefore, the EPA is not responding to those comments at this time, consistent with its general approach to comments on implementation topics described above. However, to help address this concern raised by commenters, the EPA is considering issuing additional guidance on how PSD offsets can be implemented.

### 3. Nonattainment NSR

Part D of title I of the CAA includes preconstruction review and permitting requirements for new major stationary sources and major modifications when they locate in areas designated nonattainment for a particular pollutant. The relevant part D requirements are typically referred to as the nonattainment NSR (NNSR) program. The EPA regulations for the NNSR program are contained at 40 CFR 51.165, 52.24 and part 51 Appendix S. The EPA's minimum requirements for a NNSR program to be approvable into a SIP are contained in 40 CFR 51.165. Appendix S to 40 CFR part 51 contains an interim NNSR program. This interim program enables implementation of NNSR permitting in nonattainment areas that lack a SIP-approved NNSR permitting program for the particular nonattainment pollutant, and the interim program can be applied during the time between the date of the relevant nonattainment designation and the date on which the EPA approves into the SIP a NNSR program or additional components of an NNSR program for a particular pollutant.<sup>250</sup> This interim program is commonly known as the Emissions Offset Interpretative Rule, and is applicable to all criteria pollutants, including O<sub>3</sub>.<sup>251</sup>

The EPA is not modifying any existing NNSR requirements in this rulemaking. Under the CAA, area designations for new or revised NAAQS are addressed subsequent to the effective date of the new or revised NAAQS. If the EPA determines that any revisions to the existing NNSR requirements, including those in Appendix S, are appropriate, the EPA expects, at a later date contemporaneous with the designation process for the revised O<sub>3</sub> NAAQS, to propose those revisions. If any changes are proposed to Appendix S requirements, the EPA

anticipates that it would intend for those changes to become effective no later than the effective date of the area designations. This timing would allow air agencies that lack an approved NNSR program for O<sub>3</sub> to use the relevant Appendix S provisions to issue NNSR permits addressing O<sub>3</sub> on and after the effective date of designations of new nonattainment areas for O<sub>3</sub> until such time as a NNSR program for O<sub>3</sub> is approved into the SIP.<sup>252</sup>

For NNSR, new major stationary sources and major modifications for O<sub>3</sub> must comply with the Lowest Achievable Emission Rate (LAER) requirements as defined in the CAA and NNSR rules, and must perform other analyses and satisfy other requirements under section 173 of the CAA. For example, under CAA section 173(c) emissions reductions, known as emissions offsets, must be secured to offset the increased emissions of the air pollutant (including the relevant precursors) from the new or modified source by an equal or greater reduction, as applicable, of such pollutant. The appropriate emissions offset needed for a particular source will depend upon the classification for the O<sub>3</sub> nonattainment area in which the source or modification will locate, such that areas with more severe nonattainment classifications have more stringent offset requirements. This ranges from 1.1:1 for areas classified as Marginal to 1.5:1 for areas classified as Extreme. *See, e.g.*, CAA section 182, 40 CFR 51.165(a)(9) and 40 CFR part 51 Appendix S section IV.G.2.

To facilitate continued economic development in nonattainment areas, many states have established offset banks or registries.<sup>253</sup> Such banks or registries can help new or modified major stationary source owners meet offset requirements by streamlining identification and access to available emissions reductions. Some states have established offset banks to help ensure a consistent method for generating, validating and transferring NO<sub>x</sub> and VOC offsets. Offsets in these areas are generated by emissions reductions that meet specific creditability criteria set forth by the SIP consistent with the EPA regulations. *See* 40 CFR 51.165(a)(3)(ii)(A)-(J) and part 51 Appendix S section IV.C. The EPA

received comments expressing concern about the limited availability of offsets in nonattainment areas. Since the EPA did not propose, and is not finalizing, any amendments related to the NNSR offset provisions, the EPA is not responding to those comments at this time, consistent with the EPA's general approach to comment on implementation topics as described above.

### D. Transportation and General Conformity

#### 1. What are transportation and general conformity?

Conformity is required under CAA section 176(c) to ensure that federal actions are consistent with ("conform to") the purpose of the SIP. Conformity to the purpose of the SIP means that federal activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS or interim reductions and milestones. Conformity applies to areas that are designated nonattainment, and those nonattainment areas redesignated to attainment with a CAA section 175A maintenance plan after 1990 ("maintenance areas").

The EPA's Transportation Conformity Rule (40 CFR 51.390 and part 93, subpart A) establishes the criteria and procedures for determining whether transportation activities conform to the SIP. These activities include adopting, funding or approving transportation plans, transportation improvement programs (TIPs) and federally supported highway and transit projects. For further information on conformity rulemakings, policy guidance and outreach materials, *see* the EPA's Web site at <http://www.epa.gov/otaq/stateresources/transconf/index.htm>. The EPA may issue future transportation conformity guidance as needed to implement a revised O<sub>3</sub> NAAQS.

With regard to general conformity, the EPA first promulgated general conformity regulations in November 1993. (40 CFR part 51, subpart W, 40 CFR part 93, subpart B) Subsequently the EPA finalized revisions to the general conformity regulations on April 5, 2010. (75 FR 17254-17279). Besides ensuring that federal actions not covered by the transportation conformity rule will not interfere with the SIP, the general conformity program also fosters communications between federal agencies and state/local air quality agencies, provides for public notification of and access to federal agency conformity determinations, and allows for air quality review of

<sup>250</sup> *See* Appendix S, Part I; 40 CFR 52.24(k).

<sup>251</sup> As appropriate, certain NNSR requirements under 40 CFR 51.165 or Appendix S can also apply to sources and modifications located in areas that are designated attainment or unclassifiable in the Ozone Transport Region. *See, e.g.*, CAA 184(b)(2), 40 CFR 52.24(k).

<sup>252</sup> States with SIP-approved NNSR programs for O<sub>3</sub> should evaluate that program to determine whether they can continue to issue permits under their approved program or whether revisions to their program are necessary to address the revised O<sub>3</sub> NAAQS.

<sup>253</sup> *See, for example*, emission reduction credit banking programs in Ohio (OAC Chapter 3745-1111) and California (H&SC Section 40709).



individual federal actions. More information on the general conformity program is available at <http://www.epa.gov/air/genconform/>.

2. When would transportation and general conformity apply to areas designated nonattainment for the revised O<sub>3</sub> NAAQS?

Transportation and general conformity apply one year after the effective date of nonattainment designations for the revised O<sub>3</sub> NAAQS. This is because CAA section 176(c)(6) provides a 1-year grace period from the effective date of initial designations for any revised NAAQS before transportation and general conformity apply in areas newly designated nonattainment for a specific pollutant and NAAQS.

3. Impact of a Revised O<sub>3</sub> NAAQS on a State's Existing Transportation and/or General Conformity SIP

In this final rule, the EPA is revising the O<sub>3</sub> NAAQS, but is not making specific changes to its transportation or general conformity regulations. Therefore, states should not need to revise their transportation and/or general conformity SIPs. While we are not making any revisions to the general conformity regulations at this time, we recommend, when areas develop SIPs for a revised O<sub>3</sub> NAAQS, that state and local air quality agencies work with federal agencies with large emitting activities that are subject to the general conformity regulations to establish an emissions budget for those facilities and activities in order to facilitate future conformity determinations under the conformity regulations. Finally, states with existing conformity SIPs and new nonattainment areas may also need to revise their conformity SIPs in order to ensure the state regulations apply in any newly designated areas.

Because significant tracts of land under federal management may be included in nonattainment area boundaries, the EPA encourages state and local air quality agencies to work with federal agencies to assess and develop emissions budgets that consider emissions from projects subject to general conformity, including emissions from fire on wildland, in any baseline, modeling and SIP attainment inventory. Where appropriate, states, land managers, and landowners may also consider developing plans to ensure that fuel accumulations are addressed. Information is available from DOI and USDA Forest Service on the ecological role of fire and on smoke management

programs and basic smoke management practices.<sup>254</sup>

If this is the first time that transportation conformity will apply in a state, such a state is required by the statute and EPA regulations to submit a SIP revision that addresses three specific transportation conformity requirements that address consultation procedures and written commitments to control or mitigation measures associated with conformity determinations for transportation plans, TIPs or projects. (40 CFR 51.390) Additional information and guidance can be found in the EPA's "Guidance for Developing Transportation Conformity State Implementation Plans" (<http://www.epa.gov/otaq/stateresources/transconf/policy/420b09001.pdf>).

#### *E. Regional and International Pollution Transport*

##### 1. Interstate Transport

The CAA contains provisions that specifically address and require regulation of the interstate transport of air pollution that does not otherwise qualify for data exclusion under the Act's exceptional events provisions. As previously noted, emissions from events, such as wildfires, may qualify as exceptional events and may be transported across jurisdictional boundaries. The EPA intends to address the transport of event-related emissions in our upcoming proposed revisions to the Exceptional Events Rule and draft guidance document addressing the Exceptional Events Rule criteria for wildfires that could affect O<sub>3</sub> concentrations. The EPA encourages affected air agencies to coordinate with their EPA regional office to identify approaches to evaluate the potential impacts of transported event-related emissions and determine the most appropriate information and analytical methods for each area's unique situation.

CAA section 110(a)(2)(D)(i)(I), *Interstate Transport*—CAA section 110(a)(2)(D)(i)(I) requires states to develop and implement a SIP to address the interstate transport of emissions. Specifically, this provision requires the SIP to prohibit "any source or other type of emissions activity within the state" that would "significantly contribute to nonattainment" of any NAAQS in another state, or that would "interfere with maintenance" of any NAAQS in another state. When EPA promulgates or

revises a NAAQS, each state is required to submit a SIP addressing this interstate transport provision within 3 years.

CAA section 126, *Interstate Transport*—CAA section 126(b) provides states and political subdivisions with a mechanism to petition the Administrator for a finding that "any major source or group of stationary sources emits or would emit any air pollution in violation of the prohibition of [CAA section 110(a)(2)(D)(i)(I)]."<sup>255</sup> Where the EPA makes such finding, the source is allowed to operate beyond a 3-month period after such finding only if the EPA establishes emissions limitations and a compliance schedule designated to bring the source into compliance as expeditiously as practicable, but no later than three years after such finding. This mechanism is available to downwind states and political subdivisions, regardless of designation status, that would be affected by emissions from upwind states.

##### 2. International Transport

The agency is active in work to reduce the international transport of O<sub>3</sub> and other pollutants that can contribute to "background" O<sub>3</sub> levels in the U.S. Under the Convention on Long-Range Transboundary Air Pollution (LRTAP) of the United Nations Economic Commission for Europe, the U.S. has been a party to the Protocol to Abate Acidification, Eutrophication, and Ground-level Ozone (known as the Gothenburg Protocol) since 2005. The U.S. is also active in the LRTAP Task Force for Hemispheric Transport of Air Pollution. The U.S. has worked bilaterally with Canada under the US-Canada Air Quality Agreement to adopt an Ozone Annex to address transboundary O<sub>3</sub> impacts and continues to work with China on air quality management activities. This work includes supporting China's efforts to rapidly deploy power plant pollution controls that can achieve NO<sub>x</sub> reductions of at least 80 to 90%. The U.S. also continues to work bilaterally with Mexico on the Border 2020 program to support efforts to improve environmental conditions in the border region. One of the main goals of the program is to reduce air pollution, including emissions that can cause transboundary O<sub>3</sub> impacts.

<sup>254</sup> USDA Forest Service and Natural Resources Conservation Service, Basic Smoke Management Practices Tech Note, October 2011, [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb1046311.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046311.pdf).

<sup>255</sup> The text of section 126 codified in the United States Code cross references section 110(a)(2)(D)(ii) instead of section 110(a)(2)(D)(i). The courts have confirmed that this is a scrivener's error and the correct cross reference is to section 110(a)(2)(D)(i). See *Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1040–44 (D.C. Cir. 2001).

Clean Air Act section 179B recognizes the possibility that certain nonattainment areas may be impacted by O<sub>3</sub> or O<sub>3</sub> precursor emissions from international sources beyond the regulatory jurisdiction of the state. The EPA's science review suggests that the influence of international sources on U.S. O<sub>3</sub> levels will be largest in locations that are in the immediate vicinity of an international border with Canada or Mexico. The science review also cites two recent studies which indicate that intercontinental transport of pollution, along with other natural sources and local pollutant sources, can affect O<sub>3</sub> air quality in the western U.S. under specific conditions. (U.S. EPA 2013, p. 3–140). Section 179B allows states to consider in their attainment plans and demonstrations whether an area might meet the O<sub>3</sub> NAAQS by the attainment date “but for” emissions contributing to the area originating outside the U.S. If a state is unable to demonstrate attainment of the NAAQS in such an area impacted by international transport after adopting all reasonably available control measures (e.g., RACM, including RACT, as required by CAA section 182(b)), the EPA can nonetheless approve the CAA-required state attainment plan and demonstration using the authority in section 179B.

When the EPA approves this type of attainment plan and demonstration, and there would be no adverse consequence for a finding that the area failed to attain the NAAQS by the relevant attainment date. States can also avoid potential sanctions and FIPs that would otherwise apply for failure to submit a required SIP submission or failure to submit an approvable SIP submission. For example, section 179B explicitly provides that the area shall not be reclassified to the next highest classification or required to implement a section 185 penalty fee program if a state meets the applicable criteria.

Section 179B authority does not allow an area to avoid a nonattainment designation or for the area to be classified with a lower classification than is indicated by actual ambient air quality. Section 179B also does not provide for any relaxation of mandatory emissions control measures (including contingency measures) or the prescribed emissions reductions necessary to achieve periodic emissions reduction progress requirements. In this way, section 179B insures that states will take actions to mitigate the public health impacts of exposure to ambient levels of pollution that violate the NAAQS by imposing reasonable control measures on the sources that are within the

jurisdiction of the state while also authorizing EPA to approve such attainment plans and demonstrations even though they do not fully address the public health impacts of international transport. Also, generally, monitoring data influenced by international transport may not be excluded from regulatory determinations. However, depending on the nature and scope of international emissions events affecting air quality in the U.S., the event-influenced data may qualify for exclusion under the Exceptional Events Rule. The EPA encourages affected air agencies to coordinate with their EPA regional office to identify approaches to evaluate the potential impacts of international transport and to determine the most appropriate information and analytical methods for each area's unique situation. The EPA will also work with states that are developing attainment plans for which section 179B is relevant, and ensure the states have the benefit of the EPA's understanding of international transport of ozone and ozone precursors.

The EPA has used section 179B authority previously to approve attainment plans for Mexican border areas in El Paso, TX (O<sub>3</sub>, PM<sub>10</sub>, and CO plans); and Nogales, AZ (PM<sub>10</sub> plan). The 24-hour PM<sub>10</sub> attainment plan for Nogales, AZ, was approved by EPA as sufficient to demonstrate attainment of the NAAQS by the Moderate classification deadline, but for international emissions sources in the Nogales Municipality, Mexico area (77 FR 38400, June 27, 2012).

States are encouraged to consult with their EPA Regional Office to establish appropriate technical requirements for these analyses.

## IX. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at <http://www2.epa.gov/laws-regulations/laws-and-executive-orders>.

### A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is an economically significant regulatory action that was submitted to the Office of Management and Budget (OMB) for review. Any changes made in response to OMB recommendations have been documented in the docket. The EPA prepared an analysis of the potential costs and benefits associated with this action. This analysis is contained in the document, *Regulatory Impact Analysis*

*of the Final National Ambient Air Quality Standards for Ground-Level Ozone*, October 2015. A copy of the analysis is available in the RIA docket (EPA-HQ-OAR-2013-0169) and the analysis is briefly summarized here. The RIA estimates the costs and monetized human health and welfare benefits of attaining three alternative O<sub>3</sub> NAAQS nationwide. Specifically, the RIA examines the alternatives of 65 ppb and 70 ppb. The RIA contains illustrative analyses that consider a limited number of emissions control scenarios that states and Regional Planning Organizations might implement to achieve these alternative O<sub>3</sub> NAAQS. However, the CAA and judicial decisions make clear that the economic and technical feasibility of attaining ambient standards are not to be considered in setting or revising NAAQS, although such factors may be considered in the development of state plans to implement the standards. Accordingly, although an RIA has been prepared, the results of the RIA have not been considered in issuing this final rule.

### B. Paperwork Reduction Act

The information collection requirements in this final rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act (PRA). The information collection requirements are not enforceable until OMB approves them. The Information Collection Request (ICR) document prepared by the EPA for these revisions has been assigned EPA ICR #2313.04.

The information collected and reported under 40 CFR part 58 is needed to determine compliance with the NAAQS, to characterize air quality and associated health and ecosystems impacts, to develop emission control strategies, and to measure progress for the air pollution program. We are extending the length of the required O<sub>3</sub> monitoring season in 32 states and the District of Columbia and the revised O<sub>3</sub> monitoring seasons will become effective on January 1, 2017. We are also revising the PAMS monitoring requirements to reduce the number of required PAMS sites while improving spatial coverage, and requiring states in moderate or above O<sub>3</sub> non-attainment areas and the O<sub>3</sub> transport region to develop an enhanced monitoring plan as part of the PAMS requirements. Monitoring agencies will need to comply with the PAMS requirements by June 1, 2019. In addition, we are revising the O<sub>3</sub> FRM to establish a new, additional technique for measuring O<sub>3</sub> in the ambient air. It will be

incorporated into the existing O<sub>3</sub> FRM, using the same calibration procedure in Appendix D of 40 CFR part 50. We are also making changes to the procedures for testing performance characteristics and determining comparability between candidate FEMs and reference methods.

For the purposes of ICR number 2313.04, the burden figures represent the burden estimate based on the requirements contained in this rule. The burden estimates are for the 3-year period from 2016 through 2018. The implementation of the PAMS changes will occur beyond the time frame of this ICR with implementation occurring in 2019. The cost estimates for the PAMS network (including revisions) will be captured in future routine updates to the Ambient Air Quality Surveillance ICR that are required every 3 years by OMB. The addition of a new FRM in 40 CFR part 50 and revisions to the O<sub>3</sub> FEM procedures for testing performance characteristics in 40 CFR part 53 does not add any additional information collection requirements.

The ICR burden estimates are associated with the changes to the O<sub>3</sub> seasons in this final rule. This information collection is estimated to involve 158 respondents for a total cost of approximately \$24,597,485 (total capital, labor, and operation and maintenance) plus a total burden of 339,930 hours for the support of all operational aspects of the entire O<sub>3</sub> monitoring network. The labor costs associated with these hours are \$20,209,966. Also included in the total are other costs of operations and maintenance of \$2,254,334 and equipment and contract costs of \$2,133,185. The actual labor cost increase to expand the O<sub>3</sub> monitoring seasons is \$2,064,707. In addition to the costs at the state, local, and tribal air quality management agencies, there is a burden to EPA of 41,418 hours and \$2,670,360. Burden is defined at 5 CFR 1320.3(b). State, local, and tribal entities are eligible for state assistance grants provided by the federal government under the CAA which can be used for related activities. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

#### C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small

entities. Rather, this rule establishes national standards for allowable concentrations of O<sub>3</sub> in ambient air as required by section 109 of the CAA. See also *American Trucking Associations v. EPA*, 175 F. 3d at 1044–45 (NAAQS do not have significant impacts upon small entities because NAAQS themselves impose no regulations upon small entities). Similarly, the revisions to 40 CFR part 58 address the requirements for states to collect information and report compliance with the NAAQS and will not impose any requirements on small entities. Similarly, the addition of a new FRM in 40 CFR part 50 and revisions to the FEM procedures for testing in 40 CFR part 53 will not impose any requirements on small entities.

#### D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded federal mandate of \$100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. The revisions to the O<sub>3</sub> NAAQS impose no enforceable duty on any state, local, or tribal governments or the private sector beyond those duties already established in the CAA. The expected costs associated with the monitoring requirements are described in the EPA's ICR document, and these costs are not expected to exceed \$100 million in the aggregate for any year.

Furthermore, as indicated previously, in setting NAAQS the EPA cannot consider the economic or technological feasibility of attaining ambient air quality standards, although such factors may be considered to a degree in the development of state plans to implement the standards (see *American Trucking Associations v. EPA*, 175 F. 3d at 1043 [noting that because the EPA is precluded from considering costs of implementation in establishing NAAQS, preparation of a RIA pursuant to the UMRA would not furnish any information which the court could consider in reviewing the NAAQS]). With regard to the sections of the rule preamble discussing implementation of the revisions to the O<sub>3</sub> NAAQS, the CAA imposes the obligation for states to submit SIPs to implement the NAAQS for O<sub>3</sub>. To the extent the EPA's discussion of implementation topics in this final rule may reflect some interpretations of those requirements, those interpretations do not impose obligations beyond the duties already established in the CAA and thus do not constitute a federal mandate for purposes of UMRA. The EPA is also adopting a grandfathering provision for

certain PSD permits in this action, as described above. However, that provision does not impose any mandate on any state, local, or tribal government or the private sector, but rather provides relief from requirements that would otherwise result from the new standards. In addition, the EPA is not requiring states to revise their SIPs to include such a provision.

#### E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

#### F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. It does not have a substantial direct effect on one or more Indian tribes. This rule provides increased protection from adverse effects of ozone for the entire country, including for sensitive populations, and tribes are not obligated to adopt or implement any NAAQS. In addition, tribes are not obligated to conduct ambient monitoring for O<sub>3</sub> or to adopt the ambient monitoring requirements of 40 CFR part 58. Even if this action were determined to have tribal implications within the meaning of Executive Order 13175, it will neither impose substantial direct compliance costs on tribal governments, nor preempt tribal law. Thus, consultation under Executive Order 13175 was not required.

Nonetheless, consistent with the "EPA Policy on Consultation and Coordination with Indian Tribes", the EPA offered government-to-government consultation on the proposed rule. No tribe requested government-to-government consultation with the EPA on this rule. In addition, the EPA conducted outreach to tribal environmental professionals, which included participation in the Tribal Air call sponsored by the National Tribal Air Association, and two other calls available to tribal environmental professionals. During the public comment period we received comments on the proposed rule from seven tribes and three tribal organizations.

#### G. Executive Order 13045: Protection of Children From Environmental Health & Safety Risks

This action is subject to Executive Order 13045 because it is an

economically significant regulatory action as defined by Executive Order 12866, and the EPA believes that the environmental health risk addressed by this action may have a disproportionate effect on children. The rule will establish uniform NAAQS for O<sub>3</sub>; these standards are designed to protect public health with an adequate margin of safety, as required by CAA section 109. However, the protection offered by these standards may be especially important for children because children, especially children with asthma, along with other at-risk populations<sup>256</sup> such as all people with lung disease and people active outdoors, are at increased risk for health effects associated with exposure to O<sub>3</sub> in ambient air. Because children are considered an at-risk lifestage, we have carefully evaluated the environmental health effects of exposure to O<sub>3</sub> pollution among children. Discussions of the results of the evaluation of the scientific evidence, policy considerations, and the exposure and risk assessments pertaining to children are contained in sections II.B and II.C of this preamble.

#### *H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use*

This action is not a “significant energy action” because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The purpose of this rule is to establish revised NAAQS for O<sub>3</sub>, establish an additional FRM, revise FEM procedures for testing, and revises air quality surveillance requirements. The rule does not prescribe specific pollution control strategies by which these ambient standards and monitoring revisions will be met. Such strategies will be developed by states on a case-by-case basis, and the EPA cannot predict whether the control options selected by states will include regulations on energy suppliers, distributors, or users. Thus, the EPA concludes that this rule is not likely to have any adverse energy effects and does not constitute a significant energy action as defined in Executive Order 13211.

#### *I. National Technology Transfer and Advancement Act*

This rulemaking involves environmental monitoring and measurement. Consistent with the Agency’s Performance Based

Measurement System (PBMS), the EPA is not requiring the use of specific, prescribed analytical methods. Rather, the Agency is allowing the use of any method that meets the prescribed performance criteria. Ambient air concentrations of O<sub>3</sub> are currently measured by the FRM in 40 CFR part 50, Appendix D (Measurement Principle and Calibration Procedure for the Measurement of Ozone in the Atmosphere) or by FEM that meet the requirements of 40 CFR part 53. Procedures are available in part 53 that allow for the approval of an FEM for O<sub>3</sub> that is similar to the FRM. Any method that meets the performance criteria for a candidate equivalent method may be approved for use as an FEM. This approach is consistent with EPA’s PBMS. The PBMS approach is intended to be more flexible and cost-effective for the regulated community; it is also intended to encourage innovation in analytical technology and improved data quality. The EPA is not precluding the use of any method, whether it constitutes a voluntary consensus standard or not, as long as it meets the specified performance criteria.

#### *J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*

The EPA believes that this action will not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations or indigenous peoples. The action described in this notice is to strengthen the NAAQS for O<sub>3</sub>.

The primary NAAQS are established at a level that is requisite to protect public health, including the health of sensitive or at-risk groups, with an adequate margin of safety. The NAAQS decisions are based on an explicit and comprehensive assessment of the current scientific evidence and associated exposure/risk analyses. More specifically, EPA expressly considers the available information regarding health effects among at-risk populations, including that available for low-income populations and minority populations, in decisions on NAAQS. Where low-income populations or minority populations are among the at-risk populations, the decision on the standard is based on providing protection for these and other at-risk populations and lifestages. Where such populations are not identified as at-risk populations, a NAAQS that is established to provide protection to the at-risk populations would also be expected to provide protection to all

other populations, including low-income populations and minority populations.

The ISA, HREA, and PA for this review, which include identification of populations at risk from O<sub>3</sub> health effects, are available in the docket, EPA-HQ-OAR-2008-0699. The information on at-risk populations for this NAAQS review is summarized and considered earlier in this preamble (see section II.A). This final rule increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority populations, low-income populations or indigenous peoples. This rule establishes uniform national standards for O<sub>3</sub> in ambient air that, in the Administrator’s judgment, protect public health, including the health of sensitive groups, with an adequate margin of safety.

Although it is part of a separate docket (EPA-HQ-OAR-2013-0169) and is not part of the rulemaking record for this action, EPA has prepared a RIA of this decision. As part of the RIA, a demographic analysis was conducted. While, as noted in the RIA, the demographic analysis is not a full quantitative, site-specific exposure and risk assessment, that analysis examined demographic characteristics of persons living in areas with poor air quality relative to the proposed standard. Specifically, Chapter 9, section 9.10 (page 9–7) and Appendix 9A of the RIA describe this proximity and socio-demographic analysis. This analysis found that in areas with poor air quality relative to the revised standard,<sup>257</sup> the representation of minority populations was slightly greater than in the U.S. as a whole. Because the air quality in these areas does not currently meet the revised standard, populations in these areas would be expected to benefit from implementation of the strengthened standard, and, thus, would be more affected by strategies to attain the revised standard. This analysis, which evaluates the potential implications for minority populations and low-income populations of future air pollution control actions that state and local agencies may consider in implementing the revised O<sub>3</sub> NAAQS described in this decision notice are discussed in Appendix 9A of the RIA. The RIA is available on the Web, through the EPA’s Technology Transfer Network Web site at [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html) and

<sup>256</sup> As used here and similarly throughout this document, the term population refers to people having a quality or characteristic in common, including a specific pre-existing illness or a specific age or lifestage.

<sup>257</sup> This refers to monitored areas with O<sub>3</sub> design values above the revised and alternative standards.

in the RIA docket (EPA-HQ-OAR-2013-0169). As noted above, although an RIA has been prepared, the results of the RIA have not been considered in issuing this final rule.

#### K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is a "major rule" as defined by 5 U.S.C. 804(2).

#### References

- Adams, WC. (2006). Comparison of chamber 6.6 hour exposures to 0.04–0.08 ppm ozone via square-wave and triangular profiles on pulmonary responses. *Inhalation Toxicol.* 18:127–136. <http://dx.doi.org/10.1080/08958370500306107>.
- Adams, WC. (2002). Comparison of chamber and face-mask 6.6-hour exposures to ozone on pulmonary function and symptoms responses. *Inhal Toxicol* 14:745–764. <http://dx.doi.org/10.1080/08958370290084610>.
- Akinbami, LJ; Lynch, CD; Parker, JD; Woodruff, TJ. (2010). The association between childhood asthma prevalence and monitored air pollutants in metropolitan areas, United States, 2001–2004. *Environ Res* 110:294–301. <http://dx.doi.org/10.1016/j.envres.2010.01.001>.
- Alexis, N; Urch, B; Tarlo, S; Corey, P; Pengelly, D; O'Byrne, P; Silverman, F. (2000). Cyclooxygenase metabolites play a different role in ozone-induced pulmonary function decline in asthmatics compared to normals. *Inhal Toxicol* 12:1205–1224.
- American Thoracic Society. (2000a). What constitutes an adverse health effect of air pollution? *Am. J. Respir. Crit. Care Med.* 161:665–673.
- American Thoracic Society. (2000b). Guidelines for methacholine and exercise challenge testing—1999. *Am. J. Respir. Crit. Care Med.* 161:309–329.
- American Thoracic Society. (1985). Guidelines as to what constitutes an adverse respiratory health effect, with special reference to epidemiological studies of air pollution. *Am. Rev. Respir. Dis.* 131:666–668.
- Andersen, CP; Wilson, R; Plocher, M; Hogsett, WE. (1997). Carry-over effects of ozone on root growth and carbohydrate concentrations of ponderosa pine seedlings. *Tree Physiol* 17:805–811.
- Basha, MA; Gross, KB; Gwizdala, CJ; Haidar, AH; Popovich, J, Jr. (1994). Bronchoalveolar lavage neutrophilia in asthmatic and healthy volunteers after controlled exposure to ozone and filtered purified air. *Chest* 106:1757–1765.
- Bell, ML; Peng, RD; Dominici, F. (2006). The exposure-response curve for ozone and risk of mortality and the adequacy of current ozone regulations. *Environ Health Perspect* 114:532–536.
- Bloom, B; Cohen, RA; Freeman, G. (2011). Summary health statistics for U.S. children: National Health Interview Survey, 2010. National Center for Health Statistics. *Vital Health Stat* 10 (250). [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_250.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_250.pdf).
- Brauer, M; Blair, J; Vedal, S. (1996). Effect of ambient ozone exposure on lung function in farm workers. *Am J Respir Crit Care Med* 154:981–987.
- Brown, JS; Bateson, TF; McDonnell, WF. (2008). Effects of exposure to 0.06 ppm ozone on FEV<sub>1</sub> in humans: A secondary analysis of existing data. *Environ Health Perspect* 116:1023–1026. <http://dx.doi.org/10.1289/ehp.11396>.
- Brown, JS. (2007). The effects of ozone on lung function at 0.06 ppm in healthy adults. June 14, 2007. Memo to the Ozone NAAQS Review Docket. EPA-HQ-OAR-2005-0172-0175. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_cr\\_td.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_cr_td.html).
- Brunekreef, B; Hoek, G; Breugelmans, O; Leentvaar, M. (1994). Respiratory effects of low-level photochemical air pollution in amateur cyclists. *Am J Respir Crit Care Med* 150:962–966.
- Cakmak, S; Dales, RE; Judek, S. (2006). Respiratory health effects of air pollution gases: Modification by education and income. *Arch Environ Occup Health* 61:5–10. <http://dx.doi.org/10.3200/AEOH.61.1.5-10>.
- Campbell, SJ; Wanek, R; Coulston, JW. (2007). Ozone injury in west coast forests: 6 years of monitoring—Introduction. Portland, OR: U.S. Department of Agriculture.
- Cavender, K. (2015). Summary of Final PAMS Network Design. Memorandum to the Ozone NAAQS Review Docket, EPA-HQ-OAR-2008-0699.
- Cavender, K. (2014). Network Design Considerations for the PAMS Network: Memorandum to the Ozone NAAQS Review Docket, EPA-HQ-OAR-2008-0699.
- Cavender, K. (2013). Revisions to the PAMS Compound Target List: Memorandum to the Ozone NAAQS Review Docket, EPA-HQ-OAR-2008-0699.
- Centers for Disease Control and Prevention. (2004). The health consequences of smoking: A report of the Surgeon General. Washington, DC: U.S. Department of Health and Human Services. <http://www.surgeongeneral.gov/library/smokingconsequences/>.
- Cordell, HK; Betz, CJ; Fly, M; Mou, S; Green, GT. (2008) How do Americans View Wilderness. A WILDERNESS Research Report in the Internet Research Information Series. National Survey on Recreation and the Environment. This research is a collaborative effort between the U.S. Department of Agriculture Forest Service's Southern Research Station and its Forestry Sciences Laboratory in Athens, Georgia; the University of Georgia in Athens; and the University of Tennessee in Knoxville, Tennessee. <http://warnell.forestry.uga.edu/nrrt/nsre/IRISWild/IrisWild1rptR.pdf>.
- Dales, RE; Cakmak, S; Doiron, MS. (2006). Gaseous air pollutants and hospitalization for respiratory disease in the neonatal period. *Environ Health Perspect* 114:1751–1754. <http://dx.doi.org/10.1289/ehp.9044>.
- Darbah, JNT; Kubiske, ME; Nelson, N; Oksanen, E; Vaapavuori, E; Karnosky, DF. (2008). Effects of decadal exposure to interacting elevated CO<sub>2</sub> and/or O<sub>3</sub> on paper birch (*Betula papyrifera*) reproduction. *Environ Pollut* 155:446–452. <http://dx.doi.org/10.1016/j.envpol.2008.01.033>.
- Darbah, JNT; Kubiske, ME; Nelson, N; Oksanen, E; Vaapavuori, E; Karnosky, DF. (2007). Impacts of elevated atmospheric CO<sub>2</sub> and O<sub>3</sub> on paper birch (*Betula papyrifera*): Reproductive fitness. *Scientific World Journal* 7:240–246. <http://dx.doi.org/10.1100/tsw.2007.42>.
- Darrow, LA; Klein, M; Sarnat, JA; Mulholland, JA; Strickland, MJ; Sarnat, SE; Russell, AG; Tolbert, PE. (2011a). The use of alternative pollutant metrics in time-series studies of ambient air pollution and respiratory emergency department visits. *J Expo Sci Environ Epidemiol* 21:10–19. <http://dx.doi.org/10.1038/jes.2009.49>.
- Eresmaa, N, Karppinen, SM; Joffe, SM; Rasanene, J; Talvitie, H. (2006). Mixing Height Determination by Ceilometer, Atmospheric Chemistry and Physics, 6. 1485–1493.
- Franze, T; Weller, MG; Niessner, R; Pöschl, U. (2005). Protein nitration by polluted air. *Environ Sci Technol* 39:1673–1678. <http://dx.doi.org/10.1021/es0488737>.
- Frey, HC; Samet, JM. (2012a). Letter from Dr. H. Christopher Frey, Chair and Dr. Jonathan M. Samet, Immediate Past Chair, Clean Air Scientific Advisory Committee, to Administrator Lisa P. Jackson. Re: CASAC Review of the EPA's Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (First External Review Draft—August 2012). EPA-CASAC-13-003. November 26, 2012.
- Frey, HC; Samet, JM. (2012b). Letter from Dr. H. Christopher Frey, Chair and Dr. Jonathan M. Samet, Immediate Past Chair, Clean Air Scientific Advisory Committee, to Administrator Lisa P. Jackson. Re: CASAC Review of the EPA's Health Risk and Exposure Assessment for Ozone (First External Review Draft—Updated August 2012) and Welfare Risk and Exposure Assessment for Ozone (First External Review Draft—Updated August 2012). EPA-CASAC-13-002. November 19, 2012.
- Frey, HC. (2014a). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee, to Administrator Gina McCarthy. Re: CASAC Review of the EPA's *Health Risk and Exposure Assessment for Ozone (Second External Review Draft—February, 2014)*. EPA-CASAC-14-005. July 1, 2014.
- Frey, HC. (2014b). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee, to Administrator Gina McCarthy. CASAC Review of the EPA's *Welfare Risk and Exposure Assessment for Ozone (Second External Review Draft)*. EPA-CASAC-14-003. June 18, 2104.

- Frey, HC. (2014c). Letter from Dr. H. Christopher Frey, Chair, Clean Air Scientific Advisory Committee, to Administrator Gina McCarthy. CASAC Review of the EPA's *Second Draft Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards*. EPA-CASAC-14-004. June, 26, 2014.
- Gielen, MH; Van Der Zee, SC; Van Wijnen, JH; Van Steen, CJ; Brunekreef, B. (1997). Acute effects of summer air pollution on respiratory health of asthmatic children. *Am J Respir Crit Care Med* 155:2105-2108.
- Goodman, JE; Prueitt, RL; Sax, SN; Bailey, LI; Rhomberg, LR. (2013). Evaluation of the causal framework used for setting the National Ambient Air Quality Standards. *Crit. Rev. Toxicol.* 43(10):829-849.
- Haefele, M., R.A. Kramer, and T.P. Holmes. (1991). Estimating the Total Value of a Forest Quality in High-Elevation Spruce-Fir Forests. *The Economic Value of Wilderness: Proceedings of the Conference*. Gen. Tech. Rep. SE-78 (pp. 91-96). Southeastern For. Exper. Station. Asheville, NC: USDA Forest Service.
- Heck, WW; Cowling, EB. (1997). The need for a long term cumulative secondary ozone standard—An ecological perspective. *EM* January:23-33.
- Henderson, R. (2008). Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee, to Administrator Stephen Johnson. Subject: Clean Air Scientific Advisory Committee Recommendations Concerning the Final Rule for the National Ambient Air Quality Standards for Ozone. EPA-CASAC-08-009. April 7, 2008.
- Henderson, R. (2006). Letter from Dr. Rogene Henderson, Chair, Clean Air Scientific Advisory Committee, to Administrator Stephen Johnson. Subject: Clean Air Scientific Advisory Committee's (CASAC) Peer Review of the Agency's 2nd Draft Ozone Staff Paper. EPA-CASAC-07-001. October 24, 2006.
- Hill, AB. (1965). The environment and disease: Association or causation? *Proc R Soc Med* 58:295-300.
- Hoek, G; Brunekreef, B; Kosterink, P; Van den Berg, R; Hofschreuder, P. (1993). Effect of ambient ozone on peak expiratory flow of exercising children in the Netherlands. *Arch Environ Occup Health* 48:27-32. <http://dx.doi.org/10.1080/00039896.1993.9938390>.
- Holmes, T; Kramer, R. (1995). "An Independent Sample Test of Yea-Saying and StartingPoint Bias in Dichotomous-Choice Contingent Valuation." *Journal of Environmental Economics and Management* 28:121-132.
- Hoppe, P; Peters, A; Rabe, G; Praml, G; Lindner, J; Jakobi, G; Fruhmann, G; Nowak, D. (2003). Environmental ozone effects in different population subgroups. *Int J Hyg Environ Health* 206:505-516. <http://dx.doi.org/10.1078/1438-4639-00250>.
- Horstman, DH; Ball, BA; Brown, J; Gerrity, T; Folinsbee, LJ. (1995). Comparison of pulmonary responses of asthmatic and nonasthmatic subjects performing light exercise while exposed to a low level of ozone. *Toxicol Ind Health* 11:369-385.
- Howden, LM; Meyer, JA. (2011). U.S. Census Bureau, 2010 Census Briefs, C2010BR-03, Age and Sex Composition: 2010, U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau, Washington, DC 20233. <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf>.
- Hwang, BF; Lee, YL; Lin, YC; Jaakkola, JJK; Guo, YL. (2005). Traffic related air pollution as a determinant of asthma among Taiwanese school children. *Thorax* 60:467-473.
- Islam, T; McConnell, R; Gauderman, WJ; Avol, E; Peters, JM; Gilliland, FD. (2008). Ozone, oxidant defense genes and risk of asthma during adolescence. *Am J Respir Crit Care Med* 177:388-395. <http://dx.doi.org/10.1164/rccm.200706-863OC>.
- Jacob DJ; Winner DA. (2009). Effect of climate change on air quality. *Atmos Environ* 43:51-63.
- Jerrett, M; Burnett, RT; Pope, CA, III; Ito, K; Thurston, G; Krewski, D; Shi, Y; Calle, E; Thun, M. (2009). Long-term ozone exposure and mortality. *N Engl J Med* 360:1085-1095. <http://dx.doi.org/10.1056/NEJMoa0803894>.
- Jorres, R; Nowak, D; Magnussen, H; Speckin, P; Koschyk, S. (1996). The effect of ozone exposure on allergen responsiveness in subjects with asthma or rhinitis. *Am J Respir Crit Care Med* 153:56-64.
- Katsouyanni, K; Samet, JM; Anderson, HR; Atkinson, R; Le Tertre, A; Medina, S; Samoli, E; Touloumi, G; Burnett, RT; Krewski, D; Ramsay, T; Dominici, F; Peng, RD; Schwartz, J; Zanobetti, A. (2009). Air pollution and health: A European and North American approach (APHENA). (Research Report 142). Boston, MA: Health Effects Institute. <http://pubs.healtheffects.org/view.php?id=327>.
- Kim, CS; Alexis, NE; Rappold, AG; Kehrl, H; Hazucha, MJ; Lay, JC; Schmitt, MT; Case, M; Devlin, RB; Peden, DB; Diaz-Sanchez, D. (2011). Lung function and inflammatory responses in healthy young adults exposed to 0.06 ppm ozone for 6.6 hours. *Am J Respir Crit Care Med* 183:1215-1221. <http://dx.doi.org/10.1164/rccm.201011-1813OC>.
- King, JS; Kubiske, ME; Pregitzer, KS; Hendrey, GR; McDonald, EP; Giardina, CP; Quinn, VS; Karnosky, DF. (2005). Tropospheric O<sub>3</sub> compromises net primary production in young stands of trembling aspen, paper birch and sugar maple in response to elevated atmospheric CO<sub>2</sub>. *New Phytol* 168:623-635. <http://dx.doi.org/10.1111/j.1469-8137.2005.01557.x>.
- Kohut, R. (2007). Assessing the risk of foliar injury from ozone on vegetation in parks in the U.S. National Park Service's Vital Signs Network. *Environ Pollut* 149:348-357.
- Kreit, JW; Gross, KB; Moore, TB; Lorenzen, TJ; D'Arcy, J; Eschenbacher, WL. (1989). Ozone-induced changes in pulmonary function and bronchial responsiveness in asthmatics. *J Appl Physiol* 66:217-222.
- Kubiske, ME; Quinn, VS; Heilman, WE; McDonald, EP; Marquardt, PE; Teclaw, RM; Friend, AL; Karnosky, DF. (2006). Interannual climatic variation mediates elevated CO<sub>2</sub> and O<sub>3</sub> effects on forest growth. *Global Change Biol* 12:1054-1068. <http://dx.doi.org/10.1111/j.1365-2486.2006.01152.x>.
- Kubiske, ME; Quinn, VS; Marquardt, PE; Karnosky, DF. (2007). Effects of elevated atmospheric CO<sub>2</sub> and/or O<sub>3</sub> on intra- and interspecific competitive ability of aspen. *Plant Biol (Stuttg)* 9:342-355. <http://dx.doi.org/10.1055/s-2006-924760>.
- Lee, EH; Hogsett, WE. (1996). Methodology for calculating inputs for ozone secondary standard benefits analysis: Part II. Research Triangle Park, NC: U.S. Environmental Protection Agency.
- Lefohn, AS; Hazucha, MJ; Shadwick, D; Adams, WC. (2010). An alternative form and level of the human health ozone standard. *Inhal Toxicol* 22:999-1011. <http://dx.doi.org/10.3109/08958378.2010.505253>.
- Lefohn, AS; Jackson, W; Shadwick, DS; Knudsen, HP. (1997). Effect of surface ozone exposures on vegetation grown in the southern Appalachian Mountains: Identification of possible areas of concern. *Atmos Environ* 31:1695-1708. [http://dx.doi.org/10.1016/S1352-2310\(96\)00258-0](http://dx.doi.org/10.1016/S1352-2310(96)00258-0).
- Lin, S; Bell, EM; Liu, W; Walker, RJ; Kim, NK; Hwang, SA. (2008a). Ambient ozone concentration and hospital admissions due to childhood respiratory diseases in New York State, 1991-2001. *Environ Res* 108:42-47. <http://dx.doi.org/10.1016/j.envres.2008.06.007>.
- Lin, S; Liu, X; Le, LH; Hwang, SA. (2008b). Chronic exposure to ambient ozone and asthma hospital admissions among children. *Environ Health Perspect* 116:1725-1730. <http://dx.doi.org/10.1289/ehp.11184>.
- Mar, TF; Koenig, JQ. (2009). Relationship between visits to emergency departments for asthma and ozone exposure in greater Seattle, Washington. *Ann Allergy Asthma Immunol* 103:474-479.
- McCarthy, G. (2012). Letter from Gina McCarthy, Assistant Administrator, U.S. Environmental Protection Agency to Robert Ukeiley. January 4, 2012. [http://www.epa.gov/scram001/10thmodconf/review\\_material/Sierra\\_Club\\_Petition\\_OAR-11-002-1093.pdf](http://www.epa.gov/scram001/10thmodconf/review_material/Sierra_Club_Petition_OAR-11-002-1093.pdf).
- McDonnell, WF; Stewart, PW; Smith, MV; Kim, CS; Schelegle, ES. (2012). Prediction of lung function response for populations exposed to a wide range of ozone conditions. *Inhal Toxicol* 24:619-633.
- McDonnell, WF; Chapman, RS; Horstman, DH; Leigh, MW; Abdul-Salaam, S. (1985). A comparison of the responses of children and adults to acute ozone exposure.
- McLaughlin, SB; Nosal, M; Wullschlegler, SD; Sun, G. (2007a). Interactive effects of ozone and climate on tree growth and water use in a southern Appalachian forest in the USA. *New Phytol* 174:109-124. <http://dx.doi.org/10.1111/j.1469-8137.2007.02018.x>.
- McLaughlin, SB; Wullschlegler, SD; Sun, G; Nosal, M. (2007b). Interactive effects of ozone and climate on water use, soil

- moisture content and streamflow in a southern Appalachian forest in the USA. *New Phytol* 174:125–136. <http://dx.doi.org/10.1111/j.1469-8137.2007.01970.x>.
- Medina-Ramon, M; Zanobetti, A; Schwartz, J. (2006). The effect of ozone and PM<sub>10</sub> on hospital admissions for pneumonia and chronic obstructive pulmonary disease: A national multicity study. *Am J Epidemiol* 163:579–588. <http://dx.doi.org/10.1093/aje/kwj078>.
- Mortimer, KM; Neas, LM; Dockery, DW; Redline, S; Tager, IB. (2002). The effect of air pollution on inner-city children with asthma. *Eur Respir J* 19:699–705. <http://dx.doi.org/10.1183/09031936.02.00247102>.
- Mudway, IS; Kelly, FJ. (2004). An investigation of inhaled ozone dose and the magnitude of airway inflammation in healthy adults. *Am J Respir Crit Care Med* 169:1089–1095.
- National Academy of Sciences. (1991). Rethinking the Ozone Problem in Urban and Regional Air Pollution, Committee on Tropospheric Ozone, National Resource Council, National Academy Press, Washington, DC 20001. ISBN: 0–309–56037–3.
- National Institutes of Health, National Heart Lung and Blood Institute. (2007). Expert panel report 3: Guidelines for the diagnosis and management of asthma. (07–4051). Bethesda, MD: National Institute of Health.
- National Research Council. (2008). Estimating Mortality Risk Reduction and Economic Benefits from Controlling Ozone Air Pollution. Washington, DC: *The National Academies Press*.
- Nicholich, M. (2007). Some additional statistical analyses of the FEV1 pulmonary response data from the W.C. Adams data (2006). Appendix A. In: ExxonMobil comments, Docket No. EPA–HQ–OAR–2005–0172, October 9, 2007.
- Page, S. (2010). Memorandum from Stephen D. Page, Director, Office of Air Quality Planning & Standards, U.S. EPA, to Air Division Directors and Deputies, Regions I–X. Re: Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards. April 1, 2010.
- Page, S. (2011). Memorandum from Stephen D. Page, Director, Office of Air Quality Planning and Standards, U.S. EPA, to Regional Air Directors, Regions I–X. Re: Guidance to Regions for Working with Tribes during the National Ambient Air Quality Standards (NAAQS) Designations Process. December 20, 2011. <http://www.epa.gov/ttn/oarpg/t1/memoranda/20120117naaqsguidance.pdf>.
- Page, S. (2013). Memorandum from Stephen D. Page, Director, EPA Office of Air Quality Planning and Standards to Regional Air Directors, Regions I–X. Re: Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2). September 13, 2013. <http://www.epa.gov/oar/urbanair/sipstatus/infrastructure.html>.
- Phillips, SJ; Comus, PWA. (2000). Natural History of the Sonoran Desert. University of California Press, 628 pages.
- Pope, CA, III; Burnett, RT; Thun, MJ; Calle, EE; Krewski, D; Ito, K; Thurston, GD. (2002). Lung cancer, cardiopulmonary mortality, and long-term exposure to fine particulate air pollution. *JAMA* 287:1132–1141.
- Rice, J. (2014). Ozone Monitoring Season Analysis. Memorandum to the Ozone NAAQS Review Docket, EPA–HQ–OAR–2008–0699.
- Riikonen, J; Kets, K; Darbah, J; Oksanen, E; Sober, A; Vapaavuori, E; Kubiske, ME; Nelson, N; Karnosky, DF. (2008). Carbon gain and bud physiology in *Populus tremuloides* and *Betula papyrifera* grown under longterm exposure to elevated concentrations of CO<sub>2</sub> and O<sub>3</sub>. *Tree Physiol* 28:243–254. <http://dx.doi.org/10.1093/treephys/28.2.243>.
- RTI International. (2014). Gas Chromatograph (GC) Evaluation Study: Laboratory Evaluation Phase Report. <http://www.epa.gov/ttnamt11/files/ambient/pams/labevalreport.pdf>.
- Ryerson, TB; Williams, EJ; Fehsenfeld, FC. (2000). An Efficient Photolysis System for Fast-Response NO<sub>2</sub> Measurements, *Journal of Geophysical Research*, Volume 105, Issue D21.
- Salam, MT; Islam, T; Gauderman, WJ; Gilliland, FD. (2009). Roles of arginase variants, atopy, and ozone in childhood asthma. *J Allergy Clin Immunol* 123:596–602. <http://dx.doi.org/10.1016/j.jaci.2008.12.020>.
- Samet, JM. (2011). Letter from Dr. Jonathan M. Samet, Chair, Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson. Re: Clean Air Scientific Advisory Committee (CASAC) Response to Charge Questions on the Reconsideration of the 2008 Ozone National Ambient Air Quality Standards. EPA–CASAC–11–004. March 30, 2011. [http://yosemite.epa.gov/sab/sabproduct.nsf/0/F08BEB48C1139E2A8525785E006909AC/\\$File/EPA-CASAC-11-004-unsigned+.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/0/F08BEB48C1139E2A8525785E006909AC/$File/EPA-CASAC-11-004-unsigned+.pdf).
- Samet, JM. (2010). Letter from Dr. Jonathan M. Samet, Chair, Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson. Re: Review of EPA’s Proposed Ozone National Ambient Air Quality Standard (**Federal Register**, Vol. 75, Nov. 11, January 19, 2010). EPA–CASAC–10–007. February 19, 2010. [http://yosemite.epa.gov/sab/sabproduct.nsf/264cb1227d55e02c8525740207446a4/610BB57CFAC8A41C852576CF007076BD/\\$File/EPA-CASAC-10-007-unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/264cb1227d55e02c8525740207446a4/610BB57CFAC8A41C852576CF007076BD/$File/EPA-CASAC-10-007-unsigned.pdf).
- Samet, JM; Bodurov, CC. (2008). Improving the presumptive disability decision-making process for veterans. In JM Samet; CC Bodurov (Eds.). Washington, DC: National Academies Press. [http://www.nap.edu/openbook.php?record\\_id=11908](http://www.nap.edu/openbook.php?record_id=11908).
- Samoli, E; Zanobetti, A; Schwartz, J; Atkinson, R; Le Tertre, A; Schindler, C; Pérez, L; Cadum, E; Pekkanen, J; Paldy, A; Touloumi, G; Katsouyanni, K. (2009). The temporal pattern of mortality responses to ambient ozone in the APHEA project. *J Epidemiol Community Health* 63:960–966. <http://dx.doi.org/10.1136/jech.2008.084012>.
- Sasser, E. (2014). Memorandum from Erika Sasser, Acting Director, Health and Environmental Impacts Division, Office of Air Quality Planning and Standards, U.S. EPA, to Holly Stallworth, Designated Federal Office, Clean Air Scientific Advisory Committee. Re: Request for Revised Ozone HREA Chapter 7 Appendix Tables. May 9, 2014. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_2008\\_rea.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_2008_rea.html).
- Scannell, C; Chen, L; Aris, RM; Tager, I; Christian, D; Ferrando, R; Welch, B; Kelly, T; Balmes, JR. (1996). Greater ozone-induced inflammatory responses in subjects with asthma. *Am J Respir Crit Care Med* 154:24–29.
- Schelegle, ES; Adams, WC; Walby, WF; Marion, MS. (2012). Modelling of individual subject ozone exposure response kinetics. *Inhal Toxicol* 24:401–415. <http://dx.doi.org/10.3109/08958378.2012.683891>.
- Schelegle, ES; Morales, CA; Walby, WF; Marion, S; Allen, RP. (2009). 6.6-hour inhalation of ozone concentrations from 60 to 87 parts per billion in healthy humans. *Am J Respir Crit Care Med* 180:265–272. <http://dx.doi.org/10.1164/rccm.200809-1484OC>.
- Schiller, JS; Lucas, JW; Ward, BW; Peregoy, JA. (2012). Summary health statistics for U.S. adults: National Health Interview Survey, 2010. *National Center for Health Statistics. Vital Health Stat* 10(252). [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_252.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_252.pdf).
- Silverman, RA; Ito, K. (2010). Age-related association of fine particles and ozone with severe acute asthma in New York City. *J Allergy Clin Immunol* 125:367–373. <http://dx.doi.org/10.1016/j.jaci.2009.10.061>.
- Smith, JT.; Murphy, DL. (2015). Additional Observations from WREA Datasets for Visible Foliar Injury. Memorandum to the Ozone NAAQS Review Docket, EPA–HQ–OAR–2008–0699.
- Smith, G. (2012). Ambient ozone injury to forest plants in Northeast and North Central USA: 16 years of biomonitoring. *Environ Monit Assess* 184:4049–4065. <http://dx.doi.org/10.1007/s10661-011-2243-z>.
- Smith, RL; Xu, B; Switzer, P. (2009). Reassessing the relationship between ozone and short-term mortality in U.S. urban communities. *Inhal Toxicol* 21:37–61. <http://dx.doi.org/10.1080/08958370903161612>.
- Stafoggia, M; Forastiere, F; Faustini, A; Biggeri, A; Bisanti, L; Cadum, E; Cernigliaro, A; Mallone, S; Pandolfi, P; Serinelli, M; Tessari, R; Vigotti, MA; Perucci, CA. (2010). Susceptibility factors to ozone-related mortality: A population-based case-crossover analysis. *Am J Respir Crit Care Med* 182:376–384. <http://dx.doi.org/10.1164/rccm.200908-1269OC>.

- Stieb, DM; Szyszkowicz, M; Rowe, BH; Leech, JA. (2009). Air pollution and emergency department visits for cardiac and respiratory conditions: A multi-city time-series analysis. *Environ Health Global Access Sci Source* 8:25. <http://dx.doi.org/10.1186/1476-069X-8-25>.
- Strickland, MJ; Darrow, LA; Klein, M; Flanders, WD; Sarnat, JA; Waller, LA; Sarnat, SE; Mulholland, JA; Tolbert, PE. (2010). Short-term associations between ambient air pollutants and pediatric asthma emergency department visits. *Am J Respir Crit Care Med* 182:307–316. <http://dx.doi.org/10.1164/rccm.200908-1201OC>.
- Tolbert, PE; Klein, M; Peel, JL; Sarnat, SE; Sarnat, JA. (2007). Multipollutant modeling issues in a study of ambient air quality and emergency department visits in Atlanta. *J Expo Sci Environ Epidemiol* 17:S29–S35. <http://dx.doi.org/10.1038/sj.jes.7500625>.
- Ulmer, C; Kopp, M; Ihorst, G; Frischer, T; Forster, J; Kuehr, J. (1997). Effects of ambient ozone exposures during the spring and summer of 1994 on pulmonary function of schoolchildren. *Pediatr Pulmonol* 23:344–353. [http://dx.doi.org/10.1002/\(SICI\)1099-0496\(199705\)23:53.0.CO;2-K](http://dx.doi.org/10.1002/(SICI)1099-0496(199705)23:53.0.CO;2-K).
- United Nations Environment Programme. (2003). *Millennium Ecosystem Assessment: Ecosystems and human well-being: A framework for assessment*. Washington, DC: Island Press.
- U.S. Department of Agriculture, U.S. Forest Service (2014). Tree basal area data. <http://www.fs.fed.us/foresthealth/technology/nidrm2012.shtml>.
- U.S. Department of Agriculture, National Resources Conservation Service (2014), The PLANTS Database (<http://plants.usda.gov>, 2014), National Plant Data Center, Baton Rouge, LA.
- U.S. Department of Agriculture, Agricultural Research Service. (2012). Effects of Ozone Air Pollution on Plants. <http://www.ars.usda.gov/Main/docs.htm?docid=12462>.
- U.S. Department of Health, Education, and Welfare. (1970). *Air Quality Criteria for Photochemical Oxidants*. Washington, DC: National Air Pollution Control Administration; publication no. AP-63. Available from NTIS, Springfield, VA; PB-190262/BA.
- U.S. Environmental Protection Agency. (2015) *Climate Change in the United States: Benefits of Global Action*. U.S. Environmental Protection Agency, Office of Atmospheric Programs. EPA 430-F-15-001, June 2015. Available at [www.epa.gov/cira](http://www.epa.gov/cira).
- U.S. Environmental Protection Agency. (2014a). *Health Risk and Exposure Assessment for Ozone*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/P-14-004a. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html).
- U.S. Environmental Protection Agency. (2014b). *Welfare Risk and Exposure Assessment for Ozone*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/P-14-005a. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html).
- U.S. Environmental Protection Agency. (2014c). *Policy Assessment for Ozone*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/R-14-006. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_index.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html).
- U.S. Environmental Protection Agency. (2014d) *Policy Assessment for Ozone, Second External Review Draft*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/P-14-002.
- U.S. Environmental Protection Agency (2014e). *List of Designated Reference and Equivalent Methods*. U.S. Environmental Protection Agency, Office of Research and Development, Research Triangle Park, NC 27711. <http://epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf>.
- U.S. Environmental Protection Agency (2014f). *Performance of the Proposed New Federal Reference Method for Measuring Ozone Concentrations in Ambient Air*. U.S. Environmental Protection Agency, Office of Research and Development, Research Triangle Park, NC. EPA/600/R-14/432.
- U.S. Environmental Protection Agency (2013). *Integrated Science Assessment of Ozone and Related Photochemical Oxidants (Final Report)*. U.S. Environmental Protection Agency, Washington, DC. EPA/600/R-10/076F. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_2008\\_isa.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_2008_isa.html).
- U.S. Environmental Protection Agency (2012). *Integrated Science Assessment of Ozone and Related Photochemical Oxidants (Third External Review Draft)*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-10/076C, 2012.
- U.S. Environmental Protection Agency (2011a). *Integrated Review Plan for the Ozone National Ambient Air Quality Standards*. U.S. Environmental Protection Agency, National Center for Environmental Assessment and Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA 452/R-11-006. April 2011. [http://www.epa.gov/ttn/naaqs/standards/ozone/data/2011\\_04\\_OzoneIRP.pdf](http://www.epa.gov/ttn/naaqs/standards/ozone/data/2011_04_OzoneIRP.pdf).
- U.S. Environmental Protection Agency (2011b) *Integrated Science Assessment for Ozone and Related Photochemical Oxidants: First External Review Draft*, U.S. Environmental Protection Agency, Washington, DC. EPA/600/R-10/076A.
- U.S. Environmental Protection Agency (2011c). *Integrated Science Assessment of Ozone and Related Photochemical Oxidants (Second External Review Draft)*. U.S. Environmental Protection Agency, Washington, DC. EPA/600/R-10/076B.
- U.S. Environmental Protection Agency (2011d). *Ozone National Ambient Air Quality Standards: Scope and Methods Plan for Health Risk and Exposure Assessment*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/P-11-001. April 2011. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_2008\\_pd.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_2008_pd.html).
- U.S. Environmental Protection Agency (2011e). *Ozone National Ambient Air Quality Standards: Scope and Methods Plan for Welfare Risk and Exposure Assessment*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-452/P-11-002. April 2011. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_2008\\_pd.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_2008_pd.html).
- U.S. Environmental Protection Agency (2011f). *Review of EPA's Photochemical Assessment Monitoring Stations (PAMS) Network Re-engineering Project*. U.S. Environmental Protection Agency, Office of the Administrator, Science Advisory Board, Washington DC. EPA-CASAC-11-010.
- U.S. Environmental Protection Agency (2010). *Final Assessment: Integrated Science Assessment for Carbon Monoxide*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-09/019F.
- U.S. Environmental Protection Agency (2009a). *Assessment of the Impacts of Global Change on Regional U.S. Air Quality: A Synthesis of Climate Change Impacts on Ground Level-Ozone*. An Interim Report of the U.S. EPA Global Change Research Program. U.S. Environmental Protection Agency, Washington, DC. EPA/600/R-07/094.
- U.S. Environmental Protection Agency (2009b). *Integrated Science Assessment for Particulate Matter (Final Report)*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/139F, 2009.
- U.S. Environmental Protection Agency (2008). *Responses to Significant Comments on the 2007 Proposed Rule on the National Ambient Air Quality Standards for Ozone*. U.S. Environmental Protection Agency, Washington, DC, March 2008. [http://www.epa.gov/ttn/naaqs/standards/ozone/data/2008\\_03\\_rtc.pdf](http://www.epa.gov/ttn/naaqs/standards/ozone/data/2008_03_rtc.pdf).
- U.S. Environmental Protection Agency (2007). *Review of the National Ambient Air Quality Standards for Ozone: Policy Assessment of Scientific and Technical Information*, OAQPS Staff Paper. EPA-452/R-07-007.
- U.S. Environmental Protection Agency (2006a). *Air Quality Criteria for Ozone and Related Photochemical Oxidants (2006 Final)*. U.S. Environmental Protection Agency, Washington, DC. EPA/600/R-05/004aF-cF. March 2006. [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_cr\\_cd.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_cr_cd.html).
- U.S. Environmental Protection Agency (2006b). *Ecological Benefits Assessment Strategic Plan*. EPA-240-R-06-001. Office of Administrator, Washington, DC. <http://yosemite.epa.gov/ee/epa/eed.nsf/Webpages/ecologbenefitsplan.html>.
- U.S. Environmental Protection Agency (2005). *Guidelines for carcinogen risk*



- assessment. Risk Assessment Forum, U.S. EPA, Washington, DC. EPA/630/P-03/001F. <http://www.epa.gov/cancerguidelines/>.
- U.S. Environmental Protection Agency (1999). Compendium Method TO-11A, Determination of Formaldehyde in Ambient Air using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC). U.S. Environmental Protection Agency, Office of Research and Development, Cincinnati, OH. EPA/625/R-96/010b.
- U.S. Environmental Protection Agency (1998). Technical Assistance Document (TAD) for Sampling and Analysis of Ozone Precursors. U.S. Environmental Protection Agency, Office of Research and Development, Research Triangle Park. EPA/600-R-98/161.
- U.S. Environmental Protection Agency (1996a). Air quality criteria for ozone and related photochemical oxidants. U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA/600/P-93/004aF, cF.
- U.S. Environmental Protection Agency (1996b). Review of national ambient air quality standards for ozone: Assessment of scientific and technical information: OAQPS staff paper. Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA/452/R-96/007. <http://www.ntis.gov/search/product.aspx?ABBR=PB96203435>.
- U.S. Environmental Protection Agency (1992). Summary of selected new information on effects of ozone on health and vegetation: Supplement to 1986 air quality criteria for ozone and other photochemical oxidants. Research Triangle Park, NC: Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office; EPA report no. EPA/600/8-88/105F. Available from NTIS, Springfield, VA; PB92-235670.
- U.S. Environmental Protection Agency (1989). Review of the National Ambient Air Quality Standards for Ozone: Policy Assessment of Scientific and Technical Information. OAQPS Staff Paper. Office of Air Quality Planning and Standards, Research Triangle Park, NC.
- U.S. Environmental Protection Agency (1986). Air quality criteria for ozone and other photochemical oxidants. Research Triangle Park, NC. EPA-600/8-84-020aF-EPA-600/8-84-020eF. <http://www.ntis.gov/search/product.aspx?ABBR=PB87142949>.
- U.S. Environmental Protection Agency (1978). Air quality criteria for ozone and other photochemical oxidants. Washington, DC. EPA/600/8-78/004.
- USFS (U.S. Forest Service). (2011). Forest Health Monitoring Network.
- U.S. Forest Service; National Park Service; U.S. Fish and Wildlife Service. (2010). Federal land managers' air quality related values work group (FLAG): Phase I report—revised (2010). Natural Resource Report NPS/NRPC/NRR—2010/232. National Park Service, Denver, CO. [http://www.nature.nps.gov/air/Pubs/pdf/flag/FLAG\\_2010.pdf](http://www.nature.nps.gov/air/Pubs/pdf/flag/FLAG_2010.pdf).
- U.S. National Park Service. (2003). Ozone Sensitive Plant Species on National Park Service and U.S. Fish and Wildlife Service Lands: Results of a June 24–25, 2003 Workshop. Baltimore, MD. <http://www.nature.nps.gov/air/pubs/pdf/baltfinalreport1.pdf>.
- U.S. National Park Service. (2006). Ozone Sensitive Plant Species, by Park, November 2006. [http://www.nature.nps.gov/air/Permits/ARIS/docs/Ozone\\_Sensitive\\_ByPark\\_3600.pdf](http://www.nature.nps.gov/air/Permits/ARIS/docs/Ozone_Sensitive_ByPark_3600.pdf).
- Ulmer, C; Kopp, M; Ihorst, G; Frischer, T; Forster, J; Kuehr, J. (1997). Effects of ambient ozone exposures during the spring and summer of 1994 on pulmonary function of schoolchildren. *Pediatr Pulmonol* 23:344–353. [http://dx.doi.org/10.1002/\(SICI\)1099-0496\(199705\)23:5<344::AID-PPUL6>3.0.CO;2-K](http://dx.doi.org/10.1002/(SICI)1099-0496(199705)23:5<344::AID-PPUL6>3.0.CO;2-K).
- Vagaggini, B; Cianchetti, S; Bartoli, M; Ricci, M; Bacci, E; Dente, FL; Di Franco, A; Paggiaro, P. (2007). Prednisone blunts airway neutrophilic inflammatory response due to ozone exposure in asthmatic subjects. *Respiration* 74:61–58. <http://dx.doi.org/10.1159/000096078>.
- Vagaggini, B; Taccola, M; Conti, I; Carnevali, S; Cianchetti, S; Bartoli, ML; Bacci, E; Dente, FL; Di Franco, A; Giannini, D; Paggiaro, PL. (2001). Budesonide reduces neutrophilic but not functional airway response to ozone in mild asthmatics. *Am J Respir Crit Care Med* 164:2172–2176.
- Vedal, S; Brauer, M; White, R; Petkau, J. (2003). Air pollution and daily mortality in a city with low levels of pollution. *Environ. Health Perspect.* 111:45–51.
- Villeneuve, PJ; Chen, L; Rowe, BH; Coates, F. (2007). Outdoor air pollution and emergency department visits for asthma among children and adults: A case-crossover study in northern Alberta, Canada. *Environ Health Global Access Sci Source* 6:40. <http://dx.doi.org/10.1186/1476-069X-6-40>.
- Wegman, LN. (2012). Memorandum from Lydia N. Wegman, Director, Health and Environmental Impacts Division, Office of Air Quality Planning and Standards, U.S. EPA, to Holly Stallworth, Designated Federal Officer, Clean Air Scientific Advisory Committee. Re: Updates to Information Presented in the Scope and Methods Plans for the Ozone NAAQS Health and Welfare Risk and Exposure Assessments. May 2, 2012.
- Wells, B. (2015a). Data Analyses Supporting Responses to Public Comments for the O<sub>3</sub> NAAQS. Memorandum to the Ozone NAAQS Review Docket, EPA-HQ-OAR-2008-0699.
- Wells, B. (2015b). Expanded Comparison of Ozone Metrics Considered in Current NAAQS Review. Memorandum to the Ozone NAAQS Review Docket, EPA-HQ-OAR-2008-0699.
- Wells, B. (2014a). Comparison of Ozone Metrics Considered in Current NAAQS Review. Memorandum to the Ozone NAAQS Review Docket, EPA-HQ-OAR-2008-0699.
- Wells, B. (2014b). Analysis of Overlapping 8-hour Daily Maximum Ozone Concentrations. Memorandum to the Ozone NAAQS Review Docket, EPA-HQ-OAR-2008-0699.
- Wittig, VE; Ainsworth, EA; Naidu, SL; Karnosky, DF; Long, SP. (2009). Quantifying the impact of current and future tropospheric ozone on tree biomass, growth, physiology and biochemistry: A quantitative meta-analysis. *Global Change Biol* 15:396–424. <http://dx.doi.org/10.1111/j.1365-2486.2008.01774.x>.
- Wittig, VE; Ainsworth, EA; Long, SP. (2007). To what extent do current and projected increases in surface ozone affect photosynthesis and stomatal conductance of trees? A meta-analytic review of the last 3 decades of experiments [Review]. *Plant Cell Environ* 30:1150–1162. <http://dx.doi.org/10.1111/j.1365-3040.2007.01717.x>.
- Wolff, GT. (1995). Letter to EPA Administrator Carol Browner: “CASAC Closure on the Primary Standard Portion of the Staff Paper for Ozone,” EPA-SAB-CASAC-LTR-96-002, November 30, 1995.
- Wong, CM; Vichit-Vadakan, N; Vajanapoom, N; Ostro, B; Thach, TQ; Chau, PY; Chan, EK; Chung, RY; Ou, CQ; Yang, L; Peiris, JS; Thomas, GN; Lam, TH; Wong, TW; Hedley, AJ; Kan, H; Chen, B; Zhao, N; London, SJ; Song, G; Chen, G; Zhang, Y; Jiang, L; Qian, Z; He, Q; Lin, HM; Kong, L; Zhou, D; Liang, S; Zhu, Z; Liao, D; Liu, W; Bentley, CM; Dan, J; Wang, B; Yang, N; Xu, S; Gong, J; Wei, H; Sun, H; Qin, Z. (2010). Part 5. Public health and air pollution in Asia (PAPA): A combined analysis of four studies of air pollution and mortality. In *Public Health and Air Pollution in Asia (PAPA): Coordinated Studies of Short-Term Exposure to Air Pollution and Daily Mortality in Four Cities* (pp. 377–418). Boston, MA: Health Effects Institute. <http://pubs.healtheffects.org/view.php?id=348>.
- Zanobetti, A; Schwartz, J. (2011). Ozone and survival in four cohorts with potentially predisposing diseases. *Am J Respir Crit Care Med* 184:836–841. <http://dx.doi.org/10.1164/rccm.201102-0227OC>.
- Zanobetti, A; Schwartz, J. (2008). Mortality displacement in the association of ozone with mortality: An analysis of 48 cities in the United States. *Am J Respir Crit Care Med* 177:184–189. <http://dx.doi.org/10.1164/rccm.200706-823OC>.
- Zanobetti, A; Schwartz, J. (2006). Air pollution and emergency admissions in Boston, MA. *J Epidemiol Community Health* 60:890–895. <http://dx.doi.org/10.1136/jech.2005.039834>.

## List of Subjects

### 40 CFR Part 50

Environmental protection, Air pollution control, Carbon monoxide, Lead, Nitrogen dioxide, Ozone, Particulate matter, Sulfur oxides.

### 40 CFR Part 51

Environmental protection, Administrative practices and

procedures, Air pollution control, Intergovernmental relations.

40 CFR Part 52

Environmental Protection, Administrative practices and procedures, Air pollution control, Incorporation by reference, Intergovernmental relations.

40 CFR Part 53

Environmental protection, Administrative practice and procedure, Air pollution control, Reporting and recordkeeping requirements.

40 CFR Part 58

Environmental protection, Administrative practice and procedure, Air pollution control, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: October 1, 2015.

Gina McCarthy, Administrator.

For the reasons set forth in the preamble, chapter I of title 40 of the Code of Federal Regulations is amended as follows:

**PART 50—NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS**

■ 1. The authority citation for part 50 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

■ 2. Amend § 50.14 by:

■ a. Revising paragraphs (c)(2)(iii) and (vi) and (c)(3)(i); and

■ b. Removing and reserving paragraphs (c)(2)(iv) and (v) and (c)(3)(ii) and (iii).

The revisions read as follows:

**§ 50.14 Treatment of air quality monitoring data influenced by exceptional events.**

\* \* \* \* \*

(c) \* \* \*

(2) \* \* \*

(iii) Flags placed on data as being due to an exceptional event together with an initial description of the event shall be submitted to EPA not later than July 1st of the calendar year following the year in which the flagged measurement occurred, except as allowed under paragraph (c)(2)(vi) of this section.

\* \* \* \* \*

(vi) Table 1 identifies the data submission process for a new or revised NAAQS. This process shall apply to those data that will or may influence the initial designation of areas for any new or revised NAAQS.

TABLE 1—SCHEDULE FOR FLAGGING AND DOCUMENTATION SUBMISSION FOR DATA INFLUENCED BY EXCEPTIONAL EVENTS FOR USE IN INITIAL AREA DESIGNATIONS

Exceptional events/regulatory action	Exceptional events deadline schedule <sup>d</sup>
Flagging and initial event description deadline for data years 1, 2 and 3. <sup>a</sup>	If state and tribal initial designation recommendations for a new/revised NAAQS are due August through January, then the flagging and initial event description deadline will be the July 1 prior to the recommendation deadline. If state and tribal recommendations for a new/revised NAAQS are due February through July, then the flagging and initial event description deadline will be the January 1 prior to the recommendation deadline.
Exceptional events demonstration submittal deadline for data years 1, 2 and 3. <sup>a</sup>	No later than the date that state and tribal recommendations are due to EPA.
Flagging, initial event description and exceptional events demonstration submittal deadline for data year 4 <sup>b</sup> and, where applicable, data year 5. <sup>c</sup>	By the last day of the month that is 1 year and 7 months after promulgation of a new/revised NAAQS, unless either option a or b applies.  a. If the EPA follows a 3-year designation schedule, the deadline is 2 years and 7 months after promulgation of a new/revised NAAQS. b. If the EPA notifies the state/tribe that it intends to complete the initial area designations process according to a schedule between 2 and 3 years, the deadline is 5 months prior to the date specified for final designations decisions in such EPA notification.

<sup>a</sup> Where data years 1, 2, and 3 are those years expected to be considered in state and tribal recommendations.  
<sup>b</sup> Where data year 4 is the additional year of data that the EPA may consider when it makes final area designations for a new/revised NAAQS under the standard designations schedule.  
<sup>c</sup> Where data year 5 is the additional year of data that the EPA may consider when it makes final area designations for a new/revised NAAQS under an extended designations schedule.  
<sup>d</sup> The date by which air agencies must certify their ambient air quality monitoring data in AQS is annually on May 1 of the year following the year of data collection as specified in 40 CFR 58.15(a)(2). In some cases, however, air agencies may choose to certify a prior year's data in advance of May 1 of the following year, particularly if the EPA has indicated its intent to promulgate final designations in the first 8 months of the calendar year. Data flagging, initial event description and exceptional events demonstration deadlines for "early certified" data will follow the deadlines for "year 4" and "year 5" data.

(3) *Submission of demonstrations.* (i) Except as allowed under paragraph (c)(2)(vi) of this section, a State that has flagged data as being due to an exceptional event and is requesting exclusion of the affected measurement data shall, after notice and opportunity for public comment, submit a demonstration to justify data exclusion to EPA not later than the lesser of 3 years following the end of the calendar quarter in which the flagged concentration was recorded or 12 months prior to the date that a regulatory decision must be made by

EPA. A State must submit the public comments it received along with its demonstration to EPA.

\* \* \* \* \*

■ 3. Section 50.19 is added to read as follows:

**§ 50.19 National primary and secondary ambient air quality standards for ozone.**

(a) The level of the national 8-hour primary ambient air quality standard for ozone (O<sub>3</sub>) is 0.070 parts per million (ppm), daily maximum 8-hour average, measured by a reference method based on appendix D to this part and

designated in accordance with part 53 of this chapter or an equivalent method designated in accordance with part 53 of this chapter.

(b) The 8-hour primary O<sub>3</sub> ambient air quality standard is met at an ambient air quality monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration is less than or equal to 0.070 ppm, as determined in accordance with appendix U to this part.

(c) The level of the national secondary ambient air quality standard for O<sub>3</sub> is 0.070 ppm, daily maximum 8-hour

average, measured by a reference method based on appendix D to this part and designated in accordance with part 53 of this chapter or an equivalent method designated in accordance with part 53 of this chapter.

(d) The 8-hour secondary O<sub>3</sub> ambient air quality standard is met at an ambient air quality monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration is less than or equal to 0.070 ppm, as determined in accordance with appendix U to this part.

■ 4. Revise appendix D to part 50 to read as follows:

**Appendix D to Part 50—Reference Measurement Principle and Calibration Procedure for the Measurement of Ozone in the Atmosphere (Chemiluminescence Method)**

*1.0 Applicability.*

1.1 This chemiluminescence method provides reference measurements of the concentration of ozone (O<sub>3</sub>) in ambient air for determining compliance with the national primary and secondary ambient air quality standards for O<sub>3</sub> as specified in 40 CFR part 50. This automated method is applicable to the measurement of ambient O<sub>3</sub> concentrations using continuous (real-time) sampling and analysis. Additional quality assurance procedures and guidance are provided in 40 CFR part 58, appendix A, and in Reference 14.

*2.0 Measurement Principle.*

2.1 This reference method is based on continuous automated measurement of the intensity of the characteristic chemiluminescence released by the gas phase reaction of O<sub>3</sub> in sampled air with either ethylene (C<sub>2</sub>H<sub>4</sub>) or nitric oxide (NO) gas. An ambient air sample stream and a specific flowing concentration of either C<sub>2</sub>H<sub>4</sub> (ET-CL method) or NO (NO-CL method) are mixed in a measurement cell, where the resulting chemiluminescence is quantitatively

measured by a sensitive photo-detector. References 8–11 describe the chemiluminescence measurement principle.

2.2 The measurement system is calibrated by referencing the instrumental chemiluminescence measurements to certified O<sub>3</sub> standard concentrations generated in a dynamic flow system and assayed by photometry to be traceable to a National Institute of Standards and Technology (NIST) standard reference photometer for O<sub>3</sub> (see Section 4, Calibration Procedure, below).

2.3 An analyzer implementing this measurement principle is shown schematically in Figure 1. Designs implementing this measurement principle must include: an appropriately designed mixing and measurement cell; a suitable quantitative photometric measurement system with adequate sensitivity and wavelength specificity for O<sub>3</sub>; a pump, flow control, and sample conditioning system for sampling the ambient air and moving it into and through the measurement cell; a sample air dryer as necessary to meet the water vapor interference limit requirement specified in subpart B of part 53 of this chapter; a means to supply, meter, and mix a constant, flowing stream of either C<sub>2</sub>H<sub>4</sub> or NO gas of fixed concentration with the sample air flow in the measurement cell; suitable electronic control and measurement processing capability; and other associated apparatus as may be necessary. The analyzer must be designed and constructed to provide accurate, repeatable, and continuous measurements of O<sub>3</sub> concentrations in ambient air, with measurement performance that meets the requirements specified in subpart B of part 53 of this chapter.

2.4 An analyzer implementing this measurement principle and calibration procedure will be considered a federal reference method (FRM) only if it has been designated as a reference method in accordance with part 53 of this chapter.

2.5 *Sampling considerations.* The use of a particle filter on the sample inlet line of a chemiluminescence O<sub>3</sub> FRM analyzer is required to prevent buildup of particulate

matter in the measurement cell and inlet components. This filter must be changed weekly (or at least often as specified in the manufacturer's operation/instruction manual), and the sample inlet system used with the analyzer must be kept clean, to avoid loss of O<sub>3</sub> in the O<sub>3</sub> sample air prior to the concentration measurement.

*3.0 Interferences.*

3.1 Except as described in 3.2 below, the chemiluminescence measurement system is inherently free of significant interferences from other pollutant substances that may be present in ambient air.

3.2 A small sensitivity to variations in the humidity of the sample air is minimized by a sample air dryer. Potential loss of O<sub>3</sub> in the inlet air filter and in the air sample handling components of the analyzer and associated exterior air sampling components due to buildup of airborne particulate matter is minimized by filter replacement and cleaning of the other inlet components.

*4.0 Calibration Procedure.*

4.1 *Principle.* The calibration procedure is based on the photometric assay of O<sub>3</sub> concentrations in a dynamic flow system. The concentration of O<sub>3</sub> in an absorption cell is determined from a measurement of the amount of 254 nm light absorbed by the sample. This determination requires knowledge of (1) the absorption coefficient ( $\alpha$ ) of O<sub>3</sub> at 254 nm, (2) the optical path length (*l*) through the sample, (3) the transmittance of the sample at a nominal wavelength of 254 nm, and (4) the temperature (*T*) and pressure (*P*) of the sample. The transmittance is defined as the ratio  $I/I_0$ , where *I* is the intensity of light which passes through the cell and is sensed by the detector when the cell contains an O<sub>3</sub> sample, and *I*<sub>0</sub> is the intensity of light which passes through the cell and is sensed by the detector when the cell contains zero air. It is assumed that all conditions of the system, except for the contents of the absorption cell, are identical during measurement of *I* and *I*<sub>0</sub>. The quantities defined above are related by the Beer-Lambert absorption law,

$$\text{Transmittance} = \frac{I}{I_0} = e^{-\alpha cl} \quad (1)$$

Where:

$\alpha$  = absorption coefficient of O<sub>3</sub> at 254 nm = 308 ± 4 atm<sup>-1</sup> cm<sup>-1</sup> at 0 °C and 760 torr,<sup>1, 2, 3, 4, 5, 6, 7</sup>

*c* = O<sub>3</sub> concentration in atmospheres, and  
*l* = optical path length in cm.

A stable O<sub>3</sub> generator is used to produce O<sub>3</sub> concentrations over the required calibration

concentration range. Each O<sub>3</sub> concentration is determined from the measurement of the transmittance ( $I/I_0$ ) of the sample at 254 nm with a photometer of path length *l* and calculated from the equation,

$$c(\text{atm}) = -\frac{1}{\alpha l} \left( \ln \frac{I}{I_0} \right) \quad (2a)$$

or

$$c(\text{ppm}) = -\frac{10^6}{\alpha l} \left( \ln \frac{I}{I_0} \right). \quad (2b)$$

The calculated O<sub>3</sub> concentrations must be corrected for O<sub>3</sub> losses, which may occur in the photometer, and for the temperature and pressure of the sample.

**4.2 Applicability.** This procedure is applicable to the calibration of ambient air O<sub>3</sub> analyzers, either directly or by means of a transfer standard certified by this procedure. Transfer standards must meet the requirements and specifications set forth in Reference 12.

**4.3 Apparatus.** A complete UV calibration system consists of an O<sub>3</sub> generator, an output port or manifold, a photometer, an appropriate source of zero air, and other components as necessary. The configuration must provide a stable O<sub>3</sub> concentration at the system output and allow the photometer to accurately assay the output concentration to the precision specified for the photometer (4.3.1). Figure 2 shows a commonly used configuration and serves to illustrate the calibration procedure, which follows. Other configurations may require appropriate variations in the procedural steps. All connections between components in the calibration system downstream of the O<sub>3</sub> generator must be of glass, Teflon, or other relatively inert materials. Additional information regarding the assembly of a UV photometric calibration apparatus is given in Reference 13. For certification of transfer standards which provide their own source of O<sub>3</sub>, the transfer standard may replace the O<sub>3</sub> generator and possibly other components shown in Figure 2; see Reference 12 for guidance.

**4.3.1 UV photometer.** The photometer consists of a low-pressure mercury discharge lamp, (optional) collimation optics, an absorption cell, a detector, and signal-processing electronics, as illustrated in Figure 2. It must be capable of measuring the transmittance,  $I/I_0$ , at a wavelength of 254 nm with sufficient precision such that the standard deviation of the concentration measurements does not exceed the greater of 0.005 ppm or 3% of the concentration. Because the low-pressure mercury lamp radiates at several wavelengths, the photometer must incorporate suitable means to assure that no O<sub>3</sub> is generated in the cell by the lamp, and that at least 99.5% of the radiation sensed by the detector is 254 nm

radiation. (This can be readily achieved by prudent selection of optical filter and detector response characteristics.) The length of the light path through the absorption cell must be known with an accuracy of at least 99.5%. In addition, the cell and associated plumbing must be designed to minimize loss of O<sub>3</sub> from contact with cell walls and gas handling components. See Reference 13 for additional information.

**4.3.2 Air flow controllers.** Air flow controllers are devices capable of regulating air flows as necessary to meet the output stability and photometer precision requirements.

**4.3.3 Ozone generator.** The ozone generator used must be capable of generating stable levels of O<sub>3</sub> over the required concentration range.

**4.3.4 Output manifold.** The output manifold must be constructed of glass, Teflon, or other relatively inert material, and should be of sufficient diameter to insure a negligible pressure drop at the photometer connection and other output ports. The system must have a vent designed to insure atmospheric pressure in the manifold and to prevent ambient air from entering the manifold.

**4.3.5 Two-way valve.** A manual or automatic two-way valve, or other means is used to switch the photometer flow between zero air and the O<sub>3</sub> concentration.

**4.3.6 Temperature indicator.** A device to indicate temperature must be used that is accurate to  $\pm 1$  °C.

**4.3.7 Barometer or pressure indicator.** A device to indicate barometric pressure must be used that is accurate to  $\pm 2$  torr.

#### 4.4 Reagents.

**4.4.1 Zero air.** The zero air must be free of contaminants which would cause a detectable response from the O<sub>3</sub> analyzer, and it must be free of NO, C<sub>2</sub>H<sub>4</sub>, and other species which react with O<sub>3</sub>. A procedure for generating suitable zero air is given in Reference 13. As shown in Figure 2, the zero air supplied to the photometer cell for the I<sub>0</sub> reference measurement must be derived from the same source as the zero air used for generation of the O<sub>3</sub> concentration to be assayed (I measurement). When using the photometer to certify a transfer standard

having its own source of O<sub>3</sub>, see Reference 12 for guidance on meeting this requirement.

#### 4.5 Procedure.

**4.5.1 General operation.** The calibration photometer must be dedicated exclusively to use as a calibration standard. It must always be used with clean, filtered calibration gases, and never used for ambient air sampling. A number of advantages are realized by locating the calibration photometer in a clean laboratory where it can be stationary, protected from the physical shock of transportation, operated by a responsible analyst, and used as a common standard for all field calibrations via transfer standards.

**4.5.2 Preparation.** Proper operation of the photometer is of critical importance to the accuracy of this procedure. Upon initial operation of the photometer, the following steps must be carried out with all quantitative results or indications recorded in a chronological record, either in tabular form or plotted on a graphical chart. As the performance and stability record of the photometer is established, the frequency of these steps may be reduced to be consistent with the documented stability of the photometer and the guidance provided in Reference 12.

**4.5.2.1 Instruction manual.** Carry out all set up and adjustment procedures or checks as described in the operation or instruction manual associated with the photometer.

**4.5.2.2 System check.** Check the photometer system for integrity, leaks, cleanliness, proper flow rates, etc. Service or replace filters and zero air scrubbers or other consumable materials, as necessary.

**4.5.2.3 Linearity.** Verify that the photometer manufacturer has adequately established that the linearity error of the photometer is less than 3%, or test the linearity by dilution as follows: Generate and assay an O<sub>3</sub> concentration near the upper range limit of the system or appropriate calibration scale for the instrument, then accurately dilute that concentration with zero air and re-assay it. Repeat at several different dilution ratios. Compare the assay of the original concentration with the assay of the diluted concentration divided by the dilution ratio, as follows

$$E = \frac{A_1 - A_2/R}{A_1} \times 100\% \quad (3)$$

Where:

E = linearity error, percent

A<sub>1</sub> = assay of the original concentration

A<sub>2</sub> = assay of the diluted concentration

R = dilution ratio = flow of original concentration divided by the total flow

The linearity error must be less than 5%. Since the accuracy of the measured flow-rates will affect the linearity error as measured this way, the test is not necessarily conclusive. Additional information on verifying linearity is contained in Reference 13.

**4.5.2.4 Inter-comparison.** The photometer must be inter-compared annually, either directly or via transfer standards, with a

NIST standard reference photometer (SRP) or calibration photometers used by other agencies or laboratories.

**4.5.2.5 Ozone losses.** Some portion of the O<sub>3</sub> may be lost upon contact with the photometer cell walls and gas handling components. The magnitude of this loss must be determined and used to correct the calculated O<sub>3</sub> concentration. This loss must not exceed 5%. Some guidelines for quantitatively determining this loss are discussed in Reference 13.

**4.5.3 Assay of O<sub>3</sub> concentrations.** The operator must carry out the following steps to properly assay O<sub>3</sub> concentrations.

**4.5.3.1** Allow the photometer system to warm up and stabilize.

**4.5.3.2** Verify that the flow rate through the photometer absorption cell, F, allows the cell to be flushed in a reasonably short period of time (2 liter/min is a typical flow). The precision of the measurements is inversely related to the time required for flushing, since the photometer drift error increases with time.

**4.5.3.3** Ensure that the flow rate into the output manifold is at least 1 liter/min greater than the total flow rate required by the photometer and any other flow demand connected to the manifold.

4.5.3.4 Ensure that the flow rate of zero air, Fz, is at least 1 liter/min greater than the flow rate required by the photometer.

4.5.3.5 With zero air flowing in the output manifold, actuate the two-way valve to allow the photometer to sample first the manifold zero air, then Fz. The two photometer readings must be equal ( $I = I_0$ ).

**Note:** In some commercially available photometers, the operation of the two-way valve and various other operations in section

4.5.3 may be carried out automatically by the photometer.

4.5.3.6 Adjust the O<sub>3</sub> generator to produce an O<sub>3</sub> concentration as needed.

4.5.3.7 Actuate the two-way valve to allow the photometer to sample zero air until the absorption cell is thoroughly flushed and record the stable measured value of I<sub>0</sub>.

4.5.3.8 Actuate the two-way valve to allow the photometer to sample the O<sub>3</sub> concentration until the absorption cell is

thoroughly flushed and record the stable measured value of I.

4.5.3.9 Record the temperature and pressure of the sample in the photometer absorption cell. (See Reference 13 for guidance.)

4.5.3.10 Calculate the O<sub>3</sub> concentration from equation 4. An average of several determinations will provide better precision.

$$[O_3]_{OUT} = \left(\frac{-1}{\alpha l}\right) \ln \left(\frac{I}{I_0}\right) \left(\frac{T}{273}\right) \left(\frac{760}{P}\right) \times \frac{10^6}{L} \quad (4)$$

Where:

[O<sub>3</sub>]<sub>OUT</sub> = O<sub>3</sub> concentration, ppm

α = absorption coefficient of O<sub>3</sub> at 254 nm = 308 atm<sup>-1</sup> cm<sup>-1</sup> at 0° C and 760 torr

l = optical path length, cm

T = sample temperature, K

P = sample pressure, torr

L = correction factor for O<sub>3</sub> losses from

4.5.2.5 = (1 - fraction of O<sub>3</sub> lost).

**Note:** Some commercial photometers may automatically evaluate all or part of equation 4. It is the operator's responsibility to verify that all of the information required for equation 4 is obtained, either automatically by the photometer or manually. For "automatic" photometers which evaluate the first term of equation 4 based on a linear approximation, a manual correction may be required, particularly at higher O<sub>3</sub> levels. See the photometer instruction manual and Reference 13 for guidance.

4.5.3.11 Obtain additional O<sub>3</sub> concentration standards as necessary by repeating steps 4.5.3.6 to 4.5.3.10 or by Option 1.

4.5.4 *Certification of transfer standards.* A transfer standard is certified by relating the output of the transfer standard to one or more O<sub>3</sub> calibration standards as determined according to section 4.5.3. The exact procedure varies depending on the nature

and design of the transfer standard. Consult Reference 12 for guidance.

4.5.5 *Calibration of ozone analyzers.* Ozone analyzers must be calibrated as follows, using O<sub>3</sub> standards obtained directly according to section 4.5.3 or by means of a certified transfer standard.

4.5.5.1 Allow sufficient time for the O<sub>3</sub> analyzer and the photometer or transfer standard to warm-up and stabilize.

4.5.5.2 Allow the O<sub>3</sub> analyzer to sample zero air until a stable response is obtained and then adjust the O<sub>3</sub> analyzer's zero control. Offsetting the analyzer's zero adjustment to +5% of scale is recommended to facilitate observing negative zero drift (if any). Record the stable zero air response as "Z".

4.5.5.3 Generate an O<sub>3</sub> concentration standard of approximately 80% of the desired upper range limit (URL) of the O<sub>3</sub> analyzer. Allow the O<sub>3</sub> analyzer to sample this O<sub>3</sub> concentration standard until a stable response is obtained.

4.5.5.4 Adjust the O<sub>3</sub> analyzer's span control to obtain the desired response equivalent to the calculated standard concentration. Record the O<sub>3</sub> concentration and the corresponding analyzer response. If substantial adjustment of the span control is necessary, recheck the zero and span adjustments by repeating steps 4.5.5.2 to 4.5.5.4.

4.5.5.5 Generate additional O<sub>3</sub> concentration standards (a minimum of 5 are recommended) over the calibration scale of the O<sub>3</sub> analyzer by adjusting the O<sub>3</sub> source or by Option 1. For each O<sub>3</sub> concentration standard, record the O<sub>3</sub> concentration and the corresponding analyzer response.

4.5.5.6 Plot the O<sub>3</sub> analyzer responses (vertical or Y-axis) versus the corresponding O<sub>3</sub> standard concentrations (horizontal or X-axis). Compute the linear regression slope and intercept and plot the regression line to verify that no point deviates from this line by more than 2 percent of the maximum concentration tested.

4.5.5.7 *Option 1:* The various O<sub>3</sub> concentrations required in steps 4.5.3.11 and 4.5.5.5 may be obtained by dilution of the O<sub>3</sub> concentration generated in steps 4.5.3.6 and 4.5.5.3. With this option, accurate flow measurements are required. The dynamic calibration system may be modified as shown in Figure 3 to allow for dilution air to be metered in downstream of the O<sub>3</sub> generator. A mixing chamber between the O<sub>3</sub> generator and the output manifold is also required. The flow rate through the O<sub>3</sub> generator (F<sub>O</sub>) and the dilution air flow rate (F<sub>D</sub>) are measured with a flow or volume standard that is traceable to a NIST flow or volume calibration standard. Each O<sub>3</sub> concentration generated by dilution is calculated from:

$$[O_3]'_{OUT} = [O_3]_{OUT} \left(\frac{F_O}{F_O + F_D}\right) \quad (5)$$

Where:

[O<sub>3</sub>]'<sub>OUT</sub> = diluted O<sub>3</sub> concentration, ppm

F<sub>O</sub> = flow rate through the O<sub>3</sub> generator, liter/min

F<sub>D</sub> = diluent air flow rate, liter/min

**Note:** Additional information on calibration and pollutant standards is provided in Section 12 of Reference 14.

#### 5.0 Frequency of Calibration.

5.1 The frequency of calibration, as well as the number of points necessary to establish the calibration curve, and the frequency of other performance checking will vary by analyzer; however, the minimum frequency, acceptance criteria, and subsequent actions are specified in Appendix D of Reference 14: Measurement Quality Objectives and Validation Templates. The user's quality control program shall provide guidelines for

initial establishment of these variables and for subsequent alteration as operational experience is accumulated. Manufacturers of analyzers should include in their instruction/operation manuals information and guidance as to these variables and on other matters of operation, calibration, routine maintenance, and quality control.

#### 6.0 References.

1. E.C.Y. Inn and Y. Tanaka, "Absorption coefficient of Ozone in the Ultraviolet and Visible Regions", J. Opt. Soc. Am., 43, 870 (1953).
2. A. G. Hearn, "Absorption of Ozone in the Ultraviolet and Visible Regions of the Spectrum", Proc. Phys. Soc. (London), 78, 932 (1961).
3. W. B. DeMore and O. Raper, "Hartley Band Extinction Coefficients of Ozone in the Gas Phase and in Liquid Nitrogen, Carbon Monoxide, and Argon", J. Phys. Chem., 68, 412 (1964).
4. M. Griggs, "Absorption Coefficients of Ozone in the Ultraviolet and Visible Regions", J. Chem. Phys., 49, 857 (1968).
5. K. H. Becker, U. Schurath, and H. Seitz, "Ozone Olefin Reactions in the Gas Phase. 1. Rate Constants and Activation Energies", Int'l Jour. of Chem. Kinetics, VI, 725 (1974).
6. M. A. A. Clyne and J. A. Coxom, "Kinetic Studies of Oxy-halogen Radical Systems", Proc. Roy. Soc., A303, 207 (1968).
7. J. W. Simons, R. J. Paur, H. A. Webster, and E. J. Bair, "Ozone Ultraviolet Photolysis. VI. The Ultraviolet Spectrum", J. Chem. Phys., 59, 1203 (1973).
8. Ollison, W.M.; Crow, W.; Spicer, C.W. "Field testing of new-technology

- ambient air ozone monitors.” J. Air Waste Manage. Assoc., 63 (7), 855–863 (2013).
9. Parrish, D.D.; Fehsenfeld, F.C. “Methods for gas-phase measurements of ozone, ozone precursors and aerosol precursors.” Atmos. Environ., 34 (12–14), 1921–1957(2000).
  10. Ridley, B.A.; Grahek, F.E.; Walega, J.G. “A small, high-sensitivity, medium-response ozone detector suitable for measurements from light aircraft.” J. Atmos. Oceanic Technol., 9 (2), 142–148(1992).
  11. Boylan, P., Helmig, D., and Park, J.H. “Characterization and mitigation of water vapor effects in the measurement of ozone by chemiluminescence with nitric oxide.” Atmos. Meas. Tech. 7, 1231–1244 (2014).
  12. Transfer Standards for Calibration of Ambient Air Monitoring Analyzers for Ozone, EPA publication number EPA–454/B–13–004, October 2013. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711. [Available at [www.epa.gov/ttnamti1/files/ambient/qaqc/OzoneTransferStandardGuidance.pdf](http://www.epa.gov/ttnamti1/files/ambient/qaqc/OzoneTransferStandardGuidance.pdf)].
  13. Technical Assistance Document for the Calibration of Ambient Ozone Monitors, EPA publication number EPA–600/4–79–057, September, 1979. [Available at [www.epa.gov/ttnamti1/files/ambient/criteria/4-79-057.pdf](http://www.epa.gov/ttnamti1/files/ambient/criteria/4-79-057.pdf)].
  14. QA Handbook for Air Pollution Measurement Systems—Volume II. Ambient Air Quality Monitoring Program. EPA–454/B–13–003, May 2013. [Available at <http://www.epa.gov/ttnamti1/files/ambient/pm25/qa/QA-Handbook-Vol-II.pdf>].

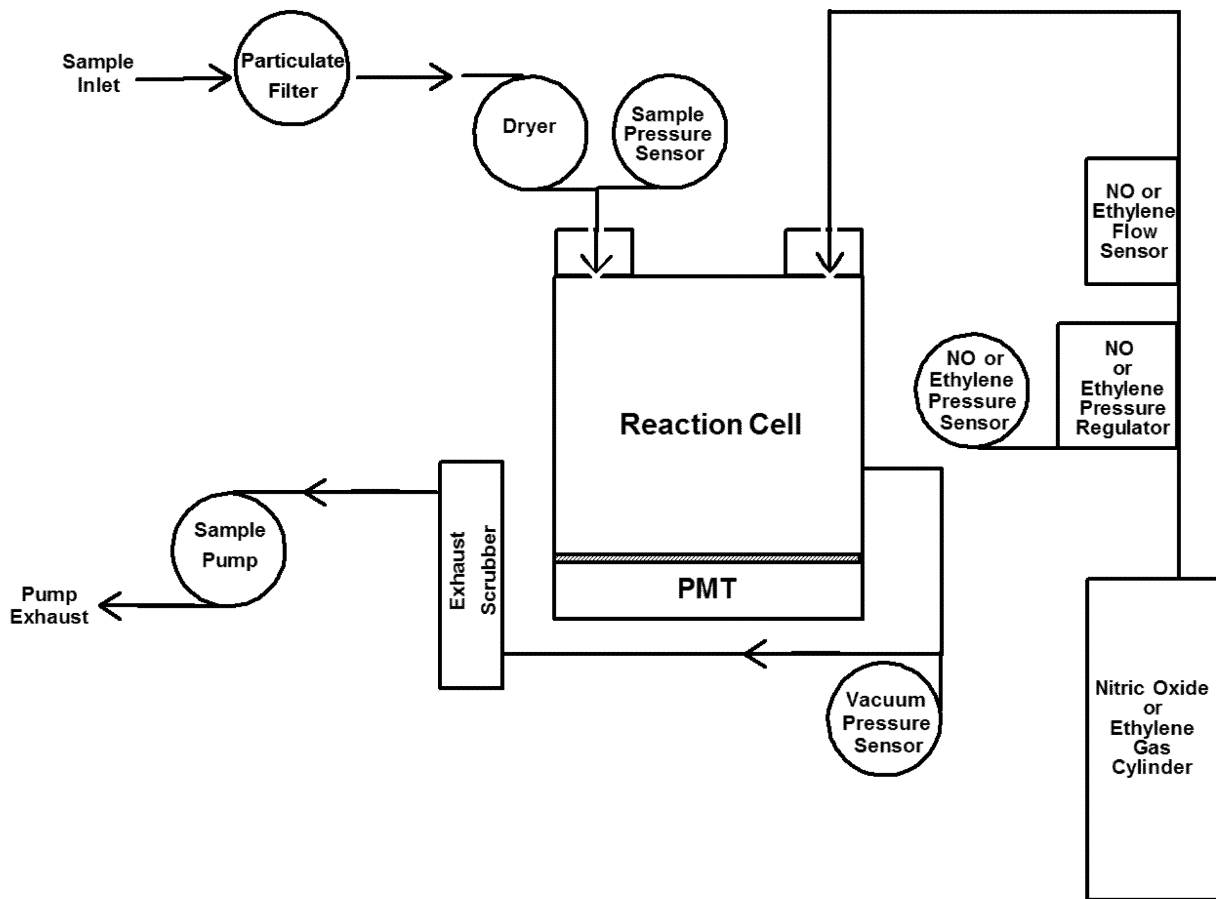


Figure 1. Gas-phase chemiluminescence analyzer schematic diagram, where PMT means photomultiplier tube.

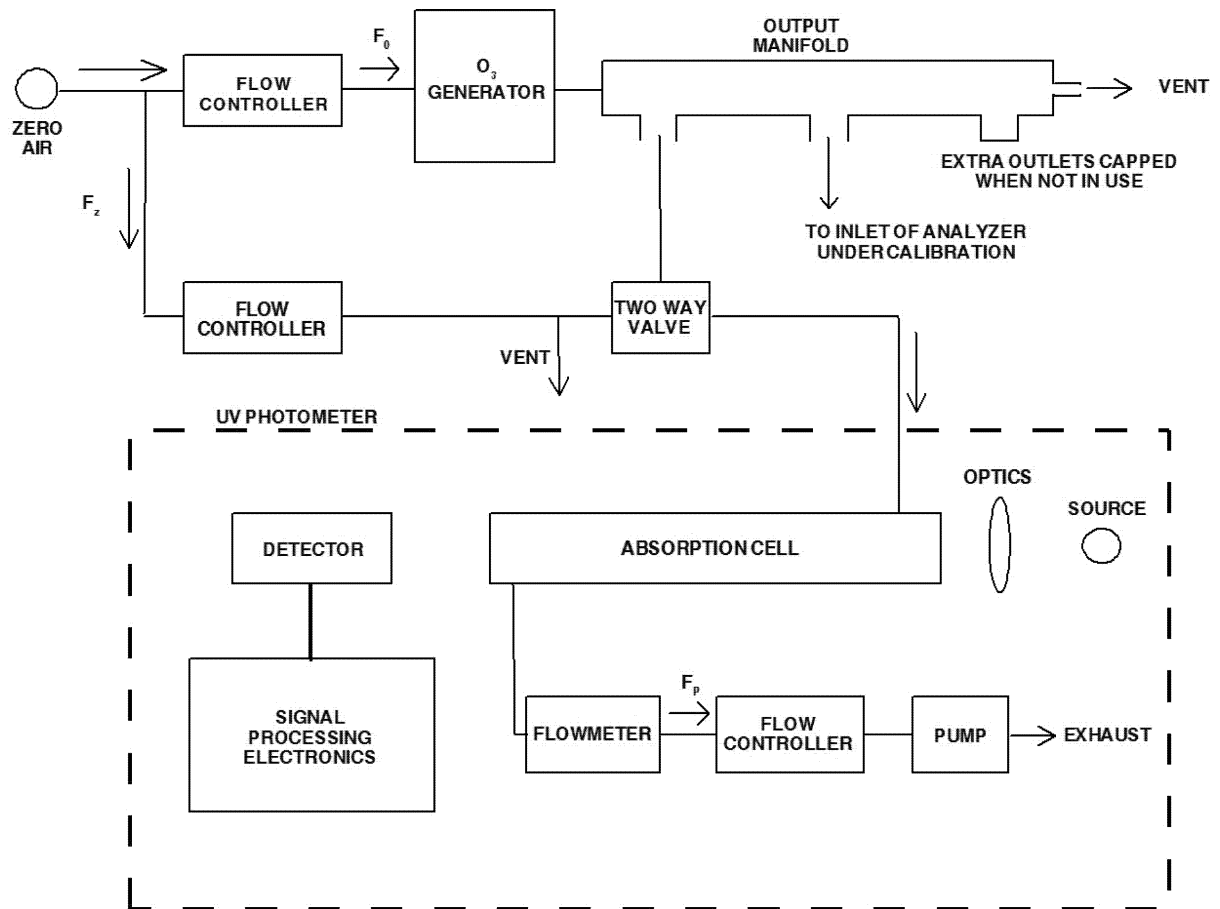


Figure 2. Schematic diagram of a typical UV photometric calibration system.

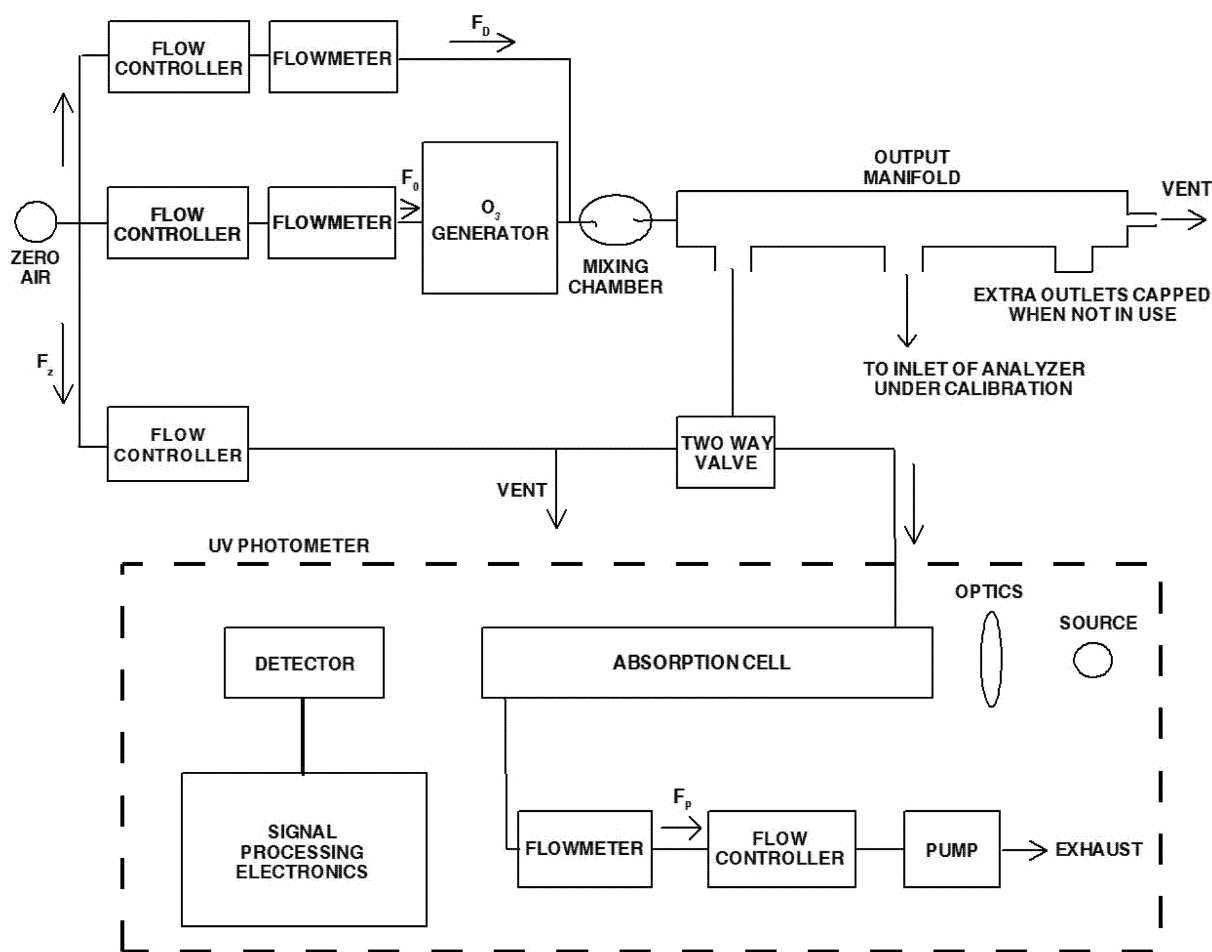


Figure 3. Schematic diagram of a typical UV photometric calibration system (Option 1).

■ 5. Add appendix U to Part 50 to read as follows:

**Appendix U to Part 50—Interpretation of the Primary and Secondary National Ambient Air Quality Standards for Ozone**

**1. General**

(a) This appendix explains the data handling conventions and computations necessary for determining whether the primary and secondary national ambient air quality standards (NAAQS) for ozone (O<sub>3</sub>) specified in § 50.19 are met at an ambient O<sub>3</sub> air quality monitoring site. Data reporting, data handling, and computation procedures to be used in making comparisons between reported O<sub>3</sub> concentrations and the levels of the O<sub>3</sub> NAAQS are specified in the following sections.

(b) Whether to exclude or retain the data affected by exceptional events is determined by the requirements under §§ 50.1, 50.14 and 51.930.

(c) The terms used in this appendix are defined as follows:

*8-hour average* refers to the moving average of eight consecutive hourly O<sub>3</sub> concentrations

measured at a site, as explained in section 3 of this appendix.

*Annual fourth-highest daily maximum* refers to the fourth highest value measured at a site during a year.

*Collocated monitors* refers to the instance of two or more O<sub>3</sub> monitors operating at the same physical location.

*Daily maximum 8-hour average O<sub>3</sub> concentration* refers to the maximum calculated 8-hour average value measured at a site on a particular day, as explained in section 3 of this appendix.

*Design value* refers to the metric (*i.e.*, statistic) that is used to compare ambient O<sub>3</sub> concentration data measured at a site to the NAAQS in order to determine compliance, as explained in section 4 of this appendix.

*Minimum data completeness requirements* refer to the amount of data that a site is required to collect in order to make a valid determination that the site is meeting the NAAQS.

*Monitor* refers to a physical instrument used to measure ambient O<sub>3</sub> concentrations.

*O<sub>3</sub> monitoring season* refers to the span of time within a year when individual states are required to measure ambient O<sub>3</sub> concentrations, as listed in Appendix D to part 58 of this chapter.

*Site* refers to an ambient O<sub>3</sub> air quality monitoring site.

*Site data record* refers to the set of hourly O<sub>3</sub> concentration data collected at a site for use in comparisons with the NAAQS.

*Year* refers to calendar year.

**2. Selection of Data for use in Comparisons With the Primary and Secondary Ozone NAAQS**

(a) All valid hourly O<sub>3</sub> concentration data collected using a federal reference method specified in Appendix D to this part, or an equivalent method designated in accordance with part 53 of this chapter, meeting all applicable requirements in part 58 of this chapter, and submitted to EPA's Air Quality System (AQS) database or otherwise available to EPA, shall be used in design value calculations.

(b) All design value calculations shall be implemented on a site-level basis. If data are reported to EPA from collocated monitors, those data shall be combined into a single site data record as follows:

(i) The monitoring agency shall designate one monitor as the primary monitor for the site.

(ii) Hourly O<sub>3</sub> concentration data from a secondary monitor shall be substituted into



the site data record whenever a valid hourly O<sub>3</sub> concentration is not obtained from the primary monitor. In the event that hourly O<sub>3</sub> concentration data are available for more than one secondary monitor, the hourly concentration values from the secondary monitors shall be averaged and substituted into the site data record.

(c) In certain circumstances, including but not limited to site closures or relocations, data from two nearby sites may be combined into a single site data record for the purpose of calculating a valid design value. The appropriate Regional Administrator may approve such combinations after taking into consideration factors such as distance between sites, spatial and temporal patterns in air quality, local emissions and meteorology, jurisdictional boundaries, and terrain features.

**3. Data Reporting and Data Handling Conventions**

(a) Hourly average O<sub>3</sub> concentrations shall be reported in parts per million (ppm) to the third decimal place, with additional digits to the right of the third decimal place truncated. Each hour shall be identified using local standard time (LST).

(b) Moving 8-hour averages shall be computed from the hourly O<sub>3</sub> concentration data for each hour of the year and shall be stored in the first, or start, hour of the 8-hour period. An 8-hour average shall be considered valid if at least 6 of the hourly concentrations for the 8-hour period are available. In the event that only 6 or 7 hourly concentrations are available, the 8-hour average shall be computed on the basis of the hours available, using 6 or 7, respectively, as the divisor. In addition, in the event that 5 or fewer hourly concentrations are available, the 8-hour average shall be considered valid if, after substituting zero for the missing hourly concentrations, the resulting 8-hour average is greater than the level of the

NAAQS, or equivalently, if the sum of the available hourly concentrations is greater than 0.567 ppm. The 8-hour averages shall be reported to three decimal places, with additional digits to the right of the third decimal place truncated. Hourly O<sub>3</sub> concentrations that have been approved under § 50.14 as having been affected by exceptional events shall be counted as missing or unavailable in the calculation of 8-hour averages.

(c) The daily maximum 8-hour average O<sub>3</sub> concentration for a given day is the highest of the 17 consecutive 8-hour averages beginning with the 8-hour period from 7:00 a.m. to 3:00 p.m. and ending with the 8-hour period from 11:00 p.m. to 7:00 a.m. the following day (*i.e.*, the 8-hour averages for 7:00 a.m. to 11:00 p.m.). Daily maximum 8-hour average O<sub>3</sub> concentrations shall be determined for each day with ambient O<sub>3</sub> monitoring data, including days outside the O<sub>3</sub> monitoring season if those data are available.

(d) A daily maximum 8-hour average O<sub>3</sub> concentration shall be considered valid if valid 8-hour averages are available for at least 13 of the 17 consecutive 8-hour periods starting from 7:00 a.m. to 11:00 p.m. In addition, in the event that fewer than 13 valid 8-hour averages are available, a daily maximum 8-hour average O<sub>3</sub> concentration shall also be considered valid if it is greater than the level of the NAAQS. Hourly O<sub>3</sub> concentrations that have been approved under § 50.14 as having been affected by exceptional events shall be included when determining whether these criteria have been met.

(e) The primary and secondary O<sub>3</sub> design value statistic is the annual fourth-highest daily maximum 8-hour O<sub>3</sub> concentration, averaged over three years, expressed in ppm. The fourth-highest daily maximum 8-hour O<sub>3</sub> concentration for each year shall be determined based only on days meeting the

validity criteria in 3(d). The 3-year average shall be computed using the three most recent, consecutive years of ambient O<sub>3</sub> monitoring data. Design values shall be reported in ppm to three decimal places, with additional digits to the right of the third decimal place truncated.

**4. Comparisons With the Primary and Secondary Ozone NAAQS**

(a) The primary and secondary national ambient air quality standards for O<sub>3</sub> are met at an ambient air quality monitoring site when the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentration (*i.e.*, the design value) is less than or equal to 0.070 ppm.

(b) A design value greater than the level of the NAAQS is always considered to be valid. A design value less than or equal to the level of the NAAQS must meet minimum data completeness requirements in order to be considered valid. These requirements are met for a 3-year period at a site if valid daily maximum 8-hour average O<sub>3</sub> concentrations are available for at least 90% of the days within the O<sub>3</sub> monitoring season, on average, for the 3-year period, with a minimum of at least 75% of the days within the O<sub>3</sub> monitoring season in any one year.

(c) When computing whether the minimum data completeness requirements have been met, meteorological or ambient data may be sufficient to demonstrate that meteorological conditions on missing days were not conducive to concentrations above the level of the NAAQS. Missing days assumed less than the level of the NAAQS are counted for the purpose of meeting the minimum data completeness requirements, subject to the approval of the appropriate Regional Administrator.

(d) Comparisons with the primary and secondary O<sub>3</sub> NAAQS are demonstrated by examples 1 and 2 as follows:

**EXAMPLE 1—SITE MEETING THE PRIMARY AND SECONDARY O<sub>3</sub> NAAQS**

Year	Percent valid days within O <sub>3</sub> monitoring season (Data completeness)	1st highest daily max 8-hour O <sub>3</sub> (ppm)	2nd highest daily max 8-hour O <sub>3</sub> (ppm)	3rd highest daily max 8-hour O <sub>3</sub> (ppm)	4th highest daily max 8-hour O <sub>3</sub> (ppm)	5th highest daily max 8-hour O <sub>3</sub> (ppm)
2014 .....	100	0.082	0.080	0.075	0.069	0.068
2015 .....	96	0.074	0.073	0.065	0.062	0.060
2016 .....	98	0.070	0.069	0.067	0.066	0.060
Average .....	98	.....	.....	.....	0.065	.....

As shown in Example 1, this site meets the primary and secondary O<sub>3</sub> NAAQS because the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentrations (*i.e.*, 0.065666 ppm, truncated

to 0.065 ppm) is less than or equal to 0.070 ppm. The minimum data completeness requirements are also met (*i.e.*, design value is considered valid) because the average percent of days within the O<sub>3</sub> monitoring

season with valid ambient monitoring data is greater than 90%, and no single year has less than 75% data completeness.

**EXAMPLE 2—SITE FAILING TO MEET THE PRIMARY AND SECONDARY O<sub>3</sub> NAAQS**

Year	Percent valid days within O <sub>3</sub> monitoring season (Data completeness)	1st highest daily max 8-hour O <sub>3</sub> (ppm)	2nd highest daily max 8-hour O <sub>3</sub> (ppm)	3rd highest daily max 8-hour O <sub>3</sub> (ppm)	4th highest daily max 8-hour O <sub>3</sub> (ppm)	5th highest daily max 8-hour O <sub>3</sub> (ppm)
2014 .....	96	0.085	0.080	0.079	0.074	0.072

EXAMPLE 2—SITE FAILING TO MEET THE PRIMARY AND SECONDARY O<sub>3</sub> NAAQS—Continued

Year	Percent valid days within O <sub>3</sub> monitoring season (Data completeness)	1st highest daily max 8-hour O <sub>3</sub> (ppm)	2nd highest daily max 8-hour O <sub>3</sub> (ppm)	3rd highest daily max 8-hour O <sub>3</sub> (ppm)	4th highest daily max 8-hour O <sub>3</sub> (ppm)	5th highest daily max 8-hour O <sub>3</sub> (ppm)
2015 .....	74	0.084	0.083	0.072	0.071	0.068
2016 .....	98	0.083	0.081	0.081	0.075	0.074
Average .....	89	.....	.....	.....	0.073	.....

As shown in Example 2, this site fails to meet the primary and secondary O<sub>3</sub> NAAQS because the 3-year average of the annual fourth-highest daily maximum 8-hour average O<sub>3</sub> concentrations (*i.e.*, 0.073333 ppm, truncated to 0.073 ppm) is greater than 0.070 ppm, even though the annual data completeness is less than 75% in one year and the 3-year average data completeness is less than 90% (*i.e.*, design value would not otherwise be considered valid).

**PART 51—REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS**

■ 6. The authority citation for part 51 continues to read as follows:

**Authority:** 23 U.S.C. 101; 42 U.S.C. 7401–7671q.

**Subpart I—Review of New Sources and Modifications**

■ 8. Amend § 51.166 by adding paragraph (i)(11) to read as follows:

**§ 51.166 Prevention of significant deterioration of air quality.**

\* \* \* \* \*

(i) \* \* \*

(11) The plan may provide that the requirements of paragraph (k)(1) of this section shall not apply to a permit application for a stationary source or modification with respect to the revised national ambient air quality standards for ozone published on October 26, 2015 if:

(i) The reviewing authority has determined the permit application subject to this section to be complete on or before October 1, 2015. Instead, the requirements in paragraph (k)(1) of this section shall apply with respect to the national ambient air quality standards for ozone in effect at the time the reviewing authority determined the permit application to be complete; or

(ii) The reviewing authority has first published before December 28, 2015 a public notice of a preliminary determination or draft permit for the permit application subject to this section. Instead, the requirements in

paragraph (k)(1) of this section shall apply with respect to the national ambient air quality standards for ozone in effect at the time of first publication of a public notice of the preliminary determination or draft permit.

\* \* \* \* \*

**PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS**

■ 8. The authority citation for part 52 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

■ 9. Amend § 52.21 by adding paragraph (i)(12) to read as follows:

**§ 52.21 Prevention of significant deterioration of air quality.**

\* \* \* \* \*

(i) \* \* \*

(12) The requirements of paragraph (k)(1) of this section shall not apply to a permit application for a stationary source or modification with respect to the revised national ambient air quality standards for ozone published on October 26, 2015 if:

(i) The Administrator has determined the permit application subject to this section to be complete on or before October 1, 2015. Instead, the requirements in paragraph (k)(1) of this section shall apply with respect to the national ambient air quality standards for ozone in effect at the time the Administrator determined the permit application to be complete; or

(ii) The Administrator has first published before December 28, 2015 a public notice of a preliminary determination or draft permit for the permit application subject to this section. Instead, the requirements in paragraph (k)(1) of this section shall apply with respect to the national ambient air quality standards for ozone in effect on the date the Administrator first published a public notice of a preliminary determination or draft permit.

\* \* \* \* \*

**PART 53—AMBIENT AIR MONITORING REFERENCE AND EQUIVALENT METHODS**

■ 10. The authority citation for part 53 continues to read as follows:

**Authority:** Sec. 301(a) of the Clean Air Act (42 U.S.C. 1857g(a)), as amended by sec. 15(c)(2) of Pub. L. 91–604, 84 Stat. 1713, unless otherwise noted.

**Subpart A—General Provisions**

**§ 53.9 [Amended]**

■ 11. Amend § 53.9 by removing paragraph (i).

■ 12. Amend § 53.14 by revising paragraph (c) introductory text to read as follows:

**§ 53.14 Modification of a reference or equivalent method.**

\* \* \* \* \*

(c) Within 90 calendar days after receiving a report under paragraph (a) of this section, the Administrator will take one or more of the following actions:

\* \* \* \* \*

**Subpart B—Procedures for Testing Performance Characteristics of Automated Methods for SO<sub>2</sub>, CO, O<sub>3</sub>, and NO<sub>2</sub>**

■ 13. Amend § 53.23 by revising paragraph (e)(1)(vi) to read as follows:

**§ 53.23 Test procedures.**

\* \* \* \* \*

(e) \* \* \*

(1) \* \* \*

(vi) *Precision:* Variation about the mean of repeated measurements of the same pollutant concentration, denoted as the standard deviation expressed as a percentage of the upper range limits.<sup>258</sup>

\* \* \* \* \*

■ 14. Revise Table B–1 to Subpart B of Part 53 to read as follows:

<sup>258</sup>NO<sub>2</sub> precision in Table B–1 is also changed to percent to agree with the calculation specified in 53.23(e)(10)(vi).

TABLE B-1 TO SUBPART B OF PART 53—PERFORMANCE LIMIT SPECIFICATIONS FOR AUTOMATED METHODS

Performance parameter	Units <sup>1</sup>	SO <sub>2</sub>		O <sub>3</sub>		CO		NO <sub>2</sub> (Std. range)	Definitions and test procedures
		Std. range <sup>3</sup>	Lower range <sup>2,3</sup>	Std. range <sup>3</sup>	Lower range <sup>2,3</sup>	Std. range <sup>3</sup>	Lower range <sup>2,3</sup>		
1. Range .....	ppm .....	0-0.5	<0.5	0-0.5	<0.5	0-50	<50	0-0.5	Sec. 53.23(a)
2. Noise .....	ppm .....	0.001	0.0005	0.0025	0.001	0.2	0.1	0.005	Sec. 53.23(b)
3. Lower detectable limit .....	ppm .....	0.002	0.001	0.005	0.002	0.4	0.2	0.010	Sec. 53.23(c)
4. Interference equivalent									
Each interferent .....	ppm .....	±0.005	4 ±0.005	±0.005	±0.005	±1.0	±0.5	±0.02	Sec. 53.23(d)
Total, all interferents .....	ppm .....	—	—	—	—	—	—	0.04	Sec. 53.23(d)
5. Zero drift, 12 and 24 hour.	ppm .....	±0.004	±0.002	±0.004	±0.002	±0.5	±0.3	±0.02	Sec. 53.23(e)
6. Span drift, 24 hour	Percent .....	—	—	—	—	—	—	±20.0	Sec. 53.23(e)
20% of upper range limit.	Percent .....	—	—	—	—	—	—	±20.0	Sec. 53.23(e)
80% of upper range limit.	Percent .....	±3.0	±3.0	±3.0	±3.0	±2.0	±2.0	±5.0	Sec. 53.23(e)
7. Lag time .....	Minutes .....	2	2	2	2	2.0	2.0	20	Sec. 53.23(e)
8. Rise time .....	Minutes .....	2	2	2	2	2.0	2.0	15	Sec. 53.23(e)
9. Fall time .....	Minutes .....	2	2	2	2	2.0	2.0	15	Sec. 53.23(e)
10. Precision									
20% of upper range limit.	Percent <sup>5</sup> ....	—	—	—	—	—	—	—	Sec. 53.23(e)
80% of upper range limit.	Percent <sup>5</sup> ....	2	2	2	2	1.0	1.0	4	Sec. 53.23(e)
		—	—	—	—	—	—	—	Sec. 53.23(e)
		2	2	2	2	1.0	1.0	6	Sec. 53.23(e)

<sup>1</sup>To convert from parts per million (ppm) to µg/m<sup>3</sup> at 25 °C and 760 mm Hg, multiply by M/0.02447, where M is the molecular weight of the gas. Percent means percent of the upper measurement range limit.

<sup>2</sup>Tests for interference equivalent and lag time do not need to be repeated for any lower range provided the test for the standard range shows that the lower range specification (if applicable) is met for each of these test parameters.

<sup>3</sup>For candidate analyzers having automatic or adaptive time constants or smoothing filters, describe their functional nature, and describe and conduct suitable tests to demonstrate their function aspects and verify that performances for calibration, noise, lag, rise, fall times, and precision are within specifications under all applicable conditions. For candidate analyzers with operator-selectable time constants or smoothing filters, conduct calibration, noise, lag, rise, fall times, and precision tests at the highest and lowest settings that are to be included in the FRM or FEM designation.

<sup>4</sup>For nitric oxide interference for the SO<sub>2</sub> UVF method, interference equivalent is ±0.0003 ppm for the lower range.

<sup>5</sup>Standard deviation expressed as percent of the URL.

Table B-3 to Subpart B of Part 53—Interferent Test Concentration,<sup>1</sup> Parts per Million

Pollutant	Analyzer type	Hydrochloric acid	Ammonia	Hydrogen sulfide	Sulfur dioxide	Nitrogen dioxide	Nitric oxide	Carbon dioxide	Ethylene	Ozone	m-Xylene	Water vapor	Carbon monoxide	Methane	Ethane	Naphthalene
SO <sub>2</sub>	Ultraviolet fluorescence			<sup>5</sup> 0.1	<sup>4</sup> 0.14	0.5	0.5			0.5	0.2	20,000				0.05
SO <sub>2</sub>	Flame photometric			0.01	<sup>4</sup> 0.14			750				<sup>3</sup> 20,000	50			
SO <sub>2</sub>	Gas chromatography			0.1	<sup>4</sup> 0.14			750				<sup>3</sup> 20,000	50			
SO <sub>2</sub>	Spectrophotometric-wet chemical (pararosaniline)	0.2	0.1	0.1	<sup>4</sup> 0.14	0.5		750		0.5						
SO <sub>2</sub>	Electrochemical	0.2	0.1	0.1	<sup>4</sup> 0.14	0.5	0.5		0.2	0.5		<sup>3</sup> 20,000				
SO <sub>2</sub>	Conductivity	0.2	0.1		<sup>4</sup> 0.14	0.5		750								
SO <sub>2</sub>	Spectrophotometric-gas phase, including DOAS				<sup>4</sup> 0.14	0.5				0.5	0.2					
O <sub>3</sub>	Ethylene chemiluminescence			0.1				750		<sup>4</sup> 0.08		20,000				
O <sub>3</sub>	NO-chemiluminescence			0.1		0.5		750		<sup>4</sup> 0.08		20,000				
O <sub>3</sub>	Electrochemical		<sup>3</sup> 0.1		0.5	0.5				<sup>4</sup> 0.08						
O <sub>3</sub>	Spectrophotometric-wet chemical (potassium iodide)		<sup>3</sup> 0.1		0.5	0.5	0.5			<sup>4</sup> 0.08						

O <sub>3</sub>	Spectrophotometric -gas phase, including ultraviolet absorption and DOAS				0.5	0.5	0.5			<sup>4</sup> 0.08	0.02	20,000				
CO	Non-dispersive Infrared							750				20,000	<sup>4</sup> 10			
CO	Gas chromatography with flame ionization detector											20,000	<sup>4</sup> 10		0.5	
CO	Electrochemical						0.5		0.2			20,000	<sup>4</sup> 10			
CO	Catalytic combustion-thermal detection		0.1					750	0.2			20,000	<sup>4</sup> 10	5.0	0.5	
CO	IR fluorescence							750				20,000	<sup>4</sup> 10		0.5	
CO	Mercury replacement-UV photometric								0.2				<sup>4</sup> 10		0.5	
NO <sub>2</sub>	Chemiluminescent		<sup>3</sup> 0.1		0.5	<sup>4</sup> 0.1	0.5					20,000				
NO <sub>2</sub>	Spectrophotometric -wet chemical (azo-dye reaction)				0.5	<sup>4</sup> 0.1	0.5	750		0.5						
NO <sub>2</sub>	Electrochemical	0.2	<sup>3</sup> 0.1		0.5	<sup>4</sup> 0.1	0.5	750		0.5		20,000	50			
NO <sub>2</sub>	Spectrophotometric -gas phase		<sup>3</sup> 0.1		0.5	<sup>4</sup> 0.1	0.5			0.5		20,000	50			

1. Concentrations of interferents listed must be prepared and controlled to  $\pm 10$  percent of the stated value.
2. Analyzer types not listed will be considered by the Administrator as special cases.
3. Do not mix with the pollutant.
4. Concentration of pollutant used for test. These pollutant concentrations must be prepared to  $\pm 10$  percent of the stated value.
5. If candidate method utilizes an elevated-temperature scrubber for removal of aromatic hydrocarbons, perform this interference test.
6. If naphthalene test concentration cannot be accurately quantified, remove the scrubber, use a test concentration that causes a full scale response, reattach the scrubber, and evaluate response for interference.

**CALCULATION OF ZERO DRIFT, SPAN DRIFT, AND PRECISION**

Applicant \_\_\_\_\_ Date \_\_\_\_\_  
 Analyzer \_\_\_\_\_ Pollutant \_\_\_\_\_

TEST PARAMETERS		CALCULATIONS	TEST DAY (n)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ZERO DRIFT	12 HOUR	$12ZD = C_{max} - C_{min}$															
	24 HOUR	$Z = (L_1 + L_2)/2$															
		$24ZD = Z_n - Z_{n-1}$															
	$24ZD = Z'_n - Z'_{n-1}$																
SPAN DRIFT	24 HOUR	$S_n = \frac{1}{6} \sum_{i=7}^{12} P_i$															
		$SD_n = \frac{S_n - S_{n-1}}{S_{n-1}} \times 100\%$															
		$SD_n = \frac{S_n - S'_{n-1}}{S'_{n-1}} \times 100\%$															
PRECISION	20% URL ( $P_{20}$ )	$P_{20} = \% \text{ STANDARD DEVIATION OF } (P_1 \dots P_6)$															
	80% URL ( $P_{80}$ )	$P_{80} = \% \text{ STANDARD DEVIATION OF } (P_7 \dots P_{12})$															

Figure B-5. Form for calculating zero drift, span drift, and precision (§ 53.23(e)).

\* \* \* \* \*

**Subpart C—Procedures for Determining Comparability between Candidate Methods and Reference Methods**

■ 17. Amend § 53.32 by revising paragraph (g)(1)(iii) to read as follows:

**§ 53.32 Test procedures for methods for SO<sub>2</sub>, CO, O<sub>3</sub>, and NO<sub>2</sub>.**

\* \* \* \* \*

(g) \* \* \*  
(1) \* \* \*

(iii) The measurements shall be made in the sequence specified in table C-2 of this subpart.

\* \* \* \* \*

**Figure E-2 to Subpart E of Part 53 [Removed]**

■ 18. Amend subpart E by removing figure E-2 to subpart E of part 53.

**PART 58—AMBIENT AIR QUALITY SURVEILLANCE**

■ 19. The authority citation for part 58 continues to read as follows:

**Authority:** 42 U.S.C. 7403, 7405, 7410, 7414, 7601, 7611, 7614, and 7619.

**Subpart B—Monitoring Network**

■ 20. Amend § 58.10 by adding paragraphs (a)(9) through (11) to read as follows:

**§ 58.10 Annual monitoring network plan and periodic network assessment.**

(a) \* \* \*

(9) The annual monitoring network plan shall provide for the required O<sub>3</sub> sites to be operating on the first day of the applicable required O<sub>3</sub> monitoring season in effect on January 1, 2017 as listed in Table D-3 of appendix D of this part.

(10) A plan for making Photochemical Assessment Monitoring Stations (PAMS) measurements, if applicable, in accordance with the requirements of appendix D paragraph 5(a) of this part shall be submitted to the EPA Regional Administrator no later than July 1, 2018. The plan shall provide for the required

PAMS measurements to begin by June 1, 2019.

(11) An Enhanced Monitoring Plan for O<sub>3</sub>, if applicable, in accordance with the requirements of appendix D paragraph 5(h) of this part shall be submitted to the EPA Regional Administrator no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O<sub>3</sub> nonattainment, whichever is later.

\* \* \* \* \*

■ 21. Section § 58.11 is amended by revising paragraph (c) to read as follows:

**§ 58.11 Network technical requirements.**

\* \* \* \* \*

(c) State and local governments must follow the network design criteria contained in appendix D to this part in designing and maintaining the SLAMS stations. The final network design and all changes in design are subject to approval of the Regional Administrator. NCore and STN network design and changes are also subject to approval of the Administrator. Changes in SPM stations do not require approvals, but a change in the designation of a monitoring site from SLAMS to SPM requires approval of the Regional Administrator.

\* \* \* \* \*

■ 22. Amend § 58.13 by adding paragraphs (g) and (h) to read as follows:

**§ 58.13 Monitoring network completion.**

\* \* \* \* \*

(g) The O<sub>3</sub> monitors required under appendix D, section 4.1 of this part must operate on the first day of the applicable required O<sub>3</sub> monitoring season in effect January 1, 2017.

(h) The Photochemical Assessment Monitoring sites required under 40 CFR part 58 Appendix D, section 5(a) must be physically established and operating under all of the requirements of this part, including the requirements of appendix A, C, D, and E of this part, no later than June 1, 2019.

**Subpart F—Air Quality Index Reporting**

■ 23. Amend § 58.50 by revising paragraph (c) to read as follows:

**§ 58.50 Index reporting.**

\* \* \* \* \*

(c) The population of a metropolitan statistical area for purposes of index reporting is the latest available U.S. census population.

**Subpart G—Federal Monitoring**

■ 24. Amend appendix D to part 58, under section 4, by revising section 4.1(i) and table D-3 to appendix D of part 58, and by revising section 5 to read as follows:

**Appendix D to part 58—Network Design Criteria for Ambient Air Quality Monitoring**

\* \* \* \* \*

*4. Pollutant-Specific Design Criteria for SLAMS Sites*

\* \* \* \* \*

*4.1 \* \* \**

(i) Ozone monitoring is required at SLAMS monitoring sites only during the seasons of the year that are conducive to O<sub>3</sub> formation (*i.e.*, “ozone season”) as described below in Table D-3 of this appendix. These O<sub>3</sub> seasons are also identified in the AQS files on a state-by-state basis. Deviations from the O<sub>3</sub> monitoring season must be approved by the EPA Regional Administrator. These requests will be reviewed by Regional Administrators taking into consideration, at a minimum, the frequency of out-of-season O<sub>3</sub> NAAQS exceedances, as well as occurrences of the Moderate air quality index level, regional consistency, and logistical issues such as site access. Any deviations based on the Regional Administrator’s waiver of requirements must be described in the annual monitoring network plan and updated in AQS. Changes to the O<sub>3</sub> monitoring season requirements in Table D-3 revoke all previously approved Regional Administrator waivers. Requests for monitoring season deviations must be accompanied by relevant supporting information. Information on how to analyze O<sub>3</sub> data to support a change to the O<sub>3</sub> season in support of the 8-hour standard for the entire network in a specific state can be found in reference 8 to this appendix. Ozone monitors at NCore stations are required to be operated year-round (January to December).

TABLE D-3<sup>1</sup> TO APPENDIX D OF PART 58. OZONE MONITORING SEASON BY STATE

State	Begin Month	End Month
Alabama .....	March .....	October.
Alaska .....	April .....	October.
Arizona .....	January .....	December.
Arkansas .....	March .....	November.
California .....	January .....	December.
Colorado .....	January .....	December.
Connecticut .....	March .....	September.
Delaware .....	March .....	October.
District of Columbia .....	March .....	October.



TABLE D-3<sup>1</sup> TO APPENDIX D OF PART 58. OZONE MONITORING SEASON BY STATE—Continued

State	Begin Month	End Month
Florida	January	December.
Georgia	March	October.
Hawaii	January	December.
Idaho	April	September.
Illinois	March	October.
Indiana	March	October.
Iowa	March	October.
Kansas	March	October.
Kentucky	March	October.
Louisiana (Northern) AQCR 019, 022	March	October.
Louisiana (Southern) AQCR 106	January	December.
Maine	April	September.
Maryland	March	October.
Massachusetts	March	September.
Michigan	March	October.
Minnesota	March	October.
Mississippi	March	October.
Missouri	March	October.
Montana	April	September.
Nebraska	March	October.
Nevada	January	December.
New Hampshire	March	September.
New Jersey	March	October.
New Mexico	January	December.
New York	March	October.
North Carolina	March	October.
North Dakota	March	September.
Ohio	March	October.
Oklahoma	March	November.
Oregon	May	September.
Pennsylvania	March	October.
Puerto Rico	January	December.
Rhode Island	March	September.
South Carolina	March	October.
South Dakota	March	October.
Tennessee	March	October.
Texas (Northern) AQCR 022, 210, 211, 212, 215, 217, 218	March	November.
Texas (Southern) AQCR 106, 153, 213, 214, 216	January	December.
Utah	January	December.
Vermont	April	September.
Virginia	March	October.
Washington	May	September.
West Virginia	March	October.
Wisconsin	March	October 15.
Wyoming	January	September.
American Samoa	January	December.
Guam	January	December.
Virgin Islands	January	December.

<sup>1</sup> The required O<sub>3</sub> monitoring season for NCore stations is January through December.

\* \* \* \* \*

#### 5. Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring

(a) State and local monitoring agencies are required to collect and report PAMS measurements at each NCore site required under paragraph 3(a) of this appendix located in a CBSA with a population of 1,000,000 or more, based on the latest available census figures.

(b) PAMS measurements include:

- (1) Hourly averaged speciated volatile organic compounds (VOCs);
- (2) Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule, or hourly averaged formaldehyde;
- (3) Hourly averaged O<sub>3</sub>;

(4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO<sub>2</sub>), and total reactive nitrogen (NO<sub>x</sub>);

- (5) Hourly averaged ambient temperature;
- (6) Hourly vector-averaged wind direction;
- (7) Hourly vector-averaged wind speed;
- (8) Hourly average atmospheric pressure;
- (9) Hourly averaged relative humidity;
- (10) Hourly precipitation;
- (11) Hourly averaged mixing-height;
- (12) Hourly averaged solar radiation; and
- (13) Hourly averaged ultraviolet radiation.

(c) The EPA Regional Administrator may grant a waiver to allow the collection of required PAMS measurements at an alternative location where the monitoring agency can demonstrate that the alternative location will provide representative data useful for regional or national scale modeling and the tracking of trends in O<sub>3</sub> precursors.

The alternative location can be outside of the CBSA or outside of the monitoring agencies jurisdiction. In cases where the alternative location crosses jurisdictions the waiver will be contingent on the monitoring agency responsible for the alternative location including the required PAMS measurements in their annual monitoring plan required under § 58.10 and continued successful collection of PAMS measurements at the alternative location. This waiver can be revoked in cases where the Regional Administrator determines the PAMS measurements are not being collected at the alternate location in compliance with paragraph (b) of this section.

(d) The EPA Regional Administrator may grant a waiver to allow speciated VOC measurements to be made as three 8-hour averages on every third day during the PAMS

season as an alternative to 1-hour average speciated VOC measurements in cases where the primary VOC compounds are not well measured using continuous technology due to low detectability of the primary VOC compounds or for logistical and other programmatic constraints.

(e) The EPA Regional Administrator may grant a waiver to allow representative meteorological data from nearby monitoring stations to be used to meet the meteorological requirements in paragraph 5(b) where the monitoring agency can demonstrate the data is collected in a manner consistent with EPA quality assurance requirements for these measurements.

(f) The EPA Regional Administrator may grant a waiver from the requirement to collect PAMS measurements in locations where CBSA-wide O<sub>3</sub> design values are equal to or less than 85% of the 8-hour O<sub>3</sub> NAAQS and where the location is not considered by the Regional Administrator to be an important upwind or downwind location for other O<sub>3</sub> nonattainment areas.

(g) At a minimum, the monitoring agency shall collect the required PAMS measurements during the months of June, July, and August.

(h) States with Moderate and above 8-hour O<sub>3</sub> nonattainment areas and states in the Ozone Transport Region as defined in 40 CFR 51.900 shall develop and implement an Enhanced Monitoring Plan (EMP) detailing enhanced O<sub>3</sub> and O<sub>3</sub> precursor monitoring activities to be performed. The EMP shall be submitted to the EPA Regional Administrator no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O<sub>3</sub> nonattainment, whichever is later. At a minimum, the EMP shall be reassessed and approved as part of the 5-year network assessments required under 40 CFR 58.10(d). The EMP will include monitoring activities deemed important to understanding the O<sub>3</sub> problems in the state. Such activities may include, but are not limited to, the following:

(1) Additional O<sub>3</sub> monitors beyond the minimally required under paragraph 4.1 of this appendix,

(2) Additional NO<sub>x</sub> or NO<sub>y</sub> monitors beyond those required under 4.3 of this appendix,

(3) Additional speciated VOC measurements including data gathered during different periods other than required under paragraph 5(g) of this appendix, or locations other than those required under paragraph 5(a) of this appendix, and

(4) Enhanced upper air measurements of meteorology or pollution concentrations.

\* \* \* \* \*

■ 25. Appendix G of Part 58 is amended by revising table 2 to read as follows:

**Appendix G to Part 58—Uniform Air Quality Index (AQI) and Daily Reporting**

\* \* \* \* \*

TABLE 2—BREAKPOINTS FOR THE AQI

These breakpoints							Equal these AQI's	
O <sub>3</sub> (ppm) 8-hour	O <sub>3</sub> (ppm) 1-hour <sup>1</sup>	PM <sub>2.5</sub> (µg/m <sup>3</sup> ) 24-hour	PM <sub>10</sub> (µg/m <sup>3</sup> ) 24-hour	CO (ppm) 8-hour	SO <sub>2</sub> (ppb) 1-hour	NO <sub>2</sub> (ppb) 1-hour	AQI	Category
0.000–0.054	—	0.0–12.0	0–54	0.0–4.4	0–35	0–53	0–50	Good.
0.055–0.070	—	12.1–35.4	55–154	4.5–9.4	36–75	54–100	51–100	Moderate.
0.071–0.085	0.125–0.164	35.5–55.4	155–254	9.5–12.4	76–185	101–360	101–150	Unhealthy for Sensitive Groups.
0.086–0.105	0.165–0.204	<sup>3</sup> 55.5–150.4	255–354	12.5–15.4	<sup>4</sup> 186–304	361–649	151–200	Unhealthy.
0.106–0.200	0.205–0.404	<sup>3</sup> 150.5–250.4	355–424	15.5–30.4	<sup>4</sup> 305–604	650–1249	201–300	Very Unhealthy.
0.201– <sup>(2)</sup>	0.405–0.504	<sup>3</sup> 250.5–350.4	425–504	30.5–40.4	<sup>4</sup> 605–804	1250–1649	301–400	Hazardous.
<sup>(2)</sup>	0.505–0.604	<sup>3</sup> 350.5–500.4	505–604	40.5–50.4	<sup>4</sup> 805–1004	1650–2049	401–500	

<sup>1</sup> Areas are generally required to report the AQI based on 8-hour ozone values. However, there are a small number of areas where an AQI based on 1-hour ozone values would be more precautionary. In these cases, in addition to calculating the 8-hour ozone index value, the 1-hour ozone index value may be calculated, and the maximum of the two values reported.

<sup>2</sup> 8-hour O<sub>3</sub> values do not define higher AQI values (>301). AQI values > 301 are calculated with 1-hour O<sub>3</sub> concentrations.

<sup>3</sup> If a different SHL for PM<sub>2.5</sub> is promulgated, these numbers will change accordingly.

<sup>4</sup> 1-hr SO<sub>2</sub> values do not define higher AQI values (≥200). AQI values of 200 or greater are calculated with 24-hour SO<sub>2</sub> concentration.

available on a first-come, first-served basis. Members of the public wishing to attend should contact Jacob B. Strickler via email at: [assumablewaters@epa.gov](mailto:assumablewaters@epa.gov) or by phone at: (202) 564-4692 by December 5th, 2016, so we can ensure adequate phone lines are available. On December 9th, 2016, public comments will be heard beginning at 3:00 p.m. until 3:30 p.m. EDT or until all comments have been heard.

**Meeting Access:** The agency will strive to reasonably accommodate individuals with disabilities. Information regarding accessibility and/or accommodations for individuals with disabilities should be directed to Jacob B. Strickler at the email address or phone number listed above. To ensure adequate time for processing, please make requests for accommodations at least 8 days prior to the meeting.

Dated: November 1, 2016.

**Benita Best-Wong,**

*Director, Office of Wetlands, Oceans, and Watersheds.*

[FR Doc. 2016-26967 Filed 11-7-16; 8:45 am]

BILLING CODE 6560-50-P

**ENVIRONMENTAL PROTECTION AGENCY**

[FRL-9954-45-Region 6]

**Adequacy Status of the Dallas-Fort Worth, Texas Attainment Demonstration 8-Hour Ozone Motor Vehicle Emission Budgets for Transportation Conformity Purposes**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Notice of adequacy.

**SUMMARY:** The Environmental Protection Agency (EPA) is notifying the public that it has found that the motor vehicle emissions budgets (MVEBs) in the Dallas-Fort Worth, Texas (DFW) Attainment Demonstration (AD) State Implementation Plan (SIP) revision for the 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS), submitted on August 5, 2016 by the Texas Commission on Environmental Quality (TCEQ) are adequate for transportation conformity purposes. As a result of EPA's finding, the DFW area must use these budgets for future conformity determinations.

**DATES:** These budgets are effective November 23, 2016.

**FOR FURTHER INFORMATION CONTACT:** The essential information in this notice will be available at EPA's conformity Website: <https://www.epa.gov/state-and-local-transportation/adequacy-review-state-implementation-plan-sip>

*submissions-conformity.* You may also contact Mr. Jeffrey Riley, State Implementation Section (6MM-AA), U.S. Environmental Protection Agency, Region 6, 1445 Ross Avenue, Dallas, Texas 75202-2733, at (214) 665-8542 or [Riley.Jeffrey@epa.gov](mailto:Riley.Jeffrey@epa.gov).

**SUPPLEMENTARY INFORMATION:**

Throughout this document "we," "us," and "our" refers to EPA. The word "budget(s)" refers to the mobile source emissions budget for volatile organic compounds (VOCs) and the mobile source emissions budget for nitrogen oxides (NO<sub>x</sub>).

On August 5, 2016, we received a SIP revision from the TCEQ. This revision consisted of an AD SIP for the DFW 2008 8-hour ozone NAAQS nonattainment area. This submission established MVEBs for the DFW 2008 ozone nonattainment area for the year 2017. The MVEB is the amount of emissions allowed in the SIP for on-road motor vehicles; it establishes an emissions ceiling for the DFW area regional transportation network, used to develop the 2017 on-road motor vehicle emissions projections contained in the AD SIP. The MVEBs are provided in Table 1:

TABLE 1—DALLAS-FORT WORTH ATTAINMENT DEMONSTRATION NO<sub>x</sub> AND VOC MVEBS

[Summer season tons per day]

	2017
NO <sub>x</sub> .....	130.77
VOC .....	64.91

On September 7, 2016, EPA posted the revised DFW area MVEBs on EPA's Web site for the purpose of soliciting public comments, as part of the adequacy process. The comment period closed on October 6, 2016, and we received no comments.

Today's notice is simply an announcement of a finding that EPA has already made. EPA Region 6 sent a letter to TCEQ on October 17, 2016, finding that the MVEBs in the DFW AD SIP, submitted on August 5, 2016 are adequate and must be used for transportation conformity determinations in the DFW area. This finding has also been announced on EPA's conformity Web site: <https://www.epa.gov/state-and-local-transportation/adequacy-review-state-implementation-plan-sip-submissions-conformity>.

Transportation conformity is required by section 176(c) of the Clean Air Act. EPA's conformity rule, 40 Code of Federal Regulations (CFR) part 93, requires that transportation plans,

programs and projects conform to state air quality implementation plans and establishes the criteria and procedures for determining whether or not they do so. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the national ambient air quality standards.

The criteria by which EPA determines whether a SIP's MVEB is adequate for transportation conformity purposes are outlined in 40 CFR 93.118(e)(4). We have also described the process for determining the adequacy of submitted SIP budgets in our July 1, 2004, final rulemaking entitled, "Transportation Conformity Rule Amendments for the New 8-hour Ozone and PM<sub>2.5</sub> National Ambient Air Quality Standards and Miscellaneous Revisions for Existing Areas; Transportation Conformity Rule Amendments: Response to Court Decision and Additional Rule Changes" See 69 FR 40004 (July 1, 2004). Please note that an adequacy review is separate from EPA's completeness review, and it should not be used to prejudge EPA's ultimate approval of the DFW 2008 8-hour ozone NAAQS AD SIP revision submittal. Even if EPA finds the budgets adequate, the DFW AD SIP revision submittal could later be disapproved.

Within 24 months from the effective date of this notice, the DFW-area transportation partners, such as the North Central Texas Council of Governments, will need to demonstrate conformity to the new MVEBs if the demonstration has not already been made, pursuant to 40 CFR 93.104(e). See 73 FR 4419 (January 24, 2008).

**Authority:** 42 U.S.C. 7401 *et seq.*

Dated: November 2, 2016.

**Ron Curry,**

*Regional Administrator, Region 6.*

[FR Doc. 2016-26957 Filed 11-7-16; 8:45 am]

BILLING CODE 6560-50-P

**FEDERAL COMMUNICATIONS COMMISSION**

[OMB 3060-0214]

**Information Collection Being Reviewed by the Federal Communications Commission**

**AGENCY:** Federal Communications Commission.

**ACTION:** Notice and request for comments.

**SUMMARY:** As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995 (44 U.S.C. 3501-

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Parts 52 and 81

[EPA-R06-OAR-2015-0721; FRL-9953-93-Region 6]

### Clean Air Act Redesignation Substitute for the Dallas-Fort Worth 1-Hour Ozone and 1997 8-Hour Ozone Nonattainment Areas; Texas

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is approving a redesignation substitute and making finding of attainment for both the revoked 1-hour and the revoked 1997 8-hour ozone National Ambient Air Quality Standards (NAAQS) for the Dallas-Fort Worth ozone nonattainment areas (DFW area).

**DATES:** This rule is effective on December 8, 2016.

**ADDRESSES:** The EPA has established a docket for this action under Docket ID No. EPA-R06-OAR-2015-0721. All documents in the docket are listed on the <http://www.regulations.gov> Web site. Although listed in the index, some information is not publicly available, e.g., Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through <http://www.regulations.gov> or in hard copy at the EPA Region 6, 1445 Ross Avenue, Suite 700, Dallas, Texas 75202-2733.

**FOR FURTHER INFORMATION CONTACT:** Tracie Donaldson, 214-665-6633, [Donaldson.tracie@epa.gov](mailto:Donaldson.tracie@epa.gov).

**SUPPLEMENTARY INFORMATION:** Throughout this document “we,” “us,” and “our” means the EPA.

#### I. Background

The background for this action is discussed in detail in our May 25, 2016 proposal (81 FR 33161). In that document we proposed to approve a redesignation substitute and make a finding of attainment for both the 1-hour and the 1997 8-hour ozone NAAQS for the Dallas-Fort Worth 1-hour and 1997 8-hour ozone nonattainment areas (DFW areas). The redesignation substitute demonstration indicates that the area has attained the revoked 1-hour and the revoked 1997 8-hour ozone NAAQS due to permanent and enforceable emission

reductions and that it will maintain those NAAQS for ten years from the date of the EPA’s approval of this demonstration. Final approval of the redesignation substitute results in the area no longer being subject to any remaining applicable anti-backsliding requirements, including nonattainment new source review associated with the revoked NAAQS. In general, final approval of the redesignation substitute allows Texas to seek to revise the Texas State Implementation Plan (SIP) for the area to remove anti-backsliding measures from the active portion of its SIP if it can demonstrate, pursuant to CAA section 110(1), that such revision would not interfere with attainment or maintenance of any applicable NAAQS, or any other requirement of the CAA. Because the EPA believes Texas does not need to revise its SIP to alter certain provisions for NNSR effective in the DFW area, the offset and threshold requirements applicable in the DFW area for NNSR will be automatically altered upon finalization of the redesignation substitute.

We received comments on the proposal from three commenters. Our response to the comments is below.

#### II. Response to Comments

*Comment:* Two commenters recognized the progress of the area and the work of TCEQ in making such significant air quality improvements in the DFW area and urged the EPA to finalize this action to reflect the changes in the area.

*Response:* We agree with the commenters that DFW area has made progress in meeting air quality standards. No changes were made to the final action based on these comments.

*Comment:* One of the supportive commenters urged the EPA to approve revisions to the Texas SIP to reflect changes to certain provisions for the NNSR program effective in the DFW area as a result of the EPA’s approval of the redesignation substitute. The commenter also asserted that approval of the redesignation substitute will result in the area no longer being subject to any remaining applicable anti-backsliding requirements.

*Response:* Due to the drafting of the Texas SIP, no revision is necessary to alter NNSR requirements applicable in the DFW area following finalization of this redesignation substitute. The NNSR provisions in the existing Texas SIP contains a provision that cross-references the designation of the area to 40 CFR part 81. See 30 TAC section 101.1(71). Because of the structure of this provision the identification of an area’s classification, and thus the related

major source thresholds and offset ratios, is updated without any additional revision to the SIP. Therefore, the EPA’s approval of the redesignation substitute automatically updates the applicable NNSR requirements. Following finalization of this rule, the NNSR requirements applicable in the DFW area will be in accordance with the DFW area’s current classification for the 2008 ozone NAAQS for newly permitted sources.<sup>1</sup> We note that approval of this redesignation substitute does not relieve sources in the area of their obligations under previously established permit conditions.<sup>2</sup> 81 FR 33161, 33165. The Texas SIP includes a suite of approved permitting regulations for the Minor and Major NSR, which will continue to apply after approval of the redesignation substitute in the DFW area. Each of these programs has been evaluated and approved by EPA as consistent with the requirements of the CAA and protective of air quality, including the requirements at 40 CFR 51.160 whereby the TCEQ cannot issue a permit or authorize an activity that will result in a violation of applicable portions of the control strategy or that will interfere with attainment or maintenance of a national standard. So moving forward to a time when the DFW area has a moderate designation as the only applicable nonattainment designation, new sources and modifications will continue to be permitted and authorized under the existing SIP requirements if they are determined to be protective of air quality.

The EPA agrees that approval of the redesignation substitute will result in the DFW area no longer being subject to the regulatory anti-backsliding requirements for the 1997 ozone standard established pursuant to the principles of CAA section 172(e). However if an anti-backsliding provision is in the Texas SIP and needs to be changed to reflect the change in this area’s status, such change is subject to the SIP revision process, which in turn is subject to review under CAA sections 110 and 193, if applicable. To date, Texas has not submitted a SIP revision concerning any anti-backsliding provisions for the EPA’s consideration.

*Comment:* One commenter objected to the use of the redesignation substitute mechanism and the implications of such an action. The commenter incorporates

<sup>1</sup> See Section D of the TSD for this action in the docket for this rulemaking for additional information.

<sup>2</sup> See Final Implementation Rule for 2008 Ozone Standard, 80 FR 12264, at 12299, footnote 83 and at 12304, footnote 91.

by reference the relevant portions of a brief filed in a petition challenging the EPA's promulgation of the redesignation substitute. See *South Coast Air Quality Mgmt. Dist. v. EPA*, No. 15–1115 (D.C. Cir.). They contend that the DFW area continues to have unhealthy levels of ozone pollution, therefore, raising the NNSR thresholds and lowering the offset requirements for the area is inappropriate. The commenter further states that our action will result “in great expense and inefficiency: because some sources will not prevent pollution, they and other sources may have to retrofit at greater expense.” The commenter asks the EPA to either disapprove the redesignation substitute or delay action until the underlying litigation is resolved.

*Response:* The EPA disagrees with the commenter that it is inappropriate to approve redesignation substitutes for the DFW area for the 1-hour and the 1997 8-hour ozone standards. As the commenter noted, the EPA created the redesignation substitute in the 2008 ozone SIP Requirements Rule as one of two acceptable procedures through which a state may demonstrate that it is no longer required to adopt any additional applicable requirements for an area which have not already been approved into the SIP for a revoked ozone NAAQS. 80 FR 12264, 12304 (March 6, 2015).

The EPA acknowledges that this rule has been challenged in the D.C. Circuit by the commenter. However, the rule has not been stayed pending resolution of the litigation, and as such, it is appropriate to continue to implement the 2008 ozone SIP Requirements Rule during the pendency of the litigation.

The EPA believes the redesignation substitute is an appropriate mechanism because it serves as a successor to a redesignation to attainment, for which these areas would have been eligible if the EPA had not revoked the 1-hour and 1997 ozone standards. For a more detailed description of why the EPA has determined the DFW area has met the redesignation criteria for the revoked 1997 ozone standard, see 81 FR 33161 for the proposal and Technical Support Document. Upon approval of a redesignation substitute, a state may request to revise its SIP to shift regulatory anti-backsliding requirements contained in the active portion of the SIP to the contingency measures portion of the SIP, subject to a showing of consistency with the general anti-backsliding checks in CAA sections 110(l) and 193 (if applicable). The EPA approval of the redesignation substitute has the same effect on these areas' nonattainment regulatory anti-

backsliding requirements as would a redesignation to attainment for the revoked standard. The EPA believes that, under any view of anti-backsliding for a revoked standard, it should not mean imposing requirements greater than those that would apply if the standard had not been revoked.

An approvable redesignation substitute must include more than a determination of attainment of the prior NAAQS, and show that it addresses redesignation criteria for that NAAQS. Moreover, the state remains subject to ongoing requirements to meet the new more stringent 2008 ozone standard in that area. In this context, the EPA believes finalizing of this action is appropriate—it recognizes and supports Texas's progress in having attained the prior standards in the DFW area due to permanent and enforceable emissions reductions, and reinforces continued attainment by demonstrating that the DFW area can maintain the revoked standard. See 80 FR 12264, 12305.

### III. Final Action

We find that Texas has successfully demonstrated it has met the requirements for approval of a redesignation substitute for the revoked 1-hour and the revoked 1997 8-hour ozone NAAQS for the DFW area. We are approving the redesignation substitute for the DFW area based on our determination that the demonstration provided by the State of Texas shows that the DFW area has attained the revoked 1-hour and the revoked 1997 8-hour ozone NAAQS due to permanent and enforceable emission reductions, and that it will maintain these NAAQS for ten years from the date of the EPA's approval of this demonstration. As we no longer redesignate nonattainment areas to attainment for the revoked 1-hour and the revoked 1997 8-hour ozone NAAQS, approval of the demonstration serves as a redesignation substitute under the EPA's implementing regulations. As a result of this action, Texas is no longer required to adopt any additional applicable 1-hour and 1997 8-hour ozone NAAQS requirements for the area which have not already been approved into the SIP (40 CFR 51.1105(b)(1)). It also allows the state to request that the EPA approve the shifting of planning and control requirements implemented pursuant to the 1-hour and the 1997 8-hour ozone NAAQS from the active portion of the SIP to the contingency measures portion of the SIP, upon a showing of consistency with CAA sections 110(l) and 193 (if applicable) (40 CFR 51.1105(b)(2)).

### IV. Statutory and Executive Order Reviews

Under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011), this action is not a “significant regulatory action” and therefore is not subject to review by the Office of Management and Budget. For this reason, this action is also not subject to Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use” (66 FR 28355, May 22, 2001). This action merely approves a demonstration provided by the State of Texas and finds that the DFW area is no longer subject to the regulatory anti-backsliding requirements under the principles of CAA section 172(e) for the revoked 1-hour ozone and the revoked 1997 8-hour ozone NAAQS; and imposes no additional requirements. Accordingly, I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). Because this rule does not impose any additional enforceable duties, it does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4). This rule also does not have a substantial direct effect on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes, as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), nor will it have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132 (64 FR 43255, August 10, 1999), because it merely approves a demonstration provided by the State of Texas and find that the DFW area is no longer subject to the regulatory anti-backsliding requirements under the principles of CAA section 172(e) for the revoked 1-hour ozone and the revoked 1997 8-hour ozone NAAQS; and does not alter the relationship or the distribution of power and responsibilities established in the CAA. This rule also is not subject to Executive Order 13045 (62 FR 19885, April 23, 1997), because it is not economically significant.

The rule does not impose an information collection burden under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*).

Additionally, this rule does not involve establishment of technical standards, and thus, the requirements of section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) do not apply. Executive Order 12898 (59 FR 7629, February 16, 1994) establishes Federal executive policy on environmental justice. Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States. The EPA has determined that this rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does not affect the level of protection provided to human health or the environment.

Under section 307(b)(1) of the Clean Air Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by January 9, 2017. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this action for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness

of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. See section 307(b)(2).

**List of Subjects**

*40 CFR Part 52*

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Volatile organic compounds.

*40 CFR Part 81*

Environmental protection, Air pollution control.

**Authority:** 42 U.S.C. 7401 *et seq.*

Dated: October 27, 2016.

**Samuel Coleman,**

*Acting Regional Administrator, Region 6.*

40 CFR parts 52 and 81 are amended as follows:

**PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS**

■ 1. The authority citation for part 52 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

**Subpart SS—Texas**

■ 2. Section 52.2275 is amended by adding paragraph (m) to read as follows:

**§ 52.2275 Control strategy and regulations: Ozone.**

\* \* \* \* \*

TEXAS—OZONE<sup>2</sup>  
[1-Hour standard]

(m) *Approval of Redesignation Substitute for the Dallas-Fort Worth 1-hour Ozone and 1997 Ozone Nonattainment Areas.* EPA has approved the redesignation substitute for the Dallas-Fort Worth 1-hour ozone and 1997 ozone nonattainment areas submitted by the State of Texas on August 18, 2015. The State is no longer being required to adopt any additional applicable to 1-hour ozone and 1997 ozone NAAQS requirements for the area.

**PART 81—DESIGNATION OF AREAS FOR AIR QUALITY PLANNING PURPOSES**

■ 3. The authority citation for part 81 continues to read as follows:

**Authority:** 42 U.S.C. 7401, *et seq.*

■ 4. Section 81.344 is amended:

■ a. In the table entitled “Texas—Ozone (1-Hour Standard)” by revising the entries for “Dallas-Fort Worth Area” and adding footnote 3; and

■ b. In the table titled “Texas—1997 8-Hour Ozone NAAQS (Primary and Secondary)” by revising the entries for “Dallas-Fort Worth, TX” and adding footnotes 5 and 6.

The revisions and additions read as follows:

**§ 81.344 Texas.**

\* \* \* \* \*

Designated area	Designation		Classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
* * * * *				
Dallas-Fort Worth Area:				
Collin County <sup>3</sup> .....	11/15/90	Nonattainment .....	3/20/98	Serious.
Dallas County <sup>3</sup> .....	11/15/90	Nonattainment .....	3/20/98	Serious.
Denton County <sup>3</sup> .....	11/15/90	Nonattainment .....	3/20/98	Serious.
Tarrant County <sup>3</sup> .....	11/15/90	Nonattainment .....	3/20/98	Serious.
* * * * *				

<sup>1</sup> This date is October 18, 2000, unless otherwise noted.

<sup>2</sup> The 1-hour ozone standard is revoked effective June 15, 2005 for all areas in Texas except the San Antonio area where it is revoked effective April 15, 2009.

<sup>3</sup> A Redesignation Substitute was approved on November 8, 2016.

\* \* \* \* \*

TEXAS—1997 8-HOUR OZONE NAAQS  
[Primary and secondary]

Designated area	Designation <sup>a</sup>		Category/classification	
	Date <sup>1</sup>	Type	Date <sup>1</sup>	Type
Dallas-Fort Worth, TX:				
Collin County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Dallas County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Denton County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Ellis County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Johnson County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Kaufman County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Parker County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Rockwall County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.
Tarrant County <sup>5,6</sup>		Nonattainment	(5)	Subpart 2/Serious.

<sup>a</sup> Includes Indian Country located in each county or area, except as otherwise specified.

<sup>1</sup> This date is June 15, 2004, unless otherwise noted.

<sup>5</sup> Effective January 19, 2011.

<sup>6</sup> A Redesignation Substitute was approved on November 8, 2016.

\* \* \* \* \*  
[FR Doc. 2016-26585 Filed 11-7-16; 8:45 am]  
BILLING CODE 6560-50-P

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 52 and 81**

[EPA-R06-OAR-2015-0609; FRL-9953-89-Region 6]

**Clean Air Act Redesignation Substitute for the Houston-Galveston-Brazoria 1997 8-Hour Ozone Nonattainment Area; Texas**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is approving a redesignation substitute and making a finding of attainment for the revoked 1997 8-hour ozone National Ambient Air Quality Standard (NAAQS) for the Houston-Galveston-Brazoria ozone nonattainment area (HGB area).

**DATES:** This rule is effective on December 8, 2016.

**ADDRESSES:** The EPA has established a docket for this action under Docket ID No. EPA-R06-OAR-2015-0609. All documents in the docket are listed on the <http://www.regulations.gov> Web site. Although listed in the index, some information is not publicly available, e.g., Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be

publicly available only in hard copy form. Publicly available docket materials are available either electronically through <http://www.regulations.gov> or in hard copy at the EPA Region 6, 1445 Ross Avenue, Suite 700, Dallas, Texas 75202-2733.

**FOR FURTHER INFORMATION CONTACT:** Tracie Donaldson, 214-665-6633, [Donaldson.tracie@epa.gov](mailto:Donaldson.tracie@epa.gov).

**SUPPLEMENTARY INFORMATION:** Throughout this document “we,” “us,” and “our” means the EPA.

**I. Background**

The background for this action is discussed in detail in our May 25, 2016 proposal (81 FR 33166). In that document we proposed to approve a redesignation substitute and make a finding of attainment for the 1997 8-hour ozone NAAQS for the Houston-Galveston-Brazoria ozone nonattainment area (HGB area). The redesignation substitute demonstration indicates that the area has attained the revoked 1997 8-hour ozone NAAQS due to permanent and enforceable emission reductions and that it will maintain that NAAQS for ten years from the date of the EPA’s approval of this demonstration. Final approval of the redesignation substitute results in the area no longer being subject to any remaining applicable anti-backsliding requirements, including nonattainment new source review, associated with the revoked NAAQS. In general, final approval of the redesignation substitute allows Texas to seek to revise the Texas SIP for the area to remove anti-backsliding measures from the active

portion of its SIP if it can demonstrate, pursuant to CAA section 110(1), that such revision would not interfere with attainment or maintenance of any applicable NAAQS, or any other requirement of the CAA. Because the EPA believes Texas does not need to revise its SIP to alter certain provisions for NNSR effective in the HGB area, the offset and threshold requirements applicable in the HGB area for NNSR will be automatically altered upon finalization of the redesignation substitute.

We previously approved a HGB area redesignation substitute for the revoked 1-hour ozone standard (80 FR 63429). In this action, we are also finalizing a non-substantive technical correction to 40 CFR 81.344 to reflect this approval.

We received comments on the proposal from five commenters. Our response to the comments are below.

**II. Response to Comments**

*Comment:* Three commenters recognized the progress of the area and the work of TCEQ in making such significant air quality improvements in the HGB area and urged the EPA to finalize this action to reflect the changes in the area.

*Response:* We agree with the commenters that HGB area has made progress in meeting air quality standards. No changes were made to the final action based on these comments.

*Comment:* One of the supportive commenters urged the EPA to approve revisions to the Texas SIP to reflect changes to certain provisions for the NNSR program effective in the HGB area as a result of the EPA’s approval of the

**ENVIRONMENTAL PROTECTION AGENCY****40 CFR Part 81**

[EPA-HQ-OAR-2017-0548; FRL-9977-72-OAR]

RIN 2060-AT94

**Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards****AGENCY:** Environmental Protection Agency (EPA).**ACTION:** Final rule.

**SUMMARY:** This rule establishes initial air quality designations for certain areas in the United States, including areas of Indian country, for the 2015 primary and secondary national ambient air quality standards (NAAQS) for ozone. On November 6, 2017, the Environmental Protection Agency (EPA) designated about 85 percent of the country as attainment/unclassifiable and three counties as unclassifiable. In this action, the EPA is designating all remaining areas, except for eight counties in the San Antonio, Texas metropolitan area. Areas are being designated as either nonattainment, attainment/unclassifiable, or unclassifiable. Areas designated as nonattainment are also being classified by operation of law according to the severity of their air quality problems. The classification categories are Marginal, Moderate, Serious, Severe, and Extreme. In addition, five nonattainment areas in California are being voluntarily reclassified to a higher classification.

**DATE:** The effective date of this rule is August 3, 2018.

**ADDRESSES:** The EPA has established a docket for this action under Docket ID NO. EPA-HQ-OAR-2017-0548. All documents in the docket are listed in the index at <http://www.regulations.gov>. Although listed in the index, some information is not publicly available, *i.e.*, Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in the docket or in hard copy at the EPA Docket Center, EPA WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Office of Air and Radiation Docket and Information Center is (202) 566-1742.

In addition, the EPA has established a website for this rulemaking at <https://www.epa.gov/ozone-designations>. The website includes the EPA's final designations, as well as designation recommendation letters from states and tribes, the EPA's 120-letters notifying the states whether EPA intends to modify the state's recommendation, technical support documents, responses to comments and other related technical information.

**FOR FURTHER INFORMATION CONTACT:** Denise Scott, Office of Air Quality

Planning and Standards, U.S. Environmental Protection Agency, Mail Code C539-01, Research Triangle Park, NC 27711, phone number (919) 541-4280 or by email at: [scott.denise@epa.gov](mailto:scott.denise@epa.gov).

**Regional Office Contacts**

Region I—Richard Burkhardt, telephone (617) 918-1664, email at [burkhardt.richard@epa.gov](mailto:burkhardt.richard@epa.gov).

Region II—Omar Hammad, telephone (212) 637-3347, email at [hammad.omar@epa.gov](mailto:hammad.omar@epa.gov).

Region III—Maria Pino, telephone (215) 814-2181, email at [pino.maria@epa.gov](mailto:pino.maria@epa.gov).

Region IV—Jane Spann, telephone (404) 562-9029, email at [spann.jane@epa.gov](mailto:spann.jane@epa.gov).

Region V—Kathleen D'Agostino, telephone (312) 886-1767, email at [dagostino.kathleen@epa.gov](mailto:dagostino.kathleen@epa.gov).

Region VI—Carrie Paige, telephone (214) 665-6521, email at [paige.carrie@epa.gov](mailto:paige.carrie@epa.gov).

Region VII—Lachala Kemp, telephone (913) 551-7214, email at [kemp.lachala@epa.gov](mailto:kemp.lachala@epa.gov).

Region VIII—Chris Dresser, telephone (303) 312-6385, email at [dresser.chris@epa.gov](mailto:dresser.chris@epa.gov).

Region IX—Ashley Graham, telephone (415) 972-3877, email at [graham.ashleyr@epa.gov](mailto:graham.ashleyr@epa.gov).

Region X—Karl Pepple, telephone (206) 553-1778, email at [pepple.karl@epa.gov](mailto:pepple.karl@epa.gov).

**SUPPLEMENTARY INFORMATION:**

The public may inspect the rule and state-specific technical support information at the following locations:

Regional offices	States
Dave Conroy, Chief, Air Programs Branch, EPA New England, 5 Post Office Square, Suite 100, Boston, MA 02109-3912, (617) 918-1661.	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
Richard Ruvo, Chief, Air Programs Branch, EPA Region II, 290 Broadway, 25th Floor, New York, NY 10007-1866, (212) 637-4014.	New Jersey, New York, Puerto Rico, and Virgin Islands.
Maria A. Pino, Acting Associate Director, Office of Air Program Planning, EPA Region III, 1650 Arch Street, Philadelphia, PA 19103-2187, (215) 814-2181.	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia.
R. Scott Davis, Chief, Air Planning and Implementation Branch, EPA Region IV, Sam Nunn Atlanta Federal Center, 61 Forsyth Street, SW, 12th Floor, Atlanta, GA 30303, (404) 562-9127.	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.
John Mooney, Chief, Air Programs Branch, EPA Region V, 77 West Jackson Street, Chicago, IL 60604, (312) 886-6043.	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.
Mary Stanton, Chief, State Implementation Section B, EPA Region VI, 1445 Ross Avenue, Dallas, TX 75202, (214) 665-8377.	Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.
Mike Jay, Chief, Air Programs Branch, EPA Region VII, 11201 Renner Blvd., Lenexa, KS 66129, (913) 551-7460.	Iowa, Kansas, Missouri, and Nebraska.
Monica Morales, Air Program Director, EPA Region VIII, 1595 Wynkoop Street, Denver, CO 80202-1129, (303) 312-6936.	Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.
Laura Lawrence, Acting Chief, Air Planning Office, EPA Region IX, 75 Hawthorne Street, San Francisco, CA 94105, (415) 972-3407.	American Samoa, Arizona, California, Guam, Hawaii, Nevada, and Northern Mariana Islands.
Debra Suzuki, Manager, State and Tribal Air Programs, EPA Region X, Office of Air, Waste, and Toxics, Mail Code OAQ-107, 1200 Sixth Avenue, Seattle, WA 98101, (206) 553-0985.	Alaska, Idaho, Oregon, and Washington.



## Table of Contents

The following is an outline of the preamble.

- I. Preamble Glossary of Terms and Acronyms
- II. What is the purpose of this action?
- III. What is ozone and how is it formed?
- IV. What are the 2015 ozone NAAQS and the health and welfare concerns they address?
- V. What are the CAA requirements for air quality designations?
- VI. What is the chronology for this designations rule and what guidance did the EPA provide?
- VII. What air quality data has the EPA used to designate areas for the 2015 ozone NAAQS?
- VIII. What are the ozone air quality classifications?
- IX. What action is EPA taking to reclassify five California nonattainment areas?
- X. How can states request that an area within 5 percent of the upper or lower limit of a classification threshold be reclassified?
  - A. Five Percent Reclassifications to a Lower Classification
  - B. Five Percent Reclassifications to a Higher Classification
  - C. Timing of the 5 Percent Reclassifications
- XI. Determining Rural Transport Areas
- XII. How do designations affect Indian country?
- XIII. Where can I find information forming the basis for this rule and exchanges between the EPA, states, and tribes related to this rule?
- XIV. Environmental Justice Concerns
- XV. Statutory and Executive Order Reviews
  - A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulations and Regulatory Review
  - B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs
  - C. Paperwork Reduction Act
  - D. Regulatory Flexibility Act
  - E. Unfunded Mandates Reform Act
  - F. Executive Order 13132: Federalism
  - G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments
  - H. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks
  - I. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use
  - J. National Technology Transfer and Advancement Act (NTTAA)
  - K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations
  - L. Congressional Review Act
  - M. Judicial Review

### I. Preamble Glossary of Terms and Acronyms

The following are abbreviations of terms used in the preamble.

- APA Administrative Procedure Act
- CAA Clean Air Act
- CFR Code of Federal Regulations

- DC District of Columbia
- EPA Environmental Protection Agency
- FR Federal Register
- NAAQS National Ambient Air Quality Standards
- NO<sub>x</sub> Nitrogen Oxides
- NTTAA National Technology Transfer and Advancement Act
- PPM Parts per million
- RFA Regulatory Flexibility Act
- RTA Rural Transport Area
- UMRA Unfunded Mandate Reform Act of 1995
- TAR Tribal Authority Rule
- U.S. United States
- U.S.C. United States Code
- VCS Voluntary Consensus Standards
- VOC Volatile Organic Compounds

### II. What is the purpose of this action?

The purpose of this action is to announce and promulgate initial area designations for certain areas of the country with respect to the 2015 primary and secondary NAAQS for ozone, in accordance with the requirements of Clean Air Act (CAA) section 107(d). The EPA is designating areas as either nonattainment, attainment/unclassifiable, or unclassifiable. In addition, this action announces the classification for nonattainment areas, which occurs by operation of law at the time of designation and is based on the severity of each area's ozone air quality problems. This action also reclassifies five areas in California to a higher classification. The classification categories are Marginal, Moderate, Serious, Severe, and Extreme. The EPA established the air quality thresholds that define the classifications in a separate rule titled, "Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach" (Classifications Rule) (83 FR 10376; March 9, 2018).

The list of all areas being designated in this action appear in the regulatory tables included at the end of this final rule. These tables, which will amend 40 CFR part 81, identify the designation and the classification for each nonattainment area.

In this action, the EPA is designating 51 areas as nonattainment. Consistent with the EPA's "Policy for Establishing Separate Air Quality Designations for Areas of Indian Country" (December 20, 2011), the EPA is designating certain lands of the Pechanga Tribe and the Morongo Tribe in Southern California as separate nonattainment areas.<sup>1</sup> Seven of the nonattainment areas are multi-state

areas. The EPA is also designating one area as unclassifiable. The EPA is designating all the other areas addressed in this final action, including both state and tribal areas, as attainment/unclassifiable. With this action, the EPA has issued final designations for all areas of the country with the exception of eight counties in the San Antonio, Texas, metropolitan area. The EPA intends to issue final designations for these eight counties by July 17, 2018.

The EPA is basing the designations on the most recent 3 years of certified ozone air quality monitoring data and on an evaluation of factors to assess contributions to nonattainment in nearby areas. State areas designated as nonattainment are subject to planning and emission reduction requirements as specified in CAA part D. Requirements vary according to an area's classification. On November 17, 2016, the EPA proposed an implementation rule to assist states in the development of state implementation plans for attaining the ozone standards (81 FR 81276). The EPA expects to finalize this rule as soon as possible after finalizing the nonattainment area designations for the 2015 ozone NAAQS.

### III. What is ozone and how is it formed?

Ground-level ozone is a gas that is formed by the reaction of volatile organic compounds (VOCs) and oxides of nitrogen (NO<sub>x</sub>) in the atmosphere in the presence of sunlight. These precursor emissions are emitted by many types of pollution sources, including power plants and industrial emissions sources, on-road and off-road motor vehicles and engines, and smaller sources, collectively referred to as area sources. Ozone is predominately a summertime air pollutant. However, high ozone concentrations have also been observed in cold months, where a few areas in the Western United States (U.S.) have experienced high levels of local VOC and NO<sub>x</sub> emissions that have formed ozone when snow is on the ground and temperatures are near or below freezing. Ozone and ozone precursors can be transported to an area from sources in nearby areas or from sources located hundreds of miles away. For purposes of determining ozone nonattainment area boundaries, the CAA requires the EPA to include areas that contribute to nearby violations of the NAAQS.

### IV. What are the 2015 ozone NAAQS and the health and welfare concerns they address?

On October 1, 2015, the EPA revised both the primary and secondary NAAQS for ozone to a level of 0.070 parts per

<sup>1</sup> Designation guidance for the 2015 ozone NAAQS is available at <https://www.epa.gov/ozone-designations/epa-guidance-area-designations-2015-ozone-naaqs>.

million (ppm) (annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years).<sup>2</sup> The level of the ozone NAAQS previously set in 2008 is 0.75 ppm. The 2015 ozone NAAQS retain the same general form and averaging time as the 2008 ozone NAAQS.

The primary ozone standards provide protection for children, older adults, and people with asthma or other lung diseases, and other at-risk populations against an array of adverse health effects that include reduced lung function, increased respiratory symptoms and pulmonary inflammation; effects that contribute to emergency department visits or hospital admissions; and mortality. The secondary ozone standards protect against adverse effects to the public welfare, including those related to impacts on sensitive vegetation and forested ecosystems.

#### V. What are the CAA requirements for air quality designations?

When the EPA promulgates a new or revised NAAQS, the EPA is required to designate all areas in the country as nonattainment, attainment, or unclassifiable, pursuant to section 107(d)(1) of the CAA. Section 107(d)(1)(A)(i) of the CAA defines a nonattainment area as, “any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.” If an area meets either prong of this definition, states should recommend and the EPA is obligated to designate the area as “nonattainment.” CAA section 107(d)(1)(A)(ii) defines an attainment area as any area that does not meet the definition of nonattainment and that meets the NAAQS. CAA section 107(d)(1)(A)(iii) provides that any area that the EPA cannot designate on the basis of available information as meeting or not meeting the standards should be designated as “unclassifiable.” Historically for ozone, the EPA has designated most areas that do not meet the definition of nonattainment as “unclassifiable/attainment.” This category includes areas that have air quality monitoring data meeting the NAAQS and areas that do not have monitors but for which the EPA has no evidence that the areas may be violating the NAAQS or contributing to a nearby violation. In the designations for the 2015 ozone NAAQS, the EPA has reversed the order

of the label to be attainment/unclassifiable to better convey the definition of the designation category and so that the category is more easily distinguished from the separate unclassifiable category. In a few instances, based on circumstances where some monitoring data are available but are not sufficient for a determination that an area is or is not attaining the NAAQS, the EPA has designated an area as “unclassifiable.”

Section 107(d)(1)(B) of the CAA requires the EPA to issue initial area designations within 2 years of promulgating a new or revised NAAQS. However, if the Administrator has insufficient information to make these designations within that time frame, the EPA has the authority to extend the deadline for designation decisions by up to 1 additional year.

By not later than 1 year after the promulgation of a new or revised NAAQS, each state governor is required to recommend air quality designations, including the appropriate boundaries for areas, to the EPA. (*See* CAA section 107(d)(1)(A).) The EPA reviews those state recommendations and is authorized to make any modifications the Administrator deems necessary. The statute does not define the term “necessary,” but the EPA interprets this to authorize the Administrator to modify designation recommendations that are inconsistent with the statutory language, including modification of recommended boundaries for nonattainment areas that are not supported by the facts or analysis. If the EPA intends to modify a state’s recommendation, section 107(d)(1)(B) of the CAA requires the EPA to notify the state of any such intended modifications not less than 120 days prior to the EPA’s promulgation of the final designation. These notifications are commonly known as the “120-day letters.” If the state does not agree with the EPA’s intended modification, the 120-day period provides an opportunity for the state to demonstrate to the EPA why it believes any modification proposed by the EPA is inappropriate. If a state fails to provide any recommendation for an area, in whole or in part, the EPA must promulgate a designation that the Administrator deems appropriate.

The terms “contributes to” and “nearby” in the definition of a nonattainment area are not defined in the statute and the EPA has discretion to interpret these ambiguous terms, based on considerations such as the nature of a specific pollutant, the types of sources that may contribute to violations, the form of the relevant NAAQS, and any other relevant

information. The EPA does not interpret the statute to require the agency to establish bright line tests or thresholds for what constitutes “contribution” or “nearby” for purposes of designations.<sup>3</sup>

Section 301(d) of the CAA authorizes the EPA to approve eligible Indian tribes to implement provisions of the CAA on Indian reservations and other areas within the tribes’ jurisdiction. The Tribal Authority Rule (TAR) (40 CFR part 49), which implements section 301(d) of the CAA, sets forth the criteria and process for tribes to apply to the EPA for eligibility to administer CAA programs. The designations process contained in section 107(d) of the CAA is included among those provisions determined to be appropriate by the EPA for treatment of tribes in the same manner as states. Under the TAR, tribes generally are not subject to the same submission schedules imposed by the CAA on states. As authorized by the TAR, tribes may seek eligibility to submit designation recommendations to the EPA.

#### VI. What is the chronology for this designations rule and what guidance did the EPA provide?

On February 25, 2016, the EPA issued guidance for states and tribal agencies to use for purposes of making designation recommendations as required by CAA section 107(d)(1)(A). (*See* February 25, 2016, memorandum from Janet G. McCabe, Acting Assistant Administrator, to Regional Administrators, Regions 1–10, titled, “Area Designations for the 2015 Ozone National Ambient Air Quality Standards” (Designations Guidance)). The Designations Guidance provided the anticipated timeline for designations and identified important factors that the EPA recommended states and tribes consider in making their recommendations and that EPA intended to consider in promulgating designations. These factors include air quality data, emissions and emissions-related data, meteorological data, geography/topography, and jurisdictional boundaries. In the Designations Guidance, the EPA asked that states and tribes submit their designation recommendations, including appropriate area boundaries, to the EPA by October 1, 2016. The EPA had previously issued two guidance memoranda related to designating areas of Indian country that also apply for designations for the 2015 ozone NAAQS. (*See* December 20, 2011, memorandum from Stephen D. Page,

<sup>2</sup> *See* 80 FR 65296; October 26, 2015, for a detailed explanation of the calculation of the 3-year 8-hour average and 40 CFR part 50, Appendix U.

<sup>3</sup> This view was confirmed in *Catawba County v. EPA*, 571 F.3d 20 (D.C. Cir. 2009).

Director, Office of Air Quality Planning and Standards, to Regional Air Directors, Regions I–X, titled, “Policy for Establishing Separate Air Quality Designations for Areas of Indian Country,” and December 20, 2011, memorandum from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to Regional Air Directors, Regions I–X, titled, “Guidance to Regions for Working with Tribes during the National Ambient Air Quality Standards (NAAQS) Designations Process.”) In the Designation Guidance, the EPA indicated the agency expected to complete the initial designations for the 2015 ozone NAAQS on a 2-year schedule, by October 1, 2017, consistent with CAA 107(d)(1)(B)(i).

On November 6, 2017, the EPA designated as attainment/unclassifiable 2,646 counties,<sup>4</sup> including tribal lands within those counties, for which the states recommended a designation of attainment or attainment/unclassifiable. This represents about 85 percent of the counties in the U.S. The EPA also designated a three-county area in Washington as unclassifiable as recommended by the state. Consistent with the EPA’s Tribal Designation Guidance, the EPA designated two areas of Indian country (Fond du Lac Band of Lake Superior Chippewa Indians and Forest County Potawatomi Community) as separate attainment/unclassifiable areas.

On December 4, 2017, a coalition of environmental and health organizations filed suit against the Administrator claiming that EPA failed to meet its mandatory obligation to designate all areas of the United States for the 2015 ozone NAAQS by October 1, 2017. *American Lung Association, et al. v. Pruitt* (N.D. Cal. No. 4:17–cv–06900). A coalition of 15 states also filed a similar suit on December 5, 2017. *State of California v. Pruitt* (N.D. Cal. No. 4:17–cv–06936). The United States District Court for the Northern District of California heard arguments on plaintiffs’ motions for summary judgment in both cases on February 22, 2018. In a March 12, 2018, order, the

<sup>4</sup> Any reference to “counties” in this action also includes non-county administrative or statistical areas that are comparable to counties. Louisiana parishes; the organized boroughs of Alaska; the District of Columbia; and the independent cities of the states of Virginia, Maryland, Missouri, and Nevada are equivalent to counties for administrative purposes. Alaska’s Unorganized Borough is divided into 10 census areas that are statistically equivalent to counties. As of 2017, there are currently 3,142 counties and county-equivalents in the U.S.

court granted the motions in part and ordered the EPA “to promulgate final designations for all areas of the country except for the eight undesignated counties composing the San Antonio area no later than April 30, 2018” and “to promulgate final designations for the San Antonio area no later than 127 days from the date of this order.” The designation deadline for eight-county San Antonio area is July 17, 2018.

On or about December 22, 2017, the EPA sent 120-day letters to Governors and tribal leaders notifying them of the EPA’s preliminary response to their designation recommendations for all areas of the country not designated in the November 2017 action, with the exception of eight counties in the San Antonio metropolitan area. For the areas addressed in the 120-day letters, the EPA requested that states and tribes submit any additional information that they wanted the EPA to consider in making final designation decisions by February 28, 2018, including any certified 2017 air quality monitoring data.

Although not required by section 107(d)(2)(B) of the CAA, the EPA also provided a 30-day public comment period on the designation recommendations from states and tribes and the EPA’s intended designations addressed in the 120-day letters to states and tribes. The EPA announced the public comment period in the **Federal Register** on January 5, 2018 (83 FR 651). In that notice, the EPA indicated that the agency intended to complete the designations for the areas addressed in the responses to states and tribes by April 30, 2018.

State and tribal recommendations and the EPA’s preliminary responses are posted on EPA’s website at <https://www.epa.gov/ozone-designations> and are available in the docket for the designations action. Comments from the states, tribes and the public, and EPA’s responses to significant comments, are also available in the docket in the individual technical support documents for specific areas and in a Response to Comments document.

#### **VII. What air quality data has the EPA used to designate areas for the 2015 ozone NAAQS?**

The final ozone designations in this action are based primarily on air quality monitoring data from the years 2014–2016, which were the most recent data that states were required to certify at the time the EPA notified the states of its intended modifications to their recommendations. Under 40 CFR 58.16,

states are required to report all monitored ozone air quality data and associated quality assurance data within 90 days after the end of each quarterly reporting period, and under 40 CFR part 58.15(a)(2) states are required to submit annual summary reports and a data certification letter to the EPA by May 1 for ozone air quality data collected in the previous calendar year. Thus, at the time of the 120-day letters, the most recent certification obligation was for air quality data from 2016. In the 120-day notification letters to states, the EPA indicated that in order for the EPA to consider air quality data for the period 2015–2017 in the final designation decisions for any area, a state must submit certified, quality assured 2015–2017 air quality monitoring data for the area to the EPA by February 28, 2018. Several states chose to submit early certified air quality data for areas within their states. For those areas, the EPA is basing the final designation decisions on air quality data from 2015–2017.

#### **VIII. What are the ozone air quality classifications?**

In accordance with CAA section 181(a)(1), each area designated as nonattainment for the ozone NAAQS is classified by operation of law at the same time as the area is designated by the EPA. Under Subpart 2 of part D of title I of the CAA, state planning and emissions control requirements for ozone are determined, in part, by a nonattainment area’s classification. The ozone nonattainment areas are classified based on the severity of their ozone levels (as determined based on the area’s “design value,” which represents air quality in the area for the most recent 3 years).<sup>5</sup> The possible classifications are Marginal, Moderate, Serious, Severe, and Extreme. Nonattainment areas with a “lower” classification have ozone levels that are closer to the standard than areas with a “higher” classification. Areas in the lower classification levels have fewer and/or less stringent mandatory air quality planning and control requirements than those in higher classifications. On March 9, 2018 (83 FR 10376), the EPA published the Classifications Rule that establishes how the statutory classifications will apply for the 2015 ozone NAAQS, including the air quality thresholds for each classification category. Each

<sup>5</sup> The air quality design value for the 8-hour ozone NAAQS is the 3-year average of the annual 4th highest daily maximum 8-hour average ozone concentration. See 40 CFR part 50, Appendix U.

nonattainment area’s design value, based on the most recent 3 years of certified air quality monitoring data, is

used to establish the classification for the area. See Table 1.

TABLE 1—CLASSIFICATION THRESHOLDS FOR THE 2015 OZONE NAAQS [0.070 ppm]

Nonattainment area classification		8-hour ozone design value (ppm)
Marginal	from	0.071
	up to *	0.081
Moderate	from	0.081
	up to *	0.093
Serious	from	0.093
	up to *	0.105
Severe-15	from	0.105
	up to *	0.111
Severe-17	from	0.111
	up to *	0.163
Extreme	from	0.163
	equal to or above	0.163

\* but not including

The regulatory tables included at the end of this action provide the classification for each designated nonattainment area for the 2015 ozone NAAQS based on the design value for the area and the classification thresholds established in the Classification Rule.

**IX. What action is EPA taking to reclassify five California nonattainment areas?**

The CAA provides states with a mechanism for addressing nonattainment areas that may not be able to attain by the attainment date for their classification. Pursuant to CAA section 181(b)(3), a state may voluntarily request that the EPA reclassify a nonattainment area to a higher classification. The EPA may not deny and must approve any such voluntary reclassification requests. Once an area is reclassified to a higher classification, it becomes subject to the associated additional planning and control requirements for that higher classification, and must attain the standard no later than the maximum attainment date for that classification. Six nonattainment areas in California were granted voluntary reclassifications to a higher classification for both the 1997 and 2008 ozone NAAQS. For the 2008 ozone NAAQS, the EPA proposed to interpret the voluntary reclassification requests for the 1997 ozone NAAQS to also apply for the more stringent 2008 ozone NAAQS, unless the state expressly requested otherwise. As part of the proposal for the Classifications Rule for the 2015 NAAQS, the EPA proposed to again apply previous voluntary reclassifications for potential

nonattainment areas in California for the 2015 ozone NAAQS, unless the state of California explicitly requested otherwise in their comments on that proposal (November 17, 2016; 81 FR 81285).<sup>6</sup> These areas included Los Angeles-South Coast Air Basin, San Joaquin Valley, Riverside County (Coachella Valley), Sacramento Metro, Ventura County and Los Angeles-San Bernardino Counties (Western Mojave) areas. The EPA believes this is an appropriate mechanism to address attainment planning for these California areas that were voluntarily reclassified for the 1997 ozone NAAQS and previously used this mechanism for the 2008 ozone NAAQS. The reclassifications will ensure that these areas will have an attainment date for the 2015 ozone NAAQS that is no earlier than the areas’ attainment date for the 2008 ozone NAAQS. The EPA proposed this approach in order to minimize the burden on the state of California to separately initiate the voluntary reclassification process again. Areas for which California declined voluntary reclassification would be classified at the time of designation for the 2015 ozone NAAQS based on the most recent 3 years of certified air quality monitoring data. In response to EPA’s proposal, California declined reclassification only for the Sacramento Metro area.

Consistent with the comments received from the state of California on the November 2016 proposal, the EPA is applying previous voluntary reclassifications for five of the six

<sup>6</sup> Proposed rule, “Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications and State Implementation Plan Requirements.”

California areas originally proposed. The following areas are voluntarily reclassified to a higher classification for the 2015 ozone NAAQS: Ventura County, CA—Serious; Riverside County (Coachella Valley), CA—Severe-15; Los Angeles-San Bernardino Counties (West Mojave Desert), CA—Severe-15; Los Angeles-South Coast Air Basin, CA—Extreme; and San Joaquin Valley, CA—Extreme. These classifications are reflected in the tables at the end of this final rule.

**X. How can states request that an area within 5 percent of the upper or lower limit of a classification threshold be reclassified?**

Under CAA section 181(a)(4), an ozone nonattainment area may be reclassified to a higher or lower classification (also known as a classification bump up or a bump down) “if an area classified under paragraph (1) (Table 1) would have been classified in another category if the design value in the area were 5 percent greater or 5 percent less than the level on which such classification was based.” That section also states that, “In making such adjustment, the Administrator may consider the number of exceedances of the national primary ambient air quality standard for ozone in the area, the level of pollution transport between the area and other affected areas, including both intrastate and interstate transport, and the mix of sources and air pollutants in the area.”

As noted in the preamble to the rule designating and classifying areas following enactment of the CAA Amendments of 1990, the provisions of section 181(a)(4) grant the Administrator broad discretion in

making, or determining not to make, a reclassification. (See 56 FR 56698; November 6, 1991.) In that designation action, the EPA provided criteria to evaluate in determining whether it is appropriate to reclassify a particular area. Because CAA section 181(b)(3) provides that the EPA must grant any state request to reclassify an area to a higher classification, the EPA focused these criteria primarily on how the EPA would assess requests for a lower classification. These criteria are:

*Request by state:* The EPA does not intend to exercise its authority to reclassify areas on the EPA's own initiative. Rather, the EPA intends to rely on the state to submit a request for a reclassification. A tribe may also submit such a request and, in the case of a multi-state nonattainment area, all affected states must submit the same reclassification request.

*Discontinuity:* A 5 percent reclassification must not result in an illogical or excessive discontinuity relative to surrounding areas. In particular, in light of the area-wide nature of ozone formation, a reclassification should not create a "donut hole" where an area of one classification is surrounded by areas of higher classification.

*Attainment:* Evidence should be available that the proposed area would be able to attain by the earlier date specified by the lower classification in the case of a reclassification downward.

*Emissions reductions:* Evidence should be available that the area would be very likely to achieve the appropriate total percent emission reduction necessary in order to attain in the shorter time period for a reclassification downward.

*Trends:* Near- and long-term trends in emissions and air quality should support a reclassification. Historical air quality data should indicate substantial air quality improvement for a reclassification downward. Growth projections and emission trends should support a reclassification downward. In addition, the EPA will consider whether vehicle miles traveled and other indicators of emissions are increasing at higher than normal rates.

*Years of data:* The same years of ozone air quality data used for the initial designation and classification should be used for reclassification requests.

For ozone areas designated in 1991, the EPA approved reclassifications when the area met the first requirement (a request by the state to EPA) and at least some of the other criteria, and did not violate any of the criteria (emissions reductions, trends, etc.). The EPA

established the same method and criteria for the purpose of evaluating any reclassification requests under CAA section 181(a)(4) for the 1997 and 2008 ozone NAAQS. The EPA intends to continue to use this same approach for purposes of evaluating any requests for a reclassification for the 2015 ozone NAAQS. For reclassifications downwards, states may only request a reclassification to the next lower classification, and air quality data from prior years cannot be used as justification to be reclassified to an even lower classification.

#### *A. Five Percent Reclassifications to a Lower Classification*

For an area to be eligible to be reclassified to a lower classification under section 181(a)(4), the area's design value must be within 5 percent of the upper limit for the next lower classification. For example, an area with a Moderate design value of no more than 0.085 ppm would be eligible to request a reclassification to Marginal because 0.085 ppm is 5 percent more than the upper limit of 0.081 ppm for the Marginal classification. Accordingly, areas with the following design values may be eligible to request a reclassification to the next lower classification: Moderate areas with a design value of 0.085 ppm or less; Serious areas with a design value of 0.097 ppm or less; Severe areas with a design value of 0.110 ppm or less; and for Extreme areas with a design value of 0.171 ppm or less.

#### *B. Five Percent Reclassifications to a Higher Classification*

An ozone nonattainment area may also be reclassified under section 181(a)(4) to the next higher classification. As with 5 percent reclassifications to a lower classification, the EPA does not intend to exercise its authority to reclassify areas to a higher classification on the EPA's own initiative. Rather, the EPA intends to rely on the state to submit a request for such a reclassification. Under this CAA provision, areas with the following design values are eligible to request a reclassification to the next higher classification: Marginal areas with a design value of 0.076 ppm or more; Moderate areas with a design value of 0.088 ppm or more; and Serious areas with a design value of 0.099 ppm or more. Note, as discussed Section IX of this preamble, under a separate CAA provision, a state may voluntarily request that the EPA reclassify a nonattainment area to a higher classification at any time and the EPA must approve the request.

#### *C. Timing of the Five Percent Reclassifications*

A Governor or eligible tribal governing body of any area who wishes to pursue a reclassification should submit all requests and supporting documentation to the EPA Regional Office by July 5, 2018. This relatively short time frame is necessary because CAA section 181(a)(4) only authorizes the Administrator to make such reclassifications within 90 days after the initial classification. The EPA will make its decision by September 4, 2018.

### **XI. Determining Rural Transport Areas**

CAA section 182(h) sets out general criteria for determining whether an area qualifies as a Rural Transport Area (RTA). The statute defines a RTA as an area which is designated nonattainment and neither includes nor is adjacent to any part of a metropolitan statistical area or consolidated metropolitan statistical area as defined at the time of the 1990 CAA amendments. In such cases, the Administrator has discretion to treat the area as a RTA based on a finding that the emissions within the area do not make a significant contribution to the ozone concentrations measured in the area or in other areas. The EPA provided guidance on requesting RTA treatment in the February 25, 2016, memorandum "Area Designations for the 2015 Ozone National Ambient Air Quality Standards." A RTA, regardless of its nonattainment classification, is treated as meeting the applicable requirements of CAA section 182 (generally relating to submissions required for ozone nonattainment areas) if the area meets the submission requirements of a Marginal area.

Two states requested that the EPA find a nonattainment area in their state to meet the criteria for treatment as a RTA. In a letter dated October 3, 2016, California requested that the EPA make a RTA determination for the Tuscan Buttes nonattainment area. In a letter dated April 20, 2017, Wisconsin requested that the EPA make a RTA determination for the Door County nonattainment area. The EPA has determined that the final nonattainment areas for Tuscan Buttes, California and Door County, Wisconsin, meet the criteria for treatment as RTAs under CAA section 182(h). Documentation supporting these determinations are contained in the final TSDs for California (section 20.0) and Wisconsin (section 3.4), which are available in the public docket for this final action. This determination is reflected in the

regulatory tables in 40 CFR part 81 for each state.

## **XII. How do designations affect Indian country?**

All state areas listed in the tables at the end of this document are designated as indicated, and include Indian country geographically located within such areas, except as otherwise noted. Information pertaining to areas of Indian country in these tables is intended for CAA planning purposes only and is not an EPA determination of Indian country land status or any Indian country boundary. The EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries in the tables. Consistent with the EPA's Tribal Designation Guidance, and at the request of the tribes, the EPA is designating certain lands of the Pechanga Tribe and the Morongo Tribe in Southern California as separate nonattainment areas.<sup>7</sup> For all other areas, the EPA is designating areas of Indian country along with the adjacent/surrounding state area(s). Where nonattainment areas include both Indian country and state land, coordinated planning will help ensure that the planning decisions made by the states and tribes complement each other and that the nonattainment area makes progress toward attainment and ultimately attains the 2015 ozone NAAQS.

## **XIII. Where can I find information forming the basis for this rule and exchanges between the EPA, states, and tribes related to this rule?**

Information providing the basis for this action is provided in the docket for this rulemaking. The applicable EPA guidance memoranda and copies of correspondence regarding this process between the EPA and the states, tribes, and other parties are available for review at the EPA Docket Center listed above in the addresses section of this document, and on the EPA's ozone designation website at <https://www.epa.gov/ozone-designations>. State-specific information is available from the EPA Regional Offices at the addresses at the top of this Preamble.

## **XIV. Environmental Justice Concerns**

When the EPA establishes a new or revised NAAQS, the CAA requires the EPA to designate all areas of the U.S. as either nonattainment, attainment, or unclassifiable. This final action

addresses designation determinations for the 2015 ozone NAAQS. In addition, nonattainment areas are being classified according to the severity of their ozone air quality problems. Area designations address environmental justice concerns by ensuring that the public is properly informed about the air quality in an area. In locations where air quality does not meet the NAAQS, the CAA requires relevant state authorities to initiate appropriate air quality management actions to ensure that all those residing, working, attending school, or otherwise present in those areas are protected, regardless of minority and economic status.

## **XV. Statutory and Executive Order Reviews**

### *A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review*

This action is exempt from review by the Office of Management and Budget because it responds to the CAA requirement to promulgate air quality designations after promulgation of a new or revised NAAQS.

### *B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs*

This action is not an Executive Order 13771 regulatory action because actions such as air quality designations after promulgating a new revised NAAQS are exempt from review under Executive Order 12866.

### *C. Paperwork Reduction Act (PRA)*

This action does not impose an information collection burden under the PRA. This action fulfills the non-discretionary duty for the EPA to promulgate air quality designations after promulgation of a new or revised NAAQS and does not contain any information collection activities.

### *D. Regulatory Flexibility Act (RFA)*

This designation action under CAA section 107(d) is not subject to the RFA. The RFA applies only to rules subject to notice-and-comment rulemaking requirements under the APA, 5 U.S.C. 553, or any other statute. Section 107(d)(2)(B) of the CAA explicitly provides that designations are exempt from the notice-and-comment provisions of the APA. In addition, designations under CAA section 107(d) are not among the list of actions that are subject to the notice-and-comment rulemaking requirements of CAA section 307(d).

### *E. Unfunded Mandates Reform Act (UMRA)*

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538 and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

### *F. Executive Order 13132: Federalism*

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. The division of responsibility between the federal government and the states for purposes of implementing the NAAQS is established under the CAA.

### *G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

This action has tribal implications. However, it will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law.

The EPA consulted with tribal officials early in the process of developing this regulation to permit them to have meaningful and timely input into its development. At the beginning of the designations process, letters were sent to all tribes who were expected to be impacted by designations for the 2015 ozone NAAQS. These letters not only informed the tribes of the overall designations process, but also offered the tribes consultation to ensure early communication and coordination. Additionally, letters were sent to potentially affected tribes indicating the EPA's intended designations for their areas of Indian country. To the extent possible, the EPA included the tribes' input into the final decision-making process for designations of their areas of Indian country for the 2015 ozone NAAQS.

### *H. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks*

The EPA interprets Executive Order 13045 as applying to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not establish an

<sup>7</sup>Designation guidance for the 2015 ozone NAAQS is available at <https://www.epa.gov/ozone-designations/epa-guidance-area-designations-2015-ozone-naaqs>.

environmental standard intended to mitigate health or safety risks.

*I. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution or Use*

This action is not subject to Executive Order 13211 because it is not a significant regulatory action under Executive Order 12866.

*J. National Technology Transfer and Advancement Act (NTTAA)*

This rulemaking does not involve technical standards.

*K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). The documentation for this determination is contained in Section XIII of this preamble, “Environmental Justice Concerns.”

*L. Congressional Review Act (CRA)*

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the U.S. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

*M. Judicial Review*

Section 307(b)(1) of the CAA indicates which Federal Courts of Appeal have venue for petitions for review of final

actions by the EPA. This section provides, in part, that petitions for review must be filed in the Court of Appeals for the District of Columbia Circuit for: (i) “any nationally applicable regulations promulgated, or final actions taken, by the Administrator,” or (ii) when such action is locally or regionally applicable, “if such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination.”

This rule that designates areas for the 2015 ozone NAAQS is “nationally applicable” within the meaning of CAA section 307(b)(1). This rule establishes designations for areas across the U.S. for the 2015 ozone NAAQS. At the core of this rulemaking is the EPA’s interpretation of the designation provisions in section 107(d)(1) of the CAA, and its application of that interpretation to areas across the country.

For these reasons, the Administrator also is determining that the final designations are of nationwide scope and effect for the purposes of CAA section 307(b)(1). This is particularly appropriate because, in the report on the 1977 Amendments that revised section 307(b)(1) of the CAA, Congress noted that the Administrator’s determination that an action is of “nationwide scope or effect” would be appropriate for any action that has a scope or effect beyond a single judicial circuit. H.R. Rep. No. 95–294 at 323, 324, reprinted in 1977 U.S.C.C.A.N. 1402–03. Here, the scope and effect of this rulemaking extends to numerous judicial circuits since the

designations apply to areas across the country. In these circumstances, CAA section 307(b)(1) and its legislative history calls for the Administrator to find the rule to be of “nationwide scope or effect” and for venue to be in the District of Columbia Circuit.

Thus, any petitions for review of these final designations must be filed in the Court of Appeals for the District of Columbia Circuit within 60 days from the date of this final action is published in the **Federal Register**.

**List of Subjects in 40 CFR Part 81**

Environmental protection, Air pollution control, National parks, Wilderness areas.

Dated: April 30, 2018

**E. Scott Pruitt,**  
*Administrator.*

For the reasons set forth in the preamble, 40 CFR part 81 is amended as follows:

**PART 81—DESIGNATIONS OF AREAS FOR AIR QUALITY PLANNING PURPOSES**

- 1. The authority citation for part 81 continues to read as follows:

Authority: 42 U.S.C. 7401, *et seq.*

**Subpart C—Section 107 Attainment Status Designations**

- 2. Section 81.302 is amended by revising the table titled “Alaska—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.302 Alaska.**

\* \* \* \* \*

**ALASKA—2015 8-HOUR OZONE NAAQS**  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date	Type
Aleutians East Borough .....	1/16/18	Attainment/ Unclassifiable.		
Aleutians West Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Anchorage Municipality .....		Attainment/ Unclassifiable.		
Bethel Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Bristol Bay Borough .....	1/16/18	Attainment/ Unclassifiable.		
Denali Borough .....	1/16/18	Attainment/ Unclassifiable.		
Dillingham Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Fairbanks North Star Borough .....	1/16/18	Attainment/ Unclassifiable.		
Haines Borough .....	1/16/18	Attainment/ Unclassifiable.		
Hoonah-Angoon Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Juneau City and Borough .....	1/16/18	Attainment/ Unclassifiable.		

ALASKA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date	Type
Kenai Peninsula Borough .....	1/16/18	Attainment/ Unclassifiable.		
Ketchikan Gateway Borough .....	1/16/18	Attainment/ Unclassifiable.		
Kodiak Island Borough .....	1/16/18	Attainment/ Unclassifiable.		
Kusilvak Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Lake and Peninsula Borough .....	1/16/18	Attainment/ Unclassifiable.		
Matanuska-Susitna Borough .....	.....	Attainment/ Unclassifiable.		
Nome Census Area .....	1/16/18	Attainment/ Unclassifiable.		
North Slope Borough .....	1/16/18	Attainment/ Unclassifiable.		
Northwest Arctic Borough .....	1/16/18	Attainment/ Unclassifiable.		
Petersburg Borough .....	1/16/18	Attainment/ Unclassifiable.		
Prince of Wales-Hyder Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Sitka City and Borough .....	1/16/18	Attainment/ Unclassifiable.		
Skagway Municipality .....	1/16/18	Attainment/ Unclassifiable.		
Southeast Fairbanks Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Valdez-Cordova Census Area .....	1/16/18	Attainment/ Unclassifiable.		
Wrangell City and Borough .....	1/16/18	Attainment/ Unclassifiable.		
Yakutat City and Borough .....	1/16/18	Attainment/ Unclassifiable.		
Yukon-Koyukuk Census Area .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 3. Section 81. 303 is amended by revising the table titled “Arizona—2015

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.303 Arizona.

\* \* \* \* \*

ARIZONA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Phoenix-Mesa, AZ .....	.....	Nonattainment .....	.....	Marginal.
Gila County (part):				
T2N, R12E (except that portion in Maricopa County); T3N, R12E (except that portion in Maricopa County); T4N, R12E (Sections 25 through 29 (except those portions in Maricopa County) and 33 through 36 (except those portions in Maricopa County)).				
Maricopa County (part):				



ARIZONA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
T1N, R1E (except that portion in Indian Country); T1N, R2E; T1N, R3E; T1N, R4E (except that portion in Indian Country); T1N, R5E (except that portion in Indian Country); T1N, R6E; T1N, R7E; T1N, R1W; T1N, R2W; T1N, R3W; T1N, R4W; T1N, R5W; T1N, R6W; T1N, R7W; T1N, R8W; T2N, R1E; T2N, R2E; T2N, R3E; T2N, R4E; T2N, R6E (except that portion in Indian Country); T2N, R7E (except that portion in Indian Country); T2N, R8E; T2N, R9E; T2N, R10E; T2N, R11E; T2N, R12E (except that portion in Gila County); T2N, R13E (except that portion in Gila County); T2N, R1W; T2N, R2W; T2N, R3W; T2N, R4W; T2N, R5W; T2N, R6W; T2N, R7W; T2N, R8W; T3N, R1E; T3N, R2E; T3N, R3E; T3N, R4E; T3N, R5E (except that portion in Indian Country); T3N, R6E (except that portion in Indian Country); T3N, R7E (except that portion in Indian Country); T3N, R8E; T3N, R9E; T3N, R10E (except that portion in Gila County); T3N, R11E (except that portion in Gila County); T3N, R12E (except that portion in Gila County); T3N, R1W; T3N, R2W; T3N, R3W; T3N, R4W; T3N, R5W; T3N, R6W; T4N, R1E; T4N, R2E; T4N, R3E; T4N, R4E; T4N, R5E; T4N, R6E (except that portion in Indian Country); T4N, R7E (except that portion in Indian Country); T4N, R8E; T4N, R9E; T4N, R10E (except that portion in Gila County); T4N, R11E (except that portion in Gila County); T4N, R12E (except that portion in Gila County); T4N, R1W; T4N, R2W; T4N, R3W; T4N, R4W; T4N, R5W; T4N, R6W; T5N, R1E; T5N, R2E; T5N, R3E; T5N, R4E; T5N, R5E; T5N, R6E; T5N, R7E; T5N, R8E; T5N, R9E (except that portion in Gila County); T5N, R10E (except that portion in Gila County); T5N, R1W; T5N, R2W; T5N, R3W; T5N, R4W; T5N, R5W; T6N, R1E (except that portion in Yavapai County); T6N, R2E; T6N, R3E; T6N, R4E; T6N, R5E; T6N, R6E; T6N, R7E; T6N, R8E; T6N, R9E (except that portion in Gila County); T6N, R10E (except that portion in Gila County); T6N, R1W (except that portion in Yavapai County); T6N, R2W; T6N, R3W; T6N, R4W; T6N, R5W; T7N, R1E (except that portion in Yavapai County); T7N, R2E (except that portion in Yavapai County); T7N, R3E; T7N, R4E; T7N, R5E; T7N, R6E; T7N, R7E; T7N, R8E; T7N, R9E (except that portion in Gila County); T7N, R1W (except that portion in Yavapai County); T7N, R2W (except that portion in Yavapai County); T8N, R2E (except that portion in Yavapai County); T8N, R3E (except that portion in Yavapai County); T8N, R4E (except that portion in Yavapai County); T8N, R5E (except that portion in Yavapai County); T8N, R6E (except that portion in Yavapai County); T8N, R7E (except that portion in Yavapai County); T8N, R8E (except that portion in Yavapai and Gila Counties); T8N, R9E (except that portion in Yavapai and Gila Counties); T1S, R1E (except that portion in Indian Country); T1S, R2E (except that portion in Pinal County and in Indian Country); T1S, R3E; T1S, R4E; T1S, R5E; T1S, R6E; T1S, R7E; T1S, R1W; T1S, R2W; T1S, R3W; T1S, R4W; T1S, R5W; T1S, R6W; T2S, R1E (except that portion in Indian Country); T2S, R5E; T2S, R6E; T2S, R7E; T2S, R1W; T2S, R2W; T2S, R3W; T2S, R4W; T2S, R5W; T3S, R1E; T3S, R1W; T3S, R2W; T3S, R3W; T3S, R4W; T3S, R5W; T4S, R1E; T4S, R1W; T4S, R2W; T4S, R3W; T4S, R4W; T4S, R5W; T5S, R4W (Sections 1 through 22 and 27 through 34). Pinal County (part): T1N, R8E; T1N, R9E; T1N, R10E; T1S, R8E; T1S, R9E; T1S, R10E; T2S, R8E (Sections 1 through 10, 15 through 22, and 27 through 34); T2S, R9E (Sections 1 through 6); T2S, R10E (Sections 1 through 6); T3S, R7E (Sections 1 through 6, 11 through 14, 23 through 26, and 35 through 36); T3S, R8E (Sections 3 through 10, 15 through 22, and 27 through 34). Fort McDowell Yavapai Nation: Gila River Indian Community of the Gila River Indian Reservation, Arizona. Includes only non-contiguous areas of Indian country known as "parcels M & N". <sup>3</sup> Tohono O'odham Nation of Arizona: Salt River Pima-Maricopa Indian Community of the Salt River Reservation. Yuma, AZ ..... Yuma County (part): That portion within Yuma County of the area described by the following: 1. Bounded on the north and west by the Arizona state line. 2. Bounded on the south by the line of latitude at 32°39'20" N. 3. Bounded on the east by the line of longitude 114°33'50" W. 4. And excluding the sections 10, 11, and 12 of township T9S, R23W and any portion in Indian Country. Cocopah Tribe of Arizona. Quechan Tribe of the Fort Yuma Indian Reservation. Gila River Indian Community of the Gila River Indian Reservation, Arizona ..... Includes the contiguous main body of the reservation, excluding non-contiguous areas of Indian country known as "parcels M & N". <sup>3</sup> Rest of State ..... Apache County ..... Cochise County ..... Coconino County. Gila County (part) remainder. Graham County. Greenlee County. La Paz County. Maricopa County (part) remainder.				
		Nonattainment		Marginal.
		Attainment/ Unclassifiable.		
		Attainment/ Unclassifiable.		
	1/16/18			
	1/16/18			

ARIZONA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Mohave County. Navajo County. Pima County. Pinal County (part) remainder. Santa Cruz County ..... Yavapai County. Yuma County (part) remainder.	1/16/18			

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

<sup>3</sup> See Section 3.0 of the EPA's technical support document for Arizona, titled "Arizona Final Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD)," for more information and a map showing the locations of "parcels M & N" (available in Docket ID: EPA-HQ-OAR-2017-0548).

\* \* \* \* \*

2015 8-Hour Ozone NAAQS (Primary and Secondary)" to read as follows:

§ 81.305 California.

\* \* \* \* \*

■ 4. Section 81.305 is amended by revising the table titled "California—

CALIFORNIA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Amador County, CA ..... Amador County: Buena Vista Rancheria of Me-Wuk Indians of California. Jackson Band of Miwuk Indians.		Nonattainment .....		Marginal.
Calaveras County, CA ..... Calaveras County: California Valley Miwok Tribe.		Nonattainment .....		Marginal.
Butte County, CA ..... Butte County: Berry Creek Rancheria of Maidu Indians of California. Enterprise Rancheria of Maidu Indians of California. Mechoopda Indian Tribe of Chico Rancheria. Mooretown Rancheria of Maidu Indians of California.		Nonattainment .....		Marginal.
Imperial County, CA ..... Imperial County: Quechan Tribe of the Fort Yuma Indian Reservation. Torres Martinez Desert Cahuilla Indians.		Nonattainment .....		Marginal.
Kern County (Eastern Kern), CA ..... Kern County (part): That portion of Kern County (with the exception of that portion in Hydrologic Unit Number 18090205—the Indian Wells Valley) east and south of a line described as follows: Beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Liebre Land Grant to the point of intersection with the range line common to Range 16 West and Range 17 West, San Bernardino Base and Meridian; north along the range line to the point of intersection with the Rancho El Tejon Land Grant boundary; then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Grant to the northwest corner of Section 3, Township 11 North, Range 17 West; then west 1.2 miles; then north to the Rancho El Tejon Land Grant boundary; then northwest along the Rancho El Tejon line to the southeast corner of Section 34, Township 32 South, Range 30 East, Mount Diablo Base and Meridian; then north to the northwest corner of Section 35, Township 31 South, Range 30 East; then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of Section 18, Township 31 South, Range 31 East; then east to the southeast corner of Section 13, Township 31 South, Range 31 East; then north along the range line common to Range 31 East and Range 32 East, Mount Diablo Base and Meridian, to the northwest corner of Section 6, Township 29 South, Range 32 East; then east to the southwest corner of Section 31, Township 28 South, Range 32 East; then north along the range line common to Range 31 East and Range 32 East to the northwest corner of Section 6, Township 28 South, Range 32 East, then west to the southeast corner of Section 36, Township 27 South, Range 31 East, then north along the range line common to Range 31 East and Range 32 East to the Kern-Tulare County boundary.		Nonattainment .....		Moderate.
Los Angeles-San Bernardino Counties (West Mojave Desert), CA ..... Los Angeles County (part):		Nonattainment .....		Severe-15.

CALIFORNIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
<p>That portion of Los Angeles County which lies north and east of a line described as follows: Beginning at the Los Angeles-San Bernardino County boundary and running west along the Township line common to Township 3 North and Township 2 North, San Bernardino Base and Meridian; then north along the range line common to Range 8 West and Range 9 West; then west along the Township line common to Township 4 North and Township 3 North; then north along the range line common to Range 12 West and Range 13 West to the southeast corner of Section 12, Township 5 North and Range 13 West; then west along the south boundaries of Sections 12, 11, 10, 9, 8, and 7, Township 5 North and Range 13 West to the boundary of the Angeles National Forest which is collinear with the range line common to Range 13 West and Range 14 West; then north and west along the Angeles National Forest boundary to the point of intersection with the Township line common to Township 7 North and Township 6 North (point is at the northwest corner of Section 4 in Township 6 North and Range 14 West); then west along the Township line common to Township 7 North and Township 6 North; then north along the range line common to Range 15 West and Range 16 West to the southeast corner of Section 13, Township 7 North and Range 16 West; then along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 7 North and Range 16 West; then north along the range line common to Range 16 West and Range 17 West to the north boundary of the Angeles National Forest (collinear with the Township line common to Township 8 North and Township 7 North); then west and north along the Angeles National Forest boundary to the point of intersection with the south boundary of the Rancho La Liebre Land Grant; then west and north along this land grant boundary to the Los Angeles-Kern County boundary.</p> <p>San Bernardino County (part):</p> <p>That portion of San Bernardino County which lies north and east of a line described as follows: Beginning at the San Bernardino-Riverside County boundary and running north along the range line common to Range 3 East and Range 2 East, San Bernardino Base and Meridian; then west along the Township line common to Township 3 North and Township 2 North to the San Bernardino-Los Angeles County boundary; and that portion of San Bernardino County which lies south and west of a line described as follows: Latitude 35 degrees, 10 minutes north and longitude 115 degrees, 45 minutes west.</p> <p>Twenty-Nine Palms Band of Mission Indians of California.</p>				
<p>Los Angeles-South Coast Air Basin, CA .....</p> <p>Los Angeles County (part):</p> <p>That portion of Los Angeles County which lies south and west of a line described as follows: Beginning at the Los Angeles-San Bernardino County boundary and running west along the Township line common to Township 3 North and Township 2 North San Bernardino Base and Meridian; then north along the range line common to Range 8 West and Range 9 West; then west along the Township line common to Township 4 North and Township 3 North; then north along the range line common to Range 12 West and Range 13 West to the southeast corner of Section 12, Township 5 North and Range 13 West; then west along the south boundaries of Sections 12, 11, 10, 9, 8, and 7, Township 5 North and Range 13 West to the boundary of the Angeles National Forest which is collinear with the range line common to Range 13 West and Range 14 West; then north and west along the Angeles National Forest boundary to the point of intersection with the Township line common to Township 7 North and Township 6 North (point is at the northwest corner of Section 4 in Township 6 North and Range 14 West); then west along the Township line common to Township 7 North and Township 6 North; then north along the range line common to Range 15 West and Range 16 West to the southeast corner of Section 13, Township 7 North and Range 16 West; then along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 7 North and Range 16 West; then north along the range line common to Range 16 West and Range 17 West to the north boundary of the Angeles National Forest (collinear with the Township line common to Township 8 North and Township 7 North); then west and north along the Angeles National Forest boundary to the point of intersection with the south boundary of the Rancho La Liebre Land Grant; then west and north along this land grant boundary to the Los Angeles-Kern County boundary.</p> <p>Orange County.</p> <p>Riverside County (part):</p>	.....	Nonattainment .....	.....	Extreme.

CALIFORNIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
<p>That portion of Riverside County which lies to the west of a line described as follows: Beginning at the Riverside-San Diego County boundary and running north along the range line common to Range 4 East and Range 3 East, San Bernardino Base and Meridian; then east along the Township line common to Township 8 South and Township 7 South; then north along the range line common to Range 5 East and Range 4 East; then west along the southern boundaries of Sections 25, 26, and 27, Township 7 South, Range 4 East, then North along the west boundaries of Sections 27, 22, 15, 10, and 3 Township 7 South, Range 4 East, then East along the Township line common to Township 6 South and Township 7 South to the southwest corner of Section 34, Township 6 South, Range 4 East; then north along the west boundaries of Sections 34, 27, 22, 15, 10, and 3, Township 6 South, Range 4 East; then west along the Township line common to Township 5 South and Township 6 South; then north along the range line common to Range 4 East and Range 3 East; then west along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 5 South, Range 3 East; then north along the range line common to Range 2 East and Range 3 East; to the Riverside-San Bernardino County line.</p> <p>San Bernardino County (part):</p> <p>That portion of San Bernardino County which lies south and west of a line described as follows: Beginning at the San Bernardino-Riverside County boundary and running north along the range line common to Range 3 East and Range 2 East, San Bernardino Base and Meridian; then west along the Township line common to Township 3 North and Township 2 North to the San Bernardino-Los Angeles County boundary.</p> <p>Cahuilla Band of Indians.</p> <p>Pechanga Band of Luiseño Mission Indians of the Pechanga Reservation:                      Includes only non-contiguous tribal lands known as the Meadowbrook parcel.<sup>3</sup></p> <p>Ramona Band of Cahuilla.</p> <p>San Manuel Band of Mission Indians.</p> <p>Soboba Band of Luiseño Indians.</p>				
<p>Mariposa County, CA .....</p>		Nonattainment .....		Marginal.
<p>Mariposa County.</p>				
<p>Nevada County (Western part), CA .....</p>		Nonattainment .....		Moderate.
<p>Nevada County (part):</p> <p>That portion of Nevada County, which lies west of a line, described as follows: Beginning at the Nevada-Placer County boundary and running north along the western boundaries of Sections 24, 13, 12, 1, Township 17 North, Range 14 East, Mount Diablo Base and Meridian, and Sections 36, 25, 24, 13, 12, Township 18 North, Range 14 East to the Nevada-Sierra County boundary.</p>				
<p>Riverside County (Coachella Valley), CA .....</p>		Nonattainment .....		Severe-15.
<p>Riverside County (part):</p> <p>That portion of Riverside County which lies to the east of a line described as follows: Beginning at the Riverside-San Diego County boundary and running north along the range line common to Range 4 East and Range 3 East, San Bernardino Base and Meridian; then east along the Township line common to Township 8 South and Township 7 South; then north along the range line common to Range 5 East and Range 4 East; then west along the Township line common to Township 6 South and Township 7 South to the southwest corner of Section 34, Township 6 South, Range 4 East; then north along the west boundaries of Sections 34, 27, 22, 15, 10, and 3, Township 6 South, Range 4 East; then west along the Township line common to Township 5 South and Township 6 South; then north along the range line common to Range 4 East and Range 3 East; then west along the south boundaries of Sections 13, 14, 15, 16, 17, and 18, Township 5 South, Range 3 East; then north along the range line common to Range 2 East and Range 3 East; to the Riverside-San Bernardino County line. And that portion of Riverside County which lies to the west of a line described as follows: That segment of the southwestern boundary line of hydrologic Unit Number 18100100 within Riverside County.</p> <p>Agua Caliente Band of Cahuilla Indians of the Agua Caliente Indian Reservation.</p> <p>Augustine Band of Cahuilla Indians.</p> <p>Cabazon Band of Mission Indians.</p> <p>Santa Rosa Band of Cahuilla Indians.</p> <p>Torres Martinez Desert Cahuilla Indians.</p> <p>Twenty-Nine Palms Band of Mission Indians of California.</p>				
<p>Sacramento Metro, CA .....</p>		Nonattainment .....		Moderate.
<p>El Dorado County (part):</p> <p>All portions of the county except that portion of El Dorado County within the drainage area naturally tributary to Lake Tahoe including said Lake.</p> <p>Placer County (part):</p>				

CALIFORNIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
<p>All portions of the county except that portion of Placer County within the drainage area naturally tributary to Lake Tahoe including said Lake, plus that area in the vicinity of the head of the Truckee River described as follows: Commencing at the point common to the aforementioned drainage area crestline and the line common to Townships 15 North and 16 North, Mount Diablo Base and Meridian, and following that line in a westerly direction to the northwest corner of Section 3, Township 15 North, Range 16 East Mount Diablo Base and Meridian, thence south along the west line of Sections 3 and 10, Township 15 North, Range 16 East, Mount Diablo Base and Meridian, to the intersection with the said drainage area crestline, thence following the said drainage area boundary in a southeasterly, then northeasterly direction to and along the Lake Tahoe Dam, thence following the said drainage area crestline in a northeasterly, then northwesterly direction to the point of beginning.</p> <p>Sacramento County.                      Solano County (part):                      That portion of Solano County which lies north and east of a line described as follows: Beginning at the intersection of the westerly boundary of Solano County and the ¼ section line running east and west through the center of Section 34; Township 6 North, Range 2 West, Mount Diablo Base and Meridian, thence east along said ¼ section line to the east boundary of Section 36, Township 6 North, Range 2 West, thence south ½ mile and east 2.0 miles, more or less, along the west and south boundary of Los Putos Rancho to the northwest corner of Section 4, Township 5 North, Range 1 West, thence east along a line common to Township 5 North and Township 6 North to the northeast corner of Section 3, Township 5 North, Range 1 East, thence south along section lines to the southeast corner of Section 10, Township 3 North, Range 1 East, thence east along section lines to the south ¼ corner of Section 8, Township 3 North, Range 2 East, thence east to the boundary between Solano and Sacramento Counties.</p> <p>Sutter County (part):                      Portion south of a line connecting the northern border of Yolo County to the SW tip of Yuba County and continuing along the southern Yuba County border to Placer County.</p> <p>Yolo County:                      Shingle Springs Band of Miwok Indians, Shingle Springs Rancheria.                      United Auburn Indian Community of the Auburn Rancheria of California.                      Wilton Rancheria.                      Yocha Dehe Wintun Nation.</p>				
<p>San Diego County, CA .....</p> <p>San Diego County:                      Barona Group of Capitan Grande of Mission Indians of the Barona Reservation.                      Campo Band of Diegueño Mission Indians of the Campo Indian Reservation.                      Capitan Grande Band of Diegueño Mission Indians of California.                      Ewiiapaayp Band of Kumeyaay Indians.                      Iipay Nation of Santa Ysabel.                      Inaja Band of Diegueño Mission Indians of the Inaja and Cosmit Reservation.                      Jamul Indian Village of California.                      La Jolla Band of Luiseño Indians.                      La Posta Band of Diegueño Mission Indians of the La Posta Indian Reservation.                      Los Coyotes Band of Cahuilla and Cupeño Indians.                      Manzanita Band of Diegueño Mission Indians of the Manzanita Reservation.                      Mesa Grande Band of Diegueño Mission Indians of the Mesa Grande Reservation.                      Pala Band of Mission Indians.                      Pauma Band of Luiseño Mission Indians of the Pauma and Yuima Reservation.                      Rincon Band of Luiseño Mission Indians of the Rincon Reservation.                      San Pasqual Band of Diegueño Mission Indians of California.                      Sycuan Band of the Kumeyaay Nation.                      Viejas (Baron Long) Group of Capitan Grande Band of Mission Indians of the Viejas Reservation.</p>		Nonattainment .....		Moderate.
<p>San Francisco Bay Area, CA .....</p> <p>Alameda County.                      Contra Costa County.                      Marin County.                      Napa County.                      San Francisco County.                      San Mateo County.                      Santa Clara County.                      Solano County (part):                      Portion of Solano County which lies south and west of a line described as follows: Beginning at the intersection of the westerly boundary of Solano County and the ¼ section line running east and west through the center of Section 34, T6N, R2W, M.D.B. &amp; M., thence east along said ¼ section line to the east boundary of Section 36, T6N, R2W, thence south ½ mile and east 2.0 miles, more or less, along the west and south boundary of Los Putos Rancho to the northwest corner of Section 4, T5N, R1W, thence east along a line common to T5N and T6N to the northeast corner of Section 3, T5N, R1E, thence south along section lines to the southeast corner of Section 10, T3N, R1E, thence east along section lines to the south ¼ corner of Section 8, T3N, R2E, thence east to the boundary between Solano and Sacramento Counties.</p>		Nonattainment .....		Marginal.

CALIFORNIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Sonoma County (part): That portion of Sonoma County which lies south and east of a line described as follows: Beginning at the southeasterly corner of the Rancho Estero Americano, being on the boundary line between Marin and Sonoma Counties, California; thence running northerly along the easterly boundary line of said Rancho Estero Americano to the northeasterly corner thereof, being an angle corner in the westerly boundary line of Rancho Canada de Jonive; thence running along said boundary of Rancho Canada de Jonive westerly, northerly and easterly to its intersection with the easterly line of Graton Road; thence running along the easterly and southerly line of Graton Road, northerly and easterly to its intersection with the easterly line of Sullivan Road; thence running northerly along said easterly line of Sullivan Road to the southerly line of Green Valley Road; thence running easterly along the said southerly line of Green Valley Road and easterly along the southerly line of State Highway 116, to the westerly line of Vine Hill Road; thence Running along the westerly and northerly line of Vine Hill Road, northerly and easterly to its intersection with the westerly line of Laguna Road; thence running northerly along the westerly line of Laguna Road and the northerly projection thereof to the northerly line of Trenton Road; thence running westerly along the northerly line of said Trenton Road to the easterly line of Trenton-Healdsburg Road; thence running northerly along said easterly line of Trenton-Healdsburg Road to the easterly line of Eastside Road; thence running northerly along said easterly line of Eastside Road to its intersection with the southerly line of Rancho Sotoyome; thence running easterly along said southerly line of Rancho Sotoyome to its intersection with the Township line common to Townships 8 and 9 North, M.D.M.; thence running easterly along said township line to its intersection with the boundary line between Sonoma and Napa Counties. Federated Indians of Graton Rancheria. Lytton Rancheria of California.				
San Joaquin Valley, CA ..... Fresno County. Kern County (part): That portion of Kern County which lies west and north of a line described as follows: Beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Libre Land Grant to the point of intersection with the range line common to R. 16 W and R. 17 W, San Bernardino Base and Meridian; north along the range line to the point of intersection with the Rancho El Tejon Land Grant boundary; then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Land Grant to the northwest corner of S 3, T. 11 N, R. 17 W; then west 1.2 miles; then north to the Rancho El Tejon Land Grant boundary; then northwest along the Rancho El Tejon line to the southeast corner of S 34, T. 32 S, R. 30 E, Mount Diablo Base and Meridian; then north to the northwest corner of S 35, T. 31 S, R. 30 E; then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of S 18, T. 31 S, R. 31 E; then east to the southeast corner of S 13, T. 31 S, R. 31 E; then north along the range line common to R. 31 E and R. 32 E, Mount Diablo Base and Meridian, to the northwest corner of S 6, T. 29 S, R. 32 E; then east to the southwest corner of S 31, T. 28 S, R. 32 E; then north along the range line common to R. 31 E and R. 32 E to the northwest corner of S 6, T. 28 S, R. 32 E, then west to the southeast corner of S 36, T. 27 S, R. 31 E, then north along the range line common to R. 31 E and R. 32 E to the Kern-Tulare County boundary. Kings County. Madera County. Merced County. San Joaquin County. Stanislaus County. Tulare County: Big Sandy Rancheria of Western Mono Indians of California. Cold Springs Rancheria of Mono Indians of California. Northfork Rancheria of Mono Indians of California. Picayune Rancheria of Chukchansi Indians of California. Santa Rosa Indian Community of the Santa Rosa Rancheria. Table Mountain Rancheria of California. Tule River Indian Tribe of the Tule River Reservation.		Nonattainment .....		Extreme.
San Luis Obispo (Eastern part), CA ..... San Luis Obispo County (part): That portion of San Luis Obispo County that lies east of a line described as follows: Beginning at the San Luis Obispo County/Santa Barbara County boundary and running north along 120 degrees 24 minutes longitude to the intersection with 35 degrees 27 minutes latitude; east along 35 degrees 27 minutes latitude to the intersection with 120 degrees 18 minutes longitude; then north along 120 degrees 18 minutes longitude to the San Luis Obispo County/Monterey County boundary.		Nonattainment .....		Marginal.
Sutter Buttes, CA ..... Sutter County (part): That portion of the Sutter Buttes mountain range at or above 2,000 feet in elevation.		Nonattainment .....		Marginal.
Tuolumne County, CA ..... Tuolumne County: Chicken Ranch Rancheria of Me-Wuk Indians of California.		Nonattainment .....		Marginal.

CALIFORNIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Tuolumne Band of Me-Wuk Indians of the Tuolumne Rancheria of California. Tuscan Buttes, CA .....		Nonattainment .....		Marginal (Rural Transport).
Tehama County (part): Those portions of the immediate Tuscan Buttes area at or above 1,800 feet in elevation. Ventura County, CA .....		Nonattainment .....		Serious.
Ventura County (part): That part of Ventura County excluding the Channel Islands of Anacapa and San Nicolas Islands. Morongo Band of Mission Indians <sup>4</sup> .....		Nonattainment .....		Serious.
Pechanga Band of Luiseño Mission Indians of the Pechanga Reservation .....		Nonattainment .....		Marginal.
Includes the main body of the contiguous Pechanga Band Reservation and the non-contiguous area known as Pu'eska Mountain, excluding non-contiguous tribal lands in the Los Angeles-South Coast Air Basin, CA (Meadowbrook parcel). <sup>3</sup> Rest of State:				
Colusa County .....		Attainment/ Unclassifiable.		
Eastern Nevada County .....		Attainment/ Unclassifiable.		
Nevada County (part) remainder. Eastern Riverside County .....		Attainment/ Unclassifiable.		
Riverside County (part) remainder. Glenn County .....		Attainment/ Unclassifiable.		
Inyo County .....		Attainment/ Unclassifiable.		
Lake County .....	1/16/18	Attainment/ Unclassifiable.		
Lake Tahoe Air Basin .....		Attainment/ Unclassifiable.		
El Dorado County (part) remainder. Placer County (part) remainder. North Central Coast Air Basin .....		Attainment/ Unclassifiable.		
Monterey County. San Benito County. Santa Cruz County. North Coast Air Basin .....		Attainment/ Unclassifiable.		
Del Norte County .....	1/16/18			
Humboldt County .....	1/16/18			
Mendocino County. Sonoma County (part) remainder. Trinity County. Northeast Plateau Air Basin .....	1/16/18	Attainment/ Unclassifiable.		
Lassen County. Modoc County. Siskiyou County. Northeastern Kern County .....		Attainment/ Unclassifiable.		
Kern County (part) remainder. Northeast San Bernardino County .....		Attainment/ Unclassifiable.		
San Bernardino County (part) remainder. Northern Channel Islands. ....		Attainment/ Unclassifiable.		
The Channel Islands located in the South Central Coast Air Basin: Anacapa, San Miguel, San Nicholas, Santa Barbara, Santa Cruz, and Santa Rosa Islands. Northern Great Basin Valleys Air Basin .....		Attainment/ Unclassifiable.		
Alpine County. Mono County. Northern Mountain Counties .....		Attainment/ Unclassifiable.		
Plumas County. Sierra County. Santa Barbara County (part) remainder .....		Attainment/ Unclassifiable.		
That part of Santa Barbara County excluding the Channel Islands of San Miguel, Santa Barbara, Santa Cruz, and Santa Rosa Islands. Shasta County .....		Attainment/ Unclassifiable.		
Sutter and Yuba Counties .....		Attainment/ Unclassifiable.		
Sutter County (part) remainder.		Attainment/ Unclassifiable.		

CALIFORNIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Yuba County.				
Tehama County (part) remainder .....	.....	Attainment/ Unclassifiable.		
Western San Luis Obispo County .....	.....	Attainment/ Unclassifiable.		
San Luis Obispo County (part) remainder.				

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

<sup>3</sup> See Section 23.0 of the EPA's technical support document for California, titled "California Final Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD)," for more information and maps showing the locations of the main body of the reservation and the non-contiguous Pu'eska Mountain and Meadowbrook lands (available in Docket ID: EPA-HQ-OAR-2017-0548).

<sup>4</sup> See Section 22.0 of the EPA's technical support document for California, titled "California Final Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD)," for more information and maps showing the boundaries of the nonattainment area (available in Docket ID: EPA-HQ-OAR-2017-0548).

\* \* \* \* \*

2015 8-Hour Ozone NAAQS (Primary and Secondary)" to read as follows:

§ 81.306 Colorado.

■ 5. Section 81.306 is amended by revising the table titled "Colorado—

\* \* \* \* \*

COLORADO—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Denver Metro/North Front Range, CO .....	.....	Nonattainment .....	.....	Marginal.
Adams County.				
Arapahoe County.				
Boulder County.				
Broomfield County.				
Denver County.				
Douglas County.				
Jefferson County.				
Larimer County (part):				
Including the portion of Rocky Mountain National Park therein and that portion of the county that lies south of a line described as follows: Beginning at a point on Larimer County's eastern boundary and Weld County's western boundary intersected by 40 degrees, 42 minutes, and 47.1 seconds north latitude, proceed west to a point defined by the intersection of 40 degrees, 42 minutes, 47.1 seconds north latitude and 105 degrees, 29 minutes, and 40.0 seconds west longitude, thence proceed south on 105 degrees, 29 minutes, 40.0 seconds west longitude to the inter-section with 40 degrees, 33 minutes and 17.4 seconds north latitude, thence proceed west on 40 degrees, 33 minutes, 17.4 seconds north latitude until this line intersects Larimer County's western boundary and Grand County's eastern boundary.				
Weld County (part):				
That portion of the county that lies south of a line described as follows: Beginning at a point on Weld County's eastern boundary and Logan County's western boundary intersected by 40 degrees, 42 minutes, 47.1 seconds north latitude, proceed west on 40 degrees, 42 minutes, 47.1 seconds north latitude until this line intersects Weld County's western boundary and Larimer County's eastern boundary.				
Alamosa County .....	1/16/18	Attainment/ Unclassifiable.		
Archuleta County .....	1/16/18	Attainment/ Unclassifiable.		
Baca County .....	1/16/18	Attainment/ Unclassifiable.		
Bent County .....	1/16/18	Attainment/ Unclassifiable.		
Chaffee County .....	1/16/18	Attainment/ Unclassifiable.		
Cheyenne County .....	1/16/18	Attainment/ Unclassifiable.		
Clear Creek County .....	.....	Attainment/ Unclassifiable.		
Conejos County .....	1/16/18	Attainment/ Unclassifiable.		
Costilla County .....	1/16/18	Attainment/ Unclassifiable.		
Crowley County .....	1/16/18	Attainment/ Unclassifiable.		
Custer County .....	1/16/18	Attainment/ Unclassifiable.		



COLORADO—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Delta County .....	1/16/18	Attainment/ Unclassifiable.		
Dolores County .....	1/16/18	Attainment/ Unclassifiable.		
Eagle County .....	1/16/18	Attainment/ Unclassifiable.		
Elbert County .....		Attainment/ Unclassifiable.		
El Paso County .....		Attainment/ Unclassifiable.		
Fremont County .....	1/16/18	Attainment/ Unclassifiable.		
Garfield County .....		Attainment/ Unclassifiable.		
Gilpin County .....		Attainment/ Unclassifiable.		
Grand County .....		Attainment/ Unclassifiable.		
Gunnison County .....	1/16/18	Attainment/ Unclassifiable.		
Hinsdale County .....	1/16/18	Attainment/ Unclassifiable.		
Huerfano County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....		Attainment/ Unclassifiable.		
Kiowa County .....	1/16/18	Attainment/ Unclassifiable.		
Kit Carson County .....	1/16/18	Attainment/ Unclassifiable.		
Lake County .....	1/16/18	Attainment/ Unclassifiable.		
La Plata County .....	1/16/18	Attainment/ Unclassifiable.		
Larimer County (part remainder) .....		Attainment/ Unclassifiable.		
Las Animas County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Logan County .....	1/16/18	Attainment/ Unclassifiable.		
Mesa County .....	1/16/18	Attainment/ Unclassifiable.		
Mineral County .....	1/16/18	Attainment/ Unclassifiable.		
Moffat County .....		Attainment/ Unclassifiable.		
Montezuma County .....	1/16/18	Attainment/ Unclassifiable.		
Montrose County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....	1/16/18	Attainment/ Unclassifiable.		
Otero County .....	1/16/18	Attainment/ Unclassifiable.		
Ouray County .....	1/16/18	Attainment/ Unclassifiable.		
Park County .....		Attainment/ Unclassifiable.		
Phillips County .....	1/16/18	Attainment/ Unclassifiable.		
Pitkin County .....	1/16/18	Attainment/ Unclassifiable.		
Prowers County .....	1/16/18	Attainment/ Unclassifiable.		
Pueblo County .....	1/16/18	Attainment/ Unclassifiable.		
Rio Blanco County .....		Attainment/ Unclassifiable.		
Rio Grande County .....	1/16/18	Attainment/ Unclassifiable.		
Routt County .....	1/16/18	Attainment/ Unclassifiable.		
Saguache County .....	1/16/18	Attainment/ Unclassifiable.		
San Juan County .....	1/16/18	Attainment/ Unclassifiable.		

**COLORADO—2015 8-HOUR OZONE NAAQS—Continued**  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
San Miguel County .....	1/16/18	Attainment/ Unclassifiable.		
Sedgwick County .....	1/16/18	Attainment/ Unclassifiable.		
Summit County .....	1/16/18	Attainment/ Unclassifiable.		
Teller County .....		Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Weld County (part) remainder .....		Attainment/ Unclassifiable.		
Yuma County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 6. Section 81.307 is amended by adding a new table titled “Connecticut—2015 8-Hour Ozone

NAAQS (Primary and Secondary)” following the table titled “Connecticut—2008 8-Hour Ozone

NAAQS (Primary and Secondary)” to read as follows:

**§ 81.307 Connecticut.**

\* \* \* \* \*

**CONNECTICUT—2015 8-HOUR OZONE NAAQS**  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Greater Connecticut, CT .....		Nonattainment .....		Marginal.
Hartford County.				
Litchfield County.				
New London County.				
Tolland County.				
Windham County.				
New York-Northern New Jersey-Long Island, NY-NJ-CT .....		Nonattainment .....		Moderate.
Fairfield County.				
Middlesex County.				
New Haven County.				

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 7. Section 81.308 is amended by adding a new table titled “Delaware—2015 8-Hour Ozone NAAQS (Primary

and Secondary)” following the table titled “Delaware—2008 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**§ 81.308 Delaware.**

\* \* \* \* \*

**DELAWARE—2015 8-HOUR OZONE NAAQS**  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE .....		Nonattainment .....		Marginal.
New Castle County.				
Kent County .....		Attainment/ Unclassifiable.		
Sussex County .....		Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \* (Primary and Secondary)” following the **§ 81.309 District of Columbia.**  
 ■ 8. Section 81.309 is amended by adding a new table titled “District of Columbia—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

**DISTRICT OF COLUMBIA—2015 8-HOUR OZONE NAAQS**  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Washington, DC-MD-VA ..... District of Columbia.	.....	Nonattainment .....	.....	Marginal.

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.  
<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \* 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.310 Florida.**  
 ■ 9. Section 81.310 is amended by revising the table titled “Florida—2015

**FLORIDA—2015 8-HOUR OZONE NAAQS**  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date	Type
Jacksonville, FL ..... Duval County.	.....	Unclassifiable.		
Alachua County .....	1/16/18	Attainment/ Unclassifiable.		
Baker County .....	.....	Attainment/ Unclassifiable.		
Bay County .....	1/16/18	Attainment/ Unclassifiable.		
Bradford County .....	1/16/18	Attainment/ Unclassifiable.		
Brevard County .....	1/16/18	Attainment/ Unclassifiable.		
Broward County .....	1/16/18	Attainment/ Unclassifiable.		
Calhoun County .....	1/16/18	Attainment/ Unclassifiable.		
Charlotte County .....	1/16/18	Attainment/ Unclassifiable.		
Citrus County .....	1/16/18	Attainment/ Unclassifiable.		
Clay County .....	.....	Attainment/ Unclassifiable.		
Collier County .....	1/16/18	Attainment/ Unclassifiable.		
Columbia County .....	1/16/18	Attainment/ Unclassifiable.		
DeSoto County .....	1/16/18	Attainment/ Unclassifiable.		
Dixie County .....	1/16/18	Attainment/ Unclassifiable.		
Escambia County .....	1/16/18	Attainment/ Unclassifiable.		
Flagler County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Gadsden County .....	1/16/18	Attainment/ Unclassifiable.		
Gilchrist County .....	1/16/18	Attainment/ Unclassifiable.		
Glades County .....	1/16/18	Attainment/ Unclassifiable.		
Gulf County .....	1/16/18	Attainment/ Unclassifiable.		
Hamilton County .....	1/16/18	Attainment/ Unclassifiable.		
Hardee County .....	1/16/18	Attainment/ Unclassifiable.		
Hendry County .....	1/16/18	Attainment/ Unclassifiable.		
Hernando County .....	1/16/18	Attainment/ Unclassifiable.		

FLORIDA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date	Type
Highlands County .....	1/16/18	Attainment/ Unclassifiable.		
Hillsborough County .....	1/16/18	Attainment/ Unclassifiable.		
Holmes County .....	1/16/18	Attainment/ Unclassifiable.		
Indian River County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Lafayette County .....	1/16/18	Attainment/ Unclassifiable.		
Lake County .....	1/16/18	Attainment/ Unclassifiable.		
Lee County .....	1/16/18	Attainment/ Unclassifiable.		
Leon County .....	1/16/18	Attainment/ Unclassifiable.		
Levy County .....	1/16/18	Attainment/ Unclassifiable.		
Liberty County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....	1/16/18	Attainment/ Unclassifiable.		
Manatee County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....	1/16/18	Attainment/ Unclassifiable.		
Martin County .....	1/16/18	Attainment/ Unclassifiable.		
Miami-Dade County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Nassau County .....		Attainment/ Unclassifiable.		
Okaloosa County .....	1/16/18	Attainment/ Unclassifiable.		
Okeechobee County .....	1/16/18	Attainment/ Unclassifiable.		
Orange County .....	1/16/18	Attainment/ Unclassifiable.		
Osceola County .....	1/16/18	Attainment/ Unclassifiable.		
Palm Beach County .....	1/16/18	Attainment/ Unclassifiable.		
Pasco County .....	1/16/18	Attainment/ Unclassifiable.		
Pinellas County .....	1/16/18	Attainment/ Unclassifiable.		
Polk County .....	1/16/18	Attainment/ Unclassifiable.		
Putnam County .....		Attainment/ Unclassifiable.		
St. Johns County .....		Attainment/ Unclassifiable.		
St. Lucie County .....	1/16/18	Attainment/ Unclassifiable.		
Santa Rosa County .....	1/16/18	Attainment/ Unclassifiable.		
Sarasota County .....	1/16/18	Attainment/ Unclassifiable.		
Seminole County .....	1/16/18	Attainment/ Unclassifiable.		
Sumter County .....	1/16/18	Attainment/ Unclassifiable.		
Suwannee County .....	1/16/18	Attainment/ Unclassifiable.		
Taylor County .....	1/16/18	Attainment/ Unclassifiable.		
Union County .....	1/16/18	Attainment/ Unclassifiable.		
Volusia County .....	1/16/18	Attainment/ Unclassifiable.		
Wakulla County .....	1/16/18	Attainment/ Unclassifiable.		

FLORIDA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date	Type
Walton County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.  
<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 10. Section 81.311 is amended by revising the table titled “Georgia—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.311 Georgia.**  
\* \* \* \* \*

GEORGIA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Atlanta, GA .....		Nonattainment .....		Marginal.
Bartow County.				
Clayton County.				
Cobb County.				
DeKalb County.				
Fulton County.				
Gwinnett County.				
Henry County.				
Appling County .....	1/16/18	Attainment/ Unclassifiable.		
Atkinson County .....	1/16/18	Attainment/ Unclassifiable.		
Bacon County .....	1/16/18	Attainment/ Unclassifiable.		
Baker County .....	1/16/18	Attainment/ Unclassifiable.		
Baldwin County .....	1/16/18	Attainment/ Unclassifiable.		
Banks County .....	1/16/18	Attainment/ Unclassifiable.		
Barrow County .....		Attainment/ Unclassifiable.		
Ben Hill County .....	1/16/18	Attainment/ Unclassifiable.		
Berrien County .....	1/16/18	Attainment/ Unclassifiable.		
Bibb County .....	1/16/18	Attainment/ Unclassifiable.		
Bleckley County .....	1/16/18	Attainment/ Unclassifiable.		
Brantley County .....	1/16/18	Attainment/ Unclassifiable.		
Brooks County .....	1/16/18	Attainment/ Unclassifiable.		
Bryan County .....	1/16/18	Attainment/ Unclassifiable.		
Bulloch County .....	1/16/18	Attainment/ Unclassifiable.		
Burke County .....	1/16/18	Attainment/ Unclassifiable.		
Butts County .....		Attainment/ Unclassifiable.		
Calhoun County .....	1/16/18	Attainment/ Unclassifiable.		
Camden County .....		Attainment/ Unclassifiable.		
Candler County .....	1/16/18	Attainment/ Unclassifiable.		
Carroll County .....		Attainment/ Unclassifiable.		
Catoosa County .....	1/16/18	Attainment/ Unclassifiable.		
Charlton County .....	1/16/18	Attainment/ Unclassifiable.		
Chatham County .....	1/16/18	Attainment/ Unclassifiable.		

GEORGIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Chattahoochee County .....	1/16/18	Attainment/ Unclassifiable.		
Chattooga County .....	1/16/18	Attainment/ Unclassifiable.		
Cherokee County .....		Attainment/ Unclassifiable.		
Clarke County .....		Attainment/ Unclassifiable.		
Clay County .....	1/16/18	Attainment/ Unclassifiable.		
Clinch County .....	1/16/18	Attainment/ Unclassifiable.		
Coffee County .....	1/16/18	Attainment/ Unclassifiable.		
Colquitt County .....	1/16/18	Attainment/ Unclassifiable.		
Columbia County .....	1/16/18	Attainment/ Unclassifiable.		
Cook County .....	1/16/18	Attainment/ Unclassifiable.		
Coweta County .....		Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Crisp County .....	1/16/18	Attainment/ Unclassifiable.		
Dade County .....	1/16/18	Attainment/ Unclassifiable.		
Dawson County .....		Attainment/ Unclassifiable.		
Decatur County .....	1/16/18	Attainment/ Unclassifiable.		
Dodge County .....	1/16/18	Attainment/ Unclassifiable.		
Dooly County .....	1/16/18	Attainment/ Unclassifiable.		
Dougherty County .....	1/16/18	Attainment/ Unclassifiable.		
Douglas County .....		Attainment/ Unclassifiable.		
Early County .....	1/16/18	Attainment/ Unclassifiable.		
Echols County .....	1/16/18	Attainment/ Unclassifiable.		
Effingham County .....	1/16/18	Attainment/ Unclassifiable.		
Elbert County .....	1/16/18	Attainment/ Unclassifiable.		
Emanuel County .....	1/16/18	Attainment/ Unclassifiable.		
Evans County .....	1/16/18	Attainment/ Unclassifiable.		
Fannin County .....	1/16/18	Attainment/ Unclassifiable.		
Fayette County .....		Attainment/ Unclassifiable.		
Floyd County .....	1/16/18	Attainment/ Unclassifiable.		
Forsyth County .....		Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Gilmer County .....	1/16/18	Attainment/ Unclassifiable.		
Glascock County .....	1/16/18	Attainment/ Unclassifiable.		
Glynn County .....	1/16/18	Attainment/ Unclassifiable.		
Gordon County .....		Attainment/ Unclassifiable.		
Grady County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....	1/16/18	Attainment/ Unclassifiable.		
Habersham County .....	1/16/18	Attainment/ Unclassifiable.		
Hall County .....		Attainment/ Unclassifiable.		

GEORGIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Hancock County .....	1/16/18	Attainment/ Unclassifiable.		
Haralson County .....		Attainment/ Unclassifiable.		
Harris County .....	1/16/18	Attainment/ Unclassifiable.		
Hart County .....	1/16/18	Attainment/ Unclassifiable.		
Heard County .....		Attainment/ Unclassifiable.		
Houston County .....	1/16/18	Attainment/ Unclassifiable.		
Irwin County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....		Attainment/ Unclassifiable.		
Jasper County .....		Attainment/ Unclassifiable.		
Jeff Davis County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Jenkins County .....	1/16/18	Attainment/ Unclassifiable.		
Johnson County .....	1/16/18	Attainment/ Unclassifiable.		
Jones County .....	1/16/18	Attainment/ Unclassifiable.		
Lamar County .....		Attainment/ Unclassifiable.		
Lanier County .....	1/16/18	Attainment/ Unclassifiable.		
Laurens County .....	1/16/18	Attainment/ Unclassifiable.		
Lee County .....	1/16/18	Attainment/ Unclassifiable.		
Liberty County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Long County .....	1/16/18	Attainment/ Unclassifiable.		
Lowndes County .....	1/16/18	Attainment/ Unclassifiable.		
Lumpkin County .....	1/16/18	Attainment/ Unclassifiable.		
McDuffie County .....	1/16/18	Attainment/ Unclassifiable.		
McIntosh County .....	1/16/18	Attainment/ Unclassifiable.		
Macon County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....		Attainment/ Unclassifiable.		
Marion County .....	1/16/18	Attainment/ Unclassifiable.		
Meriwether County .....		Attainment/ Unclassifiable.		
Miller County .....	1/16/18	Attainment/ Unclassifiable.		
Mitchell County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....		Attainment/ Unclassifiable.		
Murray County .....	1/16/18	Attainment/ Unclassifiable.		
Muscogee County .....	1/16/18	Attainment/ Unclassifiable.		
Newton County .....		Attainment/ Unclassifiable.		
Oconee County .....		Attainment/ Unclassifiable.		
Oglethorpe County .....		Attainment/ Unclassifiable.		

GEORGIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Paulding County .....		Attainment/ Unclassifiable.		
Peach County .....	1/16/18	Attainment/ Unclassifiable.		
Pickens County .....		Attainment/ Unclassifiable.		
Pierce County .....	1/16/18	Attainment/ Unclassifiable.		
Pike County .....		Attainment/ Unclassifiable.		
Polk County .....		Attainment/ Unclassifiable.		
Pulaski County .....	1/16/18	Attainment/ Unclassifiable.		
Putnam County .....	1/16/18	Attainment/ Unclassifiable.		
Quitman County .....	1/16/18	Attainment/ Unclassifiable.		
Rabun County .....	1/16/18	Attainment/ Unclassifiable.		
Randolph County .....	1/16/18	Attainment/ Unclassifiable.		
Richmond County .....	1/16/18	Attainment/ Unclassifiable.		
Rockdale County .....		Attainment/ Unclassifiable.		
Schley County .....	1/16/18	Attainment/ Unclassifiable.		
Screven County .....	1/16/18	Attainment/ Unclassifiable.		
Seminole County .....	1/16/18	Attainment/ Unclassifiable.		
Spalding County .....		Attainment/ Unclassifiable.		
Stephens County .....	1/16/18	Attainment/ Unclassifiable.		
Stewart County .....	1/16/18	Attainment/ Unclassifiable.		
Sumter County .....	1/16/18	Attainment/ Unclassifiable.		
Talbot County .....	1/16/18	Attainment/ Unclassifiable.		
Taliaferro County .....	1/16/18	Attainment/ Unclassifiable.		
Tattnall County .....	1/16/18	Attainment/ Unclassifiable.		
Taylor County .....	1/16/18	Attainment/ Unclassifiable.		
Telfair County .....	1/16/18	Attainment/ Unclassifiable.		
Terrell County .....	1/16/18	Attainment/ Unclassifiable.		
Thomas County .....	1/16/18	Attainment/ Unclassifiable.		
Tift County .....	1/16/18	Attainment/ Unclassifiable.		
Toombs County .....	1/16/18	Attainment/ Unclassifiable.		
Towns County .....	1/16/18	Attainment/ Unclassifiable.		
Treutlen County .....	1/16/18	Attainment/ Unclassifiable.		
Troup County .....		Attainment/ Unclassifiable.		
Turner County .....	1/16/18	Attainment/ Unclassifiable.		
Twiggs County .....	1/16/18	Attainment/ Unclassifiable.		
Union County .....	1/16/18	Attainment/ Unclassifiable.		
Upson County .....		Attainment/ Unclassifiable.		
Walker County .....	1/16/18	Attainment/ Unclassifiable.		
Walton County .....		Attainment/ Unclassifiable.		
Ware County .....	1/16/18	Attainment/ Unclassifiable.		



GEORGIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Warren County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Webster County .....	1/16/18	Attainment/ Unclassifiable.		
Wheeler County .....	1/16/18	Attainment/ Unclassifiable.		
White County .....	1/16/18	Attainment/ Unclassifiable.		
Whitfield County .....	1/16/18	Attainment/ Unclassifiable.		
Wilcox County .....	1/16/18	Attainment/ Unclassifiable.		
Wilkes County .....	1/16/18	Attainment/ Unclassifiable.		
Wilkinson County .....	1/16/18	Attainment/ Unclassifiable.		
Worth County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 11. Section 81.314 is amended by revising the table titled “Illinois—2015

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.314 Illinois.

\* \* \* \* \*

ILLINOIS—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Chicago, IL-IN-WI .....		Nonattainment .....		Marginal.
Cook County.				
DuPage County.				
Grundy County (part):				
Aux Sable Township and Goose Lake Township.				
Kane County.				
Kendall County (part):				
Oswego Township.				
Lake County.				
Will County.				
St. Louis, MO-IL .....		Nonattainment .....		Marginal.
Madison County.				
St. Clair County.				
Adams County .....	1/16/18	Attainment/ Unclassifiable.		
Alexander County .....	1/16/18	Attainment/ Unclassifiable.		
Boone County .....	1/16/18	Attainment/ Unclassifiable.		
Bond County .....		Attainment/ Unclassifiable.		
Brown County .....	1/16/18	Attainment/ Unclassifiable.		
Bureau County .....		Attainment/ Unclassifiable.		
Calhoun County .....		Attainment/ Unclassifiable.		
Carroll County .....	1/16/18	Attainment/ Unclassifiable.		
Cass County .....	1/16/18	Attainment/ Unclassifiable.		
Champaign County .....	1/16/18	Attainment/ Unclassifiable.		
Christian County .....	1/16/18	Attainment/ Unclassifiable.		
Clark County .....	1/16/18	Attainment/ Unclassifiable.		

ILLINOIS—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Clay County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....		Attainment/ Unclassifiable.		
Coles County .....	1/16/18	Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Cumberland County .....	1/16/18	Attainment/ Unclassifiable.		
De Kalb County .....		Attainment/ Unclassifiable.		
De Witt County .....	1/16/18	Attainment/ Unclassifiable.		
Douglas County .....	1/16/18	Attainment/ Unclassifiable.		
Edgar County .....	1/16/18	Attainment/ Unclassifiable.		
Edwards County .....	1/16/18	Attainment/ Unclassifiable.		
Effingham County .....	1/16/18	Attainment/ Unclassifiable.		
Fayette County .....	1/16/18	Attainment/ Unclassifiable.		
Ford County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Fulton County .....	1/16/18	Attainment/ Unclassifiable.		
Gallatin County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....	1/16/18	Attainment/ Unclassifiable.		
Grundy County (part) remainder .....		Attainment/ Unclassifiable.		
Hamilton County .....	1/16/18	Attainment/ Unclassifiable.		
Hancock County .....	1/16/18	Attainment/ Unclassifiable.		
Hardin County .....	1/16/18	Attainment/ Unclassifiable.		
Henderson County .....	1/16/18	Attainment/ Unclassifiable.		
Henry County .....	1/16/18	Attainment/ Unclassifiable.		
Iroquois County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jasper County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Jersey County .....		Attainment/ Unclassifiable.		
Jo Daviess County .....	1/16/18	Attainment/ Unclassifiable.		
Johnson County .....	1/16/18	Attainment/ Unclassifiable.		
Kankakee County .....		Attainment/ Unclassifiable.		
Kendall County (part) remainder .....		Attainment/ Unclassifiable.		
Knox County .....	1/16/18	Attainment/ Unclassifiable.		
La Salle County .....		Attainment/ Unclassifiable.		
Lawrence County .....	1/16/18	Attainment/ Unclassifiable.		
Lee County .....	1/16/18	Attainment/ Unclassifiable.		
Livingston County .....	1/16/18	Attainment/ Unclassifiable.		
Logan County .....	1/16/18	Attainment/ Unclassifiable.		
Macon County .....	1/16/18	Attainment/ Unclassifiable.		

ILLINOIS—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Macoupin County .....		Attainment/ Unclassifiable.		
Marion County .....		Attainment/ Unclassifiable.		
Marshall County .....	1/16/18	Attainment/ Unclassifiable.		
Mason County .....	1/16/18	Attainment/ Unclassifiable.		
Massac County .....	1/16/18	Attainment/ Unclassifiable.		
McDonough County .....	1/16/18	Attainment/ Unclassifiable.		
McLean County .....	1/16/18	Attainment/ Unclassifiable.		
Menard County .....	1/16/18	Attainment/ Unclassifiable.		
Mercer County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....	1/16/18	Attainment/ Unclassifiable.		
Moultrie County .....	1/16/18	Attainment/ Unclassifiable.		
Ogle County .....	1/16/18	Attainment/ Unclassifiable.		
Peoria County .....	1/16/18	Attainment/ Unclassifiable.		
Perry County .....	1/16/18	Attainment/ Unclassifiable.		
Piatt County .....	1/16/18	Attainment/ Unclassifiable.		
Pike County .....	1/16/18	Attainment/ Unclassifiable.		
Pope County .....	1/16/18	Attainment/ Unclassifiable.		
Pulaski County .....	1/16/18	Attainment/ Unclassifiable.		
Putnam County .....		Attainment/ Unclassifiable.		
Randolph County .....	1/16/18	Attainment/ Unclassifiable.		
Richland County .....	1/16/18	Attainment/ Unclassifiable.		
Rock Island County .....	1/16/18	Attainment/ Unclassifiable.		
Saline County .....	1/16/18	Attainment/ Unclassifiable.		
Sangamon County .....	1/16/18	Attainment/ Unclassifiable.		
Schuyler County .....	1/16/18	Attainment/ Unclassifiable.		
Scott County .....	1/16/18	Attainment/ Unclassifiable.		
Shelby County .....	1/16/18	Attainment/ Unclassifiable.		
Stark County .....	1/16/18	Attainment/ Unclassifiable.		
Stephenson County .....	1/16/18	Attainment/ Unclassifiable.		
Tazewell County .....	1/16/18	Attainment/ Unclassifiable.		
Union County .....	1/16/18	Attainment/ Unclassifiable.		
Vermilion County .....	1/16/18	Attainment/ Unclassifiable.		
Wabash County .....	1/16/18	Attainment/ Unclassifiable.		
Warren County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
White County .....	1/16/18	Attainment/ Unclassifiable.		
Whiteside County .....	1/16/18	Attainment/ Unclassifiable.		

ILLINOIS—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Williamson County .....	1/16/18	Attainment/ Unclassifiable.		
Winnebago County .....	1/16/18	Attainment/ Unclassifiable.		
Woodford County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 12. Section 81.315 is amended by revising the table titled “Indiana—2015

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.315 Indiana.

\* \* \* \* \*

INDIANA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Chicago, IL-IN-WI .....		Nonattainment .....		Marginal.
Lake County (part). Calumet Township, Hobart Township, North Township, Ross Township, and St. John Township.				
Louisville, KY-IN .....		Nonattainment .....		Marginal.
Clark County. Floyd County.				
Adams County .....	1/16/18	Attainment/ Unclassifiable.		
Allen County .....	1/16/18	Attainment/ Unclassifiable.		
Bartholomew County .....	1/16/18	Attainment/ Unclassifiable.		
Benton County .....	1/16/18	Attainment/ Unclassifiable.		
Blackford County .....	1/16/18	Attainment/ Unclassifiable.		
Boone County .....	1/16/18	Attainment/ Unclassifiable.		
Brown County .....	1/16/18	Attainment/ Unclassifiable.		
Carroll County .....	1/16/18	Attainment/ Unclassifiable.		
Cass County .....	1/16/18	Attainment/ Unclassifiable.		
Clay County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....	1/16/18	Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Daviess County .....	1/16/18	Attainment/ Unclassifiable.		
Dearborn County .....		Attainment/ Unclassifiable.		
Decatur County .....	1/16/18	Attainment/ Unclassifiable.		
DeKalb County .....	1/16/18	Attainment/ Unclassifiable.		
Delaware County .....	1/16/18	Attainment/ Unclassifiable.		
Dubois County .....	1/16/18	Attainment/ Unclassifiable.		
Elkhart County .....		Attainment/ Unclassifiable.		
Fayette County .....	1/16/18	Attainment/ Unclassifiable.		
Fountain County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....		Attainment/ Unclassifiable.		
Fulton County .....	1/16/18	Attainment/ Unclassifiable.		

INDIANA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Gibson County .....	1/16/18	Attainment/ Unclassifiable.		
Grant County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....	1/16/18	Attainment/ Unclassifiable.		
Hamilton County .....	1/16/18	Attainment/ Unclassifiable.		
Hancock County .....	1/16/18	Attainment/ Unclassifiable.		
Harrison County .....		Attainment/ Unclassifiable.		
Hendricks County .....	1/16/18	Attainment/ Unclassifiable.		
Henry County .....	1/16/18	Attainment/ Unclassifiable.		
Howard County .....	1/16/18	Attainment/ Unclassifiable.		
Huntington County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jasper County .....		Attainment/ Unclassifiable.		
Jay County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....		Attainment/ Unclassifiable.		
Jennings County .....	1/16/18	Attainment/ Unclassifiable.		
Johnson County .....	1/16/18	Attainment/ Unclassifiable.		
Knox County .....	1/16/18	Attainment/ Unclassifiable.		
Kosciusko County .....	1/16/18	Attainment/ Unclassifiable.		
LaGrange County .....	1/16/18	Attainment/ Unclassifiable.		
Lake County (part) remainder .....		Attainment/ Unclassifiable.		
La Porte County .....		Attainment/ Unclassifiable.		
Lawrence County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....	1/16/18	Attainment/ Unclassifiable.		
Marshall County .....		Attainment/ Unclassifiable.		
Martin County .....	1/16/18	Attainment/ Unclassifiable.		
Miami County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....	1/16/18	Attainment/ Unclassifiable.		
Newton County .....		Attainment/ Unclassifiable.		
Noble County .....	1/16/18	Attainment/ Unclassifiable.		
Ohio County .....		Attainment/ Unclassifiable.		
Orange County .....	1/16/18	Attainment/ Unclassifiable.		
Owen County .....	1/16/18	Attainment/ Unclassifiable.		
Parke County .....	1/16/18	Attainment/ Unclassifiable.		
Perry County .....	1/16/18	Attainment/ Unclassifiable.		
Pike County .....	1/16/18	Attainment/ Unclassifiable.		
Porter County .....		Attainment/ Unclassifiable.		

INDIANA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Posey County .....	1/16/18	Attainment/ Unclassifiable.		
Pulaski County .....	1/16/18	Attainment/ Unclassifiable.		
Putnam County .....	1/16/18	Attainment/ Unclassifiable.		
Randolph County .....	1/16/18	Attainment/ Unclassifiable.		
Ripley County .....	1/16/18	Attainment/ Unclassifiable.		
Rush County .....	1/16/18	Attainment/ Unclassifiable.		
St. Joseph County .....		Attainment/ Unclassifiable.		
Shelby County .....	1/16/18	Attainment/ Unclassifiable.		
Spencer County .....	1/16/18	Attainment/ Unclassifiable.		
Starke County .....	1/16/18	Attainment/ Unclassifiable.		
Steuben County .....	1/16/18	Attainment/ Unclassifiable.		
Sullivan County .....	1/16/18	Attainment/ Unclassifiable.		
Switzerland County .....	1/16/18	Attainment/ Unclassifiable.		
Tippecanoe County .....	1/16/18	Attainment/ Unclassifiable.		
Tipton County .....	1/16/18	Attainment/ Unclassifiable.		
Vanderburgh County .....	1/16/18	Attainment/ Unclassifiable.		
Vermillion County .....	1/16/18	Attainment/ Unclassifiable.		
Vigo County .....	1/16/18	Attainment/ Unclassifiable.		
Wabash County .....	1/16/18	Attainment/ Unclassifiable.		
Warren County .....	1/16/18	Attainment/ Unclassifiable.		
Warrick County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Wells County .....	1/16/18	Attainment/ Unclassifiable.		
White County .....	1/16/18	Attainment/ Unclassifiable.		
Whitley County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 13. Section 81.318 is amended by revising the table titled “Kentucky—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.318 Kentucky.**  
\* \* \* \* \*

KENTUCKY—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Cincinnati, OH-KY .....		Nonattainment .....		Marginal.
Boone County (part): The entire county except for 2010 US Census Tracts 706.01 and 706.04.				
Campbell County (part): The entire county except for 2010 US Census Tracts 520.01 and 520.02.				
Kenton County (part): The entire county except for 2010 US Census Tracts 637.01 and 637.02.				
Louisville, KY-IN .....		Nonattainment .....		Marginal.
Bullitt County.				

KENTUCKY—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Jefferson County. Oldham County. Adair County .....	1/16/18	Attainment/ Unclassifiable.		
Allen County .....	1/16/18	Attainment/ Unclassifiable.		
Anderson County .....	1/16/18	Attainment/ Unclassifiable.		
Ballard County .....	1/16/18	Attainment/ Unclassifiable.		
Barren County .....	1/16/18	Attainment/ Unclassifiable.		
Bath County .....	1/16/18	Attainment/ Unclassifiable.		
Bell County .....	1/16/18	Attainment/ Unclassifiable.		
Boone County (part) remainder .....		Attainment/ Unclassifiable.		
Bourbon County .....	1/16/18	Attainment/ Unclassifiable.		
Boyd County .....	1/16/18	Attainment/ Unclassifiable.		
Boyle County .....	1/16/18	Attainment/ Unclassifiable.		
Bracken County .....		Attainment/ Unclassifiable.		
Breathitt County .....	1/16/18	Attainment/ Unclassifiable.		
Breckinridge County .....	1/16/18	Attainment/ Unclassifiable.		
Butler County .....	1/16/18	Attainment/ Unclassifiable.		
Caldwell County .....	1/16/18	Attainment/ Unclassifiable.		
Calloway County .....	1/16/18	Attainment/ Unclassifiable.		
Campbell County (part) remainder .....		Attainment/ Unclassifiable.		
Carlisle County .....	1/16/18	Attainment/ Unclassifiable.		
Carroll County .....	1/16/18	Attainment/ Unclassifiable.		
Carter County .....	1/16/18	Attainment/ Unclassifiable.		
Casey County .....	1/16/18	Attainment/ Unclassifiable.		
Christian County .....	1/16/18	Attainment/ Unclassifiable.		
Clark County .....	1/16/18	Attainment/ Unclassifiable.		
Clay County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....	1/16/18	Attainment/ Unclassifiable.		
Crittenden County .....	1/16/18	Attainment/ Unclassifiable.		
Cumberland County .....	1/16/18	Attainment/ Unclassifiable.		
Daviess County .....	1/16/18	Attainment/ Unclassifiable.		
Edmonson County .....	1/16/18	Attainment/ Unclassifiable.		
Elliott County .....	1/16/18	Attainment/ Unclassifiable.		
Estill County .....	1/16/18	Attainment/ Unclassifiable.		
Fayette County .....	1/16/18	Attainment/ Unclassifiable.		
Fleming County .....	1/16/18	Attainment/ Unclassifiable.		
Floyd County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Fulton County .....	1/16/18	Attainment/ Unclassifiable.		
Gallatin County .....		Attainment/ Unclassifiable.		

KENTUCKY—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Garrard County .....	1/16/18	Attainment/ Unclassifiable.		
Grant County .....		Attainment/ Unclassifiable.		
Graves County .....	1/16/18	Attainment/ Unclassifiable.		
Grayson County .....	1/16/18	Attainment/ Unclassifiable.		
Green County .....	1/16/18	Attainment/ Unclassifiable.		
Greenup County .....	1/16/18	Attainment/ Unclassifiable.		
Hancock County .....	1/16/18	Attainment/ Unclassifiable.		
Hardin County .....		Attainment/ Unclassifiable.		
Harlan County .....	1/16/18	Attainment/ Unclassifiable.		
Harrison County .....	1/16/18	Attainment/ Unclassifiable.		
Hart County .....	1/16/18	Attainment/ Unclassifiable.		
Henderson County .....	1/16/18	Attainment/ Unclassifiable.		
Henry County .....		Attainment/ Unclassifiable.		
Hickman County .....	1/16/18	Attainment/ Unclassifiable.		
Hopkins County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jessamine County .....	1/16/18	Attainment/ Unclassifiable.		
Johnson County .....	1/16/18	Attainment/ Unclassifiable.		
Kenton County (part) remainder .....		Attainment/ Unclassifiable.		
Knott County .....	1/16/18	Attainment/ Unclassifiable.		
Knox County .....	1/16/18	Attainment/ Unclassifiable.		
Larue County .....		Attainment/ Unclassifiable.		
Laurel County .....	1/16/18	Attainment/ Unclassifiable.		
Lawrence County .....	1/16/18	Attainment/ Unclassifiable.		
Lee County .....	1/16/18	Attainment/ Unclassifiable.		
Leslie County .....	1/16/18	Attainment/ Unclassifiable.		
Letcher County .....	1/16/18	Attainment/ Unclassifiable.		
Lewis County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Livingston County .....	1/16/18	Attainment/ Unclassifiable.		
Logan County .....	1/16/18	Attainment/ Unclassifiable.		
Lyon County .....	1/16/18	Attainment/ Unclassifiable.		
Mason County .....		Attainment/ Unclassifiable.		
McCracken County .....	1/16/18	Attainment/ Unclassifiable.		
McCreary County .....	1/16/18	Attainment/ Unclassifiable.		
McLean County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....	1/16/18	Attainment/ Unclassifiable.		
Magoffin County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....	1/16/18	Attainment/ Unclassifiable.		



KENTUCKY—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Marshall County .....	1/16/18	Attainment/ Unclassifiable.		
Martin County .....	1/16/18	Attainment/ Unclassifiable.		
Meade County .....		Attainment/ Unclassifiable.		
Menifee County .....	1/16/18	Attainment/ Unclassifiable.		
Mercer County .....	1/16/18	Attainment/ Unclassifiable.		
Metcalfe County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....	1/16/18	Attainment/ Unclassifiable.		
Muhlenberg County .....	1/16/18	Attainment/ Unclassifiable.		
Nelson County .....		Attainment/ Unclassifiable.		
Nicholas County .....	1/16/18	Attainment/ Unclassifiable.		
Ohio County .....	1/16/18	Attainment/ Unclassifiable.		
Owen County .....	1/16/18	Attainment/ Unclassifiable.		
Owsley County .....	1/16/18	Attainment/ Unclassifiable.		
Pendleton County .....		Attainment/ Unclassifiable.		
Perry County .....	1/16/18	Attainment/ Unclassifiable.		
Pike County .....	1/16/18	Attainment/ Unclassifiable.		
Powell County .....	1/16/18	Attainment/ Unclassifiable.		
Pulaski County .....	1/16/18	Attainment/ Unclassifiable.		
Robertson County .....	1/16/18	Attainment/ Unclassifiable.		
Rockcastle County .....	1/16/18	Attainment/ Unclassifiable.		
Rowan County .....	1/16/18	Attainment/ Unclassifiable.		
Russell County .....	1/16/18	Attainment/ Unclassifiable.		
Scott County .....	1/16/18	Attainment/ Unclassifiable.		
Shelby County .....		Attainment/ Unclassifiable.		
Simpson County .....	1/16/18	Attainment/ Unclassifiable.		
Spencer County .....		Attainment/ Unclassifiable.		
Taylor County .....	1/16/18	Attainment/ Unclassifiable.		
Todd County .....	1/16/18	Attainment/ Unclassifiable.		
Trigg County .....	1/16/18	Attainment/ Unclassifiable.		
Trimble County .....		Attainment/ Unclassifiable.		
Union County .....	1/16/18	Attainment/ Unclassifiable.		
Warren County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Webster County .....	1/16/18	Attainment/ Unclassifiable.		
Whitley County .....	1/16/18	Attainment/ Unclassifiable.		
Wolfe County .....	1/16/18	Attainment/ Unclassifiable.		

KENTUCKY—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Woodford County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.319 Louisiana.**  
\* \* \* \* \*

■ 14. Section 81.319 is amended by revising the table titled “Louisiana—

LOUISIANA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Acadia Parish .....	1/16/18	Attainment/ Unclassifiable.		
Allen Parish .....	1/16/18	Attainment/ Unclassifiable.		
Ascension Parish .....		Attainment/ Unclassifiable.		
Assumption Parish .....		Attainment/ Unclassifiable.		
Avoyelles Parish .....	1/16/18	Attainment/ Unclassifiable.		
Beauregard Parish .....	1/16/18	Attainment/ Unclassifiable.		
Bienville Parish .....	1/16/18	Attainment/ Unclassifiable.		
Bossier Parish .....	1/16/18	Attainment/ Unclassifiable.		
Caddo Parish .....	1/16/18	Attainment/ Unclassifiable.		
Calcasieu Parish .....	1/16/18	Attainment/ Unclassifiable.		
Caldwell Parish .....	1/16/18	Attainment/ Unclassifiable.		
Cameron Parish .....	1/16/18	Attainment/ Unclassifiable.		
Catahoula Parish .....	1/16/18	Attainment/ Unclassifiable.		
Claiborne Parish .....	1/16/18	Attainment/ Unclassifiable.		
Concordia Parish .....	1/16/18	Attainment/ Unclassifiable.		
De Soto Parish .....	1/16/18	Attainment/ Unclassifiable.		
East Baton Rouge Parish .....		Attainment/ Unclassifiable.		
East Carroll Parish .....	1/16/18	Attainment/ Unclassifiable.		
East Feliciana Parish .....		Attainment/ Unclassifiable.		
Evangeline Parish .....	1/16/18	Attainment/ Unclassifiable.		
Franklin Parish .....	1/16/18	Attainment/ Unclassifiable.		
Grant Parish .....	1/16/18	Attainment/ Unclassifiable.		
Iberia Parish .....	1/16/18	Attainment/ Unclassifiable.		
Iberville Parish .....		Attainment/ Unclassifiable.		
Jackson Parish .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson Parish .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson Davis Parish .....	1/16/18	Attainment/ Unclassifiable.		
Lafayette Parish .....	1/16/18	Attainment/ Unclassifiable.		
Lafourche Parish .....	1/16/18	Attainment/ Unclassifiable.		

LOUISIANA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
LaSalle Parish .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln Parish .....	1/16/18	Attainment/ Unclassifiable.		
Livingston Parish .....		Attainment/ Unclassifiable.		
Madison Parish .....	1/16/18	Attainment/ Unclassifiable.		
Morehouse Parish .....	1/16/18	Attainment/ Unclassifiable.		
Natchitoches Parish .....	1/16/18	Attainment/ Unclassifiable.		
Orleans Parish .....	1/16/18	Attainment/ Unclassifiable.		
Ouachita Parish .....	1/16/18	Attainment/ Unclassifiable.		
Plaquemines Parish .....	1/16/18	Attainment/ Unclassifiable.		
Pointe Coupee Parish .....		Attainment/ Unclassifiable.		
Rapides Parish .....	1/16/18	Attainment/ Unclassifiable.		
Red River Parish .....	1/16/18	Attainment/ Unclassifiable.		
Richland Parish .....	1/16/18	Attainment/ Unclassifiable.		
Sabine Parish .....	1/16/18	Attainment/ Unclassifiable.		
St. Bernard Parish .....	1/16/18	Attainment/ Unclassifiable.		
St. Charles Parish .....	1/16/18	Attainment/ Unclassifiable.		
St. Helena Parish .....		Attainment/ Unclassifiable.		
St. James Parish .....		Attainment/ Unclassifiable.		
St. John the Baptist Parish .....	1/16/18	Attainment/ Unclassifiable.		
St. Landry Parish .....	1/16/18	Attainment/ Unclassifiable.		
St. Martin Parish .....	1/16/18	Attainment/ Unclassifiable.		
St. Mary Parish .....	1/16/18	Attainment/ Unclassifiable.		
St. Tammany Parish .....	1/16/18	Attainment/ Unclassifiable.		
Tangipahoa Parish .....	1/16/18	Attainment/ Unclassifiable.		
Tensas Parish .....	1/16/18	Attainment/ Unclassifiable.		
Terrebonne Parish .....	1/16/18	Attainment/ Unclassifiable.		
Union Parish .....	1/16/18	Attainment/ Unclassifiable.		
Vermilion Parish .....	1/16/18	Attainment/ Unclassifiable.		
Vernon Parish .....	1/16/18	Attainment/ Unclassifiable.		
Washington Parish .....	1/16/18	Attainment/ Unclassifiable.		
Webster Parish .....	1/16/18	Attainment/ Unclassifiable.		
West Baton Rouge Parish .....		Attainment/ Unclassifiable.		
West Carroll Parish .....	1/16/18	Attainment/ Unclassifiable.		
West Feliciana Parish .....		Attainment/ Unclassifiable.		
Winn Parish .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 15. Section 81.321 is amended by revising the table titled “Maryland—

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.321 Maryland.

\* \* \* \* \*

MARYLAND—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Baltimore, MD ..... Anne Arundel County. Baltimore County. Carroll County. Harford County. Howard County. City of Baltimore.		Nonattainment .....		Marginal.
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE ..... Cecil County.		Nonattainment .....		Marginal.
Washington, DC-MD-VA ..... Calvert County. Charles County. Frederick County. Montgomery County. Prince George's County.		Nonattainment .....		Marginal.
Allegany County .....	1/16/18	Attainment/ Unclassifiable.		
Caroline County .....	1/16/18	Attainment/ Unclassifiable.		
Dorchester County .....		Attainment/ Unclassifiable.		
Garrett County .....	1/16/18	Attainment/ Unclassifiable.		
Kent County .....		Attainment/ Unclassifiable.		
Queen Anne's County .....		Attainment/ Unclassifiable.		
St. Mary's County .....		Attainment/ Unclassifiable.		
Somerset County .....	1/16/18	Attainment/ Unclassifiable.		
Talbot County .....		Attainment/ Unclassifiable.		
Washington County .....		Attainment/ Unclassifiable.		
Wicomico County .....	1/16/18	Attainment/ Unclassifiable.		
Worcester County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 16. Section 81.322 is amended by revising the table titled

“Massachusetts—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.322 Massachusetts.

\* \* \* \* \*

MASSACHUSETTS—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date	Type
Barnstable County .....	1/16/18	Attainment/ Unclassifiable.		
Berkshire County .....		Attainment/ Unclassifiable.		
Bristol County .....	1/16/18	Attainment/ Unclassifiable.		
Dukes County .....	1/16/18	Attainment/ Unclassifiable.		
Essex County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Hampden County .....		Attainment/ Unclassifiable.		

MASSACHUSETTS—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date	Type
Hampshire County .....	1/16/18	Attainment/ Unclassifiable.		
Middlesex County .....	1/16/18	Attainment/ Unclassifiable.		
Nantucket County .....	1/16/18	Attainment/ Unclassifiable.		
Norfolk County .....	1/16/18	Attainment/ Unclassifiable.		
Plymouth County .....	1/16/18	Attainment/ Unclassifiable.		
Suffolk County .....	1/16/18	Attainment/ Unclassifiable.		
Worcester County .....		Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.323 Michigan.

\* \* \* \* \*

■ 17. Section 81.323 is amended by revising the table titled “Michigan—

MICHIGAN—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Allegan County, MI .....		Nonattainment .....		Marginal.
Allegan County (part):				
Casco Township, Cheshire Township, City of Douglas, City of Holland, City of Saugatuck, Clyde Township, Fillmore Township, Ganges Township, Heath Township, Laketown Township, Lee Township, Manlus Township, Overisel Township, Saugatuck Township, and Valley Township.				
Berrien County, MI .....		Nonattainment .....		Marginal.
Berrien County.				
Detroit, MI .....		Nonattainment .....		Marginal.
Livingston County.				
Macomb County.				
Monroe County.				
Oakland County.				
St. Clair County.				
Washtenaw County.				
Wayne County.				
Muskegon County, MI .....		Nonattainment .....		Marginal.
Muskegon County (part):				
Blue Lake Township, City of Montague, City of Muskegon, City of Muskegon Heights, City of North Muskegon, City of Roosevelt Park, City of Whitehall, Dalton Township, (incl. Village of Lakewood Club), Fruitland Township, Fruitport Township, (incl. Village of Fruitport) Laketon Township, Montague Township, Muskegon Township, Norton Shores Township, White River Township, and Whitehall Township.				
Alcona County .....	1/16/18	Attainment/ Unclassifiable.		
Allegan County (part) remainder .....		Attainment/ Unclassifiable.		
Alger County .....	1/16/18	Attainment/ Unclassifiable.		
Alpena County .....	1/16/18	Attainment/ Unclassifiable.		
Antrim County .....	1/16/18	Attainment/ Unclassifiable.		
Arenac County .....	1/16/18	Attainment/ Unclassifiable.		
Baraga County .....	1/16/18	Attainment/ Unclassifiable.		
Barry County .....		Attainment/ Unclassifiable.		
Bay County .....	1/16/18	Attainment/ Unclassifiable.		
Benzie County .....	1/16/18	Attainment/ Unclassifiable.		

MICHIGAN—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Branch County .....	1/16/18	Attainment/ Unclassifiable.		
Calhoun County .....	1/16/18	Attainment/ Unclassifiable.		
Cass County .....		Attainment/ Unclassifiable.		
Charlevoix County .....	1/16/18	Attainment/ Unclassifiable.		
Cheboygan County .....	1/16/18	Attainment/ Unclassifiable.		
Chippewa County .....	1/16/18	Attainment/ Unclassifiable.		
Clare County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....	1/16/18	Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Delta County .....	1/16/18	Attainment/ Unclassifiable.		
Dickinson County .....	1/16/18	Attainment/ Unclassifiable.		
Eaton County .....	1/16/18	Attainment/ Unclassifiable.		
Emmet County .....	1/16/18	Attainment/ Unclassifiable.		
Genesee County .....		Attainment/ Unclassifiable.		
Gladwin County .....	1/16/18	Attainment/ Unclassifiable.		
Gogebic County .....	1/16/18	Attainment/ Unclassifiable.		
Grand Traverse County .....	1/16/18	Attainment/ Unclassifiable.		
Gratiot County .....	1/16/18	Attainment/ Unclassifiable.		
Hillsdale County .....	1/16/18	Attainment/ Unclassifiable.		
Houghton County .....	1/16/18	Attainment/ Unclassifiable.		
Huron County .....	1/16/18	Attainment/ Unclassifiable.		
Ingham County .....	1/16/18	Attainment/ Unclassifiable.		
Ionia County .....		Attainment/ Unclassifiable.		
Iosco County .....	1/16/18	Attainment/ Unclassifiable.		
Iron County .....	1/16/18	Attainment/ Unclassifiable.		
Isabella County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Kalamazoo County .....		Attainment/ Unclassifiable.		
Kalkaska County .....	1/16/18	Attainment/ Unclassifiable.		
Kent County .....		Attainment/ Unclassifiable.		
Keweenaw County .....	1/16/18	Attainment/ Unclassifiable.		
Lake County .....	1/16/18	Attainment/ Unclassifiable.		
Lapeer County .....		Attainment/ Unclassifiable.		
Leelanau County .....	1/16/18	Attainment/ Unclassifiable.		
Lenawee County .....		Attainment/ Unclassifiable.		
Luce County .....	1/16/18	Attainment/ Unclassifiable.		
Mackinac County .....	1/16/18	Attainment/ Unclassifiable.		
Manistee County .....	1/16/18	Attainment/ Unclassifiable.		
Marquette County .....	1/16/18	Attainment/ Unclassifiable.		

MICHIGAN—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Mason County .....	1/16/18	Attainment/ Unclassifiable.		
Mecosta County .....		Attainment/ Unclassifiable.		
Menominee County .....	1/16/18	Attainment/ Unclassifiable.		
Midland County .....	1/16/18	Attainment/ Unclassifiable.		
Missaukee County .....	1/16/18	Attainment/ Unclassifiable.		
Montcalm County .....		Attainment/ Unclassifiable.		
Montmorency County .....	1/16/18	Attainment/ Unclassifiable.		
Muskegon County (part) remainder .....		Attainment/ Unclassifiable.		
Newaygo County .....		Attainment/ Unclassifiable.		
Oceana County .....		Attainment/ Unclassifiable.		
Ogemaw County .....	1/16/18	Attainment/ Unclassifiable.		
Ontonagon County .....	1/16/18	Attainment/ Unclassifiable.		
Osceola County .....	1/16/18	Attainment/ Unclassifiable.		
Oscoda County .....	1/16/18	Attainment/ Unclassifiable.		
Otsego County .....	1/16/18	Attainment/ Unclassifiable.		
Ottawa County .....		Attainment/ Unclassifiable.		
Presque Isle County .....	1/16/18	Attainment/ Unclassifiable.		
Roscommon County .....	1/16/18	Attainment/ Unclassifiable.		
Saginaw County .....	1/16/18	Attainment/ Unclassifiable.		
St. Joseph County .....	1/16/18	Attainment/ Unclassifiable.		
Schoolcraft County .....	1/16/18	Attainment/ Unclassifiable.		
Sanilac County .....		Attainment/ Unclassifiable.		
Shiawassee County .....	1/16/18	Attainment/ Unclassifiable.		
Tuscola County .....	1/16/18	Attainment/ Unclassifiable.		
Van Buren County .....		Attainment/ Unclassifiable.		
Wexford County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 18. Section 81.326 is amended by revising the table titled “Missouri—

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.326 Missouri.

\* \* \* \* \*

MISSOURI—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
St. Louis, MO-IL .....		Nonattainment .....		Marginal.
Franklin County (part): Boles Township.				
St. Charles County.				
St. Louis County.				
City of St. Louis.				

MISSOURI—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Adair County .....	1/16/18	Attainment/ Unclassifiable.		
Andrew County .....	1/16/18	Attainment/ Unclassifiable.		
Atchison County .....	1/16/18	Attainment/ Unclassifiable.		
Audrain County .....	1/16/18	Attainment/ Unclassifiable.		
Barry County .....	1/16/18	Attainment/ Unclassifiable.		
Barton County .....	1/16/18	Attainment/ Unclassifiable.		
Bates County .....	1/16/18	Attainment/ Unclassifiable.		
Benton County .....	1/16/18	Attainment/ Unclassifiable.		
Bollinger County .....	1/16/18	Attainment/ Unclassifiable.		
Boone County .....	1/16/18	Attainment/ Unclassifiable.		
Buchanan County .....	1/16/18	Attainment/ Unclassifiable.		
Butler County .....	1/16/18	Attainment/ Unclassifiable.		
Caldwell County .....	1/16/18	Attainment/ Unclassifiable.		
Callaway County .....	1/16/18	Attainment/ Unclassifiable.		
Camden County .....	1/16/18	Attainment/ Unclassifiable.		
Cape Girardeau County .....	1/16/18	Attainment/ Unclassifiable.		
Carroll County .....	1/16/18	Attainment/ Unclassifiable.		
Carter County .....	1/16/18	Attainment/ Unclassifiable.		
Cass County .....	1/16/18	Attainment/ Unclassifiable.		
Cedar County .....	1/16/18	Attainment/ Unclassifiable.		
Chariton County .....	1/16/18	Attainment/ Unclassifiable.		
Christian County .....	1/16/18	Attainment/ Unclassifiable.		
Clark County .....	1/16/18	Attainment/ Unclassifiable.		
Clay County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....	1/16/18	Attainment/ Unclassifiable.		
Cole County .....	1/16/18	Attainment/ Unclassifiable.		
Cooper County .....	1/16/18	Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Dade County .....	1/16/18	Attainment/ Unclassifiable.		
Dallas County .....	1/16/18	Attainment/ Unclassifiable.		
Daviess County .....	1/16/18	Attainment/ Unclassifiable.		
DeKalb County .....	1/16/18	Attainment/ Unclassifiable.		
Dent County .....	1/16/18	Attainment/ Unclassifiable.		
Douglas County .....	1/16/18	Attainment/ Unclassifiable.		
Dunklin County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County (part) remainder .....	.....	Attainment/ Unclassifiable.		
Gasconade County .....	1/16/18	Attainment/ Unclassifiable.		
Gentry County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....	1/16/18	Attainment/ Unclassifiable.		



MISSOURI—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Grundy County .....	1/16/18	Attainment/ Unclassifiable.		
Harrison County .....	1/16/18	Attainment/ Unclassifiable.		
Henry County .....	1/16/18	Attainment/ Unclassifiable.		
Hickory County .....	1/16/18	Attainment/ Unclassifiable.		
Holt County .....	1/16/18	Attainment/ Unclassifiable.		
Howard County .....	1/16/18	Attainment/ Unclassifiable.		
Howell County .....	1/16/18	Attainment/ Unclassifiable.		
Iron County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jasper County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....		Attainment/ Unclassifiable.		
Johnson County .....	1/16/18	Attainment/ Unclassifiable.		
Knox County .....	1/16/18	Attainment/ Unclassifiable.		
Laclede County .....	1/16/18	Attainment/ Unclassifiable.		
Lafayette County .....	1/16/18	Attainment/ Unclassifiable.		
Lawrence County .....	1/16/18	Attainment/ Unclassifiable.		
Lewis County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....		Attainment/ Unclassifiable.		
Linn County .....	1/16/18	Attainment/ Unclassifiable.		
Livingston County .....	1/16/18	Attainment/ Unclassifiable.		
McDonald County .....	1/16/18	Attainment/ Unclassifiable.		
Macon County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....	1/16/18	Attainment/ Unclassifiable.		
Maries County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....	1/16/18	Attainment/ Unclassifiable.		
Mercer County .....	1/16/18	Attainment/ Unclassifiable.		
Miller County .....	1/16/18	Attainment/ Unclassifiable.		
Mississippi County .....	1/16/18	Attainment/ Unclassifiable.		
Moniteau County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....	1/16/18	Attainment/ Unclassifiable.		
New Madrid County .....	1/16/18	Attainment/ Unclassifiable.		
Newton County .....	1/16/18	Attainment/ Unclassifiable.		
Nodaway County .....	1/16/18	Attainment/ Unclassifiable.		
Oregon County .....	1/16/18	Attainment/ Unclassifiable.		
Osage County .....	1/16/18	Attainment/ Unclassifiable.		
Ozark County .....	1/16/18	Attainment/ Unclassifiable.		
Pemiscot County .....	1/16/18	Attainment/ Unclassifiable.		

MISSOURI—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Perry County .....	1/16/18	Attainment/ Unclassifiable.		
Pettis County .....	1/16/18	Attainment/ Unclassifiable.		
Phelps County .....	1/16/18	Attainment/ Unclassifiable.		
Pike County .....	1/16/18	Attainment/ Unclassifiable.		
Platte County .....	1/16/18	Attainment/ Unclassifiable.		
Polk County .....	1/16/18	Attainment/ Unclassifiable.		
Pulaski County .....	1/16/18	Attainment/ Unclassifiable.		
Putnam County .....	1/16/18	Attainment/ Unclassifiable.		
Ralls County .....	1/16/18	Attainment/ Unclassifiable.		
Randolph County .....	1/16/18	Attainment/ Unclassifiable.		
Ray County .....	1/16/18	Attainment/ Unclassifiable.		
Reynolds County .....	1/16/18	Attainment/ Unclassifiable.		
Ripley County .....	1/16/18	Attainment/ Unclassifiable.		
St. Clair County .....	1/16/18	Attainment/ Unclassifiable.		
St. Francois County .....		Attainment/ Unclassifiable.		
Ste. Genevieve County .....	1/16/18	Attainment/ Unclassifiable.		
Saline County .....	1/16/18	Attainment/ Unclassifiable.		
Schuyler County .....	1/16/18	Attainment/ Unclassifiable.		
Scotland County .....	1/16/18	Attainment/ Unclassifiable.		
Scott County .....	1/16/18	Attainment/ Unclassifiable.		
Shannon County .....	1/16/18	Attainment/ Unclassifiable.		
Shelby County .....	1/16/18	Attainment/ Unclassifiable.		
Stoddard County .....	1/16/18	Attainment/ Unclassifiable.		
Stone County .....	1/16/18	Attainment/ Unclassifiable.		
Sullivan County .....	1/16/18	Attainment/ Unclassifiable.		
Taney County .....	1/16/18	Attainment/ Unclassifiable.		
Texas County .....	1/16/18	Attainment/ Unclassifiable.		
Vernon County .....	1/16/18	Attainment/ Unclassifiable.		
Warren County .....		Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Webster County .....	1/16/18	Attainment/ Unclassifiable.		
Worth County .....	1/16/18	Attainment/ Unclassifiable.		
Wright County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.  
<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 19. Section 81.329 is amended by revising the table titled “Nevada—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.329 Nevada.

\* \* \* \* \*

NEVADA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Las Vegas, NV .....		Nonattainment .....		Marginal.
Clark County (part): That portion of Clark County that lies in hydrographic area 212. <sup>3</sup> Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony.				
Rest of State .....		Attainment/ Unclassifiable.		
Carson City.				
Churchill County .....	1/16/18			
Clark County (part) remainder.				
Douglas County.				
Elko County .....	1/16/18			
Esmeralda County .....	1/16/18			
Eureka County .....	1/16/18			
Humboldt County .....	1/16/18			
Lander County .....	1/16/18			
Lincoln County.				
Lyon County .....	1/16/18			
Mineral County .....	1/16/18			
Nye County.				
Pershing County .....	1/16/18			
Storey County .....	1/16/18			
Washoe County.				
White Pine County .....	1/16/18			

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

<sup>3</sup> Hydrographic areas are shown on the State of Nevada Division of Water Resources' map titled Water Resources and Inter-basin Flows (September 1971).

\* \* \* \* \*

■ 20. Section 81.331 is amended by adding a new table titled “New Jersey—2015 8-Hour Ozone NAAQS (Primary

and Secondary)” following the table titled “New Jersey—2008 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.331 New Jersey.

\* \* \* \* \*

NEW JERSEY—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
New York-Northern New Jersey-Long Island, NY-NJ-CT .....		Nonattainment .....		Moderate.
Bergen County.				
Essex County.				
Hudson County.				
Hunterdon County.				
Middlesex County.				
Monmouth County.				
Morris County.				
Passaic County.				
Somerset County.				
Sussex County.				
Union County.				
Warren County.				
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE .....		Nonattainment .....		Marginal.
Atlantic County.				
Burlington County.				
Camden County.				
Cape May County.				
Cumberland County.				
Gloucester County.				
Mercer County.				
Ocean County.				
Salem County.				

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.332 New Mexico.

\* \* \* \* \*

■ 21. Section 81.332 is amended by revising the table titled “New Mexico—

NEW MEXICO—2015 8-HOUR OZONE NAAQS [Primary and Secondary]

Table with 5 columns: Designated area 1, Date 2, Type, Date 2, Type. Rows include Doña Ana County (Sunland Park Area), NM, Doña Ana County (part), and various other counties in New Mexico.

NEW MEXICO—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Valencia County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 22. Section 81.333 is amended by revising the table titled “New York—

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.333 New York.

\* \* \* \* \*

NEW YORK—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
New York-Northern New Jersey-Long Island, NY-NJ-CT .....		Nonattainment .....		Moderate.
Bronx County.				
Kings County.				
Nassau County.				
New York County.				
Queens County.				
Richmond County.				
Rockland County.				
Suffolk County.				
Westchester County.				
Poughkeepsie Area, NY .....		Attainment/ Unclassifiable.		
Dutchess County.				
Orange County.				
Putnam County.				
Kingston Area, NY .....		Attainment/ Unclassifiable.		
Ulster County.				
Albany County .....	1/16/18	Attainment/ Unclassifiable.		
Allegany County .....	1/16/18	Attainment/ Unclassifiable.		
Broome County .....	1/16/18	Attainment/ Unclassifiable.		
Cattaraugus County .....	1/16/18	Attainment/ Unclassifiable.		
Cayuga County .....	1/16/18	Attainment/ Unclassifiable.		
Chautauqua County .....	1/16/18	Attainment/ Unclassifiable.		
Chemung County .....	1/16/18	Attainment/ Unclassifiable.		
Chenango County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....	1/16/18	Attainment/ Unclassifiable.		
Columbia County .....	1/16/18	Attainment/ Unclassifiable.		
Cortland County .....	1/16/18	Attainment/ Unclassifiable.		
Delaware County .....	1/16/18	Attainment/ Unclassifiable.		
Erie County .....	1/16/18	Attainment/ Unclassifiable.		
Essex County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Fulton County .....	1/16/18	Attainment/ Unclassifiable.		
Genesee County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....	1/16/18	Attainment/ Unclassifiable.		
Hamilton County .....	1/16/18	Attainment/ Unclassifiable.		
Herkimer County .....	1/16/18	Attainment/ Unclassifiable.		

NEW YORK—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Lewis County .....	1/16/18	Attainment/ Unclassifiable.		
Livingston County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....	1/16/18	Attainment/ Unclassifiable.		
Niagara County .....	1/16/18	Attainment/ Unclassifiable.		
Oneida County .....	1/16/18	Attainment/ Unclassifiable.		
Onondaga County .....	1/16/18	Attainment/ Unclassifiable.		
Ontario County .....	1/16/18	Attainment/ Unclassifiable.		
Orleans County .....	1/16/18	Attainment/ Unclassifiable.		
Oswego County .....	1/16/18	Attainment/ Unclassifiable.		
Otsego County .....	1/16/18	Attainment/ Unclassifiable.		
Rensselaer County .....	1/16/18	Attainment/ Unclassifiable.		
St. Lawrence County .....	1/16/18	Attainment/ Unclassifiable.		
Saratoga County .....	1/16/18	Attainment/ Unclassifiable.		
Schenectady County .....	1/16/18	Attainment/ Unclassifiable.		
Schoharie County .....	1/16/18	Attainment/ Unclassifiable.		
Schuyler County .....	1/16/18	Attainment/ Unclassifiable.		
Seneca County .....	1/16/18	Attainment/ Unclassifiable.		
Steuben County .....	1/16/18	Attainment/ Unclassifiable.		
Sullivan County .....	1/16/18	Attainment/ Unclassifiable.		
Tioga County .....	1/16/18	Attainment/ Unclassifiable.		
Tompkins County .....	1/16/18	Attainment/ Unclassifiable.		
Warren County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Wyoming County .....	1/16/18	Attainment/ Unclassifiable.		
Yates County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.  
<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 23. Section 81.336 is amended by revising the table titled “Ohio—2015 8-

Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.336 Ohio.

\* \* \* \* \*

OHIO—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Cincinnati, OH-KY .....		Nonattainment .....		Marginal.

OHIO—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Butler County. Clermont County. Hamilton County. Warren County. Cleveland, OH .....		Nonattainment .....		Marginal.
Cuyahoga County. Geauga County. Lake County. Lorain County. Medina County. Portage County. Summit County. Columbus, OH .....		Nonattainment .....		Marginal.
Delaware County. Fairfield County. Franklin County. Licking County. Adams County .....	1/16/18	Attainment/ Unclassifiable.		
Allen County .....	1/16/18	Attainment/ Unclassifiable.		
Ashland County .....	1/16/18	Attainment/ Unclassifiable.		
Ashtabula County .....		Attainment/ Unclassifiable.		
Athens County .....	1/16/18	Attainment/ Unclassifiable.		
Auglaize County .....	1/16/18	Attainment/ Unclassifiable.		
Belmont County .....	1/16/18	Attainment/ Unclassifiable.		
Brown County .....		Attainment/ Unclassifiable.		
Champaign County .....	1/16/18	Attainment/ Unclassifiable.		
Clark County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....		Attainment/ Unclassifiable.		
Columbiana County .....	1/16/18	Attainment/ Unclassifiable.		
Coshocton County .....	1/16/18	Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Darke County .....	1/16/18	Attainment/ Unclassifiable.		
Defiance County .....	1/16/18	Attainment/ Unclassifiable.		
Erie County .....		Attainment/ Unclassifiable.		
Fayette County .....		Attainment/ Unclassifiable.		
Fulton County .....	1/16/18	Attainment/ Unclassifiable.		
Gallia County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....		Attainment/ Unclassifiable.		
Guernsey County .....		Attainment/ Unclassifiable.		
Hancock County .....	1/16/18	Attainment/ Unclassifiable.		
Hardin County .....	1/16/18	Attainment/ Unclassifiable.		
Harrison County .....	1/16/18	Attainment/ Unclassifiable.		
Henry County .....	1/16/18	Attainment/ Unclassifiable.		
Highland County .....	1/16/18	Attainment/ Unclassifiable.		
Hocking County .....		Attainment/ Unclassifiable.		
Holmes County .....	1/16/18	Attainment/ Unclassifiable.		
Huron County .....		Attainment/ Unclassifiable.		

OHIO—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Knox County .....		Attainment/ Unclassifiable.		
Lawrence County .....	1/16/18	Attainment/ Unclassifiable.		
Logan County .....		Attainment/ Unclassifiable.		
Lucas County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....		Attainment/ Unclassifiable.		
Mahoning County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....		Attainment/ Unclassifiable.		
Meigs County .....	1/16/18	Attainment/ Unclassifiable.		
Mercer County .....	1/16/18	Attainment/ Unclassifiable.		
Miami County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....		Attainment/ Unclassifiable.		
Morgan County .....	1/16/18	Attainment/ Unclassifiable.		
Morrow County .....		Attainment/ Unclassifiable.		
Muskingum County .....		Attainment/ Unclassifiable.		
Noble County .....	1/16/18	Attainment/ Unclassifiable.		
Ottawa County .....	1/16/18	Attainment/ Unclassifiable.		
Paulding County .....	1/16/18	Attainment/ Unclassifiable.		
Perry County .....		Attainment/ Unclassifiable.		
Pickaway County .....		Attainment/ Unclassifiable.		
Pike County .....	1/16/18	Attainment/ Unclassifiable.		
Preble County .....		Attainment/ Unclassifiable.		
Putnam County .....	1/16/18	Attainment/ Unclassifiable.		
Richland County .....	1/16/18	Attainment/ Unclassifiable.		
Ross County .....		Attainment/ Unclassifiable.		
Sandusky County .....	1/16/18	Attainment/ Unclassifiable.		
Scioto County .....	1/16/18	Attainment/ Unclassifiable.		
Seneca County .....	1/16/18	Attainment/ Unclassifiable.		
Shelby County .....	1/16/18	Attainment/ Unclassifiable.		
Stark County .....		Attainment/ Unclassifiable.		
Trumbull County .....		Attainment/ Unclassifiable.		
Tuscarawas County .....		Attainment/ Unclassifiable.		
Union County .....		Attainment/ Unclassifiable.		
Vinton County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Williams County .....	1/16/18	Attainment/ Unclassifiable.		



OHIO—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Wood County .....	1/16/18	Attainment/ Unclassifiable.		
Wyandot County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 24. Section 81.337 is amended by revising the table titled “Oklahoma—

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.337 Oklahoma.

\* \* \* \* \*

OKLAHOMA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Adair County .....	1/16/18	Attainment/ Unclassifiable.		
Alfalfa County .....	1/16/18	Attainment/ Unclassifiable.		
Atoka County .....	1/16/18	Attainment/ Unclassifiable.		
Beaver County .....	1/16/18	Attainment/ Unclassifiable.		
Beckham County .....	1/16/18	Attainment/ Unclassifiable.		
Blaine County .....	1/16/18	Attainment/ Unclassifiable.		
Bryan County .....		Attainment/ Unclassifiable.		
Caddo County .....	1/16/18	Attainment/ Unclassifiable.		
Canadian County .....	1/16/18	Attainment/ Unclassifiable.		
Carter County .....	1/16/18	Attainment/ Unclassifiable.		
Cherokee County .....	1/16/18	Attainment/ Unclassifiable.		
Choctaw County .....	1/16/18	Attainment/ Unclassifiable.		
Cimarron County .....	1/16/18	Attainment/ Unclassifiable.		
Cleveland County .....	1/16/18	Attainment/ Unclassifiable.		
Coal County .....	1/16/18	Attainment/ Unclassifiable.		
Comanche County .....	1/16/18	Attainment/ Unclassifiable.		
Cotton County .....	1/16/18	Attainment/ Unclassifiable.		
Craig County .....	1/16/18	Attainment/ Unclassifiable.		
Creek County .....	1/16/18	Attainment/ Unclassifiable.		
Custer County .....	1/16/18	Attainment/ Unclassifiable.		
Delaware County .....	1/16/18	Attainment/ Unclassifiable.		
Dewey County .....	1/16/18	Attainment/ Unclassifiable.		
Ellis County .....	1/16/18	Attainment/ Unclassifiable.		
Garfield County .....	1/16/18	Attainment/ Unclassifiable.		
Garvin County .....	1/16/18	Attainment/ Unclassifiable.		
Grady County .....	1/16/18	Attainment/ Unclassifiable.		
Grant County .....	1/16/18	Attainment/ Unclassifiable.		

OKLAHOMA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Greer County .....	1/16/18	Attainment/ Unclassifiable.		
Harmon County .....	1/16/18	Attainment/ Unclassifiable.		
Harper County .....	1/16/18	Attainment/ Unclassifiable.		
Haskell County .....	1/16/18	Attainment/ Unclassifiable.		
Hughes County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Johnston County .....	1/16/18	Attainment/ Unclassifiable.		
Kay County .....	1/16/18	Attainment/ Unclassifiable.		
Kingfisher County .....	1/16/18	Attainment/ Unclassifiable.		
Kiowa County .....	1/16/18	Attainment/ Unclassifiable.		
Latimer County .....	1/16/18	Attainment/ Unclassifiable.		
Le Flore County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Logan County .....	1/16/18	Attainment/ Unclassifiable.		
Love County .....	1/16/18	Attainment/ Unclassifiable.		
McCain County .....	1/16/18	Attainment/ Unclassifiable.		
McCurtain County .....	1/16/18	Attainment/ Unclassifiable.		
McIntosh County .....	1/16/18	Attainment/ Unclassifiable.		
Major County .....	1/16/18	Attainment/ Unclassifiable.		
Marshall County .....	1/16/18	Attainment/ Unclassifiable.		
Mayes County .....	1/16/18	Attainment/ Unclassifiable.		
Murray County .....	1/16/18	Attainment/ Unclassifiable.		
Muskogee County .....	1/16/18	Attainment/ Unclassifiable.		
Noble County .....	1/16/18	Attainment/ Unclassifiable.		
Nowata County .....	1/16/18	Attainment/ Unclassifiable.		
Okfuskee County .....	1/16/18	Attainment/ Unclassifiable.		
Oklahoma County .....	1/16/18	Attainment/ Unclassifiable.		
Okmulgee County .....	1/16/18	Attainment/ Unclassifiable.		
Osage County .....	1/16/18	Attainment/ Unclassifiable.		
Ottawa County .....	1/16/18	Attainment/ Unclassifiable.		
Pawnee County .....	1/16/18	Attainment/ Unclassifiable.		
Payne County .....	1/16/18	Attainment/ Unclassifiable.		
Pittsburg County .....	1/16/18	Attainment/ Unclassifiable.		
Pontotoc County .....	1/16/18	Attainment/ Unclassifiable.		
Pottawatomie County .....	1/16/18	Attainment/ Unclassifiable.		
Pushmataha County .....	1/16/18	Attainment/ Unclassifiable.		
Roger Mills County .....	1/16/18	Attainment/ Unclassifiable.		
Rogers County .....	1/16/18	Attainment/ Unclassifiable.		

OKLAHOMA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Seminole County .....	1/16/18	Attainment/ Unclassifiable.		
Sequoyah County .....	1/16/18	Attainment/ Unclassifiable.		
Stephens County .....	1/16/18	Attainment/ Unclassifiable.		
Texas County .....	1/16/18	Attainment/ Unclassifiable.		
Tillman County .....	1/16/18	Attainment/ Unclassifiable.		
Tulsa County .....	1/16/18	Attainment/ Unclassifiable.		
Wagoner County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Washita County .....	1/16/18	Attainment/ Unclassifiable.		
Woods County .....	1/16/18	Attainment/ Unclassifiable.		
Woodward County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 25. Section 81.338 is amended by revising the table titled “Oregon—2015

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.338 Oregon.

\* \* \* \* \*

OREGON—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Baker County .....	1/16/18	Attainment/ Unclassifiable.		
Benton County .....		Attainment/ Unclassifiable.		
Clackamas County .....		Attainment/ Unclassifiable.		
Clatsop County .....	1/16/18	Attainment/ Unclassifiable.		
Columbia County .....		Attainment/ Unclassifiable.		
Coos County .....	1/16/18	Attainment/ Unclassifiable.		
Crook County .....	1/16/18	Attainment/ Unclassifiable.		
Curry County .....	1/16/18	Attainment/ Unclassifiable.		
Deschutes County .....	1/16/18	Attainment/ Unclassifiable.		
Douglas County .....	1/16/18	Attainment/ Unclassifiable.		
Gilliam County .....	1/16/18	Attainment/ Unclassifiable.		
Grant County .....	1/16/18	Attainment/ Unclassifiable.		
Harney County .....	1/16/18	Attainment/ Unclassifiable.		
Hood River County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Josephine County .....	1/16/18	Attainment/ Unclassifiable.		
Klamath County .....	1/16/18	Attainment/ Unclassifiable.		

OREGON—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Lake County .....	1/16/18	Attainment/ Unclassifiable.		
Lane County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Linn County .....		Attainment/ Unclassifiable.		
Malheur County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....		Attainment/ Unclassifiable.		
Morrow County .....	1/16/18	Attainment/ Unclassifiable.		
Multnomah County .....		Attainment/ Unclassifiable.		
Polk County .....		Attainment/ Unclassifiable.		
Sherman County .....	1/16/18	Attainment/ Unclassifiable.		
Tillamook County .....	1/16/18	Attainment/ Unclassifiable.		
Umatilla County .....	1/16/18	Attainment/ Unclassifiable.		
Union County .....	1/16/18	Attainment/ Unclassifiable.		
Wallowa County .....	1/16/18	Attainment/ Unclassifiable.		
Wasco County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....		Attainment/ Unclassifiable.		
Wheeler County .....	1/16/18	Attainment/ Unclassifiable.		
Yamhill County .....		Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 26. Section 81.339 is amended by revising the table titled “Pennsylvania—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.339 Pennsylvania.**  
\* \* \* \* \*

PENNSYLVANIA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE .....		Nonattainment .....		Marginal.
Bucks County.				
Chester County.				
Delaware County.				
Montgomery County.				
Philadelphia County.				
Adams County .....		Attainment/ Unclassifiable.		
Allegheny County .....	1/16/18	Attainment/ Unclassifiable.		
Armstrong County .....	1/16/18	Attainment/ Unclassifiable.		
Beaver County .....	1/16/18	Attainment/ Unclassifiable.		
Bedford County .....	1/16/18	Attainment/ Unclassifiable.		
Berks County .....		Attainment/ Unclassifiable.		
Blair County .....	1/16/18	Attainment/ Unclassifiable.		
Bradford County .....	1/16/18	Attainment/ Unclassifiable.		

PENNSYLVANIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Butler County .....	1/16/18	Attainment/ Unclassifiable.		
Cambria County .....	1/16/18	Attainment/ Unclassifiable.		
Cameron County .....	1/16/18	Attainment/ Unclassifiable.		
Centre County .....	1/16/18	Attainment/ Unclassifiable.		
Clarion County .....	1/16/18	Attainment/ Unclassifiable.		
Clearfield County .....	1/16/18	Attainment/ Unclassifiable.		
Clinton County .....	1/16/18	Attainment/ Unclassifiable.		
Columbia County .....	1/16/18	Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Cumberland County .....		Attainment/ Unclassifiable.		
Dauphin County .....		Attainment/ Unclassifiable.		
Elk County .....	1/16/18	Attainment/ Unclassifiable.		
Erie County .....	1/16/18	Attainment/ Unclassifiable.		
Fayette County .....	1/16/18	Attainment/ Unclassifiable.		
Forest County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....		Attainment/ Unclassifiable.		
Fulton County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....	1/16/18	Attainment/ Unclassifiable.		
Huntingdon County .....	1/16/18	Attainment/ Unclassifiable.		
Indiana County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Juniata County .....	1/16/18	Attainment/ Unclassifiable.		
Lackawanna County .....	1/16/18	Attainment/ Unclassifiable.		
Lancaster County .....		Attainment/ Unclassifiable.		
Lawrence County .....	1/16/18	Attainment/ Unclassifiable.		
Lebanon County .....		Attainment/ Unclassifiable.		
Luzerne County .....	1/16/18	Attainment/ Unclassifiable.		
Lycoming County .....	1/16/18	Attainment/ Unclassifiable.		
McKean County .....	1/16/18	Attainment/ Unclassifiable.		
Mercer County .....	1/16/18	Attainment/ Unclassifiable.		
Mifflin County .....	1/16/18	Attainment/ Unclassifiable.		
Montour County .....	1/16/18	Attainment/ Unclassifiable.		
Northumberland County .....	1/16/18	Attainment/ Unclassifiable.		
Perry County .....		Attainment/ Unclassifiable.		
Potter County .....	1/16/18	Attainment/ Unclassifiable.		
Schuylkill County .....		Attainment/ Unclassifiable.		
Snyder County .....	1/16/18	Attainment/ Unclassifiable.		
Somerset County .....	1/16/18	Attainment/ Unclassifiable.		
Sullivan County .....	1/16/18	Attainment/ Unclassifiable.		

PENNSYLVANIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Susquehanna County .....	1/16/18	Attainment/ Unclassifiable.		
Tioga County .....	1/16/18	Attainment/ Unclassifiable.		
Union County .....	1/16/18	Attainment/ Unclassifiable.		
Venango County .....	1/16/18	Attainment/ Unclassifiable.		
Warren County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Westmoreland County .....	1/16/18	Attainment/ Unclassifiable.		
Wyoming County .....	1/16/18	Attainment/ Unclassifiable.		
York County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.340 Rhode Island.**  
 ■ 27. Section 81.340 is amended by revising the table titled “Rhode Island—

RHODE ISLAND—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Bristol County .....	1/16/18	Attainment/ Unclassifiable.		
Kent County .....	1/16/18	Attainment/ Unclassifiable.		
Newport County .....	1/16/18	Attainment/ Unclassifiable.		
Providence County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.344 Texas.**  
 ■ 28. Section 81.344 is amended by revising the table titled “Texas—2015 8-

TEXAS—2015 8-HOUR OZONE NAAQS (PRIMARY AND SECONDARY)

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Dallas-Fort Worth, TX .....		Nonattainment .....		Marginal.
Collin County.				
Dallas County.				
Denton County.				
Ellis County.				
Johnson County.				
Kaufman County.				
Parker County.				
Tarrant County.				
Wise County.				
Houston-Galveston-Brazoria, TX .....		Nonattainment .....		Marginal.
Brazoria County.				

## TEXAS—2015 8-HOUR OZONE NAAQS (PRIMARY AND SECONDARY)—Continued

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Chambers County. Fort Bend County. Galveston County. Harris County. Montgomery County. Rest of State:				
Anderson County .....	1/16/18	Attainment/ Unclassifiable.		
Andrews County .....	1/16/18	Attainment/ Unclassifiable.		
Angelina County .....	1/16/18	Attainment/ Unclassifiable.		
Aransas County .....	1/16/18	Attainment/ Unclassifiable.		
Archer County .....	1/16/18	Attainment/ Unclassifiable.		
Armstrong County .....	1/16/18	Attainment/ Unclassifiable.		
Austin County .....		Attainment/ Unclassifiable.		
Bailey County .....	1/16/18	Attainment/ Unclassifiable.		
Bastrop County .....	1/16/18	Attainment/ Unclassifiable.		
Baylor County .....	1/16/18	Attainment/ Unclassifiable.		
Bee County .....	1/16/18	Attainment/ Unclassifiable.		
Bell County .....	1/16/18	Attainment/ Unclassifiable.		
Blanco County .....	1/16/18	Attainment/ Unclassifiable.		
Borden County .....	1/16/18	Attainment/ Unclassifiable.		
Bosque County .....		Attainment/ Unclassifiable.		
Bowie County .....	1/16/18	Attainment/ Unclassifiable.		
Brazos County .....	1/16/18	Attainment/ Unclassifiable.		
Brewster County .....	1/16/18	Attainment/ Unclassifiable.		
Briscoe County .....	1/16/18	Attainment/ Unclassifiable.		
Brooks County .....	1/16/18	Attainment/ Unclassifiable.		
Brown County .....	1/16/18	Attainment/ Unclassifiable.		
Burleson County .....	1/16/18	Attainment/ Unclassifiable.		
Burnet County .....	1/16/18	Attainment/ Unclassifiable.		
Caldwell County .....	1/16/18	Attainment/ Unclassifiable.		
Calhoun County .....	1/16/18	Attainment/ Unclassifiable.		
Callahan County .....	1/16/18	Attainment/ Unclassifiable.		
Cameron County .....	1/16/18	Attainment/ Unclassifiable.		
Camp County .....	1/16/18	Attainment/ Unclassifiable.		
Carson County .....	1/16/18	Attainment/ Unclassifiable.		
Cass County .....	1/16/18	Attainment/ Unclassifiable.		
Castro County .....	1/16/18	Attainment/ Unclassifiable.		
Cherokee County .....	1/16/18	Attainment/ Unclassifiable.		
Childress County .....	1/16/18	Attainment/ Unclassifiable.		
Clay County .....	1/16/18	Attainment/ Unclassifiable.		
Cochran County .....	1/16/18	Attainment/ Unclassifiable.		
Coke County .....	1/16/18	Attainment/ Unclassifiable.		
Coleman County .....	1/16/18	Attainment/ Unclassifiable.		

TEXAS—2015 8-HOUR OZONE NAAQS (PRIMARY AND SECONDARY)—Continued

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Collingsworth County .....	1/16/18	Attainment/ Unclassifiable.		
Colorado County .....	1/16/18	Attainment/ Unclassifiable.		
Comanche County .....	1/16/18	Attainment/ Unclassifiable.		
Concho County .....	1/16/18	Attainment/ Unclassifiable.		
Coryell County .....	1/16/18	Attainment/ Unclassifiable.		
Cooke County .....		Attainment/ Unclassifiable.		
Cottle County .....	1/16/18	Attainment/ Unclassifiable.		
Crane County .....	1/16/18	Attainment/ Unclassifiable.		
Crockett County .....	1/16/18	Attainment/ Unclassifiable.		
Crosby County .....	1/16/18	Attainment/ Unclassifiable.		
Culberson County .....	1/16/18	Attainment/ Unclassifiable.		
Dallam County .....	1/16/18	Attainment/ Unclassifiable.		
Dawson County .....	1/16/18	Attainment/ Unclassifiable.		
Deaf Smith County .....	1/16/18	Attainment/ Unclassifiable.		
Delta County .....	1/16/18	Attainment/ Unclassifiable.		
DeWitt County .....	1/16/18	Attainment/ Unclassifiable.		
Dickens County .....	1/16/18	Attainment/ Unclassifiable.		
Dimmit County .....	1/16/18	Attainment/ Unclassifiable.		
Donley County .....	1/16/18	Attainment/ Unclassifiable.		
Duval County .....	1/16/18	Attainment/ Unclassifiable.		
Eastland County .....	1/16/18	Attainment/ Unclassifiable.		
Ector County .....	1/16/18	Attainment/ Unclassifiable.		
Edwards County .....	1/16/18	Attainment/ Unclassifiable.		
El Paso County .....		Attainment/ Unclassifiable.		
Erath County .....	1/16/18	Attainment/ Unclassifiable.		
Falls County .....	1/16/18	Attainment/ Unclassifiable.		
Fannin County .....		Attainment/ Unclassifiable.		
Fayette County .....	1/16/18	Attainment/ Unclassifiable.		
Fisher County .....	1/16/18	Attainment/ Unclassifiable.		
Floyd County .....	1/16/18	Attainment/ Unclassifiable.		
Foard County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Freestone County .....	1/16/18	Attainment/ Unclassifiable.		
Frio County .....	1/16/18	Attainment/ Unclassifiable.		
Gaines County .....	1/16/18	Attainment/ Unclassifiable.		
Garza County .....	1/16/18	Attainment/ Unclassifiable.		
Gillespie County .....	1/16/18	Attainment/ Unclassifiable.		
Glasscock County .....	1/16/18	Attainment/ Unclassifiable.		
Goliad County .....	1/16/18	Attainment/ Unclassifiable.		
Gonzales County .....	1/16/18	Attainment/ Unclassifiable.		



## TEXAS—2015 8-HOUR OZONE NAAQS (PRIMARY AND SECONDARY)—Continued

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Gray County .....	1/16/18	Attainment/ Unclassifiable.		
Grayson County .....		Attainment/ Unclassifiable.		
Gregg County .....	1/16/18	Attainment/ Unclassifiable.		
Grimes County .....		Attainment/ Unclassifiable.		
Hale County .....	1/16/18	Attainment/ Unclassifiable.		
Hall County .....	1/16/18	Attainment/ Unclassifiable.		
Hamilton County .....	1/16/18	Attainment/ Unclassifiable.		
Hansford County .....	1/16/18	Attainment/ Unclassifiable.		
Hardeman County .....	1/16/18	Attainment/ Unclassifiable.		
Hardin County .....	1/16/18	Attainment/ Unclassifiable.		
Harrison County .....	1/16/18	Attainment/ Unclassifiable.		
Hartley County .....	1/16/18	Attainment/ Unclassifiable.		
Haskell County .....	1/16/18	Attainment/ Unclassifiable.		
Hays County .....	1/16/18	Attainment/ Unclassifiable.		
Hemphill County .....	1/16/18	Attainment/ Unclassifiable.		
Henderson County .....		Attainment/ Unclassifiable.		
Hidalgo County .....	1/16/18	Attainment/ Unclassifiable.		
Hill County .....		Attainment/ Unclassifiable.		
Hockley County .....	1/16/18	Attainment/ Unclassifiable.		
Hood County .....		Attainment/ Unclassifiable.		
Hopkins County .....		Attainment/ Unclassifiable.		
Houston County .....	1/16/18	Attainment/ Unclassifiable.		
Howard County .....	1/16/18	Attainment/ Unclassifiable.		
Hudspeth County .....		Attainment/ Unclassifiable.		
Hunt County .....		Attainment/ Unclassifiable.		
Hutchinson County .....	1/16/18	Attainment/ Unclassifiable.		
Irion County .....	1/16/18	Attainment/ Unclassifiable.		
Jack County .....		Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jasper County .....	1/16/18	Attainment/ Unclassifiable.		
Jeff Davis County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Jim Hogg County .....	1/16/18	Attainment/ Unclassifiable.		
Jim Wells County .....	1/16/18	Attainment/ Unclassifiable.		
Jones County .....	1/16/18	Attainment/ Unclassifiable.		
Karnes County .....	1/16/18	Attainment/ Unclassifiable.		
Kenedy County .....	1/16/18	Attainment/ Unclassifiable.		
Kent County .....	1/16/18	Attainment/ Unclassifiable.		
Kerr County .....	1/16/18	Attainment/ Unclassifiable.		
Kimble County .....	1/16/18	Attainment/ Unclassifiable.		

TEXAS—2015 8-HOUR OZONE NAAQS (PRIMARY AND SECONDARY)—Continued

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
King County .....	1/16/18	Attainment/ Unclassifiable.		
Kinney County .....	1/16/18	Attainment/ Unclassifiable.		
Kleberg County .....	1/16/18	Attainment/ Unclassifiable.		
Knox County .....	1/16/18	Attainment/ Unclassifiable.		
Lamar County .....	1/16/18	Attainment/ Unclassifiable.		
Lamb County .....	1/16/18	Attainment/ Unclassifiable.		
Lampasas County .....	1/16/18	Attainment/ Unclassifiable.		
La Salle County .....	1/16/18	Attainment/ Unclassifiable.		
Lavaca County .....	1/16/18	Attainment/ Unclassifiable.		
Lee County .....	1/16/18	Attainment/ Unclassifiable.		
Leon County .....	1/16/18	Attainment/ Unclassifiable.		
Liberty County .....		Attainment/ Unclassifiable.		
Limestone County .....	1/16/18	Attainment/ Unclassifiable.		
Lipscomb County .....	1/16/18	Attainment/ Unclassifiable.		
Live Oak County .....	1/16/18	Attainment/ Unclassifiable.		
Llano County .....	1/16/18	Attainment/ Unclassifiable.		
Loving County .....	1/16/18	Attainment/ Unclassifiable.		
Lubbock County .....	1/16/18	Attainment/ Unclassifiable.		
Lynn County .....	1/16/18	Attainment/ Unclassifiable.		
Matagorda County .....		Attainment/ Unclassifiable.		
McCulloch County .....	1/16/18	Attainment/ Unclassifiable.		
McLennan County .....	1/16/18	Attainment/ Unclassifiable.		
McMullen County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....	1/16/18	Attainment/ Unclassifiable.		
Martin County .....	1/16/18	Attainment/ Unclassifiable.		
Mason County .....	1/16/18	Attainment/ Unclassifiable.		
Maverick County .....	1/16/18	Attainment/ Unclassifiable.		
Menard County .....	1/16/18	Attainment/ Unclassifiable.		
Midland County .....	1/16/18	Attainment/ Unclassifiable.		
Milam County .....	1/16/18	Attainment/ Unclassifiable.		
Mills County .....	1/16/18	Attainment/ Unclassifiable.		
Mitchell County .....	1/16/18	Attainment/ Unclassifiable.		
Montague County .....	1/16/18	Attainment/ Unclassifiable.		
Moore County .....	1/16/18	Attainment/ Unclassifiable.		
Morris County .....	1/16/18	Attainment/ Unclassifiable.		
Motley County .....	1/16/18	Attainment/ Unclassifiable.		
Nacogdoches County .....	1/16/18	Attainment/ Unclassifiable.		
Navarro County .....		Attainment/ Unclassifiable.		
Newton County .....	1/16/18	Attainment/ Unclassifiable.		

## TEXAS—2015 8-HOUR OZONE NAAQS (PRIMARY AND SECONDARY)—Continued

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Nolan County .....	1/16/18	Attainment/ Unclassifiable.		
Nueces County .....	1/16/18	Attainment/ Unclassifiable.		
Ochiltree County .....	1/16/18	Attainment/ Unclassifiable.		
Oldham County .....	1/16/18	Attainment/ Unclassifiable.		
Orange County .....	1/16/18	Attainment/ Unclassifiable.		
Palo Pinto County .....		Attainment/ Unclassifiable.		
Panola County .....	1/16/18	Attainment/ Unclassifiable.		
Parmer County .....	1/16/18	Attainment/ Unclassifiable.		
Pecos County .....	1/16/18	Attainment/ Unclassifiable.		
Polk County .....	1/16/18	Attainment/ Unclassifiable.		
Potter County .....	1/16/18	Attainment/ Unclassifiable.		
Presidio County .....	1/16/18	Attainment/ Unclassifiable.		
Rains County .....	1/16/18	Attainment/ Unclassifiable.		
Randall County .....	1/16/18	Attainment/ Unclassifiable.		
Reagan County .....	1/16/18	Attainment/ Unclassifiable.		
Real County .....	1/16/18	Attainment/ Unclassifiable.		
Red River County .....	1/16/18	Attainment/ Unclassifiable.		
Reeves County .....	1/16/18	Attainment/ Unclassifiable.		
Refugio County .....	1/16/18	Attainment/ Unclassifiable.		
Roberts County .....	1/16/18	Attainment/ Unclassifiable.		
Robertson County .....	1/16/18	Attainment/ Unclassifiable.		
Rockwall County .....		Attainment/ Unclassifiable.		
Runnels County .....	1/16/18	Attainment/ Unclassifiable.		
Rusk County .....	1/16/18	Attainment/ Unclassifiable.		
Sabine County .....	1/16/18	Attainment/ Unclassifiable.		
San Augustine County .....	1/16/18	Attainment/ Unclassifiable.		
San Jacinto County .....		Attainment/ Unclassifiable.		
San Patricio County .....	1/16/18	Attainment/ Unclassifiable.		
San Saba County .....	1/16/18	Attainment/ Unclassifiable.		
Schleicher County .....	1/16/18	Attainment/ Unclassifiable.		
Scurry County .....	1/16/18	Attainment/ Unclassifiable.		
Shackelford County .....	1/16/18	Attainment/ Unclassifiable.		
Shelby County .....	1/16/18	Attainment/ Unclassifiable.		
Sherman County .....	1/16/18	Attainment/ Unclassifiable.		
Smith County .....	1/16/18	Attainment/ Unclassifiable.		
Somervell County .....		Attainment/ Unclassifiable.		
Starr County .....	1/16/18	Attainment/ Unclassifiable.		
Stephens County .....	1/16/18	Attainment/ Unclassifiable.		
Sterling County .....	1/16/18	Attainment/ Unclassifiable.		
Stonewall County .....	1/16/18	Attainment/ Unclassifiable.		

TEXAS—2015 8-HOUR OZONE NAAQS (PRIMARY AND SECONDARY)—Continued

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Sutton County .....	1/16/18	Attainment/ Unclassifiable.		
Swisher County .....	1/16/18	Attainment/ Unclassifiable.		
Taylor County .....	1/16/18	Attainment/ Unclassifiable.		
Terrell County .....	1/16/18	Attainment/ Unclassifiable.		
Terry County .....	1/16/18	Attainment/ Unclassifiable.		
Throckmorton County .....	1/16/18	Attainment/ Unclassifiable.		
Titus County .....	1/16/18	Attainment/ Unclassifiable.		
Tom Green County .....	1/16/18	Attainment/ Unclassifiable.		
Travis County .....	1/16/18	Attainment/ Unclassifiable.		
Trinity County .....		Attainment/ Unclassifiable.		
Tyler County .....	1/16/18	Attainment/ Unclassifiable.		
Upshur County .....	1/16/18	Attainment/ Unclassifiable.		
Upton County .....	1/16/18	Attainment/ Unclassifiable.		
Uvalde County .....	1/16/18	Attainment/ Unclassifiable.		
Val Verde County .....	1/16/18	Attainment/ Unclassifiable.		
Van Zandt County .....	1/16/18	Attainment/ Unclassifiable.		
Victoria County .....	1/16/18	Attainment/ Unclassifiable.		
Ward County .....	1/16/18	Attainment/ Unclassifiable.		
Webb County .....	1/16/18	Attainment/ Unclassifiable.		
Walker County .....		Attainment/ Unclassifiable.		
Waller County .....		Attainment/ Unclassifiable.		
Washington County .....		Attainment/ Unclassifiable.		
Wharton County .....		Attainment/ Unclassifiable.		
Wheeler County .....	1/16/18	Attainment/ Unclassifiable.		
Wichita County .....	1/16/18	Attainment/ Unclassifiable.		
Wilbarger County .....	1/16/18	Attainment/ Unclassifiable.		
Willacy County .....	1/16/18	Attainment/ Unclassifiable.		
Williamson County .....	1/16/18	Attainment/ Unclassifiable.		
Winkler County .....	1/16/18	Attainment/ Unclassifiable.		
Wood County .....	1/16/18	Attainment/ Unclassifiable.		
Yoakum County .....	1/16/18	Attainment/ Unclassifiable.		
Young County .....	1/16/18	Attainment/ Unclassifiable.		
Zapata County .....	1/16/18	Attainment/ Unclassifiable.		
Zavala County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 29. Section 81.345 is amended by revising the table titled “Utah—2015 8-

Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.345 Utah.

\* \* \* \* \*

UTAH—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Northern Wasatch Front, UT Weber County (part): All portions of Weber County west of and including Townships 5, 6, and that portion of 7 North Range 1 West that are west of the ridgeline that traces the Wasatch Mountains from the southeast corner of the township to the easternmost extension of the county boundary within the township. Tooele County (part): In Tooele County, the following Townships or portions thereof as noted (including Tooele City): Township 1 South Range 3 West. Township 2 South Range 3 West. Township 3 South Range 3 West. Township 3 South Range 4 West. Township 2 South Range 4 West. Township 2 South Range 5 West. Township 3 South Range 5 West. Township 3 South Range 6 West. Township 2 South Range 6 West. Township 1 South Range 6 West. Township 1 South Range 5 West. Township 1 South Range 4 West. Township 1 South Range 7 West. Township 2 South Range 7 West. Township 3 South Range 7 West. All Sections within Township 4 South Range 7 West except for Sections 29, 30, 31 and 32. Township 4 South Range 6 West. Township 4 South Range 5 West. Township 4 South Range 4 West. Township 4 South Range 3 West. Salt Lake County. Davis County.		Nonattainment		Marginal.
Southern Wasatch Front, UT Utah County (part): All portions of Utah County west of and including any portion of the following townships located within Utah County: Township 3 South Range 1 East. Township 4 South Range 2 East. Township 5 South Range 3 East. Township 6 South Range 3 East. Township 7 South Range 3 East. Township 8 South Range 3 East. Township 9 South Range 3 East. Township 10 South Range 2 East.		Nonattainment		Marginal.
Uinta Basin, UT <sup>3</sup> Duchesne County (part): All land in Duchesne County below a contiguous external perimeter of 6,250 ft. in elevation. All areas within that contiguous external perimeter are included in the nonattainment area—including mesas and buttes which may have an elevation greater than 6,250 ft., but which are surrounded on all sides by land lower than 6,250 ft. Additionally, areas that fall outside the 6,250 ft. contiguous external perimeter that have elevations less than 6,250 ft. are excluded from the nonattainment area. The boundary is defined by the 6,250 ft. contour line created from the 2013 USGS 10-meter seamless Digital Elevation Model (USGS NED n41w110 1/3 arc-second 2013 1 × 1 degree IMG).		Nonattainment		Marginal.
Uintah County (part): All land in Uintah County below a contiguous external perimeter of 6,250 ft. in elevation. All areas within that contiguous external perimeter are included in the nonattainment area—including mesas and buttes which may have an elevation greater than 6,250 ft., but which are surrounded on all sides by land lower than 6,250 ft. Additionally, areas that fall outside the 6,250 ft. contiguous external perimeter that have elevations less than 6,250 ft. are excluded from the nonattainment area. The boundary is defined by the 6,250 ft. contour line created from the 2013 USGS 10-meter seamless Digital Elevation Model (USGS NED n41w110 1/3 arc-second 2013 1 × 1 degree IMG).				
Beaver County	1/16/18	Attainment/ Unclassifiable.		
Box Elder		Attainment/ Unclassifiable.		
Cache County		Attainment/ Unclassifiable.		
Carbon County		Attainment/ Unclassifiable.		
Daggett County		Attainment/ Unclassifiable.		
Duchesne County (part) remainder		Attainment/ Unclassifiable.		
Emery County	1/16/18	Attainment/ Unclassifiable.		

UTAH—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Garfield County .....	1/16/18	Attainment/ Unclassifiable.		
Grand County .....		Attainment/ Unclassifiable.		
Iron County .....	1/16/18	Attainment/ Unclassifiable.		
Juab County .....		Attainment/ Unclassifiable.		
Kane County .....	1/16/18	Attainment/ Unclassifiable.		
Millard County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....		Attainment/ Unclassifiable.		
Piute County .....	1/16/18	Attainment/ Unclassifiable.		
Rich County .....		Attainment/ Unclassifiable.		
San Juan County .....	1/16/18	Attainment/ Unclassifiable.		
Sanpete County .....		Attainment/ Unclassifiable.		
Sevier County .....	1/16/18	Attainment/ Unclassifiable.		
Summit County .....		Attainment/ Unclassifiable.		
Tooele County (part) remainder .....		Attainment/ Unclassifiable.		
Uintah County (part) remainder .....		Attainment/ Unclassifiable.		
Utah County (part) remainder .....		Attainment/ Unclassifiable.		
Wasatch County .....		Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Weber County (part) remainder .....		Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

<sup>3</sup> The EPA is designating portions of the Uinta Basin as “nonattainment,” including both Tribal and State lands. The Ute Tribe has air quality planning jurisdiction in the areas of Indian country included in the Uinta Basin nonattainment area, while the State of Utah has air quality planning jurisdiction in the areas of State land included in the Uinta Basin nonattainment area.

\* \* \* \* \*

■ 30. Section 81.347 is amended by revising the table titled “Virginia—2015

8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.347 Virginia.

\* \* \* \* \*

VIRGINIA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Washington, DC-MD-VA .....		Nonattainment .....		Marginal.
Arlington County.				
Fairfax County.				
Loudoun County.				
Prince William County.				
Alexandria City.				
Fairfax City.				
Falls Church City.				
Manassas City.				
Manassas Park City.				
Accomack County .....	1/16/18	Attainment/ Unclassifiable.		
Albemarle County .....	1/16/18	Attainment/ Unclassifiable.		
Alleghany County .....	1/16/18	Attainment/ Unclassifiable.		

VIRGINIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Amelia County .....	1/16/18	Attainment/ Unclassifiable.		
Amherst County .....	1/16/18	Attainment/ Unclassifiable.		
Appomattox County .....	1/16/18	Attainment/ Unclassifiable.		
Augusta County .....	1/16/18	Attainment/ Unclassifiable.		
Bath County .....	1/16/18	Attainment/ Unclassifiable.		
Bedford County .....	1/16/18	Attainment/ Unclassifiable.		
Bland County .....	1/16/18	Attainment/ Unclassifiable.		
Botetourt County .....	1/16/18	Attainment/ Unclassifiable.		
Brunswick County .....	1/16/18	Attainment/ Unclassifiable.		
Buchanan County .....	1/16/18	Attainment/ Unclassifiable.		
Buckingham County .....	1/16/18	Attainment/ Unclassifiable.		
Campbell County .....	1/16/18	Attainment/ Unclassifiable.		
Caroline County .....	1/16/18	Attainment/ Unclassifiable.		
Carroll County .....	1/16/18	Attainment/ Unclassifiable.		
Charles City County .....	1/16/18	Attainment/ Unclassifiable.		
Charlotte County .....	1/16/18	Attainment/ Unclassifiable.		
Chesterfield County .....	1/16/18	Attainment/ Unclassifiable.		
Clarke County .....		Attainment/ Unclassifiable.		
Craig County .....	1/16/18	Attainment/ Unclassifiable.		
Culpeper County .....		Attainment/ Unclassifiable.		
Cumberland County .....	1/16/18	Attainment/ Unclassifiable.		
Dickenson County .....	1/16/18	Attainment/ Unclassifiable.		
Dinwiddie County .....	1/16/18	Attainment/ Unclassifiable.		
Essex County .....	1/16/18	Attainment/ Unclassifiable.		
Fauquier County .....		Attainment/ Unclassifiable.		
Floyd County .....	1/16/18	Attainment/ Unclassifiable.		
Fluvanna County .....	1/16/18	Attainment/ Unclassifiable.		
Franklin County .....	1/16/18	Attainment/ Unclassifiable.		
Frederick County .....		Attainment/ Unclassifiable.		
Fredericksburg City .....		Attainment/ Unclassifiable.		
Giles County .....	1/16/18	Attainment/ Unclassifiable.		
Gloucester County .....	1/16/18	Attainment/ Unclassifiable.		
Goochland County .....	1/16/18	Attainment/ Unclassifiable.		
Grayson County .....	1/16/18	Attainment/ Unclassifiable.		
Greene County .....	1/16/18	Attainment/ Unclassifiable.		
Greensville County .....	1/16/18	Attainment/ Unclassifiable.		
Halifax County .....	1/16/18	Attainment/ Unclassifiable.		
Hanover County .....	1/16/18	Attainment/ Unclassifiable.		
Henrico County .....	1/16/18	Attainment/ Unclassifiable.		

VIRGINIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Henry County .....	1/16/18	Attainment/ Unclassifiable.		
Highland County .....	1/16/18	Attainment/ Unclassifiable.		
Isle of Wight County .....	1/16/18	Attainment/ Unclassifiable.		
James City County .....	1/16/18	Attainment/ Unclassifiable.		
King and Queen County .....	1/16/18	Attainment/ Unclassifiable.		
King George County .....	1/16/18	Attainment/ Unclassifiable.		
King William County .....	1/16/18	Attainment/ Unclassifiable.		
Lancaster County .....	1/16/18	Attainment/ Unclassifiable.		
Lee County .....	1/16/18	Attainment/ Unclassifiable.		
Louisa County .....	1/16/18	Attainment/ Unclassifiable.		
Lunenburg County .....	1/16/18	Attainment/ Unclassifiable.		
Madison County .....	1/16/18	Attainment/ Unclassifiable.		
Mathews County .....	1/16/18	Attainment/ Unclassifiable.		
Mecklenburg County .....	1/16/18	Attainment/ Unclassifiable.		
Middlesex County .....	1/16/18	Attainment/ Unclassifiable.		
Montgomery County .....	1/16/18	Attainment/ Unclassifiable.		
Nelson County .....	1/16/18	Attainment/ Unclassifiable.		
New Kent County .....	1/16/18	Attainment/ Unclassifiable.		
Northampton County .....	1/16/18	Attainment/ Unclassifiable.		
Northumberland County .....	1/16/18	Attainment/ Unclassifiable.		
Nottoway County .....	1/16/18	Attainment/ Unclassifiable.		
Orange County .....	1/16/18	Attainment/ Unclassifiable.		
Page County .....	1/16/18	Attainment/ Unclassifiable.		
Patrick County .....	1/16/18	Attainment/ Unclassifiable.		
Pittsylvania County .....	1/16/18	Attainment/ Unclassifiable.		
Powhatan County .....	1/16/18	Attainment/ Unclassifiable.		
Prince Edward County .....	1/16/18	Attainment/ Unclassifiable.		
Prince George County .....	1/16/18	Attainment/ Unclassifiable.		
Pulaski County .....	1/16/18	Attainment/ Unclassifiable.		
Rappahannock County .....		Attainment/ Unclassifiable.		
Richmond County .....	1/16/18	Attainment/ Unclassifiable.		
Roanoke County .....	1/16/18	Attainment/ Unclassifiable.		
Rockbridge County .....	1/16/18	Attainment/ Unclassifiable.		
Rockingham County .....	1/16/18	Attainment/ Unclassifiable.		
Russell County .....	1/16/18	Attainment/ Unclassifiable.		
Scott County .....	1/16/18	Attainment/ Unclassifiable.		
Shenandoah County .....	1/16/18	Attainment/ Unclassifiable.		
Smyth County .....	1/16/18	Attainment/ Unclassifiable.		
Southampton County .....	1/16/18	Attainment/ Unclassifiable.		



VIRGINIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Spotsylvania County .....		Attainment/ Unclassifiable.		
Stafford County .....		Attainment/ Unclassifiable.		
Surry County .....	1/16/18	Attainment/ Unclassifiable.		
Sussex County .....	1/16/18	Attainment/ Unclassifiable.		
Tazewell County .....	1/16/18	Attainment/ Unclassifiable.		
Warren County .....		Attainment/ Unclassifiable.		
Washington County .....	1/16/18	Attainment/ Unclassifiable.		
Westmoreland County .....	1/16/18	Attainment/ Unclassifiable.		
Winchester City .....		Attainment/ Unclassifiable.		
Wise County .....	1/16/18	Attainment/ Unclassifiable.		
Wythe County .....	1/16/18	Attainment/ Unclassifiable.		
York County .....	1/16/18	Attainment/ Unclassifiable.		
Bristol City .....	1/16/18	Attainment/ Unclassifiable.		
Buena Vista City .....	1/16/18	Attainment/ Unclassifiable.		
Charlottesville City .....	1/16/18	Attainment/ Unclassifiable.		
Chesapeake City .....	1/16/18	Attainment/ Unclassifiable.		
Colonial Heights City .....	1/16/18	Attainment/ Unclassifiable.		
Covington City .....	1/16/18	Attainment/ Unclassifiable.		
Danville City .....	1/16/18	Attainment/ Unclassifiable.		
Emporia City .....	1/16/18	Attainment/ Unclassifiable.		
Franklin City .....	1/16/18	Attainment/ Unclassifiable.		
Galax City .....	1/16/18	Attainment/ Unclassifiable.		
Hampton City .....	1/16/18	Attainment/ Unclassifiable.		
Harrisonburg City .....	1/16/18	Attainment/ Unclassifiable.		
Hopewell City .....	1/16/18	Attainment/ Unclassifiable.		
Lexington City .....	1/16/18	Attainment/ Unclassifiable.		
Lynchburg City .....	1/16/18	Attainment/ Unclassifiable.		
Martinsville City .....	1/16/18	Attainment/ Unclassifiable.		
Newport News City .....	1/16/18	Attainment/ Unclassifiable.		
Norfolk City .....	1/16/18	Attainment/ Unclassifiable.		
Norton City .....	1/16/18	Attainment/ Unclassifiable.		
Petersburg City .....	1/16/18	Attainment/ Unclassifiable.		
Poquoson City .....	1/16/18	Attainment/ Unclassifiable.		
Portsmouth City .....	1/16/18	Attainment/ Unclassifiable.		
Radford City .....	1/16/18	Attainment/ Unclassifiable.		
Richmond City .....	1/16/18	Attainment/ Unclassifiable.		
Roanoke City .....	1/16/18	Attainment/ Unclassifiable.		
Salem City .....	1/16/18	Attainment/ Unclassifiable.		
Staunton City .....	1/16/18	Attainment/ Unclassifiable.		

VIRGINIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Suffolk City .....	1/16/18	Attainment/ Unclassifiable.		
Virginia Beach City .....	1/16/18	Attainment/ Unclassifiable.		
Waynesboro City .....	1/16/18	Attainment/ Unclassifiable.		
Williamsburg City .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 31. Section 81.348 is amended by revising the table titled “Washington—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.348 Washington.**  
\* \* \* \* \*

WASHINGTON—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Tri-Cities Area, WA .....	1/16/18	Unclassifiable.		
Benton County.				
Franklin County.				
Walla Walla County.				
Adams County .....	1/16/18	Attainment/ Unclassifiable.		
Asotin County .....	1/16/18	Attainment/ Unclassifiable.		
Chelan County .....	1/16/18	Attainment/ Unclassifiable.		
Clallam County .....	1/16/18	Attainment/ Unclassifiable.		
Clark County .....		Attainment/ Unclassifiable.		
Columbia County .....	1/16/18	Attainment/ Unclassifiable.		
Cowlitz County .....		Attainment/ Unclassifiable.		
Douglas County .....	1/16/18	Attainment/ Unclassifiable.		
Ferry County .....	1/16/18	Attainment/ Unclassifiable.		
Garfield County .....	1/16/18	Attainment/ Unclassifiable.		
Grant County .....	1/16/18	Attainment/ Unclassifiable.		
Grays Harbor County .....	1/16/18	Attainment/ Unclassifiable.		
Island County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
King County .....	1/16/18	Attainment/ Unclassifiable.		
Kitsap County .....	1/16/18	Attainment/ Unclassifiable.		
Kittitas County .....	1/16/18	Attainment/ Unclassifiable.		
Klickitat County .....	1/16/18	Attainment/ Unclassifiable.		
Lewis County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Mason County .....	1/16/18	Attainment/ Unclassifiable.		
Okanogan County .....	1/16/18	Attainment/ Unclassifiable.		
Pacific County .....	1/16/18	Attainment/ Unclassifiable.		

WASHINGTON—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Pend Oreille County .....	1/16/18	Attainment/ Unclassifiable.		
Pierce County .....	1/16/18	Attainment/ Unclassifiable.		
San Juan County .....	1/16/18	Attainment/ Unclassifiable.		
Skagit County .....	1/16/18	Attainment/ Unclassifiable.		
Skamania County .....		Attainment/ Unclassifiable.		
Snohomish County .....	1/16/18	Attainment/ Unclassifiable.		
Spokane County .....	1/16/18	Attainment/ Unclassifiable.		
Stevens County .....	1/16/18	Attainment/ Unclassifiable.		
Thurston County .....	1/16/18	Attainment/ Unclassifiable.		
Wahkiakum County .....	1/16/18	Attainment/ Unclassifiable.		
Whatcom County .....	1/16/18	Attainment/ Unclassifiable.		
Whitman County .....	1/16/18	Attainment/ Unclassifiable.		
Yakima County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 32. Section 81.349 is amended by revising the table titled “West

Virginia—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.349 West Virginia.

\* \* \* \* \*

WEST VIRGINIA—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Barbour County .....	1/16/18	Attainment/ Unclassifiable.		
Berkeley County .....		Attainment/ Unclassifiable.		
Boone County .....	1/16/18	Attainment/ Unclassifiable.		
Braxton County .....	1/16/18	Attainment/ Unclassifiable.		
Brooke County .....	1/16/18	Attainment/ Unclassifiable.		
Cabell County .....	1/16/18	Attainment/ Unclassifiable.		
Calhoun County .....	1/16/18	Attainment/ Unclassifiable.		
Clay County .....	1/16/18	Attainment/ Unclassifiable.		
Doddridge County .....	1/16/18	Attainment/ Unclassifiable.		
Fayette County .....	1/16/18	Attainment/ Unclassifiable.		
Gilmer County .....	1/16/18	Attainment/ Unclassifiable.		
Grant County .....	1/16/18	Attainment/ Unclassifiable.		
Greenbrier County .....	1/16/18	Attainment/ Unclassifiable.		
Hampshire County .....		Attainment/ Unclassifiable.		
Hancock County .....	1/16/18	Attainment/ Unclassifiable.		
Hardy County .....	1/16/18	Attainment/ Unclassifiable.		

WEST VIRGINIA—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Harrison County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....	1/16/18	Attainment/ Unclassifiable.		
Kanawha County .....	1/16/18	Attainment/ Unclassifiable.		
Lewis County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Logan County .....	1/16/18	Attainment/ Unclassifiable.		
McDowell County .....	1/16/18	Attainment/ Unclassifiable.		
Marion County .....	1/16/18	Attainment/ Unclassifiable.		
Marshall County .....	1/16/18	Attainment/ Unclassifiable.		
Mason County .....	1/16/18	Attainment/ Unclassifiable.		
Mercer County .....	1/16/18	Attainment/ Unclassifiable.		
Mineral County .....	1/16/18	Attainment/ Unclassifiable.		
Mingo County .....	1/16/18	Attainment/ Unclassifiable.		
Monongalia County .....	1/16/18	Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Morgan County .....	1/16/18	Attainment/ Unclassifiable.		
Nicholas County .....	1/16/18	Attainment/ Unclassifiable.		
Ohio County .....	1/16/18	Attainment/ Unclassifiable.		
Pendleton County .....	1/16/18	Attainment/ Unclassifiable.		
Pleasants County .....	1/16/18	Attainment/ Unclassifiable.		
Pocahontas County .....	1/16/18	Attainment/ Unclassifiable.		
Preston County .....	1/16/18	Attainment/ Unclassifiable.		
Putnam County .....	1/16/18	Attainment/ Unclassifiable.		
Raleigh County .....	1/16/18	Attainment/ Unclassifiable.		
Randolph County .....	1/16/18	Attainment/ Unclassifiable.		
Ritchie County .....	1/16/18	Attainment/ Unclassifiable.		
Roane County .....	1/16/18	Attainment/ Unclassifiable.		
Summers County .....	1/16/18	Attainment/ Unclassifiable.		
Taylor County .....	1/16/18	Attainment/ Unclassifiable.		
Tucker County .....	1/16/18	Attainment/ Unclassifiable.		
Tyler County .....	1/16/18	Attainment/ Unclassifiable.		
Upshur County .....	1/16/18	Attainment/ Unclassifiable.		
Wayne County .....	1/16/18	Attainment/ Unclassifiable.		
Webster County .....	1/16/18	Attainment/ Unclassifiable.		
Wetzel County .....	1/16/18	Attainment/ Unclassifiable.		
Wirt County .....	1/16/18	Attainment/ Unclassifiable.		
Wood County .....	1/16/18	Attainment/ Unclassifiable.		

WEST VIRGINIA—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Wyoming County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

■ 33. Section 81.350 is amended revising the table titled “Wisconsin—2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows: **§ 81.350 Wisconsin.**  
\* \* \* \* \*

WISCONSIN—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Chicago, IL-IN-WI .....		Nonattainment .....		Marginal.
Kenosha County (part): Inclusive and east of 88th Avenue.				
Door County, WI .....		Nonattainment .....		Marginal (Rural Transport).
Door County (part): Newport State Park Boundary.				
Manitowoc County, WI .....		Nonattainment .....		Marginal.
Manitowoc County (part): Inclusive and east of the following roadways going from the northern county bound- ary to the southern county boundary: Saxonburg Road, Zander Road, Saxonburg Road, Tapawingo Road, Tannery Road, E County Road V, Tannery Road, E Hill- crest Road, Sunset Drive, County Road VV, Manitou Drive, County Road B, Goodwin Road, N Rapids Road, S Rapids Road, Calumet Avenue, Hecker Road, Silver Creek Road, Gass Lake Road, Clover Road, Center Road, County Road F, Westview Road, County Road X, S Union Road.				
Northern Milwaukee/Ozaukee Shoreline, WI .....		Nonattainment .....		Marginal.
Milwaukee County (part): Northeastern corner of Milwaukee County bounded by and inclusive of the following roadways going from the northern county border to Lake Michigan: Highway 57/N. Sherman Blvd/N. 43rd Street to W. Mill Road to Highway 57/N. Green Bay Ave to W. Bender Road/Devon Street to N. Santa Monica Blvd to E. Belle Ave to south- ern boundary of Klode Park.				
Ozaukee County (part): Inclusive and east of County. Road KW, Cedar Beach Road, 6 Mile Road, County Road A, Lovers Lane Road, Woodland Road, County Road KK, Willow Road, Highway 57, County Road W, N. Riverside Drive, E. Green Bay Avenue, S. Main Street, N. Green Bay Road, 12th Avenue, Wisconsin Avenue, Green Bay Road, S. Main Street, N. Cedarburg Road/Highway 57.				
Sheboygan County, WI .....		Nonattainment .....		Marginal.
Sheboygan County (part): Inclusive and east of the following roadways going from the northern county bound- ary to the southern county boundary: Highway 43, Wilson Lima Road, Minderhaud Road, County Road KK/Town Line Road, N 10th Street, County Road A S/Center Avenue, Gibbons Road, Hoftiezer Road, Highway 32, Palmer Road/Smies Road/Palmer Road, Amsterdam Road/County Road RR, Termaat Road.				
Adams County .....	1/16/18	Attainment/ Unclassifiable.		
Ashland County .....	1/16/18	Attainment/ Unclassifiable.		
Barron County .....	1/16/18	Attainment/ Unclassifiable.		
Bayfield County .....	1/16/18	Attainment/ Unclassifiable.		
Brown County .....		Attainment/ Unclassifiable.		
Buffalo County .....	1/16/18	Attainment/ Unclassifiable.		
Burnett County .....	1/16/18	Attainment/ Unclassifiable.		
Calumet County .....		Attainment/ Unclassifiable.		
Chippewa County .....	1/16/18	Attainment/ Unclassifiable.		

WISCONSIN—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Clark County .....	1/16/18	Attainment/ Unclassifiable.		
Columbia County .....	1/16/18	Attainment/ Unclassifiable.		
Crawford County .....	1/16/18	Attainment/ Unclassifiable.		
Dane County .....	1/16/18	Attainment/ Unclassifiable.		
Dodge County .....		Attainment/ Unclassifiable.		
Door County (part) remainder .....		Attainment/ Unclassifiable.		
Douglas County .....	1/16/18	Attainment/ Unclassifiable.		
Dunn County .....	1/16/18	Attainment/ Unclassifiable.		
Eau Claire County .....	1/16/18	Attainment/ Unclassifiable.		
Florence County .....	1/16/18	Attainment/ Unclassifiable.		
Fond du Lac County .....		Attainment/ Unclassifiable.		
Forest County .....	1/16/18	Attainment/ Unclassifiable.		
Grant County .....	1/16/18	Attainment/ Unclassifiable.		
Green County .....	1/16/18	Attainment/ Unclassifiable.		
Green Lake County .....	1/16/18	Attainment/ Unclassifiable.		
Iowa County .....	1/16/18	Attainment/ Unclassifiable.		
Iron County .....	1/16/18	Attainment/ Unclassifiable.		
Jackson County .....	1/16/18	Attainment/ Unclassifiable.		
Jefferson County .....		Attainment/ Unclassifiable.		
Juneau County .....	1/16/18	Attainment/ Unclassifiable.		
Kenosha County (part) remainder .....		Attainment/ Unclassifiable.		
Kewaunee County .....		Attainment/ Unclassifiable.		
La Crosse County .....	1/16/18	Attainment/ Unclassifiable.		
Lafayette County .....	1/16/18	Attainment/ Unclassifiable.		
Langlade County .....	1/16/18	Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Manitowoc County (part) remainder .....		Attainment/ Unclassifiable.		
Marathon County .....	1/16/18	Attainment/ Unclassifiable.		
Marinette County .....	1/16/18	Attainment/ Unclassifiable.		
Marquette County .....	1/16/18	Attainment/ Unclassifiable.		
Menominee County .....	1/16/18	Attainment/ Unclassifiable.		
Milwaukee County (part) remainder .....		Attainment/ Unclassifiable.		
Monroe County .....	1/16/18	Attainment/ Unclassifiable.		
Oconto County .....	1/16/18	Attainment/ Unclassifiable.		
Oneida County .....	1/16/18	Attainment/ Unclassifiable.		
Outagamie County .....	1/16/18	Attainment/ Unclassifiable.		
Ozaukee County (part) remainder .....		Attainment/ Unclassifiable.		
Pepin County .....	1/16/18	Attainment/ Unclassifiable.		
Pierce County .....	1/16/18	Attainment/ Unclassifiable.		

WISCONSIN—2015 8-HOUR OZONE NAAQS—Continued  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Polk County .....	1/16/18	Attainment/ Unclassifiable.		
Portage County .....	1/16/18	Attainment/ Unclassifiable.		
Price County .....	1/16/18	Attainment/ Unclassifiable.		
Racine County .....		Attainment/ Unclassifiable.		
Richland County .....	1/16/18	Attainment/ Unclassifiable.		
Rock County .....	1/16/18	Attainment/ Unclassifiable.		
Rusk County .....	1/16/18	Attainment/ Unclassifiable.		
St. Croix County .....	1/16/18	Attainment/ Unclassifiable.		
Sauk County .....	1/16/18	Attainment/ Unclassifiable.		
Sawyer County .....	1/16/18	Attainment/ Unclassifiable.		
Shawano County .....	1/16/18	Attainment/ Unclassifiable.		
Sheboygan County (part) remainder .....		Attainment/ Unclassifiable.		
Taylor County .....	1/16/18	Attainment/ Unclassifiable.		
Trempealeau County .....	1/16/18	Attainment/ Unclassifiable.		
Vernon County .....	1/16/18	Attainment/ Unclassifiable.		
Vilas County .....	1/16/18	Attainment/ Unclassifiable.		
Walworth County .....		Attainment/ Unclassifiable.		
Washburn County .....	1/16/18	Attainment/ Unclassifiable.		
Washington County .....		Attainment/ Unclassifiable.		
Waukesha County .....		Attainment/ Unclassifiable.		
Waupaca County .....	1/16/18	Attainment/ Unclassifiable.		
Waushara County .....	1/16/18	Attainment/ Unclassifiable.		
Winnebago County .....	1/16/18	Attainment/ Unclassifiable.		
Wood County .....	1/16/18	Attainment/ Unclassifiable.		
Forest County Potawatomi Community Indian Tribe <sup>3</sup> .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

<sup>3</sup> Includes Indian country of the tribe listed in this table located in Forest County, Wisconsin. Information pertaining to areas of Indian country in this table is intended for Clean Air Act planning purposes only and is not an EPA determination of Indian country status or any Indian country boundary. EPA lacks the authority to establish Indian country land status, and is making no determination of Indian country boundaries, in this table.

\* \* \* \* \*

■ 34. Section 81.351 is amended by revising the table titled “Wyoming—

2015 8-Hour Ozone NAAQS (Primary and Secondary)” to read as follows:

§ 81.351 Wyoming.

\* \* \* \* \*

WYOMING—2015 8-HOUR OZONE NAAQS  
[Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Albany County .....		Attainment/ Unclassifiable.		
Big Horn County .....	1/16/18	Attainment/ Unclassifiable.		
Campbell County .....	1/16/18	Attainment/ Unclassifiable.		

WYOMING—2015 8-HOUR OZONE NAAQS—Continued  
 [Primary and Secondary]

Designated area <sup>1</sup>	Designation		Classification	
	Date <sup>2</sup>	Type	Date <sup>2</sup>	Type
Carbon County .....	1/16/18	Attainment/ Unclassifiable.		
Converse County .....	1/16/18	Attainment/ Unclassifiable.		
Crook County .....	1/16/18	Attainment/ Unclassifiable.		
Fremont County .....	1/16/18	Attainment/ Unclassifiable.		
Goshen County .....	1/16/18	Attainment/ Unclassifiable.		
Hot Springs County .....	1/16/18	Attainment/ Unclassifiable.		
Johnson County .....	1/16/18	Attainment/ Unclassifiable.		
Laramie County .....		Attainment/ Unclassifiable.		
Lincoln County .....	1/16/18	Attainment/ Unclassifiable.		
Natrona County .....	1/16/18	Attainment/ Unclassifiable.		
Niobrara County .....	1/16/18	Attainment/ Unclassifiable.		
Park County .....	1/16/18	Attainment/ Unclassifiable.		
Platte County .....	1/16/18	Attainment/ Unclassifiable.		
Sheridan County .....	1/16/18	Attainment/ Unclassifiable.		
Sublette County .....	1/16/18	Attainment/ Unclassifiable.		
Sweetwater County .....	1/16/18	Attainment/ Unclassifiable.		
Teton County .....	1/16/18	Attainment/ Unclassifiable.		
Uinta County .....	1/16/18	Attainment/ Unclassifiable.		
Washakie County .....	1/16/18	Attainment/ Unclassifiable.		
Weston County .....	1/16/18	Attainment/ Unclassifiable.		

<sup>1</sup> Includes any Indian country in each county or area, unless otherwise specified. EPA is not determining the boundaries of any area of Indian country in this table, including any area of Indian country located in the larger designation area. The inclusion of any Indian country in the designation area is not a determination that the state has regulatory authority under the Clean Air Act for such Indian country.

<sup>2</sup> This date is August 3, 2018, unless otherwise noted.

\* \* \* \* \*

[FR Doc. 2018-11838 Filed 6-1-18; 8:45 am]

BILLING CODE 6560-50-P