CHAPTER 2
SYSTEM IDENTIFICATION

The DFW Metropolitan Transportation System is comprised of three major components – the regional freeway and tollway system, the regional arterial system, and the regional transit system. The regional freeway and tollway system is typically characterized by controlled-access general purpose lanes, HOV lanes, managed lanes, and frontage roads. The freeway and tollway system carries nearly half of all vehicle travel in the area, and this is anticipated to continue through the year 2045. The regional arterial system provides support and access to the freeway and tollway system. Lastly, the regional transit system is comprised of passenger rail, bus routes, and park-and-ride facilities. The regional transit system is operated by the Dallas Area Rapid Transit (DART), the Denton County Transportation Authority (DCTA), and Trinity Metro. These agencies provide traditional transit service throughout much of the DFW Metropolitan Area.

In addition to the regional freeway and tollway system, the regional arterial system and the regional transit system, the regional active transportation network is another transportation mode for travelers in the DFW region to utilize. The regional active transportation network cannot be treated as standalone 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.

Despite ongoing technological advances, expanded transit systems, and increased awareness/sensitivity to environmental concerns, there will continue to be significant demand placed on the regional transportation system. The continued demand will warrant continued system improvements and expansion well into the future.

Regional Freeway and Tollway System

System expansion, operation and maintenance of the regional freeway and tollway system are expensive ventures. Mobility 2045 faces the challenge of balancing a huge demand on an already overused system with less than adequate funding resources from traditional fuel tax and vehicle registration fee revenues.

Historically, TxDOT financed highway projects on a "pay-as-you-go" basis, using motor fuel taxes and other revenue deposited in the State highway fund. However, population increases, and traffic demand outpaced the efficiency of this traditional finance mechanism, leading to increasing use of tolled facilities. Developing projects as toll roads can help bridge the gap between transportation needs and financial resources.

Past sessions of the State Legislature have focused on the reliance on tolls and the need to reevaluate the balance between tolled and non-tolled roadways. A guiding principle in the development of Mobility 2045 considered this pendulum swing away from tolled roadways and back toward more tax-funded facilities. State Proposition 1 and State Proposition 7 have provided the region with more transportation funding toward general-purpose lanes, and the state gas tax will no longer be diverted to non-transportation uses.

The funding from these changes only accounts for approximately one-third of the identified need for transportation projects in Mobility 2045. For this reason, Mobility 2045 still includes recommendations for toll roads and tolled managed lanes both to manage congestion and to leverage funds to deliver both tolled and non-tolled capacity. These recommendations are the result of analyses of the current and proposed freeway/tollway system in conjunction with the proposed managed facility system. There is recognition that the freeway and managed facilities work together and thus are analyzed in that manner. Exhibit 2-1 shows the lane miles per county for the regional freeway and tollway system for 2018 and 2045.

Exhibit 2-1: Freeway/Tollway Lane Miles Per County

County	Year 2018	Year 2045
Collin	484	754
Dallas	2,083	2,520
Denton	402	744
Ellis	388	481
Hood	0	0
Hunt	118	176
Johnson	155	208
Kaufman	223	246
Parker	159	193
Rockwall	77	105
Tarrant	1,498	1,955
Wise	12	39
Total	**5,599**	**7,421**

Exhibit 2-2 highlights the funded controlled access facility recommendations for Mobility 2045. The total cost for the implementation of the freeway, tollway, and managed facility improvements is $40 billion. Costs from the plan are based on current planning and engineering studies, were reviewed by TxDOT and NTTA, and represent total project cost reflected in year of expenditure dollars consistent with federal planning requirements.

Exhibit 2-2: Mobility 2045 Major Roadway Recommendations

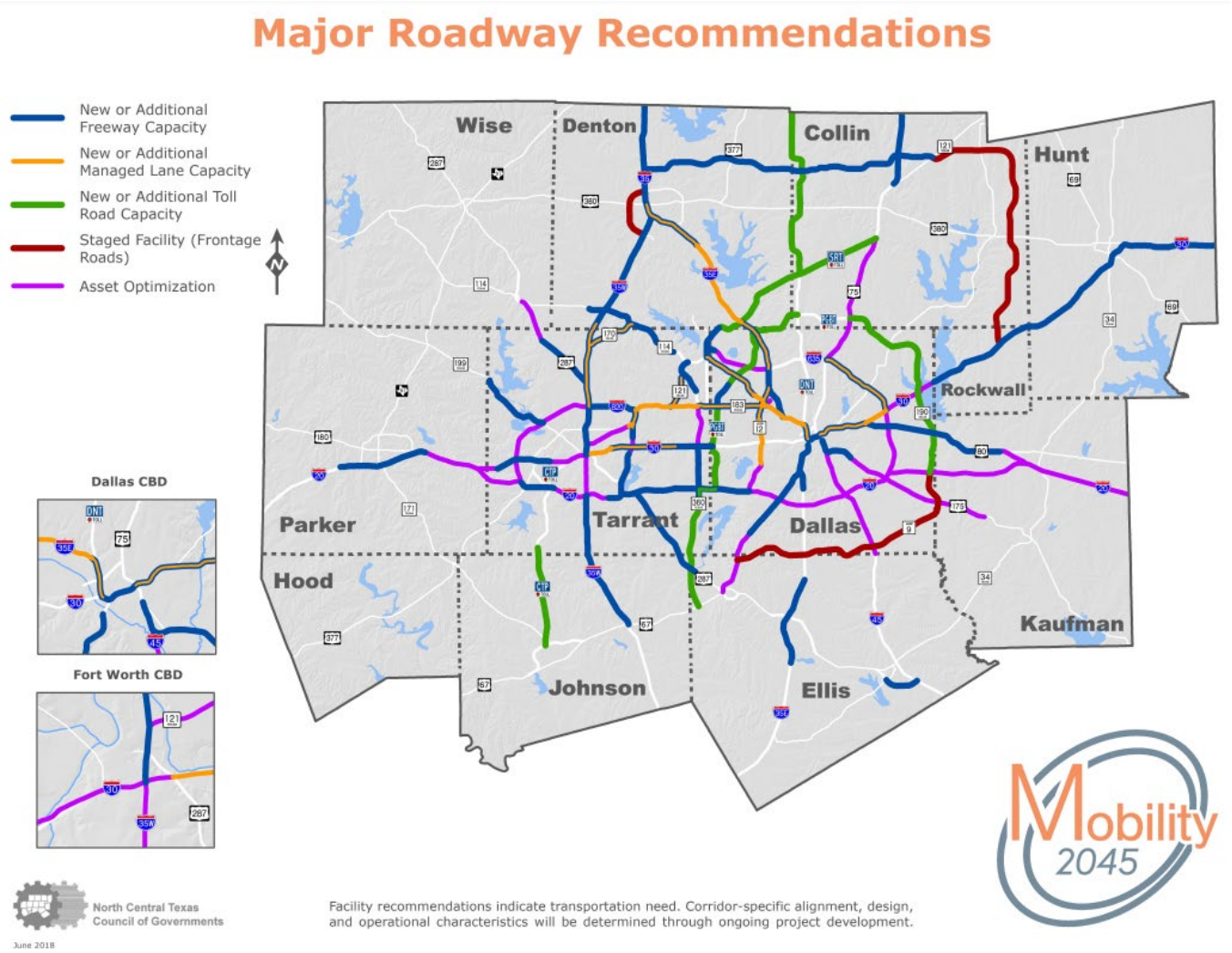


Exhibit 2-3 displays the network of tolled roads and tolled managed lanes recommended in Mobility 2045. The network shown in this map includes the existing toll road system managed by North Texas Tollway Authority (NTTA); new tollways that are expected to be constructed by local toll authorities, regional mobility authorities, and TxDOT; and the express/HOV and tolled managed lane system that is being developed cooperatively between NCTCOG, TxDOT, and NTTA. Exhibit 2-4 includes the Express/HOV/Tolled/Tolled Managed Lane miles per county.

Exhibit 2-3: Network Of Tolled Roads And Tolled Managed Lanes Recommended In Mobility 2045

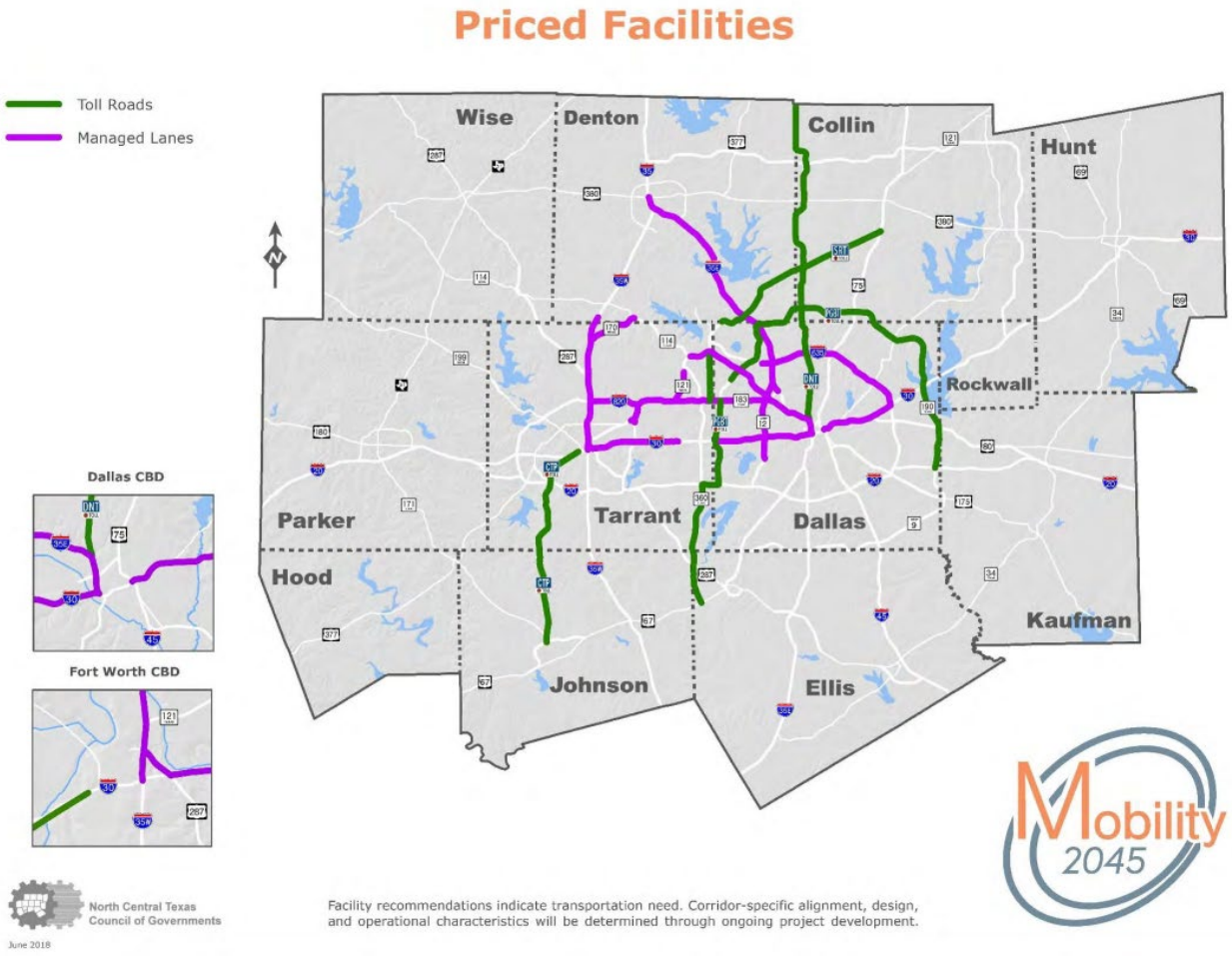


Exhibit 2-4: Express/HOV/Tolled Managed Lane Miles Per County

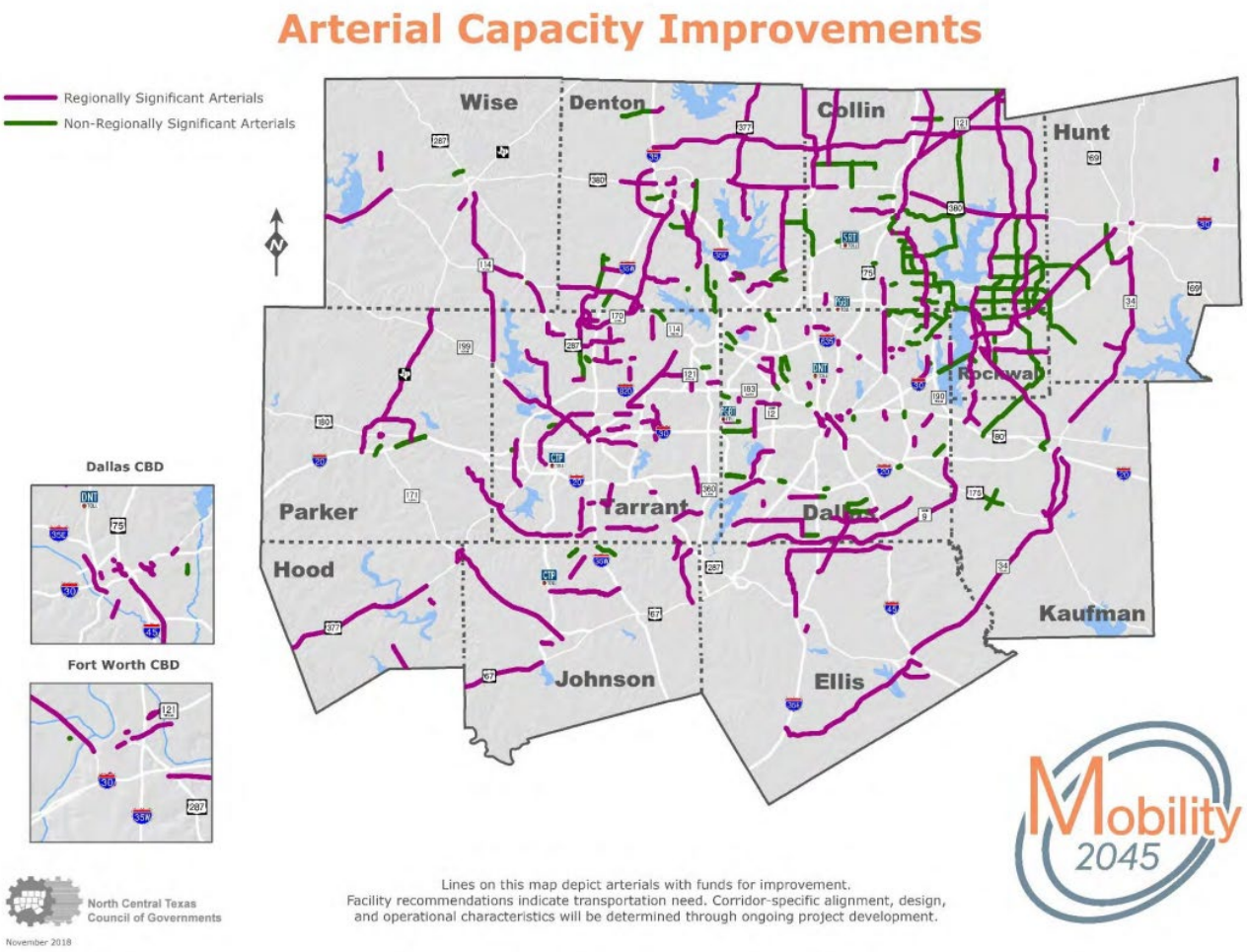
County	Year 2018	Year 2045
Collin	11	0
Dallas	151	296
Denton	23	83
Tarrant	95	210
Total	**280**	**589**

Source: Expanded Dallas-Fort Worth Regional Travel Model, NCTCOG

Regional Arterial System

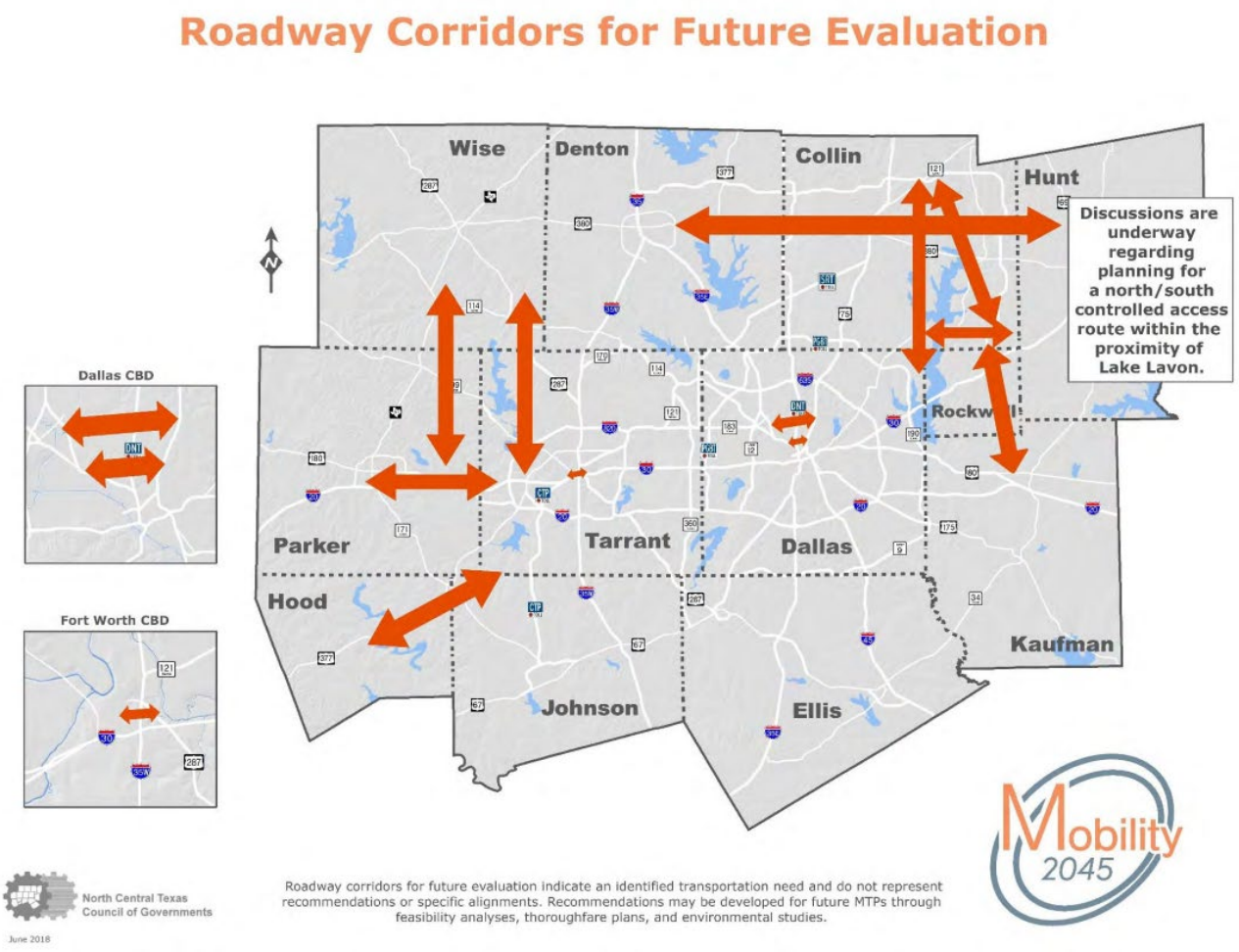
The Designated Regionally Significant Arterial System, shown in Exhibit 2-5 is a critical component of Mobility 2045 in providing transportation support and access. This system of arterials is forecasted to carry approximately 39 percent of all vehicular traffic in the region by 2045. The significance of regional arterials to the region's transportation system becomes increasingly essential as reliever facilities to parallel controlled access facilities, as well as supporting accessibility to other regional facilities to and from local land uses.

Exhibit 2-5: Designated Regionally Significant Arterials



The regionally significant arterials that are currently funded for improvement or anticipated to be funded within the timeframe of Mobility 2045 are shown in Exhibit 2-6. Mobility 2045 has designated $8.8 billion for regionally significant arterial improvements; a majority of this funding will come from traditional federal and state revenue.

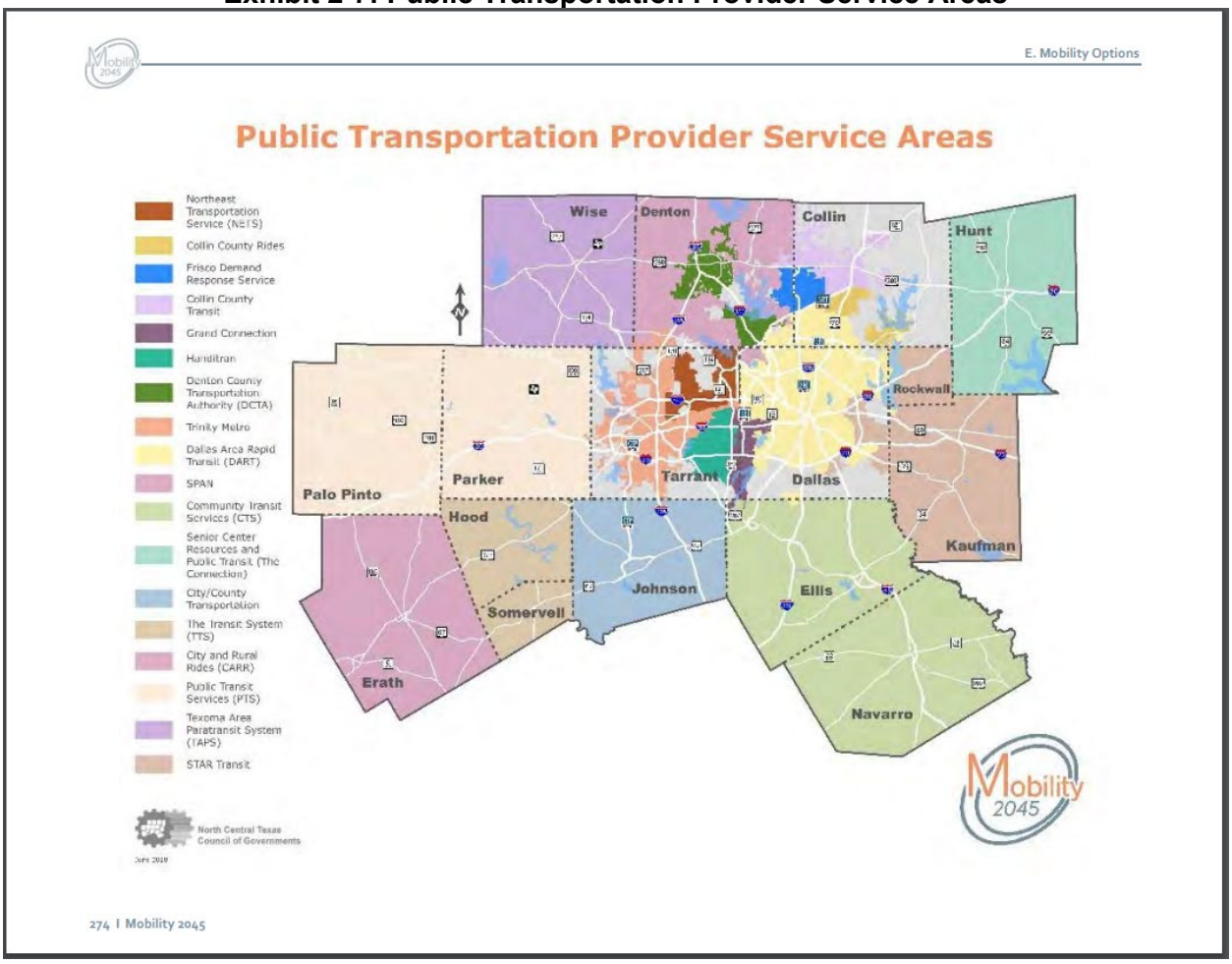
Exhibit 2-6: Funded Arterial Improvements



Regional Transit System

Public transportation services throughout the DFW Metropolitan Area are provided by small and large transit-focused organizations. The three largest organizations (DART, DCTA, and Trinity Metro) provide traditional transit service throughout much of the DFW Metropolitan Area. Other local organizations provide complementary services that coordinate transit operations and human services in less densely populated areas in North Central Texas. There are an additional 80 known public, private, and specialized transportation service providers in North Central Texas. Exhibit 2-7 highlights the service areas for some of the larger transit providers.

Exhibit 2-7: Public Transportation Provider Service Areas



DART was created by voters in 1983 and is funded with a one-cent sales tax by 13 member cities. DART's nearly 700-square-mile service area includes a broad range of services such as 145 bus routes, 93 miles of light rail transit (LRT), ADA paratransit service for the mobility impaired, on-call zones, Dallas Streetcar, and vanpools. DART continually expands and upgrades transit facilities throughout their service area by reviewing routes to maximize efficiency. Local feeder routes improve the potential for increased rail ridership by providing reliable connections from residential areas to rail stations.

Dallas Area Rapid Transit - Member Cities: 13

1. **Addison**
2. **Carrollton**
3. **Cockrell Hill**
4. **Dallas**
5. **Farmers Branch**
6. **Garland**
7. **Glenn Heights**
8. **Highland Park**
9. **Irving**
10. **Plano**
11. **Richardson**
12. **Rowlett**
13. **University Park**

Service Area: 689 square miles; Service Area Population: 2.4 million
Source: 2019 National Transit Database

DCTA includes three municipalities; Denton, Highland Village, and Lewisville that provide a half-cent sales tax to fund various transportation services in their cities. DCTA services include

operation of the A-train, joint operation of the North Texas Xpress, fixed-route buses, shuttles, ADA paratransit service, vanpools, and contracted services in Collin County, including Frisco, and McKinney Urban Transit District. Other aspects of the service plan are a park-and-ride transfer network along the rail corridor to connect to all planned services, regional connector bus service as an interim measure where rail service will eventually be implemented, local fixed-route bus services operating in Denton and Lewisville serving the most dense portions of the county, demand response service to member cities for the elderly and disabled, and a local assistance program to help improve traffic mobility in the near term.

Denton County Transportation Authority - Member Cities: 3

1. **Denton**
2. **Highland Village**
3. **Lewisville**

Service Area: 284 square miles; Service Area Population: 608,520
Source: 2019 National Transit Database

Trinity Metro provides express bus routes, local bus service, ADA paratransit service, shuttle service and vanpools throughout Fort Worth and Blue Mound. Trinity Metro also operates the TEXRail, a 27-mile commuter rail line from downtown Fort Worth to Dallas Fort Worth International Airport Terminal B. Express routes allow virtually non-stop travel weekdays from downtown Fort Worth and the Trinity Railway Express (TRE) commuter rail station at the Intermodal Transportation Center (ITC). Park-and-ride locations offer a convenient meeting point for carpools and vanpools since all-day free parking is provided by Trinity Metro, participating businesses, and churches.

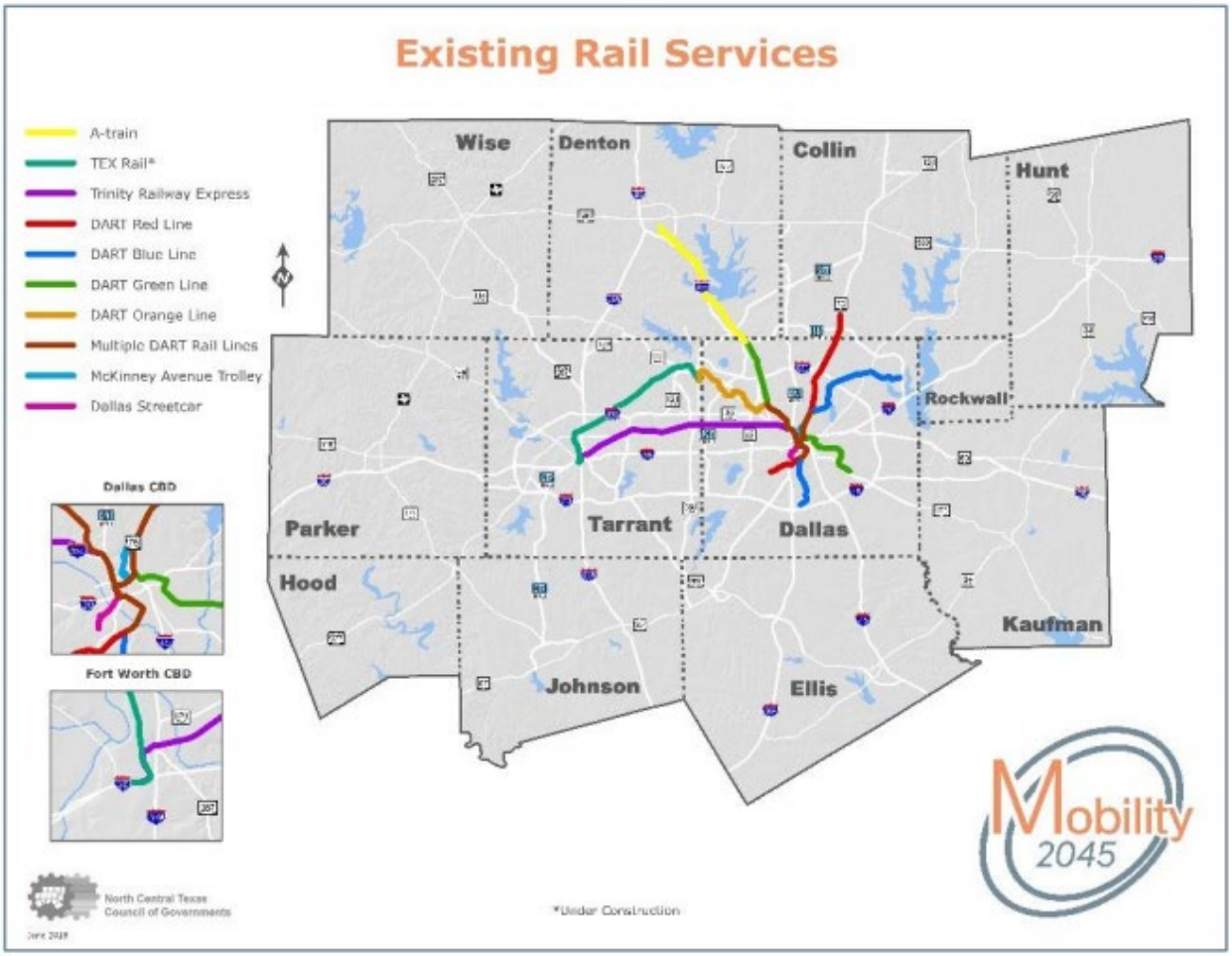
Fort Worth Transportation Authority - Member Cities: 2

1. **Blue Mound**
2. **Fort Worth**

Service Area: 350 square miles; Service Area Population: 879,939Source: 2019 National Transit Database

The TRE is a cooperative commuter rail service provided by DART and Trinity Metro. The TRE includes approximately 34 miles of track, linking downtown Fort Worth, downtown Dallas, and Dallas Fort Worth International Airport. Scheduled train service is provided Monday through Saturday. No regularly scheduled service is available on Sunday. Special Sunday service may be promoted for announced special events only. Exhibit 2-8 highlights the existing regional passenger rail lines for DART, DCTA, and Trinity Metro.

Exhibit 2-8: Existing Regional Passenger Rail



The funding of management and operations, transit system improvements, and expansions are included as part of the development of specific recommendations in Mobility 2045 and in Regional Connections: Next Generation Transit Program, including a broad range of innovative bus and rail services and concepts as part of the regions robust transit network. The program includes, but is not limited to, regional rail, light rail, stacked commuter rail and special event rail; and high intensity bus and guaranteed transit. Project examples include, but are not limited to, double tracking, rail station improvements, bus stop improvements, and system modernization and safety improvements for the system and railroad crossings.

Bicycle / Pedestrian System

Active transportation, or bicycle and pedestrian modes, is an integral component of the transportation system. Active transportation offers numerous options to improve the existing transportation system 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.

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). The original Regional Veloweb map was developed in 1997 based on an extensive study conducted by the NCTCOG Bicycle and Pedestrian Advisory Committee. In 2008, work began to update the Regional Veloweb alignments based on feedback received by local governments and community members and the general need to reassess the functionality and alignment of the Veloweb. The results of the Regional Veloweb update included approximately 1,024 miles of added facilities, bringing the total Veloweb to approximately 1,668 miles. This network is reflected in the map in Exhibit 2-9 and the table in Exhibit 2-10. 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 2-9: Combined Regional Veloweb Community Paths, and On-Street Bikeway Network Map

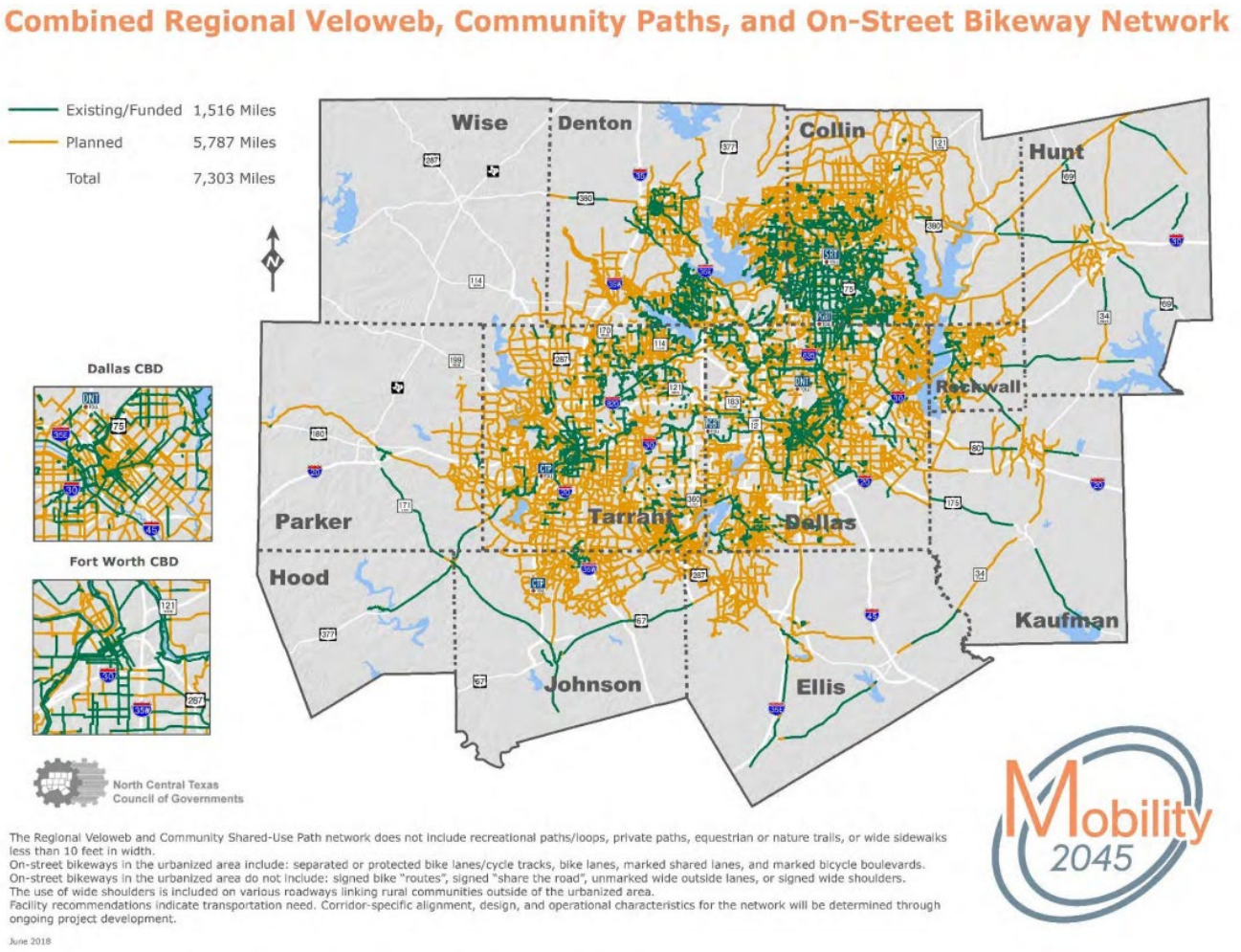


Exhibit 2-10: Combined Regional Veloweb Community Paths, and On-Street Bikeway Network Table

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

[1] 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.

[2] 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.

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 total cost for the implementation of active transportation improvements is $4.2 billion. The recommendations made in Mobility 2045 seek to increase active transportation as a viable transportation mode for the residents of North Central Texas.

Summary

With a population that is expected to grow to 11.2 million residents by 2045, the need for a reliable transportation system in North Central Texas is particularly important. Transportation professionals and policy makers are working to develop creative solutions to these challenges. Recent bills by the Texas Legislatures have provided innovative ways to finance and build these highway projects that are shown of greatest needs through toll bonds, concession fees, and excess revenues. The Regional Arterial System, which is forecasted to carry approximately 39 percent of vehicular traffic in the region, is also designated for $8.8 billion in improvements, according to Mobility 2045.

The proven ability of rail service that DART, DCTA, Trinity Metro, and other local transit operators provide will help improve mobility in the region. These joint efforts by the transit agencies will play a crucial role in meeting those future transportation needs and the current system demand in North Central Texas. Finally, the Regional Active Transportation Network that is interconnected with transit services and other modes of transportation will provide a seamless multimodal transportation network to connect housing and key destinations, including employment centers, education, medical, retail and entertainment centers, and others.