

# 6.0: Mobility Options

North Central Texas is a large, diverse place, and the mobility needs of residents and businesses vary greatly across the region. It is of utmost importance that the transportation system satisfies mobility needs and also provides transportation choices. The primary purpose of the Metropolitan Transportation Plan is to accommodate the multimodal mobility needs of this growing region. Mobility has a significant impact on quality of life. It allows people to live where they want; to access jobs, education, and healthcare; and provides a means to cultural and recreational activities. In addition to quality of life impacts, mobility also influences the regional economic vitality and appeal. The ability to move goods easily from producers to consumers has been a major factor in the growth and prosperity North Central Texas has experienced over the past 40 years.

The following sections discuss mobility options for the North Central Texas region. Full-sized versions of the Mobility 2045 recommendations maps contained within this chapter can be found in appendix **E: Mobility Options**, along with detailed policy, program, and project recommendations.



Mobility Options in North Central Texas

Source: NCTCOG

## MOBILITY OPTIONS AT A GLANCE

A variety of transportation options are available to meet the diverse travel demands of the North Central Texas region. These modes work together to move goods, improve mobility, and provide access to, from, and throughout the area.

### DID YOU KNOW ...

- ... there are 27 airports and 2 military training airfields in the region?
- ... Dallas-Fort Worth is home to the nation's largest inland port?
- ... Mobility 2045 recommends expanding the Regional Veloweb to approximately 1,884 miles?
- ... Mobility 2045 calls for almost 260 miles of passenger rail?

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# 6.3: Active Transportation

## Mobility 2045 Supported Goals

Improve the availability of transportation options for people and goods.

Support travel efficiency measures and system enhancements targeted at congestion reduction and management.

Ensure all communities are provided access to the regional transportation system and planning process.

Preserve and enhance the natural environment, improve air quality, and promote active lifestyles.

Encourage livable communities which support sustainability and economic vitality.

Ensure adequate maintenance and enhance the safety and reliability of the existing transportation system.

Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.

## Providing Traveler Choice

- All trips less than two miles in length in the urbanized area should have options available to be accomplished by non-motorized or transit modes of travel.
- All roadways in the urbanized area should be designed and constructed to accommodate at least three modes of transportation.
- Roadway projects should implement context-sensitive design approaches compatible with the community and neighborhood in which the roadway is located.

## Introduction

Active transportation, or bicycle and pedestrian modes, is an integral component of Mobility 2045. Active transportation offers numerous options to

improve the existing transportation system efficiently and cost effectively through a variety of systematic enhancements. Active transportation benefits all road users and creates more livable, safe, cost-efficient communities. The region's active transportation network is used as a mode of transportation by people of all ages and abilities to walk and bicycle. The network is used for non-recreational trips and a variety of purposes such as traveling to work or school, and as first /last mile connections with transit services, including bus stops and rail stations.

A current federal statute, United States Code, Title 23, Chapter 2, Section 217 (23 USC 217), mandates that *"bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities, except where bicycle and pedestrian use are not permitted."*

The United States Department of Transportation (USDOT) policy statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations signed on March 11, 2010 is *"to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes."*

The USDOT policy emphasizes that active transportation accommodations should be given the same priority as other transportation modes. Walking and bicycling facilities should meet accessibility requirements and provide safe, convenient, and interconnected transportation networks that ensure transportation choices are available for people of all ages and abilities, especially children. With this stronger emphasis for multimodal transportation facilities by USDOT, TxDOT has also established guidance, signed on March 23, 2011, to proactively plan, design, and construct facilities to safely accommodate bicycles and pedestrians.

## Active Transportation Context in North Central Texas

Many cities and counties in the region have developed and adopted bicycle master plans, trail master plans, or a combination of both. Various communities are also developing plans for local pedestrian networks and programs to provide safe routes to schools. In addition, numerous cities and transportation agencies have adopted local policies for bicycle accommodations to encourage bicycling as a form of transportation. The number of locally adopted community bicycle and trail master plans in the region grows each year. These documents are used in the development of Mobility 2045 to ensure regional connectivity and continuity.

The types of pedestrian and bicycle facilities available differ from community to community, and their conditions vary based on the context and density of the surrounding area where they are located. These projects provide for non-motorized modes of transportation, and also enhance travel and tourism throughout the region, including access to destinations of statewide significance such as the Fort Worth Stockyards National Historic District, the Arlington Entertainment District, Fair Park in Dallas, and others.

In urban areas, the active transportation network typically includes a wide mix of interconnected sidewalks, off-street shared-use paths, and on-street bikeways, including designated or separated bike lanes and cycle tracks and marked shared lanes. The network concentration is the greatest in higher density urban areas and where there are high volumes of users requiring connections to transit and major destinations. These areas also have a significant number of short trips that can be achieved by walking and bicycling.

In suburban areas, the active transportation network typically includes similar facilities to those in urban areas. However, the overall network and mix of the active transportation network may vary from urban areas due to differences in the physical design and density of land uses and the opportunities for short walking and biking trips.

In rural unincorporated areas, the active transportation network may consist of signed wide shoulders on roads for safe bicycle travel between rural towns.

In order to support regional goals related to mobility, land use, the environment, the economy, and public health, Mobility 2045 recognizes that the active transportation network in the region cannot be treated as stand-alone facilities. Sidewalks, off-street shared-use paths, and on-street bikeways should be integrated as part of Complete Streets, and they should be interconnected with transit services and other modes of transportation. This seamless multimodal transportation network can connect housing and key destinations, including employment centers, education, medical, retail and entertainment centers, and others. Much of the region's 2045 active transportation network of pedestrian facilities and on-street bikeways will be implemented through Complete Streets designed and operated to enable safe access and travel for users of all ages and abilities.



Mobility 2045 supports the development of local Complete Streets policies and the implementation of Complete Streets infrastructure on both new and reconstructed streets; such design will safely accommodate all users in the region. Additional information on Complete Streets can be found in the *Sustainable Development* section of the **Operational Efficiency** chapter, the *Healthy Communities* section of the **Environmental Considerations** chapter, and in the *Roadway* section of this chapter. According to the 2009 National Household Travel Survey, in urban areas, 52 percent of all trips were three miles or less in distance, and 29 percent of all trips were one mile or less.

These trips are ideal for biking, walking, transit, or a combination of these modes of travel. By encouraging investment in facilities that support these forms of transportation, the region has the opportunity to shift short trips to walking and bicycling modes, resulting in more transportation choices and improved air quality. Therefore, Mobility 2045 aims to provide options for non-motorized or transit modes of travel for all trips in the urbanized area that are less than two miles in distance.

### Combined Regional Paths and Bikeway Network

The active transportation network in the region consists of regional shared-use paths (Regional Veloweb), supporting community shared-use paths, and the on-street bikeway network (including on-street wide shoulders in rural areas). This network is reflected in the map in Exhibit 6.3-1 and the table in Exhibit 6.3-2. This network plays a key role in supporting Mobility 2045 and the implementation of the multimodal Complete Streets and transit infrastructure that safely accommodate all travelers throughout the region.



Exhibit 6.3-1: Combined Regional Veloweb, Community Paths, and On-Street Bikeway Network

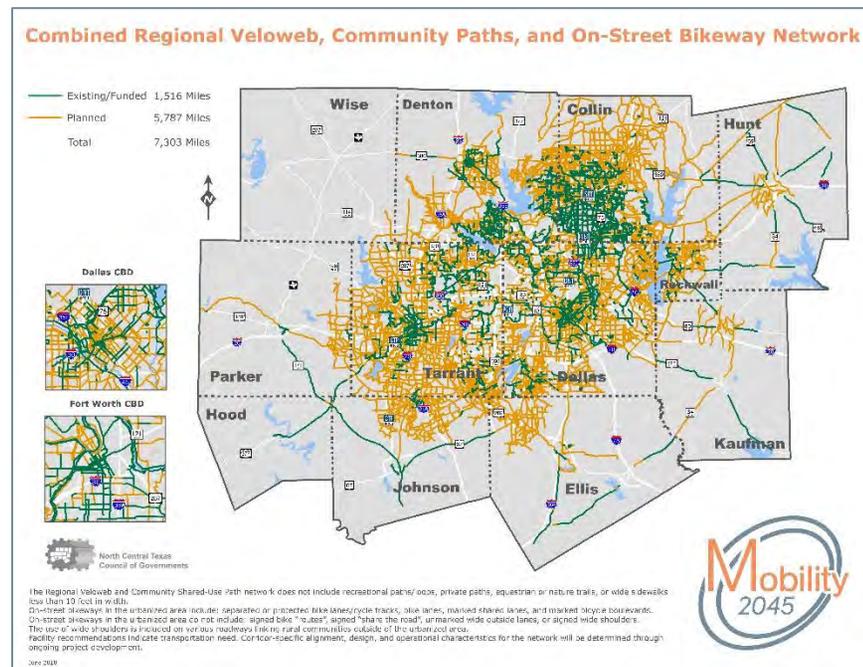


Exhibit 6.3-2: Combined Regional Veloweb, Community Shared-Use Paths, and On-Street Bikeways Network Miles by Facility Status (June 2018)

Facility Type*	Miles
<b>Regional Veloweb Paths<sup>1</sup></b>	
Regional Veloweb, Existing	455
Regional Veloweb, Funded	143
Regional Veloweb, Planned	1,285
<b>Total Veloweb Paths</b>	<b>1,883</b>
<b>Community Shared-Use Paths<sup>1</sup></b>	
Community Shared-Use Paths, Existing	318
Community Shared-Use Paths, Funded	57
Community Shared-Use Paths, Planned	2,584
<b>Total Community Paths</b>	<b>2,959</b>
<b>Total Regional Veloweb and Community Paths</b>	
	<b>4,842</b>
<b>On-Street Bikeways<sup>2</sup></b>	
On-Street Bikeways, Existing	212
On-Street Bikeways, Funded	84
On-Street Bikeways, Planned	1,817
<b>Total On-Street Bikeways (Urbanized Area)</b>	<b>2,113</b>
On-Street Wide Shoulders, Existing (rural areas between communities)	247
On-Street Wide Shoulders, Planned (rural areas between communities)	101
<b>Total On-Street Wide Shoulders (Rural Area)</b>	<b>348</b>
<b>Total On-Street Bikeways</b>	<b>2,461</b>
<b>Total All Facilities</b>	<b>7,303</b>

<sup>1</sup> The Regional Veloweb and Community Shared-Use Path network does not include recreational paths/loops, private paths, equestrian or nature trails, or wide sidewalks less than 10 feet in width.

<sup>2</sup> On-street bikeways in the urbanized area include separated or protected bike lanes/cycle tracks, bike lanes, marked shared lanes, and marked bicycle boulevards. On-street bikeways in the urbanized area do not include signed bike "routes", signed "share the road", unmarked wide outside lanes, or signed wide shoulders. The use of wide shoulders is included on various roadways linking rural communities outside of the urbanized area.

Mobility 2045 represents extensive research on and compilation of the locally adopted master plans for active transportation infrastructure throughout the

region. By working with local and regional stakeholders, the plan prioritizes corridors for improvement as represented by the Regional Veloweb and other policies for active transportation infrastructure investment and safety. Mobility 2045 represents the compilation of 63 locally adopted plans with shared-use paths (trails) and 61 locally adopted plans that include on-street bikeway facilities. Various new or updated plans are adopted each year throughout the region, and the North Central Texas Council of Governments regularly coordinates with local jurisdictions to update a database of existing, funded, and planned active transportation facilities.

### Recommended Off-Street Network: The Regional Veloweb

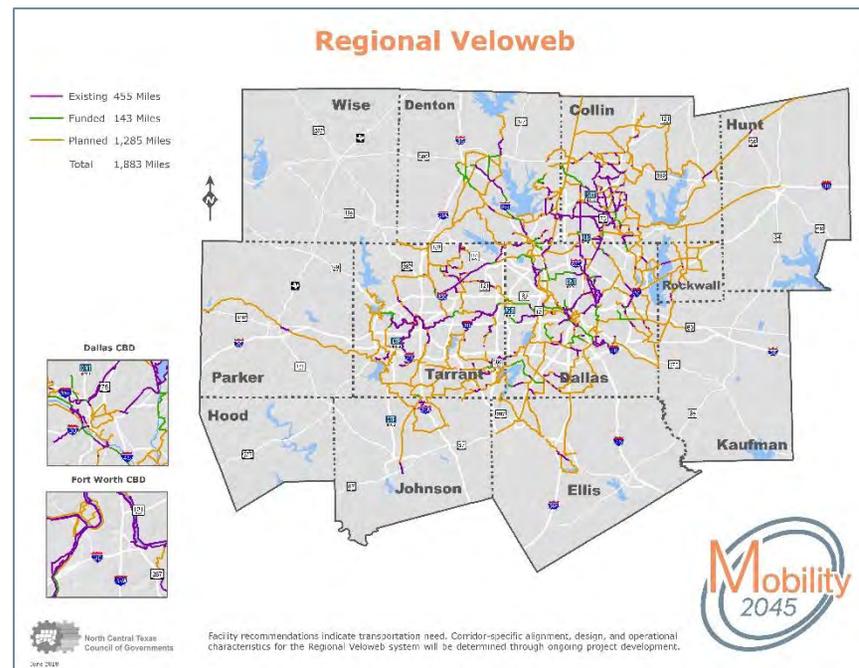
The Regional Veloweb is a network of off-street shared-use paths (trails) designed for non-recreational trip purposes by bicyclists, pedestrians, and other non-motorized forms of transportation. The Veloweb serves as the regional expressway network for active transportation, and it extends the reach of the region’s roadway and passenger rail transit network for non-motorized transportation. The Veloweb has planned connections in 10 counties and 105 cities in North Central Texas. Alignments were determined through the cooperative efforts of local governments and NCTCOG staff by:

- Identifying existing and funded facilities.
- Reviewing locally planned bicycle and pedestrian facilities.
- Locating routes that would provide air quality benefits and access to transit stations and major destinations.
- Identifying corridors that provide the greatest potential for regional connectivity.
- Identifying routes that provide opportunities to enhance travel and tourism.

The Regional Veloweb is reflected in **Exhibit 6.3-3** and includes approximately 1,884 miles of shared-use path facilities in various stages of development. These shared-use paths are expected to be consistent with the recommendations and design guidance set forth by the American Association of State Highway Officials (AASHTO) for the development of bicycle facilities. The primary design considerations of Veloweb paths typically include wider cross sections (minimum 12-foot width) and grade-separated crossings of roadways with significant traffic flows. They may have wider 16- to 24-foot sections or separated facilities for pedestrians and bicyclists in areas experiencing high-peak user volumes due to the proximity to transit stations,

employment and education centers, and/or other major venues. Design considerations for regional and community pathways are described in more detail in **Exhibit 6.3-3**.

Exhibit 6.3-3: The Regional Veloweb



**Exhibit 6.3-4: Regional Veloweb 2045 Pathways Classifications and Primary Design Considerations**

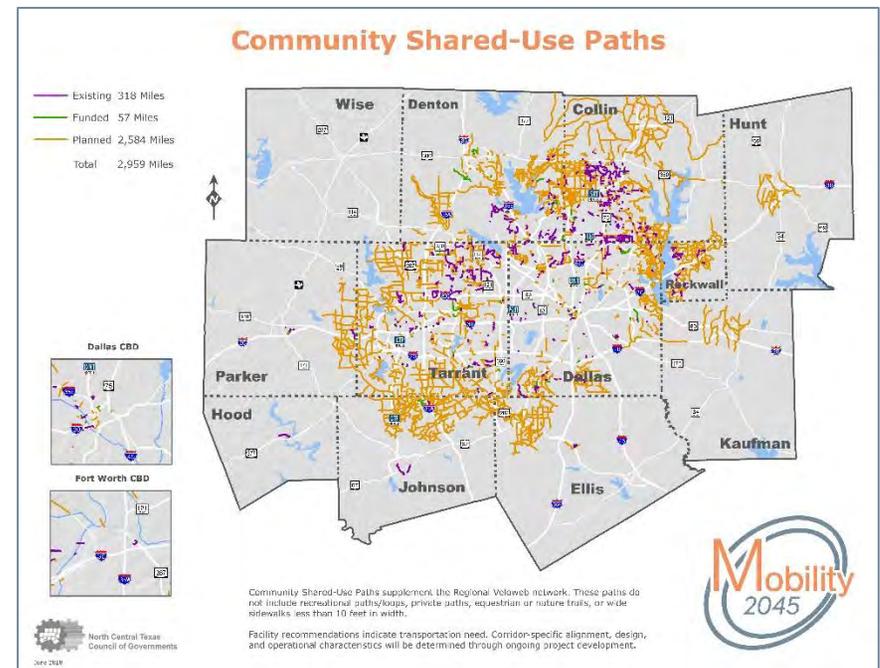
Regional Pathways 2045 Primary Design Considerations	Community Pathways Primary Design Considerations
Consistent with the guidance set forth by AASHTO for the development of bicycle facilities.	Consistent with the guidance set forth by AASHTO for the development of bicycle facilities.
<u>Minimum width:</u> 12 to 14 feet (typical) with 16- to 24-foot wide sections or separated facilities for pedestrians and bicyclists in areas with high-peak user volumes.	<u>Minimum width:</u> 10 to 14 feet (typical) with wider sections where warranted due to high-peak volumes.
Typically independent right-of-way corridors such as greenways, along waterways, freeways, active or abandoned rail lines, utility rights-of-way, and unused rights-of-way.	May include more alignments adjacent to local collector and arterial roadways, and through neighborhoods and areas where right-of-way is more constrained and user volumes are lower.
Continuous linear corridors that provide long-distance connections through cities and across counties; provide connections to major destinations, including transit stations, employment and education centers, and/or other major activity venues with high volumes of users.	Corridors generally shorter in length and may terminate within a community, may supplement adjacent on-street bikeways along roadways with higher traffic speeds and volumes not suitable for less experienced bicyclists, and may provide short connections between on-street bikeways and neighborhoods.
Grade-separated crossing of roadways with significant traffic flows. Few, if any, driveway crossings and signalized or stop sign intersections.	May include more at-grade crossings of roadways with signalized or stop sign intersections while minimizing any conflicts with motor vehicles and associated operational and safety issues.
Supported by a network of local community paths, sidewalks, and on-street bikeways that provide connections to local neighborhood destinations.	Serves as an extension of the regional pathway network by providing connections to local neighborhood destinations.
Constructed with a long-lasting impervious surface.	Constructed with a long-lasting impervious surface.

**Off-Street Network: Community Shared-Use Paths**

Community shared-use path facilities support the Regional Veloweb and help extend the reach of the Veloweb network by connecting it to local and neighborhood destinations. Approximately 2,955 miles of these paths, shown

in the map in **Exhibit 6.3-5**, are in various stages of development. These facilities are also expected to be consistent with the recommendations and guidance set forth by AASHTO for the development of bicycle facilities. This network of facilities does not include recreational park loops, private paths, equestrian or nature trails, or wide sidewalks less than 10 feet in width. Mobility 2045 forecasts that a portion of the network of community shared-use paths will be implemented. The paths that will be constructed are primarily located in corridors that serve as extensions of the Regional Veloweb and provide connections to transit facilities and other local major destinations. While not fully funded by Mobility 2045, community shared-use paths provide important connections within communities and will be implemented as funding is available.

**Exhibit 6.3-5: Community Shared-Use Paths**

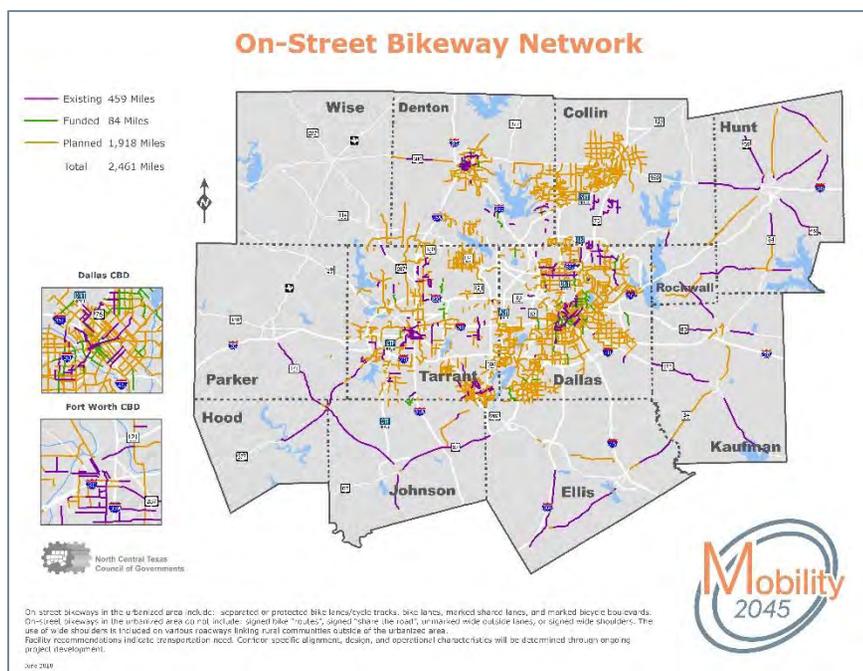


**Regional On-Street Bikeway Network**

On-street bikeways facilitate safe and convenient travel for bicyclists, and they serve as extensions of the Regional Veloweb and community shared-use path network by providing non-motorized travel connections between housing, employment, major destinations, and transit facilities. The existing and

planned on-street bikeway network, shown in **Exhibit 6.3-6**, provides the densest network of bicycle facilities in a growing number of communities throughout the region. Currently more than 61 locally adopted plans include on-street bikeway facilities representing more than 2,458 miles in various stages of development.

**Exhibit 6.3-6: On-Street Bikeway Network**



Consistent with guidance from AASHTO, the National Association of City Transportation Officials, FHWA, and the Separated Bike Lane Planning and Design Guide, the type and design of on-street bikeways can vary based on the community and context in which they are located. Bikeways in urban and suburban areas of the region are recommended to include the following:

- Separated or protected bike lanes/cycle tracks
- Bike lanes
- Marked shared lanes
- Marked bicycle boulevards

Communities may also provide on-street bicycle accommodations that include signed bike routes and signed shared roadways without designated bikeway

pavement markings, including wide outside lanes. However, these facilities are not represented in Mobility 2045. Bikeways between communities in rural unincorporated areas of the region generally consist of paved shoulders, particularly on roadways with higher speeds or traffic volumes. Paved shoulders in these rural areas provide opportunities for travel between small communities.

### Pedestrian Network

Pedestrian facilities must accommodate a diverse group of travelers of all ages and abilities, including people who walk, jog, use wheelchairs or walkers, or push strollers. Pedestrians tend to be the most vulnerable road users; therefore, pedestrian facilities should be designed and implemented to increase their safety and effectiveness.

The pedestrian network provides a primary mode of travel for short trips and it supports other transportation modes. The network of pedestrian facilities should be complete, direct, safe, and enjoyable to use. This can be accomplished by addressing the continuity of the sidewalk network, the streetscape, and the physical context in which the sidewalk is located.

Planning for the pedestrian network requires similar consideration and analysis as planning for roadways. The pedestrian network enhances economic development by connecting places where people like to live and visit, and it improves safety by supporting safe routes to school. When fully developed, the pedestrian network should provide safe links between destinations such as schools, employment, and transit facilities. Programs that invest in this network should prioritize improvements that connect to major destinations, improve safety, and help promote community livability and a healthy lifestyle.

The primary considerations of the pedestrian network include:

- Completing gaps in the sidewalk network
- Completing first/last mile connections to transit services
- Providing safe routes, including crossings of busy streets and major barriers, that are compliant with the Americans with Disabilities Act
- Providing context-sensitive streetscapes

### *Americans with Disabilities Act and Transition Plans*

The Americans with Disabilities Act (ADA) of 1990 is a civil rights statute that prohibits discrimination against people with disabilities. Title II of the ADA

addresses public services and the accessibility of public transportation to people with disabilities. After the ADA became effective, public facilities were required to be designed and constructed to be accessible by people with disabilities. Failing to design and construct facilities accessible by people with disabilities constitutes discrimination and is prohibited by law. Title II of the ADA applies to facilities built after 1990, pre-existing facilities, and any organization with 50 or more employees.

State and local governments are required to perform self-evaluations of current facilities and develop a transition plan to address deficiencies by building new projects and by altering existing projects, including performing reconstruction, major rehabilitation, widening, resurfacing, signal installation, and upgrades. This affects pedestrian facilities in the public right-of-way, including sidewalks, curb ramps, and warnings detectable by a range of users. In the case of noncompliance for state or local governments, FHWA will seek a voluntary compliance agreement. If an agreement cannot be met, FHWA will send the case to the Attorney General for action.

NCTCOG is helping local jurisdictions comply with ADA through policy, funding, and training for officials.

## Policies, Programs, and Projects

This section describes the policy framework that guides the implementation of the region-wide network of urban and rural active transportation facilities. This includes the integration of Complete Streets, context-sensitive solutions, and other relevant initiatives into roadway planning, design, implementation, and maintenance policies. This multimodal network vision of *Mobility 2045* will create a seamless and interconnected transportation network that safely accommodates users of all ages and abilities, including pedestrians, bicyclists, transit riders, and motorists.

Three policies form the foundation of the *Mobility 2045* active transportation vision; these policies are supported by a variety of programs and projects. Each element plays an integral role in meeting shared regional goals and needs. Policies guide decision-making processes, programs compose the policy framework, and performance measures maintain accountability. See appendix E: **Mobility Options** for a complete listing of policies, programs, projects, and maps related to active transportation.

**Policy BP3-001:** Support the planning and design of a multimodal transportation network with seamless interconnected active transportation facilities that promotes walking and bicycling as equals with other transportation modes.

The active transportation network must be interconnected with transit services and integrated as part of Complete Streets to connect key destinations, including employment centers; education, medical, retail, and entertainment centers; and other destinations for daily activities. *Mobility 2045 promotes roadways in the urbanized area that are designed and constructed to accommodate at least three or more modes of transportation.*

### BP2-001: Active Transportation Planning and Design

- A. Multimodal Transportation Plans:** Encourage development of local pedestrian and bicycle plans, as well as modifications to local transportation plans and standards that provide for pedestrian accommodations, on-street bikeways, and the network of off-street trails.
- B. Complete Streets:** Facilitate and support the adoption of local policies and the implementation of Complete Streets projects with bicycle and pedestrian facilities as routine accommodations for new roadway construction and reconstruction projects.
- C. Context-Sensitive Design:** Incorporate bicycle and pedestrian modes in all transportation corridor studies, support the adoption of regional and local policies, and implement Complete Streets projects and roadway projects that are sensitive in design to the context of their surroundings.
- D. Corridor Studies:** Integrate bicycle and pedestrian mobility in all transportation corridor studies, incorporate bicycle and pedestrian modes in corridor studies, and support the funding and construction of bicycle and pedestrian elements of final corridor studies.
- E. Americans with Disabilities Act Transition Plans:** Encourage local agencies to adopt and implement Americans with Disabilities Act transition plans.
- F. Local Regulations:** Encourage local jurisdictions to adopt ordinances, zoning standards, engineering standards, and guidelines that accommodate bicycle and pedestrian modes of travel through such means as Complete Streets policies, thoroughfare technical specifications, right-

of-way and easement preservation, bicycle parking ordinances, bicycle passing ordinances, and end-of-trip facilities.

**G. Data Collection and Analysis:** Monitor and evaluate the North Central Texas region's bicycling and walking efforts by collecting bicycle and pedestrian count data, analyzing bicycle and pedestrian crash data, conducting regional non-motorized travel surveys, developing an appropriate methodology indicating active transportation's modal share goal, and publishing findings.

**H. Technical Support/Resources/Research:** Collect relevant research materials regarding bicycle and pedestrian transportation to utilize in regional initiatives and provide as resources to local governments and area stakeholders.

**Policy BP3-002:** Implement pedestrian and bicycle facilities that meet accessibility requirements and provide safe, convenient, and interconnected transportation for people of all ages and abilities.

Mobility 2045 promotes bicycle and pedestrian projects that connect multiple jurisdictions and expand the regional network by improving coordination, connectivity, and continuity between counties and communities. To realize the potential of active transportation, special attention must be paid to the current barriers and safety issues the region is experiencing. These include:

- An incomplete network of bicycle and pedestrian facilities, including those that serve environmental justice and transit-dependent populations.
- High rates of pedestrian and bicycle crashes and fatalities involving motor vehicles.
- Limited funding for safe routes to school projects.
- Infrastructure that is not compliant with ADA.
- Significant barriers to safe active transportation travel; these barriers include freeways, major streets with high traffic volumes and speeds, and waterways.

Improving safety is a top priority for USDOT, and Mobility 2045 is committed to reducing fatalities and serious injuries on the transportation network throughout North Central Texas.

**BP2-002:** Active Transportation Network Implementation

**A. Complete the Regional Active Transportation Network:** Continue the Regional Transportation Council Local Funding Program initiatives and Sustainable Development Funding Programs. The Local Funding Program initiatives include the Local Air Quality Transportation Alternatives Program. Sustainable Development Funding Programs direct funds to local governments to improve, expand, and complete the bicycle and pedestrian facilities network and related programs throughout the region.

Implementation priorities include:

1. **Close Gaps and Improve Connectivity in the Regional Veloweb, On-Street Bikeway Network, and Pedestrian Network:** Eliminate major gaps in the regional network and complete connections to address major barriers such as freeways, railroads, and waterways.
2. **Linkages to Transit and Major Destinations:** Support and complete the development of pedestrian and bicycle facilities that provide access from neighborhoods to public transportation services, education facilities, employment centers, medical, retail, and other destinations.
3. **Environmental Justice Areas and Transit-Dependent Populations:** Improve accommodations for pedestrians and bicyclists in environmental justice areas and improve connections for transit-dependent populations.
4. **Regional Pedestrian Network:** Develop a Regional Pedestrian Network and Safety Plan. Implement projects that improve accommodations and safety for pedestrians, with special attention given to vulnerable road users and disadvantaged communities.
5. **Safe Routes to School:** Coordinate with Independent School Districts, municipalities, public safety officials, and other agencies throughout the region to ensure safe and accessible walking and bicycling corridors to education facilities.

**B. Safety Improvements:** Support efforts to reduce crashes and fatalities between motor vehicles and pedestrians and bicyclists, including the implementation of Proven Safety Countermeasures outlined by the Federal Highway Administration Office of Safety. Prioritize infrastructure design techniques and safety countermeasures projects in areas with high rates of pedestrian and bicycle crashes and fatalities.

**C. Americans with Disabilities Act Compliance:** Support efforts to identify American with Disabilities Act accessibility needs and incorporate improvements into the overall transportation network.

**Policy BP3-003:** Support programs and activities that promote pedestrian and bicycle safety, health, and education.

Walking and bicycling are legitimate forms of transportation that have the potential to positively impact the region by shifting travel modes, resulting in reduced congestion and improved air quality and public health. Mobility 2045 promotes enhanced safety for active travel by increasing education and training opportunities for cyclists, pedestrians, motorists, and professionals who are designing and implementing roadway facilities, implementing safety infrastructure projects, and promoting enforcement of traffic laws to reduce bicycle and pedestrian-related conflicts.

**BP2-003:** Active Transportation Education and Outreach

- A. Safety Education Programs and Campaigns:** Support and create programs and campaigns that educate bicyclists, pedestrians, and the general public about bicycle operation, bicyclists' and pedestrians' rights and responsibilities, and lawful interactions between motorists, bicyclists, and pedestrians to increase safety for all road users. Support programs aimed at increasing bicycle and walking trips by providing incentives, recognition, or services that make bicycling and walking more convenient transportation modes.
- B. Healthy and Livable Communities:** Create healthier and more livable communities by encouraging the use of bicycle and pedestrian facilities for work and non-work trips, and for daily physical activity.
- C. Enforcement:** Encourage enforcement efforts of traffic laws and target unsafe bicyclist, pedestrian, and motorist behaviors to improve safety and reduce collisions and conflicts between motorists, bicyclists, and pedestrians.
- D. Technical Training and Education:** Provide pertinent training to transportation-related professionals.
- E. Mapping Facilities and Plans:** Maintain a regional database and provide information regarding existing and planned active transportation facilities and related amenities throughout the region.

In the future, the multimodal network and related policies, programs, and projects may be considered in the context of automated vehicles. Such vehicles have the potential to both benefit (through vehicle safety features) and harm (through infrastructure such as dedicated lanes) efforts to safely implement active transportation. Appropriate policies could help ensure that automated vehicles improve safety for bicyclists and pedestrians. More information on automated vehicles can be found in the **Transportation Technology** chapter.

## Priority Areas to Improve Facilities and Accessibility

Mobility 2045 recommends prioritizing improvements to active transportation facilities to close gaps within the larger network, increase the use of facilities, improve safety and comfort for pedestrians and bicyclists, and create easier access to destinations in areas with high propensity for walking and bicycling including:

- Public transportation facilities (bus stops and rail stations)
- Mixed-use/transit-oriented development areas
- Central business districts and major employment centers
- Educational institutions
- Neighborhood services (e.g. grocery stores, medical centers, libraries)
- Neighborhoods with transit-dependent populations
- Areas with pedestrian and bicycle safety concerns and high rates of crashes
- Areas with a high density of short car trips
- Areas with moderate to severe vehicle congestion levels (see appendix **E: Mobility Options**).
- Routes of statewide and regional significance identified by the Texas Department of Transportation Bicycle Tourism Trails Study

These destinations and routes are places that generate higher than average pedestrian and bicycle traffic. Prioritizing improvements in these areas and corridors will create the greatest benefit for people who travel by walking or bicycling. Other factors to consider when prioritizing projects include community support, cost/benefit analysis, sharing of construction costs, and geographic balance to ensure facilities are evenly constructed throughout the region.

## Performance Measures

Federally required performance measures for Metropolitan Planning Organizations are addressed in the **Regional Performance** chapter. Additional performance dimensions related to active transportation include:

- Number of pedestrian fatalities
- Number of pedestrian serious injuries
- Number of bicyclist fatalities
- Number of bicyclist serious injuries
- Number of miles of existing Regional Veloweb
- Number of miles of existing community shared-use paths
- Number of miles of existing on-street bikeways

## Summary

Active transportation is an important element in providing for the region's diverse needs and enhancing transportation choice. Walking and bicycling provide low-cost mobility options that place fewer demands on local roads and highways. Increased commitment to and investment in walking networks and bicycle facilities can help meet goals for cleaner, healthier air; less congested roadways; and more livable, safe, cost-efficient communities. The recommendations made in Mobility 2045 seek to increase active transportation as a viable transportation mode for the residents of North Central Texas.

## Active Transportation

Mobility 2045 represents the extensive research and compilation of the locally adopted master plans for active transportation infrastructure throughout the region. Various new or updated plans are adopted each year throughout the region, and the North Central Texas Council of Governments (NCTCOG) regularly coordinates with local jurisdictions to maintain an updated database of existing, funded, and planned active transportation facilities.

### Local Adopted Master Plans with Shared-Use Paths (Trails) and On-Street Bikeways, February 2018

Type of Master Plans	Number of Adopted Plans
Cities and counties with adopted trails master plans	63
Cities and counties with adopted master plans with on-street bikeways	61

Source: NCTCOG, February 2018

### Recommended Off-Street Network: The Regional Veloweb 2045

The Regional Veloweb plan was first developed in 1997 based on an extensive study conducted by NCTCOG’s Bicycle and Pedestrian Transportation Task Force. Over the years, as additional planning has occurred in cities and counties throughout the region, this planned regional network has grown as new prioritized corridors have been identified that provide connectivity between cities and counties, as well as linkages to transit stations and major destinations.

	1997 Regional Veloweb	Mobility 2035 Regional Veloweb (2011)	Mobility 2035 – 2013 Update (2013)	Mobility 2040 Regional Veloweb (2016)	Mobility 2045 Regional Veloweb (2018)
Length (miles)	644	1,668	1,728	1,876	1,883
Number of Cities Connected	50	116	117	105	106
Number of Counties Connected	4	10	10	10	10

The Mobility 2045 Regional Veloweb includes adjustments in much of the unincorporated rural areas of the region. In some areas, Veloweb alignments reflected in previous plans were updated and replaced by on-street wide-paved shoulder accommodations. These shoulder accommodations are more suitable for providing opportunities for travel between small communities located outside of the urban area. They are reflected in the regional On-Street Bikeway Network.

### Costs

Costs to implement various sections of the Veloweb and Community Paths will vary based on the location and context of the local area. For example, some sections may require extensive grade separation crossings of highways or waterways while other portions of the network can be implemented with fewer barrier crossings. Additional costs for lighting, traffic signal or roadway crossing accommodations, and engineering and design are not calculated into the overall Veloweb construction costs of \$950,000 per mile as detailed in following table.

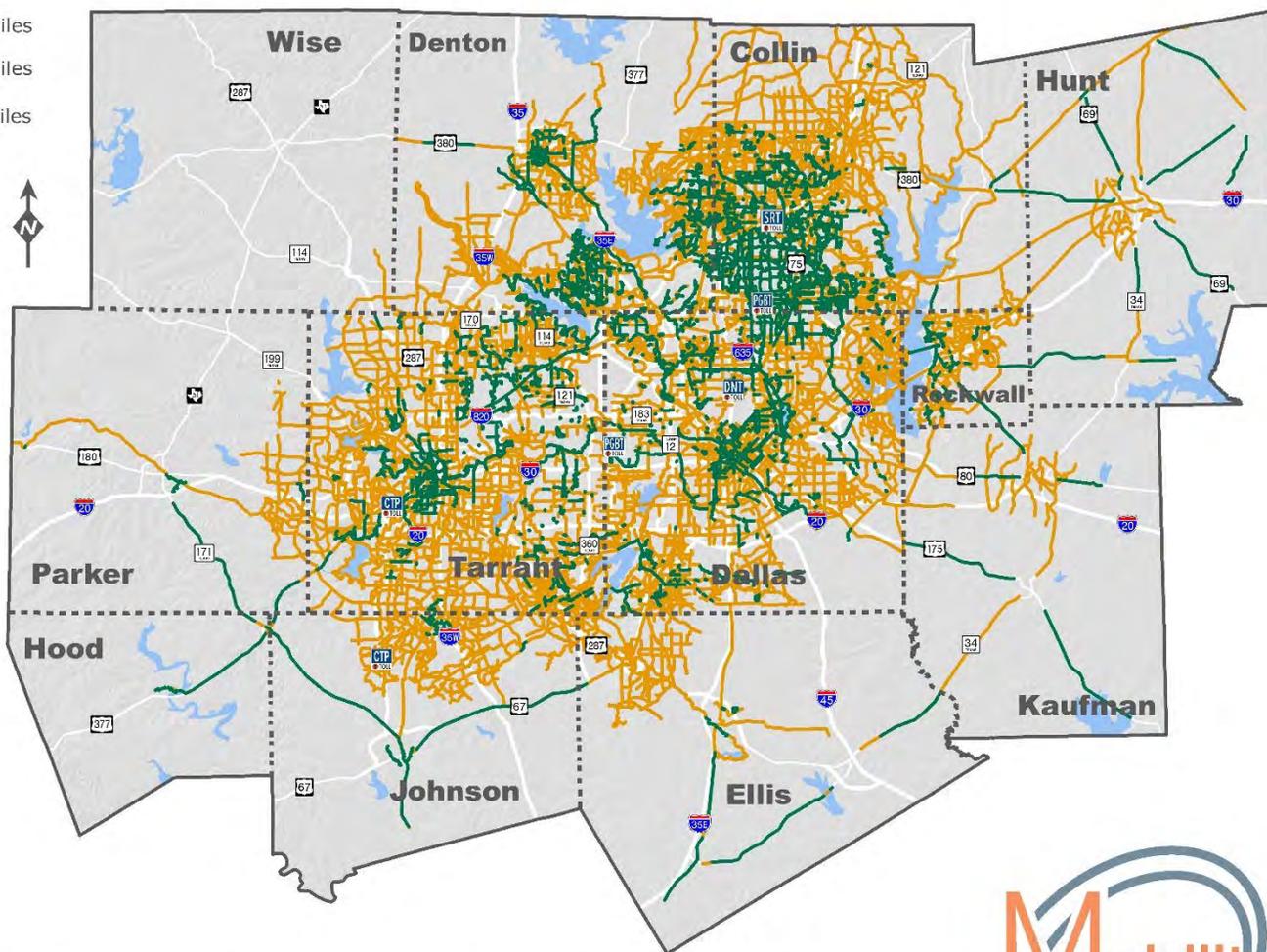
Facility	Estimated Costs Per Mile
12-foot wide concrete shared-use path <sup>1</sup>	\$420,000
Retaining wall, bridges, railings, culverts, or other major structures	\$530,000
<b>Total</b>	<b>\$950,000</b>

<sup>1</sup> Based on 12-foot width, includes mobilization, site prep, demolition, earthwork

Source: NCTCOG, 2015

## Combined Regional Veloweb, Community Paths, and On-Street Bikeway Network

	Existing/Funded	1,516 Miles
	Planned	5,787 Miles
	Total	7,303 Miles



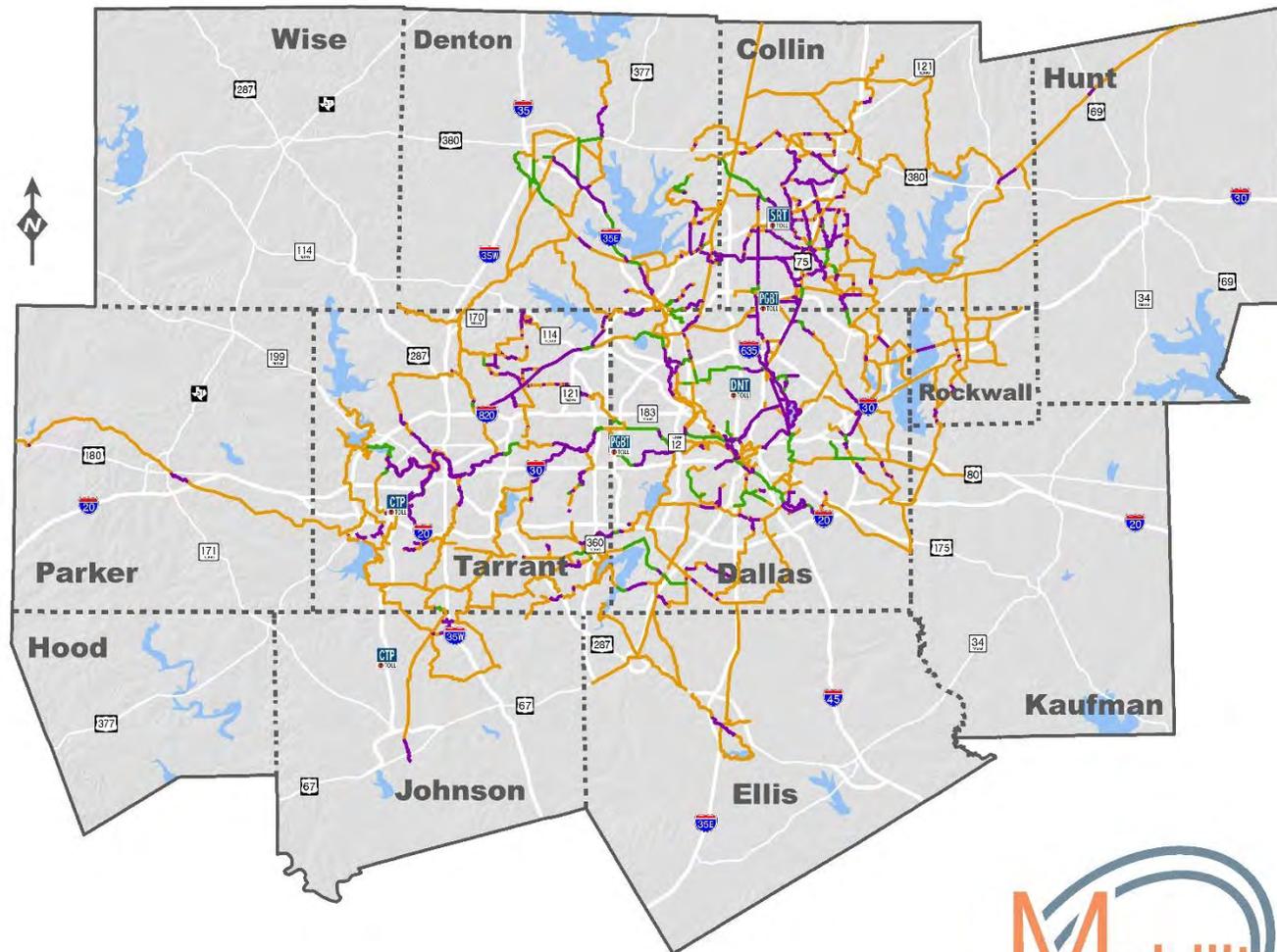
The Regional Veloweb and Community Shared-Use Path network does not include recreational paths/loops, private paths, equestrian or nature trails, or wide sidewalks less than 10 feet in width.  
 On-street bikeways in the urbanized area include: separated or protected bike lanes/cycle tracks, bike lanes, marked shared lanes, and marked bicycle boulevards.  
 On-street bikeways in the urbanized area do not include: signed bike "routes", signed "share the road", unmarked wide outside lanes, or signed wide shoulders.  
 The use of wide shoulders is included on various roadways linking rural communities outside of the urbanized area.  
 Facility recommendations indicate transportation need. Corridor-specific alignment, design, and operational characteristics for the network will be determined through ongoing project development.

June 2018



# Regional Veloweb

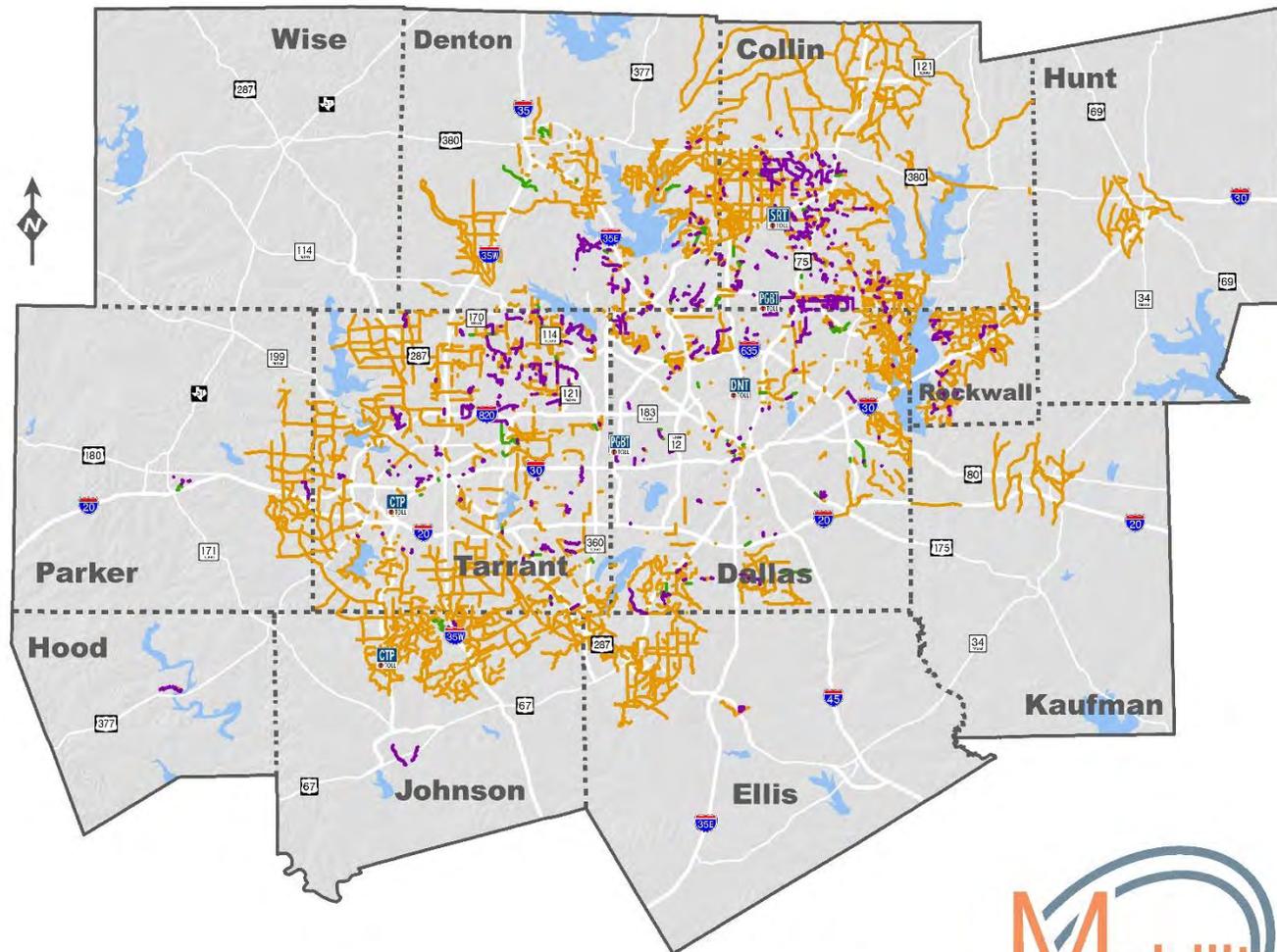
- Existing 455 Miles
- Funded 143 Miles
- Planned 1,285 Miles
- Total 1,883 Miles



Facility recommendations indicate transportation need. Corridor-specific alignment, design, and operational characteristics for the Regional Veloweb system will be determined through ongoing project development.

# Community Shared-Use Paths

- Existing 318 Miles
- Funded 57 Miles
- Planned 2,584 Miles
- Total 2,959 Miles



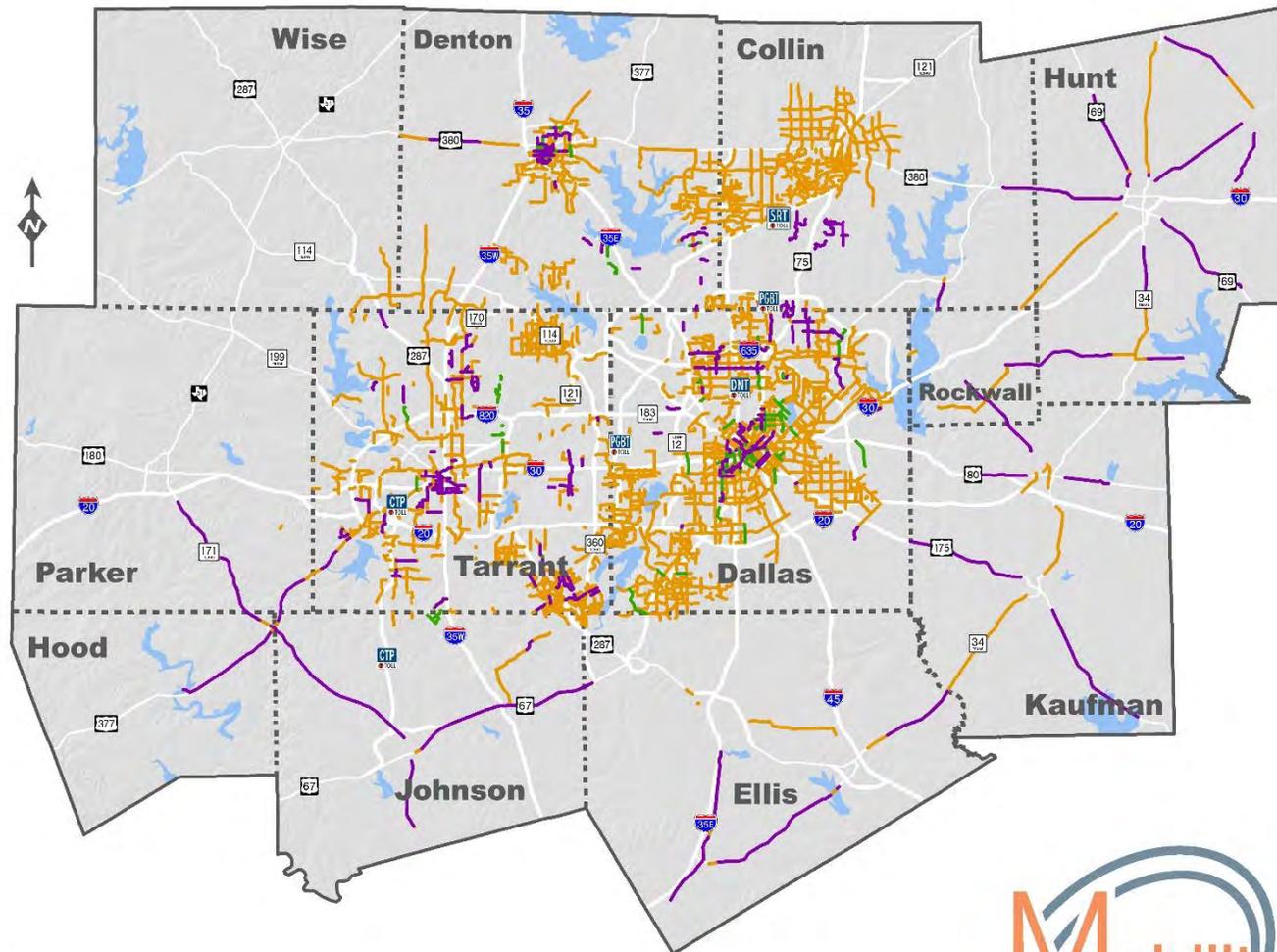
Community Shared-Use Paths supplement the Regional Veloweb network. These paths do not include recreational paths/loops, private paths, equestrian or nature trails, or wide sidewalks less than 10 feet in width.

Facility recommendations indicate transportation need. Corridor-specific alignment, design, and operational characteristics will be determined through ongoing project development.



# On-Street Bikeway Network

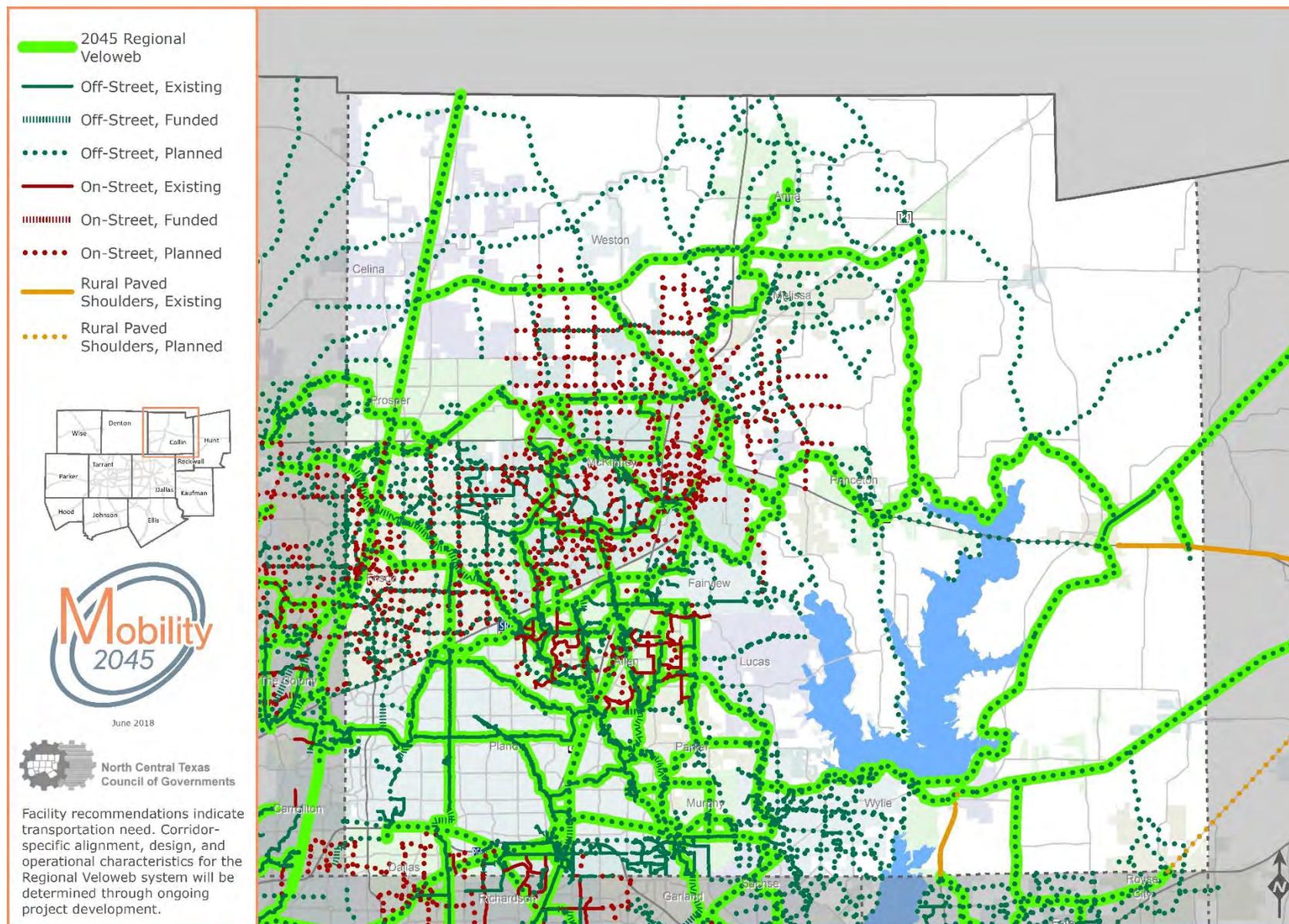
- Existing 459 Miles
- Funded 84 Miles
- Planned 1,918 Miles
- Total 2,461 Miles



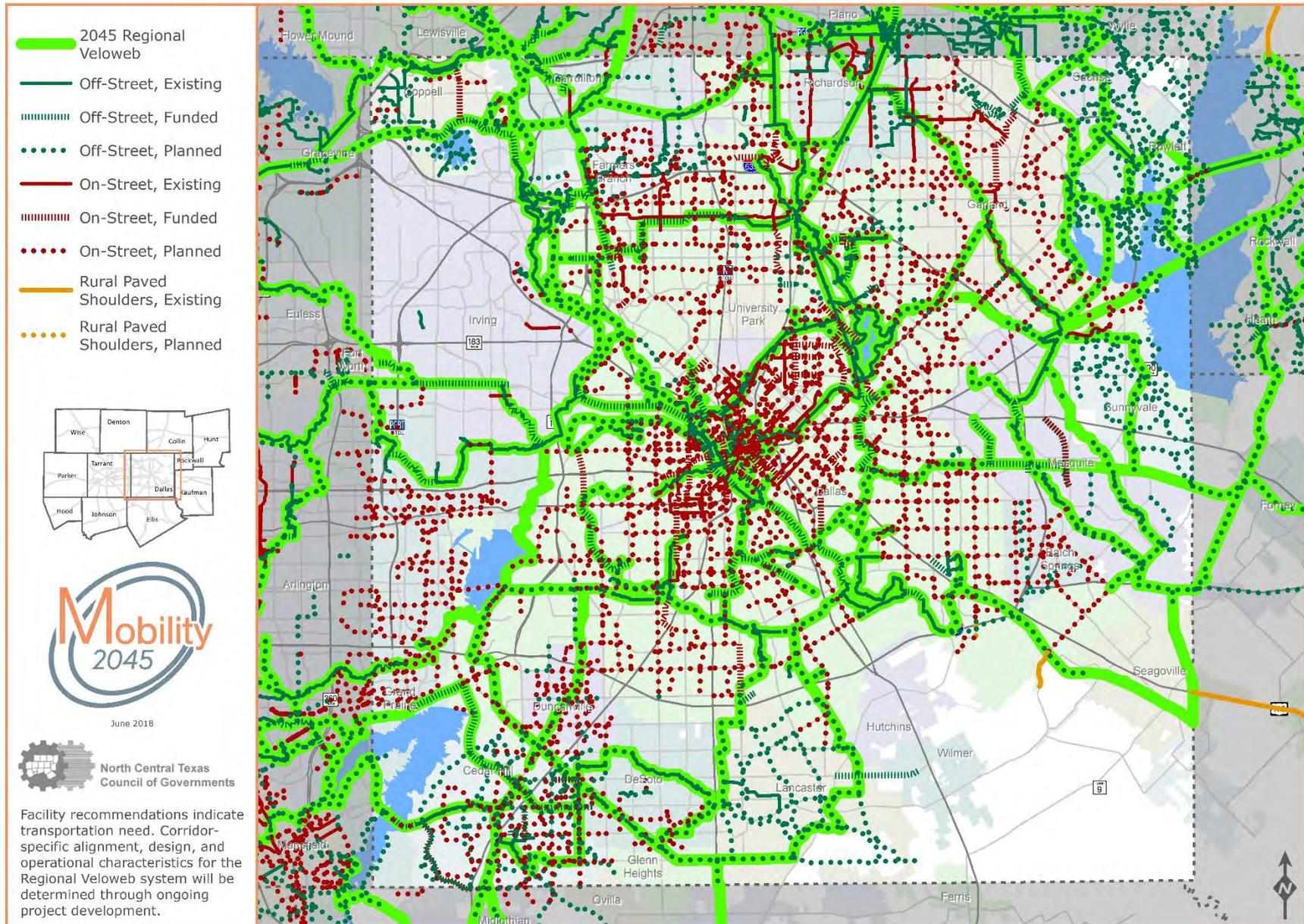
On-street bikeways in the urbanized area include: separated or protected bike lanes/cycle tracks, bike lanes, marked shared lanes, and marked bicycle boulevards. On-street bikeways in the urbanized area do not include: signed bike "routes", signed "share the road", unmarked wide outside lanes, or signed wide shoulders. The use of wide shoulders is included on various roadways linking rural communities outside of the urbanized area. Facility recommendations indicate transportation need. Corridor-specific alignment, design, and operational characteristics will be determined through ongoing project development.

The following maps identify with additional detail the general alignment of existing, funded, and planned shared-use paths and on-street bikeways in each county in the region. Planned facilities are those that are included in locally adopted master plans.

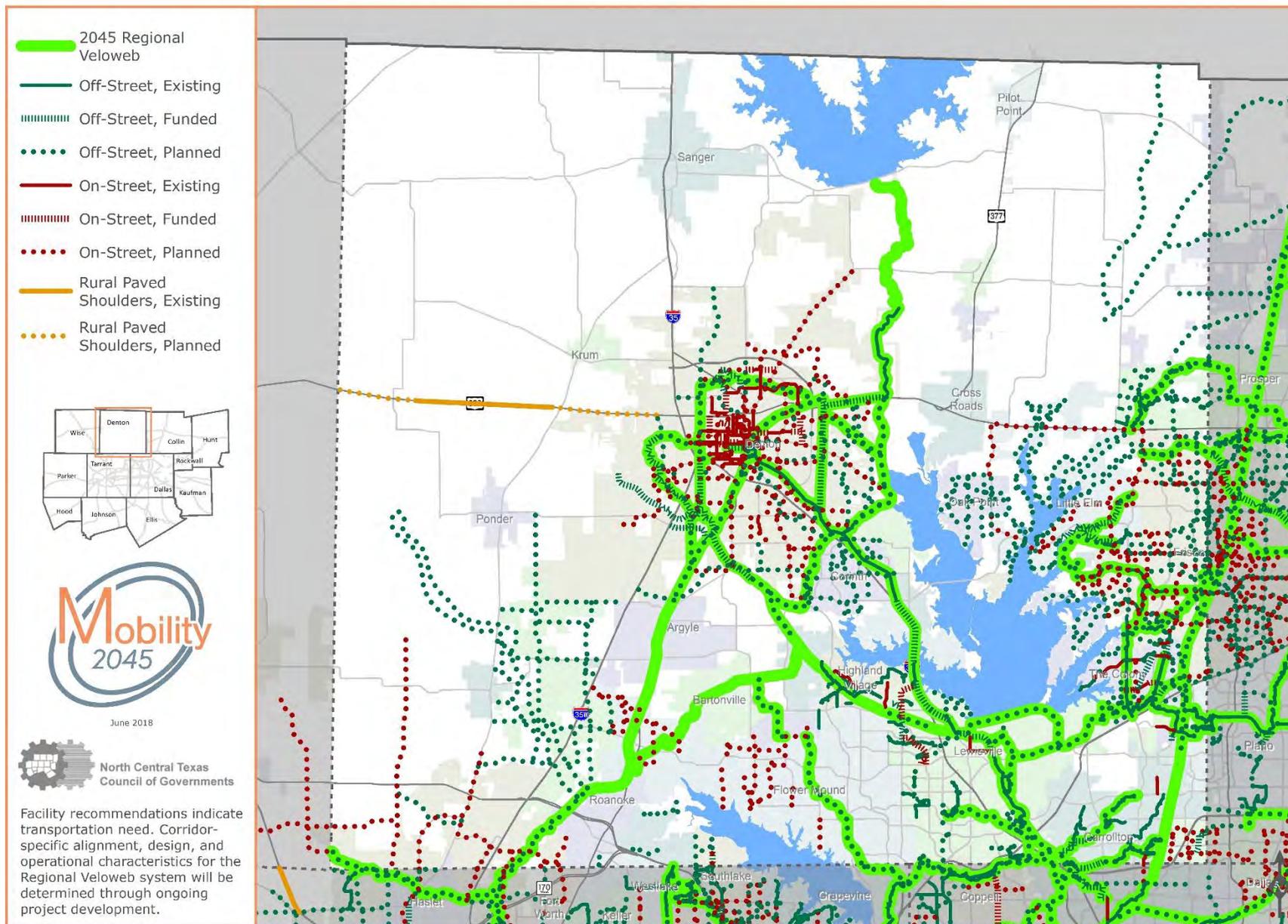
## Bikeway Network in Collin County



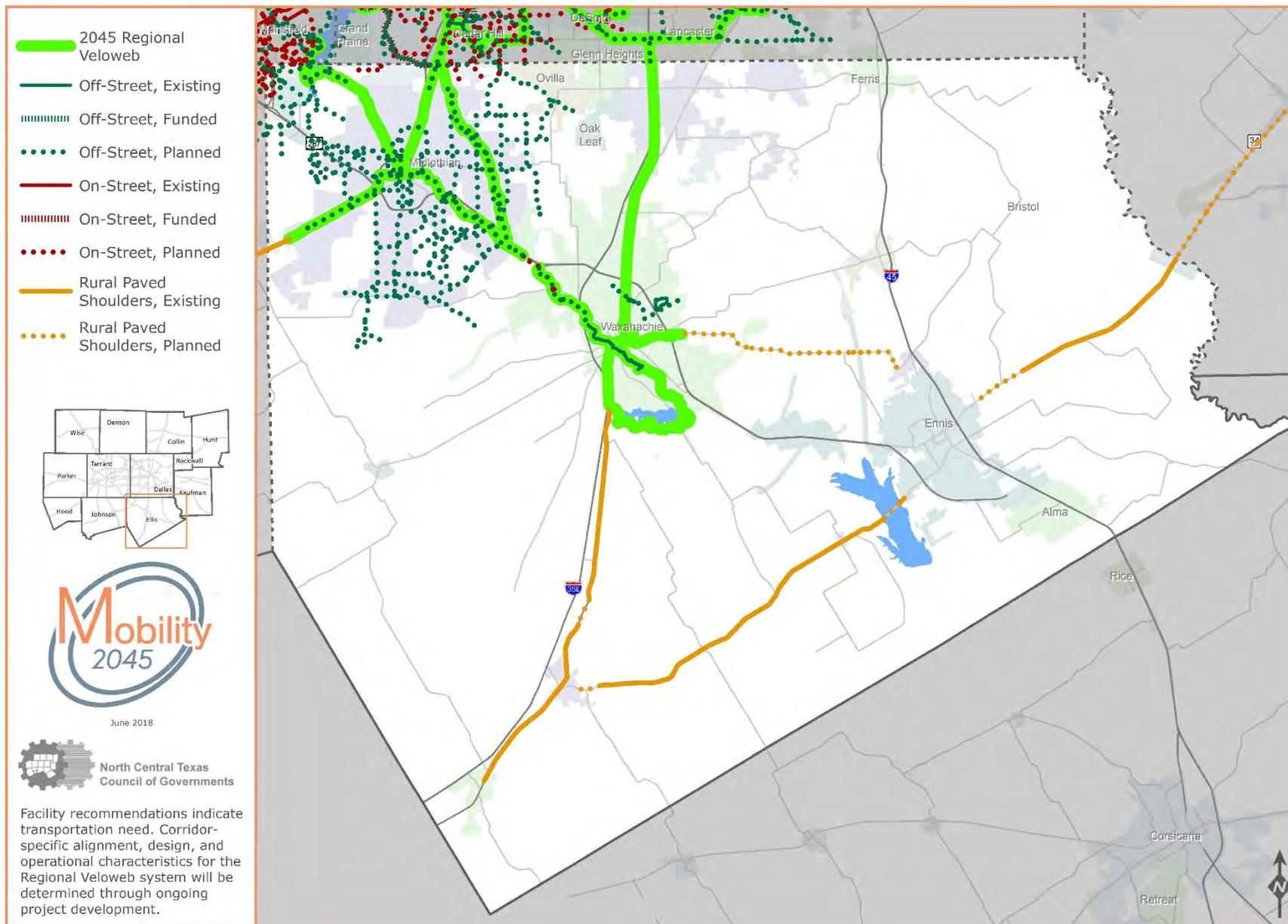
## Bikeway Network in Dallas County



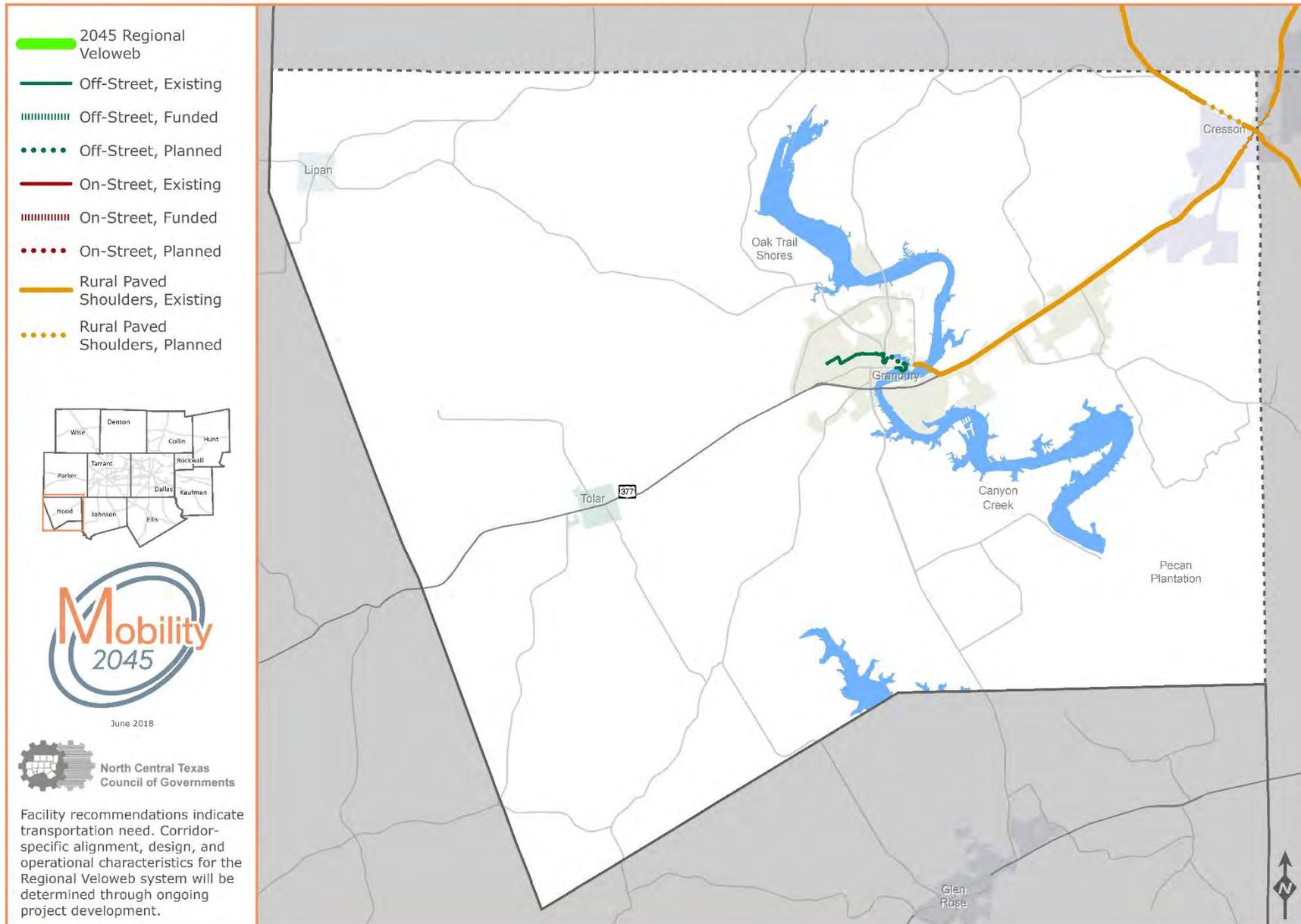
## Bikeway Network in Denton County



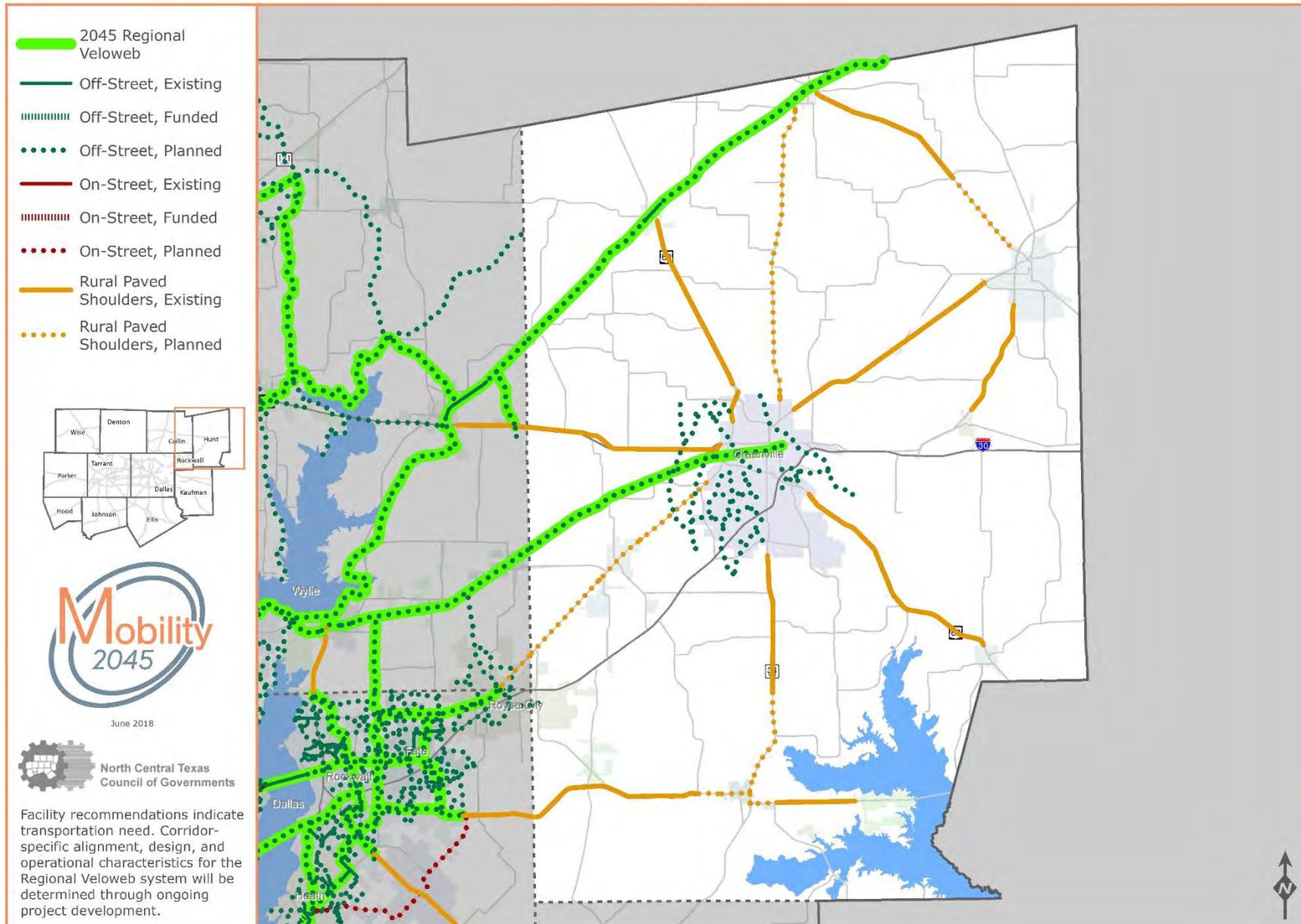
## Bikeway Network in Ellis County



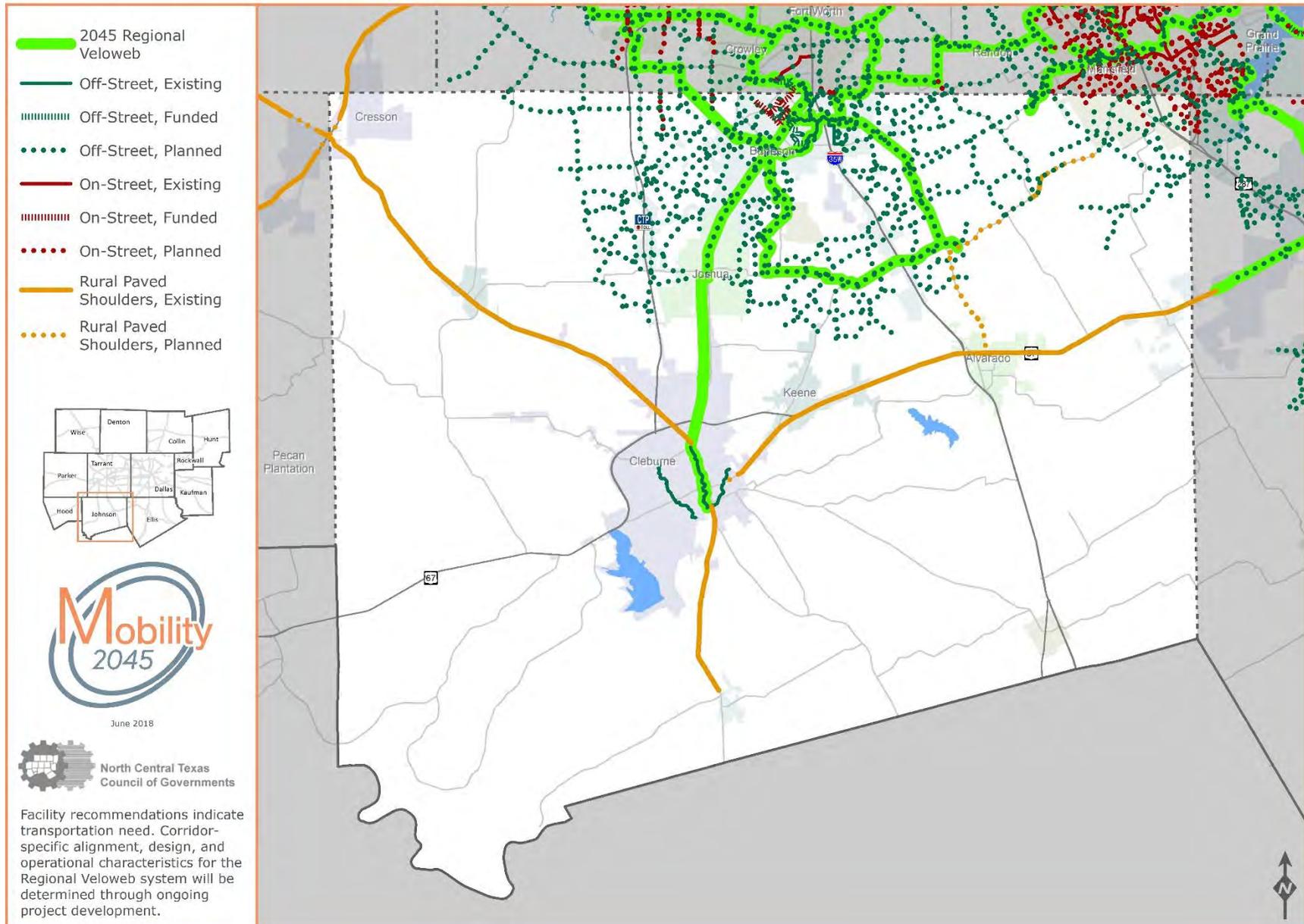
## Bikeway Network in Hood County



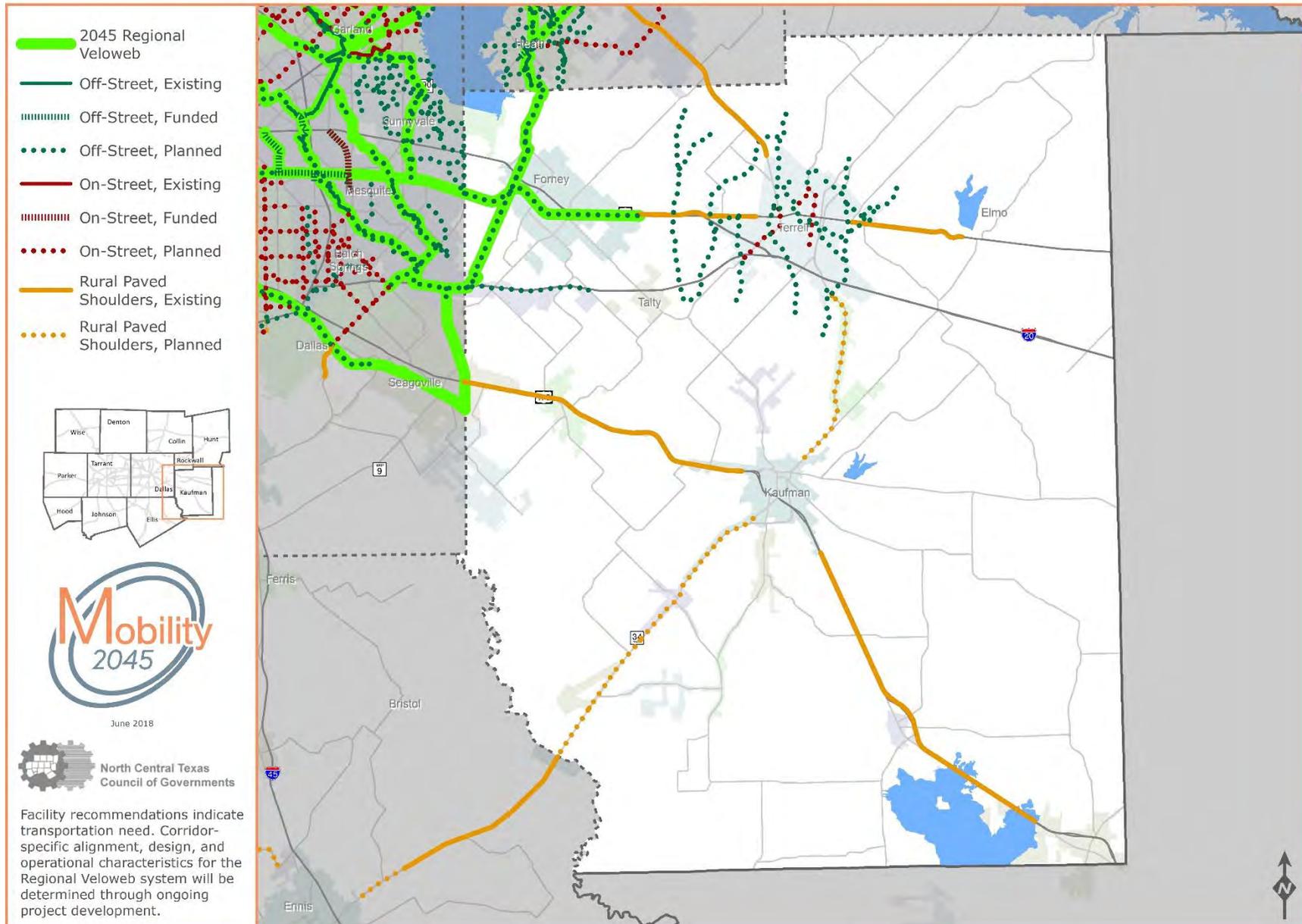
## Bikeway Network in Hunt County



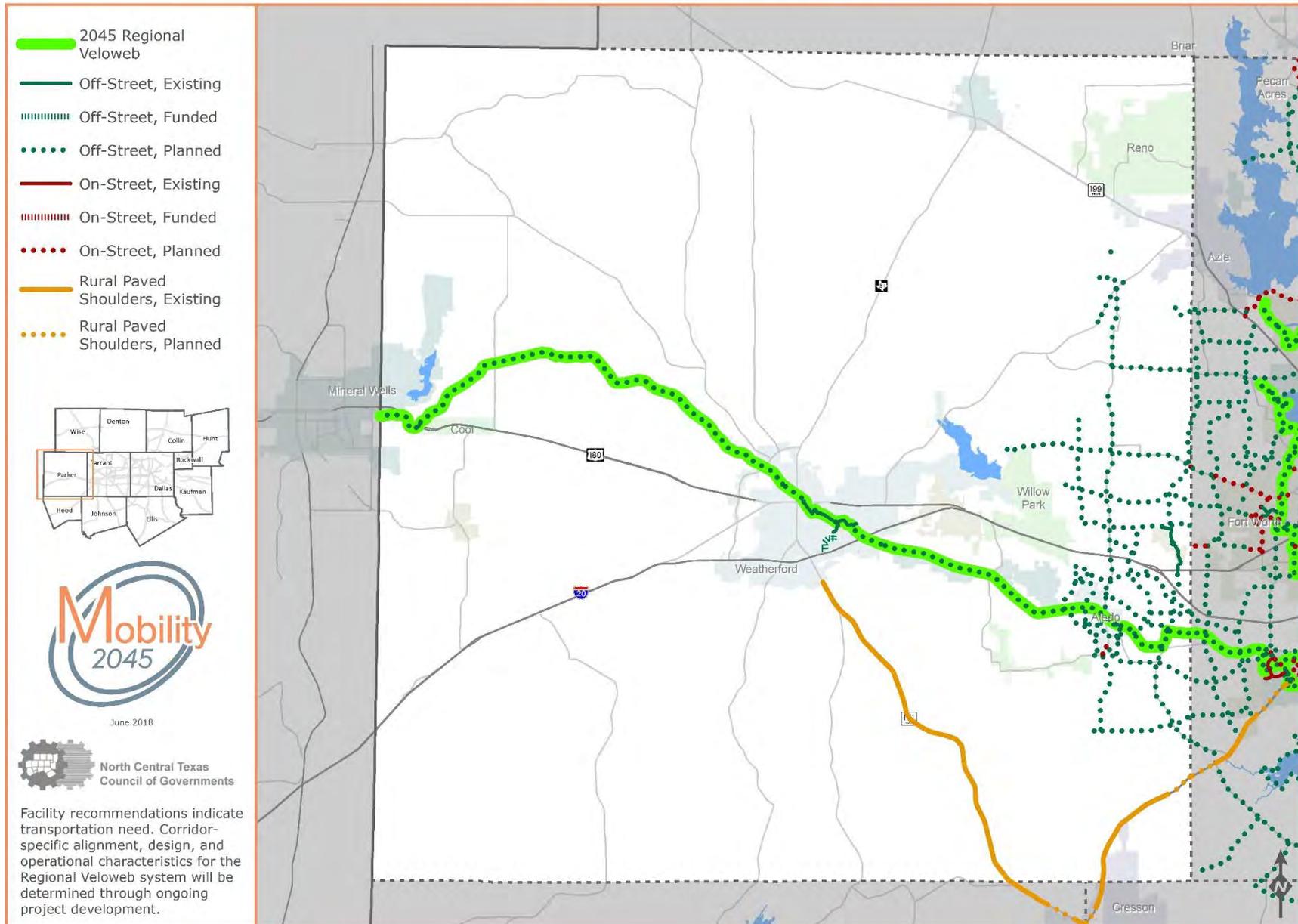
## Bikeway Network in Johnson County



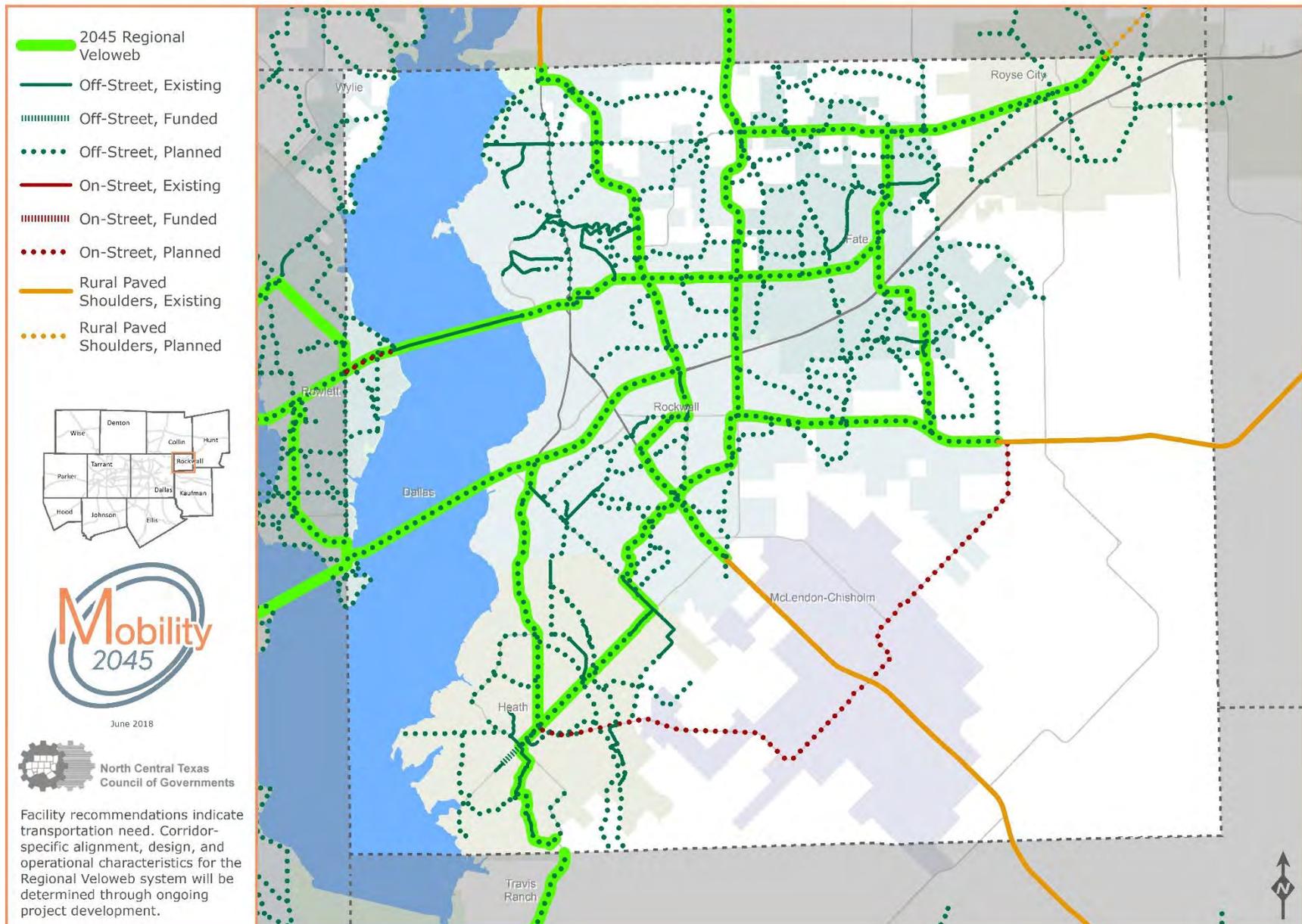
## Bikeway Network in Kaufman County



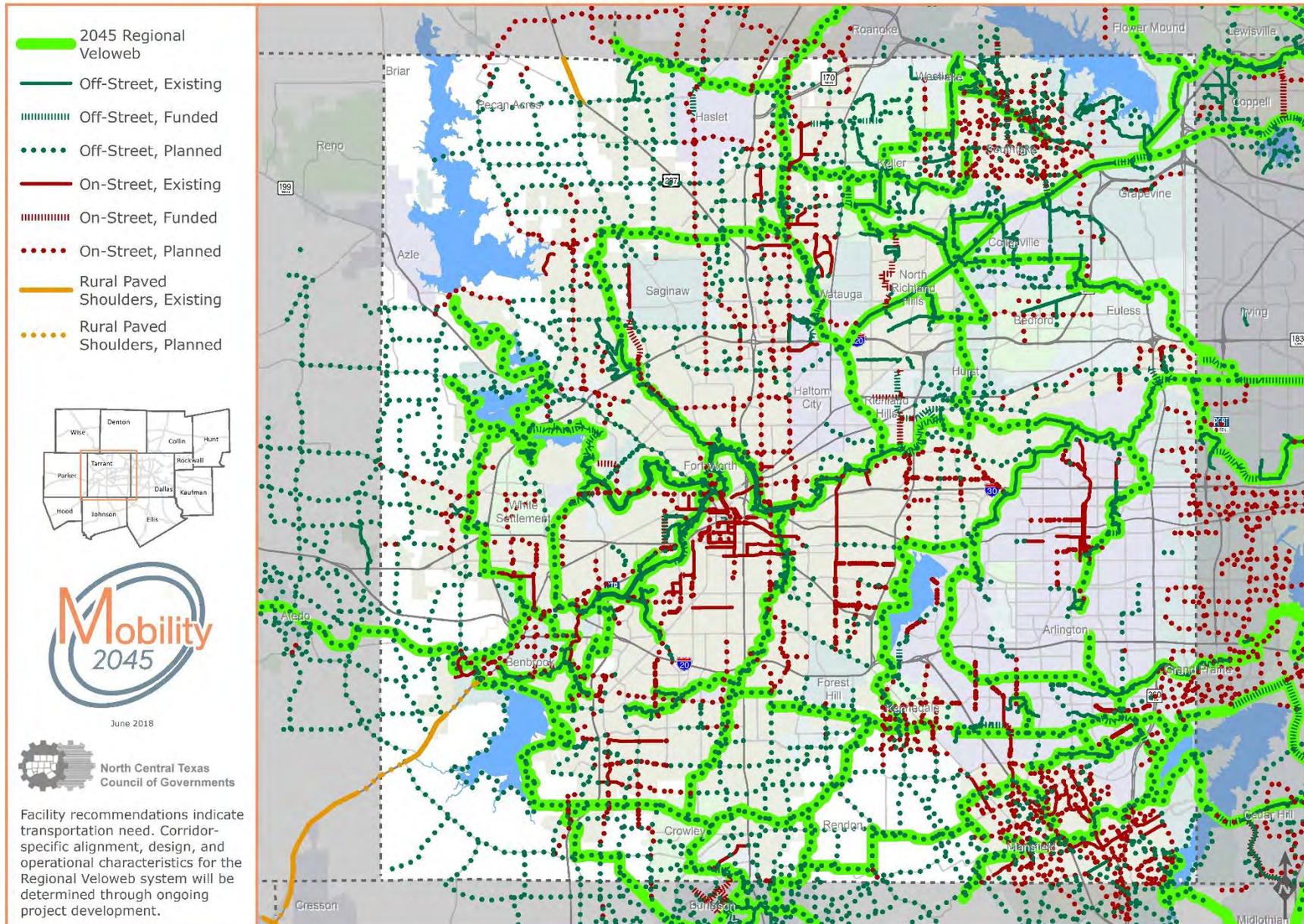
## Bikeway Network in Parker County



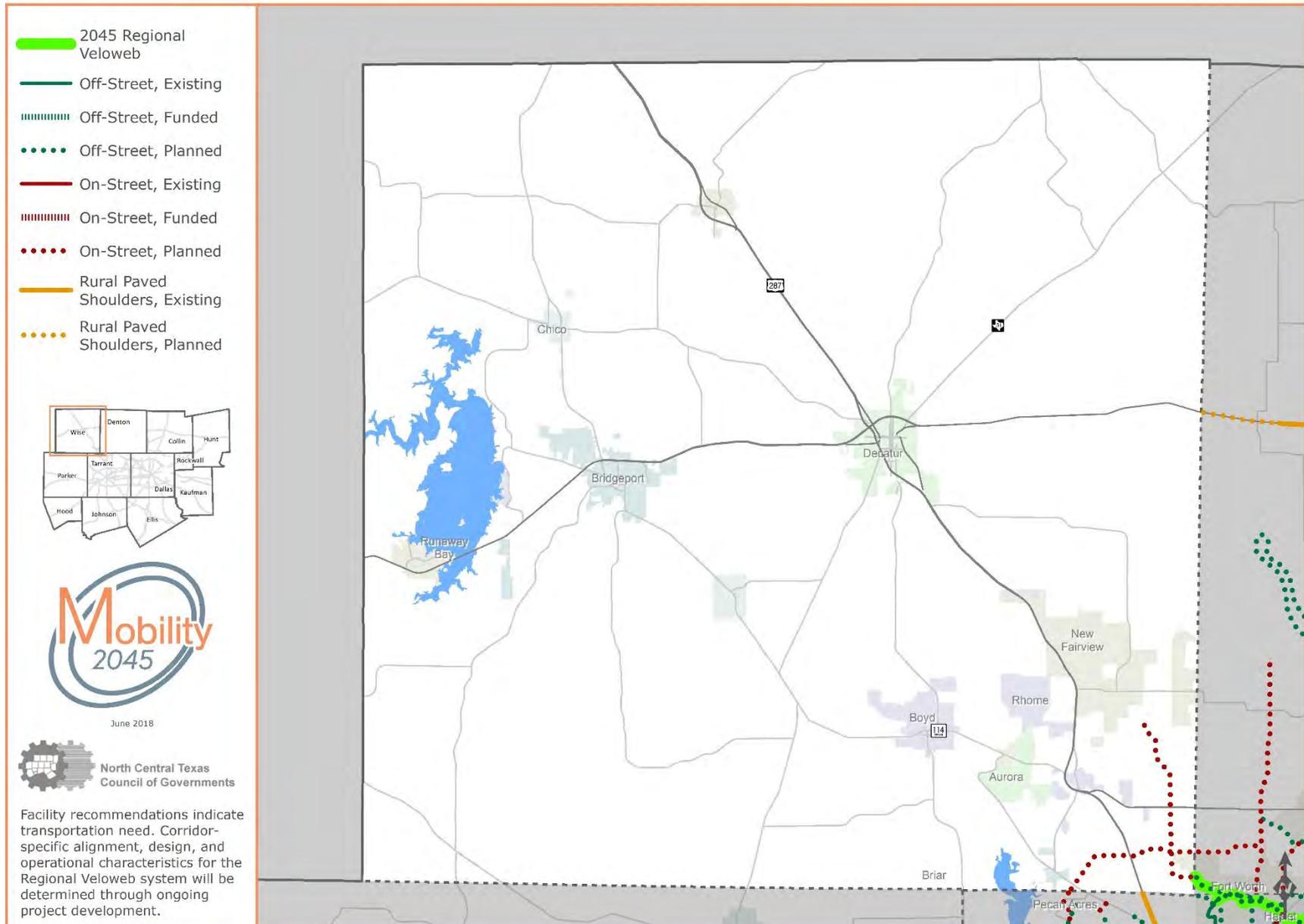
## Bikeway Network in Rockwall County



## Bikeway Network in Tarrant County



## Bikeway Network in Wise County



### Funding the Active Transportation Network Plan

The amount of federal funding allocated to pedestrian and bicycle projects throughout the region varies from year to year, as described in the current Transportation Improvement Program. While federal funds cover much of the

cost of the Regional Veloweb network and portions of the other community pathway and on-street bicycle networks, local governments also contribute matching funds to these projects. In addition, local funding also implements a variety of local path, on-street bikeway, and pedestrian improvement and safety-related projects.

	TIGER <sup>1</sup>	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP/NHS	STBG	TA	RTP	SRTS <sup>3</sup>	PLAN	402	405	FLTP
Access Enhancements to Public Transportation	●	●	●	●	●		●	●	●						●
ADA/504 Self Evaluation/Transition Plan								●	●	●		●			●
Bicycle and/or Pedestrian Plans			●					●	●		●	●			●
Bicycle Helmets (project or training related)								●	● <sup>S</sup>		●		●		
Bicycle Helmets (safety promotion)								●	● <sup>S</sup>		●				
Bicycle Lanes on Road	●	●	●	●	●	●	●	●	●		●				●
Bicycle Parking	●*	●*	●	●	●		●	●	●	●	●				●
Bicycle Racks on Transit	●	●	●	●	●			●	●						●
Bicycle Share (capital and equipment; not operations)	●	●	●	●	●		●	●	●						●
Bicycle Storage or Service Centers	●*	●*	●	●	●			●	●						●
Bridges/Overcrossings for Bicyclists and/or Pedestrians	●		●	●	●*	●	●	●	●	●	●				●
Bus Shelters & Benches	●		●	●	●			●	●						●
Coordinator Positions (state or local)					● <sup>L</sup>			●	● <sup>S</sup>		●				
Crosswalks (new or retrofit)	●		●	●	●*	●	●	●	●	●	●				●
Curb Cuts and Ramps	●		●	●	●*	●	●	●	●	●	●				●
Counting Equipment	● <sup>P</sup>		●	●		●	●	●	●	●	●	●*			●
Data Collection and Monitoring for Bicyclists and/or Pedestrians	● <sup>P</sup>		●	●		●	●	●	●	●	●	●*			●
Helmet Promotion (for bicyclists)								●	● <sup>S</sup>		●		●		
Historic Preservation (bicycle and pedestrian and transit facilities)	●		●	●				●	●						●
Landscaping, Streetscaping (bicycle and/or pedestrian route; transit access)	●*		●	●				●	●						●
Lighting (pedestrian and bicyclist scale associated with pedestrian/bicyclist project)	●		●	●		●	●	●	●	●	●				●
Maps (for bicyclists and/or pedestrians)			●	●	●			●	●		●	●*			
Paved Shoulders for Bicyclist and/or Pedestrian Use	●				●*	●	●	●	●		●				●
Police Patrols (safety enforcement)								● <sup>S</sup>	● <sup>S</sup>		●		●*	●*	
Recreational Trails	●*							●	●	●					●

	TIGER <sup>1</sup>	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP/NHS	STBG	TA	RTP	SRTS <sup>3</sup>	PLAN	402	405	FLTPP
Road Diets	●	●				●	●	●	●						●
Road Safety Assessment for pedestrians and bicyclists						●		●	●			●			●
Safety (education and awareness activities and programs to inform pedestrians, bicyclists, and motorists on pedestrian and bicyclist safety)								● <sup>S</sup>	● <sup>S</sup>		●	●*	●*	●*	
Safety Education Positions								● <sup>S</sup>	● <sup>S</sup>		●		●*		
Safety Program Technical Assessment (for bicyclists and pedestrians)								● <sup>S</sup>	● <sup>S</sup>		●	●*	●		
Separated Bicycle Lanes	●		●	●	●	●	●	●	●		●				●
Shared-Use Paths/Transportation Trails	●		●	●	●*	●	●	●	●	●	●				●
Sidewalks (new or retrofit)	●		●	●	●	●	●	●	●	●	●				●
Signs/Signals/Signal Improvements	●		●	●	●	●	●	●	●		●				●
Signed Bicycle or Pedestrian Routes	●		●	●	●		●	●	●		●				●
Spot Improvement Programs	●		●			●		●	●	●	●				●
Stormwater Impacts Related to Pedestrian and Bicycle Projects	●		●	●		●	●	●	●	●	●				●
Traffic Calming	●		●			●	●	●	●		●				●
Trail Bridges	●				●*	●	●	●	●	●	●				●
Trial Construction and Maintenance Equipment								● <sup>R</sup>	● <sup>R</sup>	●					
Trail/Highway Intersections	●				●*	●	●	●	●	●	●				●
Trailside and Trailhead Facilities (restrooms and water)	●*	●*						●*	●*	●*					●
Training					●	●		●	●	●	●	●*	●*		
Training for Law Enforcement on Bicyclist and Pedestrian Safety Laws								● <sup>S</sup>	● <sup>S</sup>		●				
Tunnels/Undercrossings for Bicyclists and/or Pedestrians	●		●	●	●*	●	●	●	●	●	●				●

Source: Federal Highway Administration, Revised August 12, 2016

402	State and Community Highway Safety Grant Program
405	National Priority Safety Programs (Nonmotorized Safety)
ATI	Associated Transit Improvement (1% set-aside of Federal Transit Administration)
CMAQ	Congestion Mitigation and Air Quality Improvement Program
FLTPP	Federal Lands and Tribal Transportation Programs (Federal Lands Access Program, Federal Lands Transportation Program, Tribal Transportation Program)
FTA	Federal Transit Administration Capital Funds
HSIP	Highway Safety Improvement Program
MM	Metropolitan Mobility
NHPP/NHS	National Highway Performance Program/National Highway System
PLAN	Statewide or Metropolitan Planning
RTP	Recreational Trails Program
SRTS	Safe Routes to School Program
STP	Surface Transportation Program
TAP/TE	Transportation Alternatives Program/Transportation Enhancement Activities
TIFIA	Transportation Infrastructure Finance and Innovation Act (loans)
TIGER	Transportation Investment Generating Economic Recovery Discretionary Grant Program

Key:

- = Funds may be used for this activity.
- \* = Eligible, but not competitive unless part of a larger project.
- <sup>P</sup> = Eligible for TIGER planning funds.
- <sup>L</sup> = Limit one per state.
- <sup>S</sup> = As SRTS.
- <sup>R</sup> = as RTP

## Policies

MTP Reference #	Active Transportation
BP3-001	Support the planning and design of a multimodal transportation network with seamless interconnected active transportation facilities that promotes walking and bicycling as equals with other transportation modes.
BP3-002	Implement pedestrian and bicycle facilities that meet accessibility requirements and provide safe, convenient, and interconnected transportation for people of all ages and abilities.
BP3-003	Support programs and activities that promote pedestrian and bicycle safety, health, and education.

## Programs

Active Transportation Planning and Design	
Reference	BP2-001
Background	The Active Transportation Planning and Design Program consists of plans, studies, policies, laws/legislation, and data collection/analysis to support multimodal transportation networks and context sensitive facilities.
Related Goals	<ul style="list-style-type: none"> <li>▪ Improve the availability of transportation options for people and goods.</li> <li>▪ Support travel efficiency measures and system enhancements targeted at congestion reduction and management.</li> <li>▪ Ensure all communities are provided access to the regional transportation system and planning process.</li> <li>▪ Preserve and enhance the natural environment, improve air quality, and promote active lifestyles.</li> <li>▪ Encourage livable communities which support sustainability and economic vitality.</li> <li>▪ Ensure adequate maintenance and enhance the safety and reliability of the existing transportation system.</li> <li>▪ Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.</li> </ul>
Related Policies	BP3-001
Implementation	<ul style="list-style-type: none"> <li>▪ <b>Multimodal Transportation Plans:</b> Encourage development of local pedestrian and bicycle plans, as well as modifications to local transportation plans and standards that provide for pedestrian accommodations, on-street bikeways, and the network of off-street trails.</li> <li>▪ <b>Complete Streets:</b> Facilitate and support the adoption of local policies and the implementation of Complete Streets projects with bicycle and pedestrian facilities as routine accommodations for new roadway construction and reconstruction projects.</li> <li>▪ <b>Context-Sensitive Design:</b> Incorporate bicycle and pedestrian modes in all transportation corridor studies, support the adoption of local policies, implement Complete Streets projects and roadway projects that are sensitive in design to the context of their surroundings.</li> <li>▪ <b>Corridor Studies:</b> Integrate bicycle and pedestrian mobility in all transportation corridor studies, incorporate bicycle and pedestrian modes in corridor studies, and support the funding and construction of bicycle and pedestrian elements of final corridor studies.</li> <li>▪ <b>Americans with Disabilities Act Transition Plans:</b> Encourage local agencies to adopt and implement Americans with Disabilities Act transition plans.</li> <li>▪ <b>Local Regulations:</b> Encourage local jurisdictions to adopt ordinances, zoning standards, engineering standards, and guidelines that accommodate bicycle and pedestrian modes of travel through such means as Complete Streets policies, thoroughfare technical specifications, right-of-way and easement preservation, bicycle parking ordinances, bicycle passing ordinances, and end-of-trip facilities.</li> <li>▪ <b>Data Collection and Analysis:</b> Monitor and evaluate the North Central Texas region’s bicycling and walking efforts by collecting bicycle and pedestrian count data, analyzing bicycle and pedestrian crash data, conducting regional non-motorized travel surveys, and publishing findings.</li> <li>▪ <b>Technical Support/Resources/Research:</b> Collect relevant research materials regarding bicycle and pedestrian transportation to utilize in regional initiatives and provide as resources to local governments and area stakeholders.</li> </ul>
Cost Estimate	N/A – Program costs associated with planning elements only

Active Transportation Network Implementation	
Reference	BP2-002
Background	The Active Transportation Accessibility and Safety Program consists of funding and implementing bicycle and pedestrian projects, completing linkages with other modes of transportation, enhancing safety, and improving accessibility for disadvantaged populations.
Related Goals	<ul style="list-style-type: none"> <li>▪ Improve the availability of transportation options for people and goods.</li> <li>▪ Support travel efficiency measures and system enhancements targeted at congestion reduction and management.</li> <li>▪ Ensure all communities are provided access to the regional transportation system and planning process.</li> <li>▪ Preserve and enhance the natural environment, improve air quality, and promote active lifestyles.</li> <li>▪ Encourage livable communities which support sustainability and economic vitality.</li> <li>▪ Ensure adequate maintenance and enhance the safety and reliability of the existing transportation system.</li> <li>▪ Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.</li> </ul>
Related Policies	BP3-002
Implementation	<ul style="list-style-type: none"> <li>▪ <b>Complete the Regional Active Transportation Network:</b> Improve, expand, and complete the region’s bicycle and pedestrian facilities network, end of trip facilities, signage and wayfinding, and related programs throughout the region with continued use of the Regional Transportation Council’s Local Funding Program Initiatives, Local Air Quality and Sustainable Development Funding Programs, Congestion Mitigation and Air Quality, the Transportation Alternatives Program, and other available funding sources.</li> <li>▪ <b>Close Gaps and Improve Connectivity in the Regional Veloweb, On-Street Bikeway Network, and Pedestrian Network:</b> Eliminate major gaps in the regional network and complete connections to address major barriers such as freeways, railroads, and waterways.</li> <li>▪ <b>Linkages to Transit and Major Destinations:</b> Support and complete the development of pedestrian and bicycle facilities that provide access from neighborhoods to public transportation services, education facilities, employment centers, medical, retail, and other destinations.</li> <li>▪ <b>Environmental Justice Areas and Transit-Dependent Populations:</b> Improve accommodations for pedestrians and bicyclists in environmental justice areas and improve connections for transit-dependent populations.</li> <li>▪ <b>Regional Pedestrian Network:</b> Develop a Regional Pedestrian Network and Safety Plan. Implement projects that improve accommodations and safety for pedestrians, with special attention given to vulnerable road users and disadvantaged communities.</li> <li>▪ <b>Safe Routes to School:</b> Coordinate with Independent School Districts, municipalities, public safety officials, and other agencies throughout the region to ensure safe and accessible walking and bicycling corridors to education facilities.</li> <li>▪ <b>Safety Improvements:</b> Support efforts to reduce crashes and fatalities between motor vehicles and pedestrians and bicyclists, including the implementation of Proven Safety Countermeasures outlined by the Federal Highway Administration Office of Safety. Prioritize infrastructure design techniques and safety countermeasures projects in areas with high rates of pedestrian and bicycle crashes and fatalities.</li> <li>▪ <b>Americans with Disabilities Compliance:</b> Support efforts to identify Americans with Disabilities accessibility needs and incorporate improvements into the overall transportation network.</li> </ul>
Cost Estimate	\$4,150,000,000

Active Transportation Education and Outreach	
Reference	BP2-003
Background	The Education and Outreach Program includes activities to improve safety, reduce crashes and fatalities, raise awareness, and promote healthier communities.
Related Goals	<ul style="list-style-type: none"> <li>▪ Improve the availability of transportation options for people and goods.</li> <li>▪ Ensure all communities are provided access to the regional transportation system and planning process.</li> <li>▪ Preserve and enhance the natural environment, improve air quality, and promote active lifestyles.</li> <li>▪ Encourage livable communities which support sustainability and economic vitality.</li> <li>▪ Ensure adequate maintenance and enhance the safety and reliability of the existing transportation system.</li> </ul>
Related Policies	BP3-003
Implementation	<ul style="list-style-type: none"> <li>▪ <b>Safety Education Programs and Campaigns:</b> Support and create programs and campaigns that educate bicyclists, pedestrians, and the general public about bicycle operation, bicyclists’ and pedestrians’ rights and responsibilities, and lawful interactions between motorists, bicyclists, and pedestrians to increase safety for all road users. Support programs aimed at increasing bicycle and walking trips by providing incentives, recognition, or services that make bicycling and walking more convenient transportation modes.</li> <li>▪ <b>Healthy and Livable Communities:</b> Create healthier and more livable communities by encouraging the use of bicycle and pedestrian facilities for work and non-work trips, and for daily physical activity.</li> <li>▪ <b>Enforcement:</b> Encourage enforcement efforts of traffic laws and target unsafe bicyclist, pedestrian, and motorist behaviors to improve safety and reduce collisions and conflicts between motorists, bicyclists, and pedestrians.</li> <li>▪ <b>Technical Training and Education:</b> Provide pertinent training to transportation-related professionals.</li> <li>▪ <b>Mapping Facilities and Plans:</b> Maintain a regional database and provide information regarding existing and planned active transportation facilities and related amenities throughout the region.</li> </ul>
Cost Estimate	N/A – Program costs associated with planning elements only