



The Transportation Policy Body for the North Central Texas Council of Governments
(Metropolitan Planning Organization for the Dallas-Fort Worth Region)

September 13, 2018

Texas Commission on Environmental Quality
Air Quality Division
Implementation Grants Section, MC-204
P.O. Box 13087
Austin, TX 78711-3087
ATTN: VW Settlement

Re: Comments Regarding Draft Beneficiary Mitigation Plan for Texas

Dear Chairman Niermann:

On behalf of the Regional Transportation Council (RTC), the Metropolitan Planning Organization (MPO) for the Dallas-Fort Worth area, attached are formal comments on the Draft Beneficiary Mitigation Plan (Plan) for Texas. The RTC appreciates the hard work completed by the Texas Commission on Environmental Quality (TCEQ) staff in developing the draft Plan and supports the goals laid out by the TCEQ. We are in agreement with several elements of the Plan, including:

- Requiring some match for all projects;
- Setting aside funding for statewide zero-emission vehicle infrastructure; and
- Dedicating 81 percent of funds for eligible mitigation actions in certain "priority areas" of the state to maximize impacts.

However, after review of the Plan, the RTC requests that certain items be revised as the Plan is finalized. These items are detailed in the enclosed policy paper and accompanying attachments. We appreciate the TCEQ's recognition of the important role that Councils of Governments and MPOs play, and the commitment to give particular weight to comments received from our organization along with our peers across the state.

The RTC wishes to convey our commitment to partnership with regard to implementation of these funds. We appreciate your consideration of these recommendations, and will schedule a meeting to discuss these points in the event you have any questions. In the meantime, please contact Chris Klaus, Senior Program Manager of Air Quality Planning and Operations at the North Central Texas Council of Governments, at (817) 695-9286 or cklaus@nctcog.org.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Fickes", is written over a horizontal line.

Gary Fickes
Chair, Regional Transportation Council
Commissioner, Tarrant County

LPC:ch
Enclosure

cc: Donna Huff, Director, Air Quality Division, TCEQ
Joe Walton, Manager, Implementation Grants Section
Steve Dayton, Technical Specialist, Implementation Grants Section
Chris Klaus, Senior Program Manager, NCTCOG

Regional Transportation Council Policy Paper Regarding Requested Changes to the Draft Beneficiary Mitigation Plan (Plan) for Texas as Released August 8, 2018

The Regional Transportation Council (RTC) requests the following be revised as the Plan is finalized.

1. Provide a Fair-Share Funding Allocation to the Dallas-Fort Worth (DFW) Area

The proposed funding allocation to the DFW Area, which is approximately \$29 million, is inexplicably low and should be modified to properly reflect an equitable distribution based on realistic expectations and technical data. The Texas Commission on Environmental Quality (TCEQ) lists the first two goals as reducing nitrogen oxides (NO_x) emissions in the areas most impacted by emissions, and reducing the potential for exposure of the public to pollutants. The Plan identifies a two-thirds to one-third division of funding between areas “close” to the ozone standard and the long-time ozone nonattainment areas. This proposal lacks sufficient technical details and ignores regional fair-share funding allocation. As the DFW Area is designated nonattainment for both the 2008 and 2015 ozone standards with a population of over 7 million persons, a higher allocation of funding to DFW is critical to meeting the stated goals of the TCEQ. The RTC previously recommended that the DFW Area receive approximately \$63 million of the Texas allocation, and stands by this original recommendation.

To aid the TCEQ’s fair-share technical assessment, the North Central Texas Council of Governments (NCTCOG) staff evaluated various metrics to determine if the original \$63 million request was valid. A summary of this evaluation is detailed in Attachment 1. This analysis shows that regardless of what metric is used to determine funding distribution across the state, the appropriate allocation to the DFW Area is far greater than what has been proposed. Thus, the RTC reiterates the need for a substantially higher allocation to the DFW Area and recommends a data-based, transparent explanation of methodology for geographic distribution in the final Plan.

2. Allow Regional Agencies to Serve as Third-Party Administrators of Mitigation Trust Funds

The RTC reiterates our previous recommendation that the TCEQ allow Councils of Governments (COGs) to serve as third-party administrators of the Trust in their areas. Regional agencies add value by being more closely attuned to regional priorities and opportunities. Moreover, the NCTCOG houses the DFW Clean Cities Coalition, which focuses on working with fleets and is a natural conduit for connecting with potential applicants and leveraging national expertise on vehicle technologies eligible under the Plan. NCTCOG has also proven its abilities as a third-party administrator of Texas Emissions Reduction Plan (TERP) funds.

The RTC respects the TCEQ’s aggressive proposal to limit administrative costs to only four percent. We support the effort to maximize funding available for project implementation. Therefore, the RTC commits that if allowed to serve as a third-party administrator, the NCTCOG would not charge any administrative costs to the Mitigation Trust fund. All administrative costs would be paid through other funding sources available to NCTCOG, thus preserving 100 percent of the funds allocated to the DFW Area for project implementation.

3. Update Emission Calculation Methodology to Use Latest/Greatest Tools

The RTC recommends the TCEQ update its emissions calculation practices to other commercially available and user-friendly tools that provide more robust project analysis, rather than rely on the in-house TERP calculator that has been proposed. It is highly recommended that the TCEQ utilize the Argonne National Laboratory Alternative Fuel Life-Cycle Environment and Economic Transportation (AFLEET) Tool for quantification of all on-road vehicle projects. AFLEET includes adjustment factors for new diesel engines that reflect the higher emission rates at low speeds, based on the real-world research detailed in Attachment 2, and will also provide multi-pollutant emissions benefits. The Environmental Protection Agency's Diesel Emissions Quantifier (DEQ) tool is recommended for non-road projects, as it also provides multi-pollutant benefits.

TERP methodology is inadequate for two reasons. First, it only estimates impacts of a single pollutant, NO_x. While NO_x emissions are the focus of the Trust, multi-pollutant benefits should be quantified in order to provide a more holistic view of Mitigation Plan impacts. Second, and more importantly, TERP methodology relies on engine certification to determine emission rates. Numerous studies have shown that the newest, cleanest diesel engines emit NO_x at rates far higher than their certification levels under various conditions, especially when at low speeds. A sample listing of research projects on this topic is included as Attachment 2. Thus, relying on engine certification alone will underestimate the emissions of new diesel engines, and overestimate potential emissions reductions achieved. This not only delays progress in reaching attainment, but also has consequences for project selection. As the Volkswagen Settlement put much emphasis on all-electric technology, it is likely that submitted projects will include several all-electric projects, as well as other alternative fuels. These technologies typically cost more, but because they can achieve superior emissions reductions, have the potential to be competitive on a cost-effectiveness basis if real-world emissions expectations are considered. If a competitive evaluation is based only on certification data, the underestimation of new diesel emissions will likely result in a decision to award funding to a project that appears to be more cost-effective on paper only, at the expense of an alternative fuel vehicle project that would have achieved more emissions reductions. Ironically, the discrepancy between certified and real-world emissions rates is what led to the Volkswagen Settlement and development of the Mitigation Trust.

4. Confirm and Clarify Equal Eligibility of Zero-Emission Vehicle Infrastructure

It is our understanding that for heavy-duty replacement or repower projects involving a new all-electric vehicle, both hydrogen refueling and electric recharging infrastructure are equally eligible to receive up to 60 percent funding as part of the project costs. The RTC supports this interpretation as it provides equity between multiple fuel types, within the constraints of the court settlement. However, we recommend that the TCEQ clarify this by adding a definition of "charging infrastructure" that specifies both hydrogen and battery-electric eligibility, similar to the definition of "All-Electric".

5. Quantify Cost Effectiveness Based Only on Mitigation Plan Funding

The RTC recommends that the TCEQ only consider the amount of Mitigation Plan funding requested for a project when calculating cost effectiveness. Applicants are likely to leverage Mitigation Plan funding with other sources to offset match requirements or to enable a smaller funding request that would make more expensive projects, such as those involving alternative fuels or infrastructure to support all-electric vehicles, more competitive on a cost-effectiveness evaluation. These projects should not be penalized for leveraging other funding sources to stretch limited dollars further.

Summary of DFW Area Fair-Share Allocation Under the Draft Beneficiary Mitigation Plan for Texas

Exhibit 1: Potential Fair Share Allocations to DFW Area Based on Various Metrics

Metric	DFW Area as % of Areas Originally Recommended by the Regional Transportation Council	DFW Area as % of Counties Proposed as Priority Counties by the TCEQ
Registered Violating Vehicles	32.77%	41.10%
Population	35.97%	41.21%
Vehicle Miles of Travel	38.82%	44.26%
NO _x Emissions	37.14%	42.66%
VOC Emissions	36.13%	40.76%
Heavy-Duty Diesel Vehicles Eligible for Replacement/Repower	34.04%	38.37%

Exhibit 2: Potential Fair Share Allocations to DFW Area Based on Various Metrics

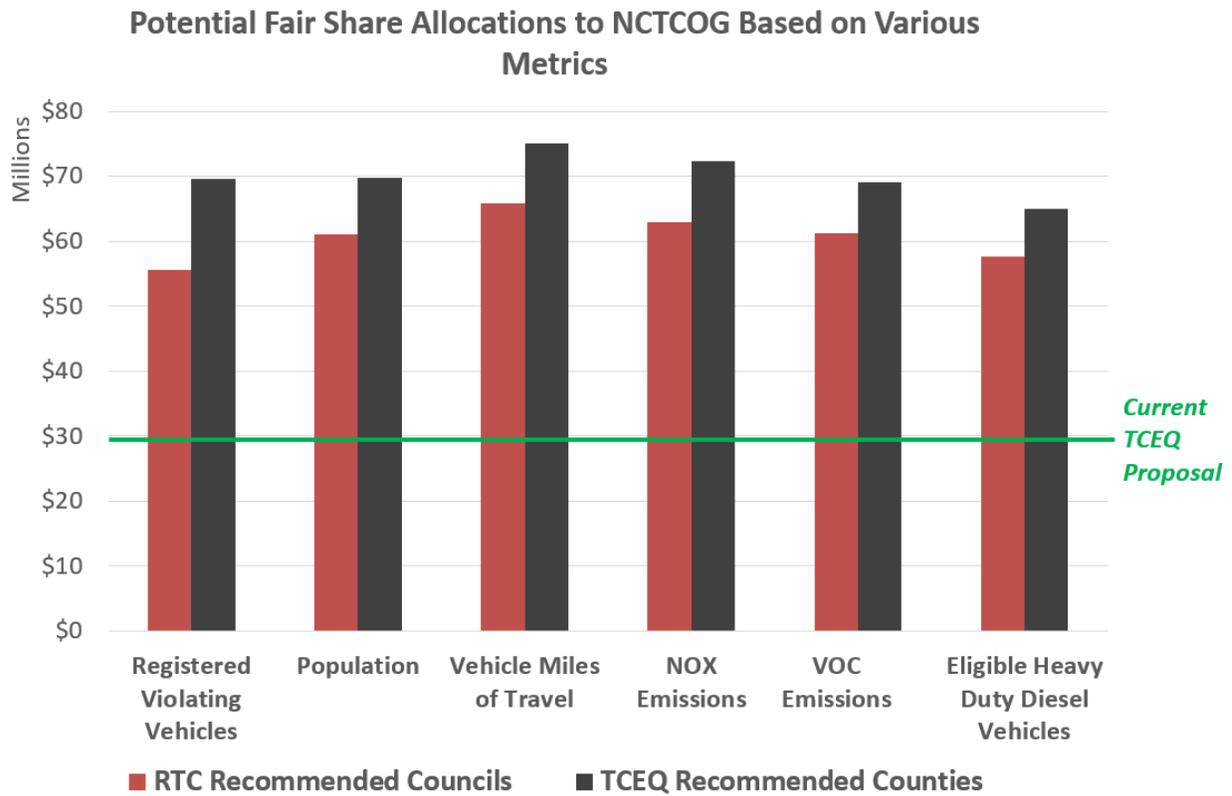
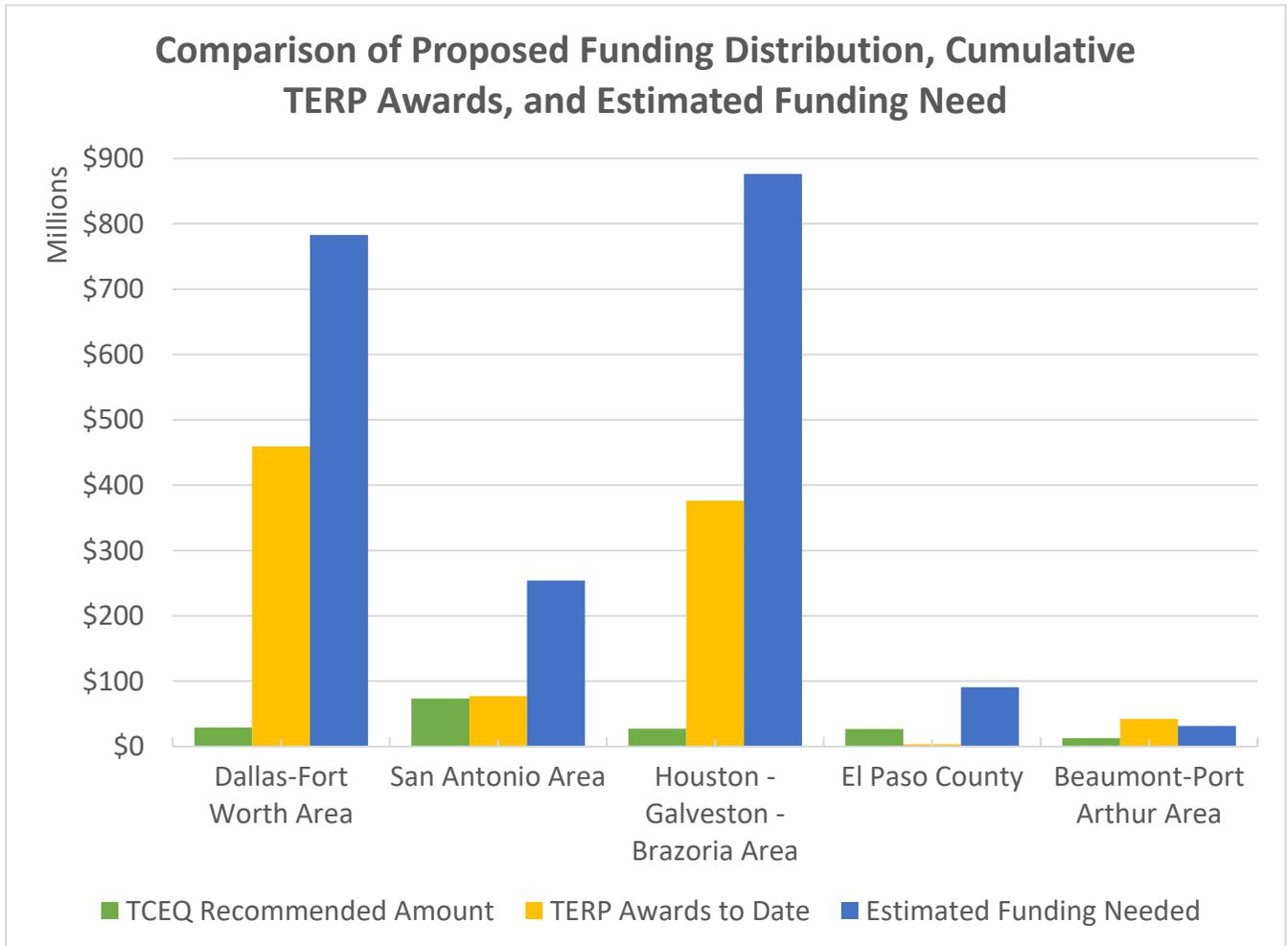


Exhibit 3: Estimated Distribution of Eligible Heavy-Duty Diesel Vehicles and Funding Need Among TCEQ-Proposed Priority Areas

Region	Estimated Number of Eligible Vehicles	Minimum Funding Need (in Millions)
Dallas-Fort Worth	21,340	\$782.8
San Antonio	6,877	\$254.2
Houston–Galveston-Brazoria	23,989	\$876.0
El Paso	2,475	\$90.6
Beaumont-Port Arthur	726	\$31.3

NCTCOG evaluated Department of Motor Vehicle Registration Data as of August 20, 2018 and identified potentially eligible heavy-duty diesel vehicles based on model year, gross vehicle weight, fuel type, and vehicle type. Minimum Funding Need is based on lowest estimated project cost identified by TCEQ in Table D.3 of the Draft Beneficiary Mitigation Plan for Texas, multiplied by the number of vehicles in each area of that type.

Exhibit 4: Comparison of TCEQ-Proposed Funding, Estimated Funding Needs from Exhibit 3, and Cumulative Texas Emissions Reduction Plan Funds Awarded from 2001-2017



Subset of Research Indicating that Heavy-Duty Diesel Engine Emissions Certification Levels are not an Accurate Indication of Real-World Emissions of Nitrogen Oxides (NO_x)

1. Seunju Yoon et al. "Comparison of NO_x Emissions from In-Use 2010 Technology Heavy-Duty Engines to Their Certification Standards." 25th CRC On-road Emissions Workshop, March 23-25, 2015, Long Beach, CA. California Air Resources Board (2015). <https://www.arb.ca.gov/research/veh-emissions/onroad-nox/crc2015-nox.pdf>
 - Slide 14: "In-use NO_x emissions from 2010 diesel trucks were higher than the certification standard and the certification level NO_x."
2. Johnson, Kent et al. "Ultra-Low NO_x Natural Gas Vehicle Evaluation ISL G NZ." Center for Environmental Research & Technology, University of California Riverside (2016). http://www.cert.ucr.edu/research/efr/2016%20CWI%20LowNOx%20NG_Finalv06.pdf
 - Section 1.2, page 11: "Although the 2010 certification standards were designed to reduce NO_x emissions, the in-use NO_x emissions are actually much higher than certification standards for certain fleets... For diesel engines low load duty cycles have a significant impact in the NO_x emissions... The cold start emissions were ten times higher than the certification standard and much higher than the corresponding hot start emissions... The main cause for the high NO_x emissions is low selective catalytic reduction (SCR) inlet temperatures resulting from low power operation."
3. Anenberg, Susan C. et al. "Impacts and mitigation of excess diesel-related NO_x emissions in 11 major vehicle markets." *Nature* 545 (2017). <https://www.nature.com/articles/nature22086>
 - Pages 467-471: "...across 11 markets, representing approximately 80 per cent of global diesel vehicle sales, nearly one-third of on-road heavy-duty diesel vehicle emissions... are in excess of certification limits."
4. Thiruvengadam, Arvind, et al. "Emission Rates of Regulated Pollutants from Current Technology Heavy-Duty Diesel and Natural Gas Goods Movement Vehicles. *Environ. Sci. Technol.* 49.8 (2015). <https://pubs.acs.org/doi/10.1021/acs.est.5b00943>
 - Pages 5236-5244: "The low percentage of activity SCR over the local and near-dock cycles contributed to a brake-specific NO_x emissions that were 5-7 times higher than in-use certification limit."
5. Quiros, David C. et al. "Real-World Emissions from Modern Heavy-Duty Diesel, Natural Gas, and Hybrid Diesel Trucks Operating Along Major California Freight Corridors." *Emission Control Science and Technology* 2.3 (2016) <https://link.springer.com/article/10.1007/s40825-016-0044-0>
 - Pages 156-172: "The ranking of certification NO_x emissions for the seven engines reported during engine-dynamometer-based certification was not maintained during real-world testing; for example, highway driving NO_x emissions were lower than certification values for some engine families and higher than certification values for others."
6. Center for Alternative Fuels, Engines, and Emissions, West Virginia University. In-Use Emissions and Performance Testing of Propane-Fueled Engines. (2017).
 - Summary Attached, courtesy of the Texas Propane Gas Association.

West Virginia University (WVU) In-Use Emissions and Performance Testing of Propane-Fueled Engines

West Virginia University performed a research program for PERC to establish exhaust emissions and performance characteristics of propane-fueled vehicles/engines through in-use testing methods in comparison to vehicles/engines fueled with other common transportation fuels. WVU used portable emissions measurement systems (PEMS) on each vehicle to collect the data (CO, CO₂, NO_x, and total hydrocarbon emissions) as they drove predetermined test routes using hot and cold starts. The Morgantown route consisted of city and highway driving, while the Stop and Go route simulated low speed operation and passenger pick up. The table below shows the specifications of the tested school buses.

Fuel	Propane (LPG)	Ultra-Low Sulfur Diesel
Vehicle	Blue Bird School Bus (6.8L, 10 Cylinder)	Blue Bird School Bus (6.7L, 6 Cylinder)
Model Year	2015	2014
Exhaust Aftertreatment	Three-Way Catalyst	Diesel Oxidation Catalyst, Diesel Particulate Filter, Selective Catalytic Reduction System

Pros: The approach to collect real-world data on specific propane-fueled vehicles/engines was robust and accurate. NO_x results are very favorable for propane.

Cons: The results are specific to the conditions of the test environment and differ from the requirements (e.g., temperature) for engine certification testing.

Noteworthy Results

- 96% NO_x reduction: Propane school bus vs. diesel school bus (stop-and-go route)
- >95% NO_x reduction: Propane school bus vs. diesel school bus (Morgantown route, cold start)
- >93% NO_x reduction: Propane school bus vs. diesel school bus (Morgantown route, hot start)
- >13% CO₂ reduction: Propane school bus vs. diesel school bus (stop-and-go route)

The findings from the WVU in-use tests of high NO_x emissions for heavy-duty vehicles are supported by other tests in literature. See “Real-World Emissions from Modern Heavy-Duty Diesel, Natural Gas, and Hybrid Diesel Trucks Operating Along Major California Freight Corridors” ([link](#)) and “Emission rates of regulated pollutants from current technology heavy-duty diesel and natural gas goods movement vehicles” ([link](#)).