6. MOBILITY OPTIONS

INTRODUCTION

North Central Texas is a large and diverse region with varying mobility needs for residents and businesses. Mobility 2050 aims to enhance mobility by optimizing a multimodal transportation network that provides equitable access to jobs, education, healthcare, and healthy food. Mobility also influences regional economic vitality, enabling the efficient movement of goods, which has contributed to the region's sizeable growth and prosperity.

Mobility 2050 addresses the region's mobility challenges by integrating roadways, public transit, active transportation, freight, and aviation into a comprehensive, interconnected network. The plan builds on data-driven analysis, stakeholder input, and a shared commitment to enhanced mobility and system sustainability. Each transportation mode is assessed to support regional and global economic growth, aiming to create a transportation system that not only moves people and goods but also improves the lives of all who call North Central Texas home.

The following sections discuss mobility options for the North Central Texas region. Full-sized versions of the Mobility 2050 recommendations maps contained within this chapter can be found in the **Mobility Options** appendix, along with detailed policy, program, and project recommendations.

IN THIS CHAPTER

DID YOU KNOW?

PEOPLE WANT MORE TRAVEL OPTIONS: Nearly half of public input survey respondents said they need better transit, safer walking/biking options, or alternatives to driving.

TRANSIT ISN'T KEEPING UP: Transit access isn't keeping up with growth. By 2050, only 37% of the population will live inside a transit service area, down from 47% in 2026—raising concerns about connectivity and keeping pace with growth.

MORE TRAILS AND BIKEWAYS RECOMMENDED: Mobility 2050 recommends 2,200+ miles of new active transportation infrastructure, expanding safe, accessible routes for walking and biking.

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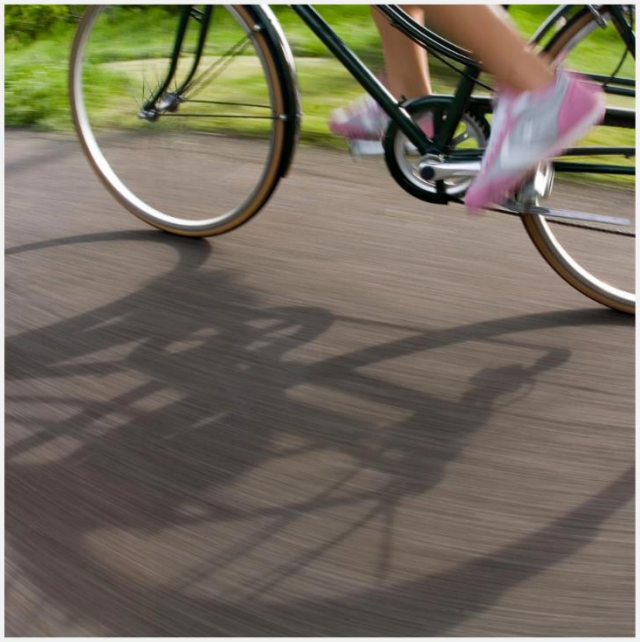

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6-1. AVIATION

OVERVIEW

North Central Texas, the nation's largest inland port and fourth-largest metropolitan area, thrives on its robust aviation network, which fuels economic growth and connects the region to global markets. With over 400 aviation facilities and more than 675 aerospace and aviation employers, aviation supports over 95,000 jobs,[1] playing a critical role in the region's prosperity. Airports not only drive economic development and business opportunities, but also support global cargo movement and leisure travel, positioning the region as a hub of connectivity.

To remain competitive, North Central Texas's aviation system requires coordinated planning, land-use protection, and funding support. This includes maintaining surface access, protecting land-use compatibility, and securing funding. The Regional Transportation Council aims to ensure that roadway congestion does not hinder airport expansion, enabling airports to grow to their airside limits without delays. Intermodal connectors are particularly vital for seamless cargo movement, enhancing the region's role as a nonconventional inland port system.

Regional aviation planning at the North Central Texas Council of Governments (NCTCOG) focuses on maximizing infrastructure to meet future needs. This work emphasizes integrating transportation connections and ensuring adequate air and ground capacity within the aviation system. However, NCTCOG's scope does not address the selection of projects for entitlement funding, block grants, or Airport Improvement Program funding. It also excludes responsibilities such as airport closures, interference with private commercial pilots, aircraft certification, airspace approval, or air carrier system planning.

By advancing regional aviation infrastructure and addressing critical access challenges, North Central Texas aims to sustain its economic and logistical leadership on both national and global stages.

MOBILITY 2050 POLICIES AND PROGRAMS

Mobility 2050 includes policies and programs that address regional priorities and public needs. Policies guide decision-making and set the framework for long-term goals, while programs provide the funding and resources to turn plans into action across the transportation system.

Policies

AV3-001: Improve efficiency, safety, air quality, and access related to aviation.

AV3-002: Provide input to the National Plan of Integrated Airport Systems and the Texas Airport System Plan.

[1] Dallas Regional Chamber, *Aviation and Aerospace Report*, 2024, https://www.dallaschamber.org/wp-content/uploads/2024/03/EDG2024_Industry-Aviation.pdf

MOBILITY 2050 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.

Pursue long-term sustainable revenue sources to address regional transportation system needs.

Provide for timely project planning and implementation.

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

AV3-003: Encourage compatible land-use planning surrounding airports in the region.

AV3-004: Establish a comprehensive and integrated Aviation Education System in North Central Texas.

AV3-005: Implement operational restrictions and other requirements of uncrewed aircraft systems around regionally significant aviation facilities.

AV3-006: Safely and efficiently integrate vertical mobility technology (advanced air mobility, urban air mobility, uncrewed traffic management, uncrewed aircraft systems) into the NCTCOG region.

Programs

For more information on program funding and implementation, see the **Mobility Options** appendix.

AV2-001: Aviation Surface Access Planning

AV2-002: Data Collection and Performance Tracking

AV2-003: Continuous Aviation System Planning

AV2-004: Encroachment Prevention and Compatible Land-Use Planning

AV2-005: Integrated Aviation Education System

AV2-006: Coordination of Uncrewed Aircraft Systems

AV2-007: Air Taxi and Air Cargo Corridor Identification and Demand Determination

AV2-008: Scaling Advanced Air Mobility Pilot Ecosystems to Other Metroplex Locations

AV2-009: Test Multimodal Integration and Proof of Concept for Air Taxis into the Dallas-Fort Worth Metroplex

AV2-010: Development of a Scalable Vertical Mobility Public Engagement Program

AIR TRANSPORTATION ADVISORY COMMITTEE

The Air Transportation Advisory Committee is composed of airport managers, city managers, aviation industry representatives, and aviation experts from throughout the region. This committee provides a regional forum for discussing aviation needs related to general aviation and heliports. During the Regional General Aviation and Heliport System Plan process, the Air Transportation Advisory Committee serves as the Project Review Committee and performs technical review functions on behalf of NCTCOG's Executive Board and Regional Transportation Council on an as-needed basis.

AVIATION PLANNING IN CONTEXT

Various levels of planning are needed to meet the demands of the region's airport system. System planning occurs at all levels of government and plays a role in maintaining the region's airports.

Federal

At the federal level, the National Plan of Integrated Airport Systems (NPIAS) provides an overview of national aviation capacity needs and funding requirements. The 2025-2029 NPIAS identifies 3,247 existing and 5 proposed airports of national significance. These airports are eligible for federal funding under the Airport Improvement Program. Thirty of these facilities are located in the 16-county region of North Central Texas.

NCTCOG AVIATION INITIATIVE

UPDATE general aviation and heliport regional plans.

MAINTAIN the Air Transportation Advisory Committee and Uncrewed Aircraft Systems Safety and Integration Task Force.

DEVELOP new policies, partnerships, plans, and programs for aviation.

EXAMINE the market and timing for:

- Additional aviation facilities
- Intercity high-speed rail access to aviation
- Improvements to reliever, general aviation, and heliport assets
- New technologies (i.e., UAS, eVTOL aircraft)
- Additional aviation workforce

DETERMINE needs related to:

- Long-term airspace demands
- Maintaining international competitiveness
- Surface access and land use around airports/heliports
- Improving air quality

State

The Texas Airport System Plan (TASP) provides an overview of needed capacity and a statewide aviation activity forecast. Out of more than 1,600 landing facilities in the state, 292 airports meet TASP requirements. TASP provides guidelines that help determine how to maximize the value of public funds and identify capital improvements that best serve the state's aviation needs, such as transportation, business, and economic development functions, that will benefit Texas.

Regional

At the regional level, the Regional General Aviation and Heliport System Plan provides aviation activity forecasts for a specific geography in North Central Texas and will make recommendations about aviation infrastructure that is used regionally by corporate entities, private citizens, and aviation students.

Local

At the local level, each airport will continue to maintain Airport Master Plans and Airport Layout Plans as required by the Federal Aviation Administration.

In addition, as the Metropolitan Planning Organization for the 16-county Dallas-Fort Worth Metropolitan Planning Area, NCTCOG is responsible for:

- Providing surface access and services to improve air quality at aviation facilities.
- Processing data summary requests related to the Airport Improvement Program and Environmental Protection Agency programs.
- Monitoring capacity and use at the region's major airports, including air cargo and foreign trade zone activity.

Factors Affecting Airport System Planning

PHYSICAL CONSIDERATIONS

Consider the geographical and engineered location of a new airport or of the expansion of an existing airport.

OPERATIONAL CONSIDERATIONS

Evaluate airside and landside access.

ENVIRONMENTAL CONSIDERATIONS

Consider regulatory guidelines and mandates, including those addressing air quality, noise, and surrounding land use.

ECONOMIC CONSIDERATIONS

Evaluate the short- and long-term costs, as well as the source and timing of funding used, to facilitate development of the aviation system.

SOCIO-POLITICAL CONSIDERATIONS

Ask the public: "Will the idea and development of new projects work for the surrounding community and our region?"

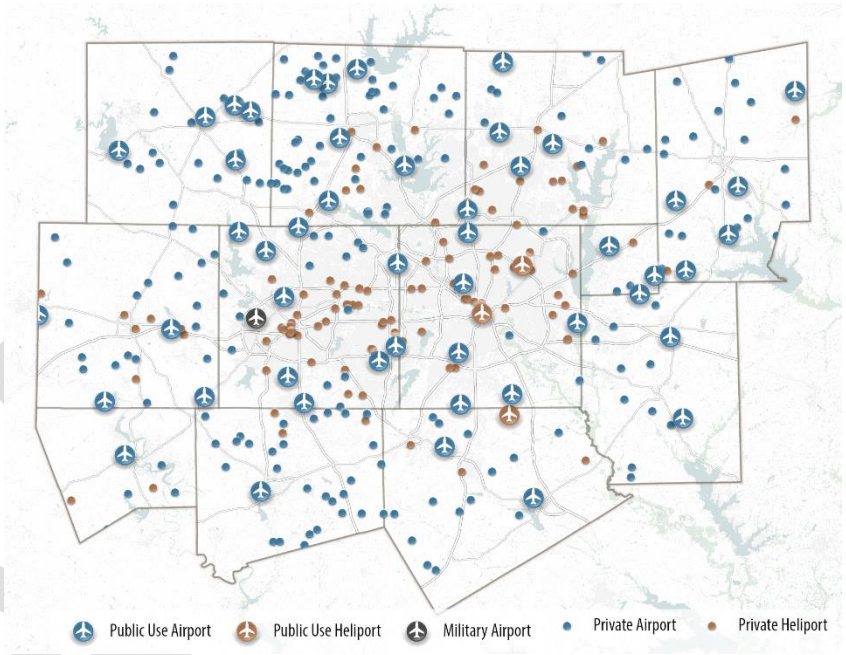
AVIATION FACILITIES IN NORTH CENTRAL TEXAS

The 16-county Metropolitan Planning Area is home to a variety of public and private aviation facilities, including:

- **2 Primary Commercial Service Airports:** Airports that serve the needs of the flying public by hosting scheduled commercial airline service. These include Dallas Fort Worth International Airport and Dallas Love Field.
- **11 Reliever Airports:** Designated by the Federal Aviation Administration to relieve congestion at major commercial aviation locations by diverting general aviation traffic.
- **28 General Aviation Airports:** Designed to meet the needs of corporate aviation, small-scale cargo use, and recreational flight.
- **2 Existing Military Training Airfields:** Located at the Naval Air Station Joint Reserve Base Fort Worth and at Redmond Taylor Army Heliport in Dallas.
- **4 Public-Use Heliports:** Dallas Central Business District Vertiport, Garland/Dallas-Fort Worth Heloplex, Ferris-Red Oak Municipal Heliport, and DeSoto Heliport.
- **Over 300 Private-Use Airports and Heliports:** Serving the needs of private pilots and businesses. This includes private facilities serving recreational flight, short takeoff and landing, and sail planes.

These facilities are shown in **Figure 6-1**.

Figure 6-1: Aviation Facilities in North Central Texas



DATA COLLECTION AND PERFORMANCE TRACKING

One of NCTCOG's roles is to monitor aviation trends at the region's commercial and air cargo airports. NCTCOG tracks the impact of uncrewed aircraft systems and the innovative technologies introduced through the Federal Aviation Administration's Next Generation (NextGen) Air Transportation System. Planning procedures for these technologies should benefit the long-term viability of the aviation system.

Aviation connects North Central Texas to national and global markets. The data shown in the following two graphs (**Figure 6-2** and **Figure 6-3**) illustrate recent trends in passenger and cargo volumes at the region's

major aviation facilities. For the first time since the COVID shutdowns led to a 90 percent drop in air travel, Dallas Fort Worth International Airport and Dallas Love Field reported more enplanements than before the pandemic in 2022. In 2021, cargo volumes exceeded a seasonally adjusted forecast of historical data.

Figure 6-2: Annual Passenger Enplanements in Millions

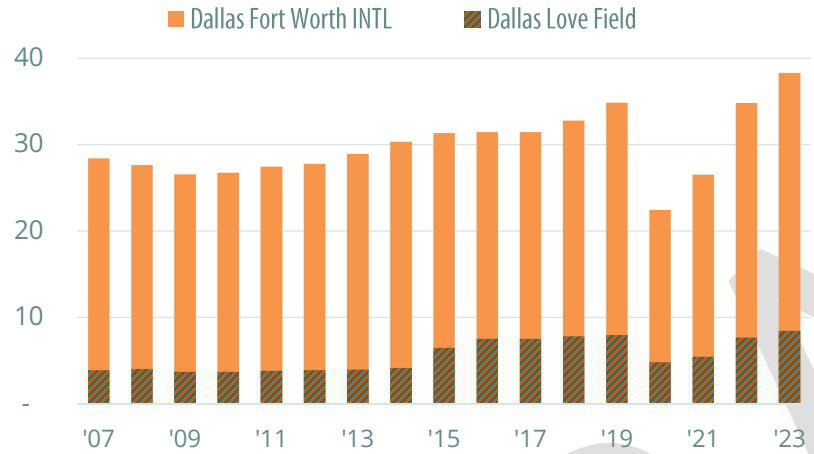
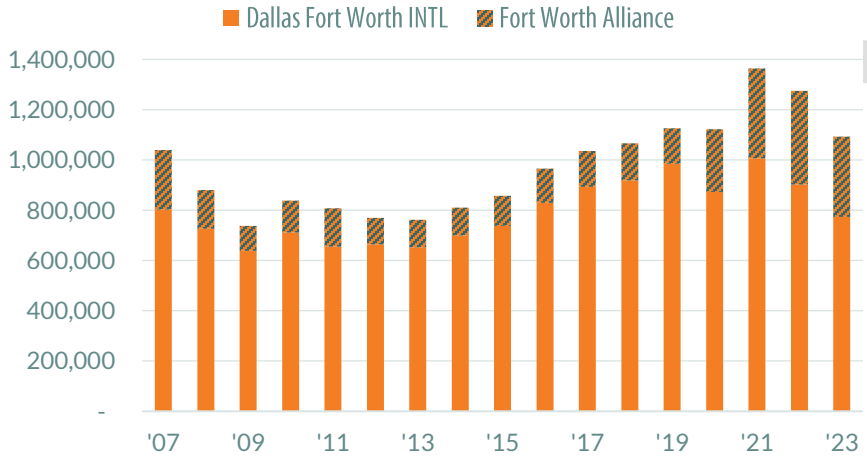


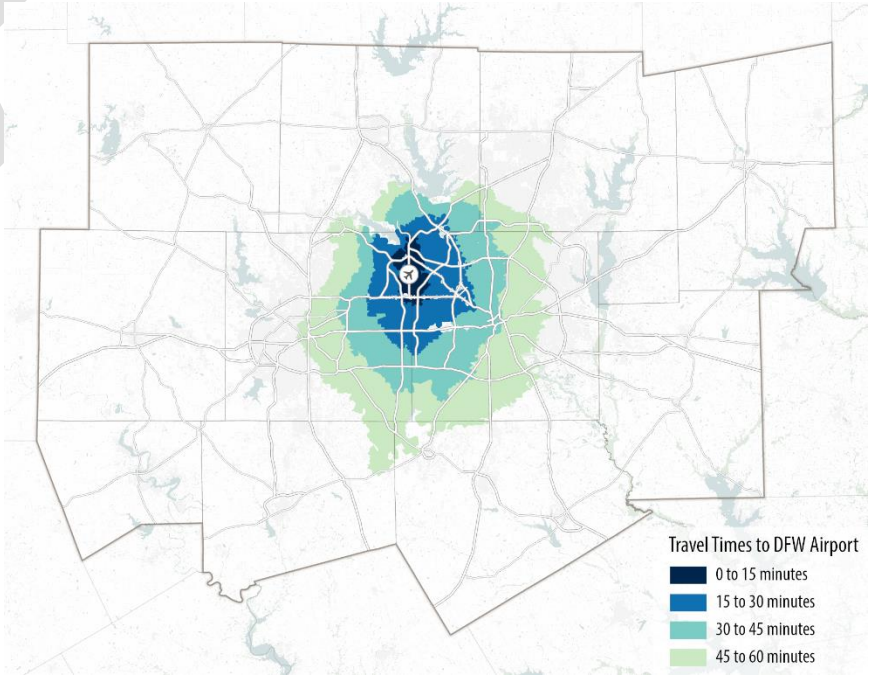
Figure 6-3: Total Regional Air Cargo Tonnes Transported Annually



AVIATION SURFACE ACTION PLANNING

The mobility of air passengers and cargo is affected by the capacity of airports and surrounding highway and transit systems. Congestion in the air or on the ground can significantly impact air cargo operations and efficiency. National and international trade and travel require a surface transportation network that successfully connects with facilities for air passengers and cargo. The map in **Figure 6-4** displays projected travel times to or from Dallas Fort Worth International Airport. Similar maps for Dallas Love Field and Fort Worth Alliance Airport are located in the **Mobility Options** appendix. This analysis was performed based on models for the average peak-period traffic in 2050 and it assumes the recommendations in Mobility 2050 have been constructed.

Figure 6-4: Surface Travel Time Contours for the Dallas Fort Worth International Airport in 2050



This analysis fulfills NCTCOG's role as the region's Metropolitan Planning Organization. NCTCOG also will inventory specific improvements to the roadways surrounding the region's aviation facilities. This inventory will be created to assist decision-makers in prioritizing and funding these connectors.

CONTINUOUS AVIATION SYSTEM PLANNING

NCTCOG will work with the Federal Aviation Administration to produce a Regional General Aviation and Heliport System Plan for the 16-county NCTCOG region and surrounding areas. In this effort, we will update the regional inventory, develop a system to manage aviation data, and analyze demand on the current and forecast system. This study may also explore market demand, system deficiencies, needed improvements, and economic impacts of the regional general aviation and heliport system. NCTCOG will coordinate with federal- and state-level planning agencies to ensure regional priorities are considered in planning and funding decisions at those levels.

This study also will address potential constraints on regional airspace, including changes to passenger and air cargo activity, changes in business travel, and the influence of new technologies such as electric vertical takeoff and landing aircraft, conventional takeoff and landing aircraft, etc. NCTCOG will coordinate with city officials, the public, and aviation stakeholders to ensure recommendations are implemented to enhance the regional aviation system.

ENCROACHMENT PREVENTION AND COMPATIBLE LAND-USE PLANNING

As urban development increases, it will be vital for neighboring land use to be compatible with the region's aviation facilities. The noise associated with airfields makes some land uses incompatible when located in close proximity to aviation facilities. These land uses include housing, schools, offices, and public gathering places. Safety is also a concern, particularly near the ends of the runways. When airport neighbors voice noise and safety concerns, the results can include restrictions on flight schedules, costly modifications by airports, and, in extreme cases, political pressure to close airports. Aviation facilities require a high level of public investment; promoting compatible land-use planning and land development controls can protect this investment. This effort will be of particular interest as the region's population continues to grow.

REGIONAL MILITARY-COMMUNITY PLANNING

Joint Land Use Study

In 2018, NCTCOG completed work with Naval Air Station Joint Reserve Base (NAS JRB) Fort Worth, surrounding communities, and other regional military installations to develop a regional Joint Land Use Study. The study identified strategies to allow military installations and surrounding communities to develop in a compatible manner to ensure the military presence in North Central Texas is sustained. This Joint Land Use Study follows up on a similar study that focused on NAS JRB Fort Worth and was completed in 2008. At the conclusion of the 2008 study, NAS JRB Fort Worth and surrounding communities

created the NAS JRB Fort Worth Regional Coordination Committee (RCC). The RCC is a collaborative effort to ensure future development near the installation is compatible with current and future operations of the base. The RCC enhances communication and cooperation among the base and local governments. RCC participants identify and solve issues shared among the communities surrounding the installation, including transportation topics such as transit, safety, and infrastructure improvements; emergency preparedness; storm water management; and community education.

Strategic Highway Network

Transportation facilities providing access to NAS JRB Fort Worth are important for national security. Additionally, NAS JRB Fort Worth and other related companies are major regional employers that generate substantial volumes of commuter and freight traffic. NCTCOG is fortunate to work closely with NAS JRB Fort Worth and surrounding communities to ensure adequate access to the facility and will continue to monitor transportation needs and coordinate with federal partners on Strategic Highway Network designations as appropriate.

INTEGRATED AVIATION EDUCATION SYSTEM

The aerospace and aviation industry is a significant employer in Texas, directly engaging over 154,000 workers across more than 2,000 establishments.[2] To meet the evolving demands of this sector, NCTCOG initiated the Aviation Education Initiative in 2009, emphasizing science, technology, engineering, and math courses across various educational institutions.

By July 2013, approximately 800 students were enrolled in aviation programs within independent school districts, and about 300 students were participating in college and university aviation programs. Since then, the initiative has expanded, with several ISDs implementing aviation and aerospace programs for high school students. Additionally, a regional aviation maintenance school has been established to further support workforce development.

Higher education institutions in North Texas have also bolstered their aviation-related offerings. Embry-Riddle Aeronautical University's Worldwide Campus provides bachelor's and master's degrees at two North Texas locations. Tarrant County College offers programs in Aviation Maintenance and Professional Pilot training. The University of North Texas has introduced a Bachelor of Science in Aviation Logistics, the first four-year degree of its kind in Texas, preparing students for various roles within the industry. Offering a Bachelor of Science in Aviation Science, the Texas Women's University provides an Aviation Management and Professional Pilot option.

In 2012, NCTCOG launched www.NCTaviationcareers.com to provide comprehensive information about aviation training and career opportunities. This resource, along with the collaborative efforts of educational institutions and industry stakeholders, continues to play a crucial role in developing a skilled workforce to meet current and future employment demands in North Texas' aviation and aerospace sector.

[2] Texas Economic Development and Tourism Aerospace, *Aviation and Defense Industry Report*, 2024, https://www.gov.texas.gov/uploads/files/business/AerospaceAviationandDefense.pdf

COORDINATION OF UNCREWED AIRCRAFT SYSTEMS

Technological advances are leading to new uses of uncrewed aircraft. Historically used almost exclusively by the military, use of uncrewed aircraft systems (UAS) has grown in both the public and private sectors.

NCTCOG is working with municipalities, first responders, drone delivery companies, and transportation partners to ensure uncrewed and crewed aircraft can coexist in the busy skies above North Central Texas. NCTCOG compiled a report, *Unmanned Aircraft: Policy, Operations, and Local Integration*, which serves as a framework for how the agency, with guidance from the Air Transportation Advisory Committee, will approach UAS coordination. With Walmart aiming to expand UAS package delivery to 75 percent of the Dallas-Fort Worth area, North Central Texas is set to emerge as a leader in UAS integration. NCTCOG is leading an airspace awareness pilot program through a partnership with three drone service providers to provide live data to aid in safe UAS flights.

UAS Safety and Integration Task Force

The UAS Safety and Integration Task Force is composed of aviation industry representatives, educators, public safety, airport managers, and government from throughout the region. This group provides recommendations to safely integrate UAS implementation within Dallas-Fort Worth. The Task Force aims to mitigate reckless UAS operations and promote and accelerate the integration through education, training, legislation, public awareness, strategic planning, and innovation.

NCTCOG will continue working with its partners and private-sector entities to accelerate safe UAS integration. Through workshops and other outreach efforts, NCTCOG will continue to help facilitate a regional effort that allows UAS technology to realize its potential while ensuring the skies remain safe for traditional aviation activities.

SUMMARY

The goal of the aviation planning efforts in North Central Texas is to promote, maximize, protect, and advance regional aviation infrastructure to accommodate future growth in the region. This goal will be accomplished by collecting data, tracking performance, reviewing and monitoring surface transportation access to aviation facilities, conducting continuous aviation system planning, planning for compatible land use to prevent encroachment, integrating aviation education systems, and coordinating UAS efforts. The policies, programs, and projects discussed in this section are intended to advance the aviation planning activities and coordination efforts within North Central Texas.

New projects, programs, and policies will be developed as needed, and they will enable NCTCOG's Executive Board and the Regional Transportation Council to continue to support important aviation goals throughout the region.

See the **Mobility Options** appendix for a complete listing of policies, programs, projects, and maps related to aviation.

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6-2. FREIGHT

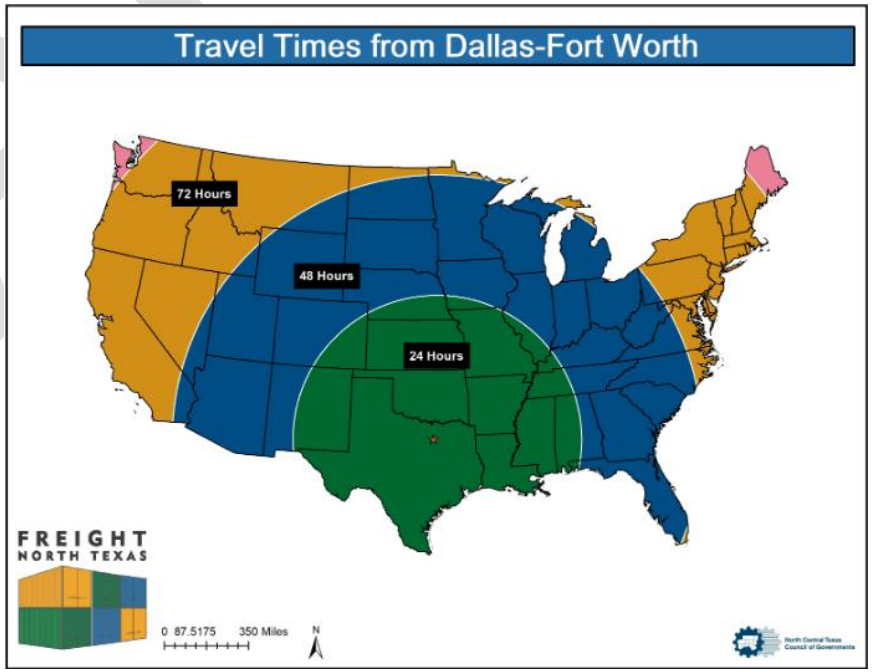
OVERVIEW

Freight and goods movement are essential to our daily lives. Without freight movement, homes could not be built, fuel could not be delivered, and store shelves could not be filled. In short, if freight ceased to move, the effects would be felt within hours. In Texas, it is projected that in 2050, more than 8 billion tons of goods valued at more than $7 trillion are expected to be moving through and within Texas.[3]

Freight transportation is a key component in our regional, state, and national economies. Freight-related employment constitutes approximately 21 percent of all regional employment.[4] In 2023, $25.5 billion of transportation and warehousing gross domestic product occurred in the North Texas region.[5]

The region is the nation's largest inland port where freight is moved, transferred, and distributed to destinations across the state and around the world. Four major Interstate Highways cross the region: IH 20, IH 30, IH 45, and IH 35 (including IH 35E and IH 35W branch routes). The region is a national railroad crossroads and a domestic and international air cargo hub, making it a national logistics hub. North Central Texas is centrally located within the lower 48 states, which allows the region to serve as a primary distribution center, or inland port, for the southwestern US and the nation. Trucks leaving the region can reach much of the country within 72 hours.[6] **Figure 6-5** shows freight travel times into and out of the region. The region has one of the most extensive surface and air transportation networks in the world, providing widespread trade opportunities for the more than 600 motor/trucking carriers and almost 100 freight forwarders operating within the region.[7]

Figure 6-5: Travel Times in Dallas-Fort Worth



[3] Texas Department of Transportation, texas-delivers-2050.pdf (txdot.gov)
[4] North Texas Commission, 2024 NTC Profile.pdf (ntc-dfw.org)
[5] North Texas Commission, 2024 NTC Profile.pdf (ntc-dfw.org)
[6] Freight North Texas, NCTCOG - Freight North Texas
[7] Dallas Fort Worth International Airport, DFW International Airport | Official Website (dfwairport.com)

As domestic and international freight demand continues to grow, the ability of infrastructure to meet that demand is crucial to the region's economy and mobility and to the safety of its residents. As such, freight integration is a critical component in the overall transportation planning process. Effective freight planning impacts Transportation Management and Operations, Transportation Safety, Intelligent Transportation Systems, Sustainable Development, Roadway/Rail Infrastructure, and Air Quality. These programs are addressed in the **Operational Efficiency**, **Mobility Options**, and **Environmental Considerations** chapters.

Effective freight planning must consider the following five significant freight transportation issues in the North Central Texas region:

- First/last mile connections
- Inadequate infrastructure and evolving land use
- Growing congestion on major regional transportation facilities
- Emerging freight technologies
- Safety

To help overcome these freight transportation issues, the North Central Texas Council of Governments (NCTCOG) has multiple regional freight planning aims:

- Coordinate with the freight community during the planning process.
- Improve freight movements across all modes and integrate goods movement with other transportation options.
- Improve freight movement efficiency to, from, and within the region.
- Promote safety, mobility, and accessibility.
- Reduce the air quality impacts of freight movements.
- Seamlessly incorporate freight technology considerations in transportation projects.
- Encourage participation between the public and private sectors to implement projects across the region.
- Improve railroad safety and reliability by encouraging freight and passenger railroad coordination.

Achievement of these goals will enable NCTCOG to better plan for the needs of freight transportation facilities and the freight sector.

Measuring Performance

Performance measures are essential for evaluating the progress of freight-related goals and policies in the Dallas-Fort Worth region. Federal transportation legislation has emphasized performance-based planning since the introduction of the Moving Ahead for Progress in the 21st Century Act, with its principles carried forward through subsequent laws, including the Fixing America's Surface Transportation Act and the Infrastructure Investment and Jobs Act. These measures address safety, infrastructure condition, congestion, system reliability, freight movement, economic vitality, and environmental sustainability. A key freight-specific measure is the Truck Travel Time Reliability Index, which assesses the consistency of travel times on the Interstate system. NCTCOG enhances these efforts by tracking the Regional Ratio of Truck Travel Time Index to Passenger Vehicle Travel Time Index, aiming to reduce freight-related congestion and improve mobility.

The Freight Program also incorporates regional performance measures to support data-driven planning and improved outcomes such as vehicle classification counts, freight facility inventories, and safety initiatives like reducing truck-involved accidents and at-grade railroad incidents. Continued coordination with the freight community and promoting compatible land uses near freight developments remain priorities. For more information, see the **Regional Performance** chapter.

MOBILITY 2050 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.

Pursue long-term sustainable revenue sources to address regional transportation system needs.

Provide for timely project planning and implementation.

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

MOBILITY 2050 POLICIES AND PROGRAMS

Mobility 2050 includes policies and programs that address regional priorities and public needs. Policies guide decision-making and set the framework for long-term goals, while programs provide the funding and resources to turn plans into action across the transportation system.

Policies

FP3-001: Foster regional economic activity through safe, efficient, reliable freight movement while educating elected officials and the public regarding freight's role in the Dallas-Fort Worth region's economy.

FP3-002: Encourage the freight industry to participate in freight system planning and development to improve air quality and delivery time reliability.

FP3-003: Identify and maintain regional freight networks to meet business and consumer demand, benefiting everyday life.

FP3-004: Enhance intermodal freight activity through innovation, facility development, and improved connections to the freight network.

FP3-005: Enhance freight-oriented land-use sustainability by requiring local governments to adopt compatible zoning requirements and address nondiscrimination concerns pertaining to freight-oriented developments and land-use conflicts. Work with local governments as needed to address specific land-use issues related to freight.

FP3-006: Incorporate technological advancements into the regional freight network with both public and private partnerships.

FP3-007: Improve efficiency by promoting safety, mobility, and accessibility on freight networks.

FP3-008: Monitor freight traffic annually along major corridors and major freight facilities.

FP3-009: Incorporate freight analysis using the Freight Economic Analysis Tool and involve the freight community in the planning process of goods movement projects.

FP3-010: Improve air quality related to freight through adopting local ordinances prohibiting truck engine idling.

FP3-011: Improve railroad safety through public education, innovation, and partnering with local governments to address railroad crossing safety improvements.

FP3-012: Improve truck parking throughout the region and identify funding sources to assist with the creation of new truck parking.

FP3-013: Encourage regional railroads to participate in rail system planning, identifying issues, and the development of integrated operations with local commuter rail agencies.

FP3-014: Enhance freight movements through identifying specific freight-focused issues.

Programs

For more information on program funding and implementation, see the **Mobility Options** appendix.

FP2-001: Data Collection

FP2-002: Freight System/Network Planning

FP2-003: Freight Outreach Activities

FP2-004: North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (NT MOVES)

FP2-005: Land-Use Planning

PROGRAM STRATEGIES

FP2-001: Data Collection

The program's purpose is to collect data and monitor freight traffic in the region, including:

- Vehicle classification counts and vehicle movements
- Freight Travel Demand Forecasting Model
- Freight transportation facility inventory
- Federal Highway Administration, state, local, and private data sources
- Economic information regarding the impact of freight

Data will be collected for the region, particularly for areas with freight facilities and high freight traffic. Capital improvement needs will be documented as well.

Data will be used to help determine where potential issues may arise in the freight system and will help to create projects addressing these issues. It will also be used in outreach for elected officials and policy-makers to communicate freight's importance to the region.

FP2-002: Freight System/Network Planning

The planning efforts and studies listed below are part of the Freight System/Network Planning Program:

Safety: Increase public and freight operators' safety through education and projects.

Freight Rail: Continue various regional rail planning efforts, including:

- Implement recommendations from regional rail studies
- Railroad Crossing Analysis Program
- Railroad Safety Education Program
- Railroad Crossing Quiet Zone Planning

Freight Routes: Identify, analyze, and improve freight routes, including:

- Innovative solutions (e.g., truck only lanes)
- Develop and keep Critical Urban Freight Corridors up to date
- Bottleneck removal projects
- New technologies (e.g., automated vehicles)
- Improve truck parking availability
- Infrastructure improvements on primary and secondary freight networks and local truck routes
- First/last mile access improvements
- Operations improvement on key freight routes
- Implement projects to enhance network connectivity
- Hazardous materials routing

FP2-003: Freight Outreach Activities

This program's purpose is to engage in education and outreach activities within and outside the freight sector. Outreach participants include professionals in the freight industry, public officials, and the general public. This outreach will increase the understanding of freight's importance to the region and of long-term freight planning for the public, industry professionals, and decision-makers.

FP2-004: North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program (NT MOVES)

This program's purpose addresses long-range freight rail planning needs. The program seeks to address rail mobility issues through collaboration and strategic investment into rail infrastructure. The program resolves long-standing congestion issues by working with both public and private rail sectors to help identify and resolve rail bottlenecks and operations issues within the North Central Texas region. There are several elements and projects to this program, including:

Better Utilizing Investments to Leverage Development Grant: Work with regional rail partners to complete the projects outlined in the Fiscal Year 2020 Better Utilizing Investments to Leverage Development Grant award.

Regional Railroad Information System: Implement Clear Path technology to be used to assist in creating capacity of the Dallas-Fort Worth rail network by facilitating inter-carrier operations and enhancing the flow of passenger and freight trains through the complex.

Professional Engineering Agreements: Establish engineering agreements with freight and passenger railroads, allowing for streamlined design and review of design plans for regionally significant transportation projects.

Transit Rail Insurance: Administer funds allocated for required insurance, which would allow passenger rail integration onto active freight rail lines.

FP2-005: Land-Use Planning

This program's purpose is to help ensure compatible land uses are considered near freight development, including:

- Railroad tracks
- Intermodal facilities
- Freight-oriented developments
- Truck routes and other major freight roadways
- Truck parking facilities

This program will help create safer and more efficient freight centers.

FREIGHT NORTH TEXAS

Freight North Texas is an ongoing planning program led by NCTCOG to enhance the safety, mobility, efficiency, and air quality associated with freight movements within the North Central Texas region. As a part of creating the Freight North Texas Program, in September 2011, NCTCOG staff convened the Regional Freight Advisory Committee, consisting of freight professionals. The Regional Freight Advisory Committee, which meets twice a year, provides guidance to NCTCOG staff and regional policy-makers regarding freight activities, and the committee also continues to provide strategic product and project review. The guiding document for Freight North Texas *is Freight North Texas: A Freight Mobility Plan*, originally published in May 2013, then updated in 2022. This document highlights policies, programs, and projects needed to improve freight planning and operations in North Central Texas. The plan includes recommendations for follow-up studies and new policies and programs to improve freight movements in the region. Recommendations for follow-up studies from this document include:

View document online

- Truck Bottleneck Study
- Rail Pathing Study
- Air Cargo Analysis
- Rail Crossing Analysis

As mentioned, Freight North Texas is an ongoing planning program; therefore, NCTCOG continually updates and works to publish the most up-to-date information on the policies, programs, and projects needed to improve freight planning and operations in North Central Texas.

Completing these studies has provided a more comprehensive and accurate representation of regional freight and will help to identify and prioritize effective initiatives. With the completion of the follow-up studies, work has begun on the new Freight North Texas Regional Freight Plan. This document will continue to be the guiding document for the Freight Program at NCTCOG.

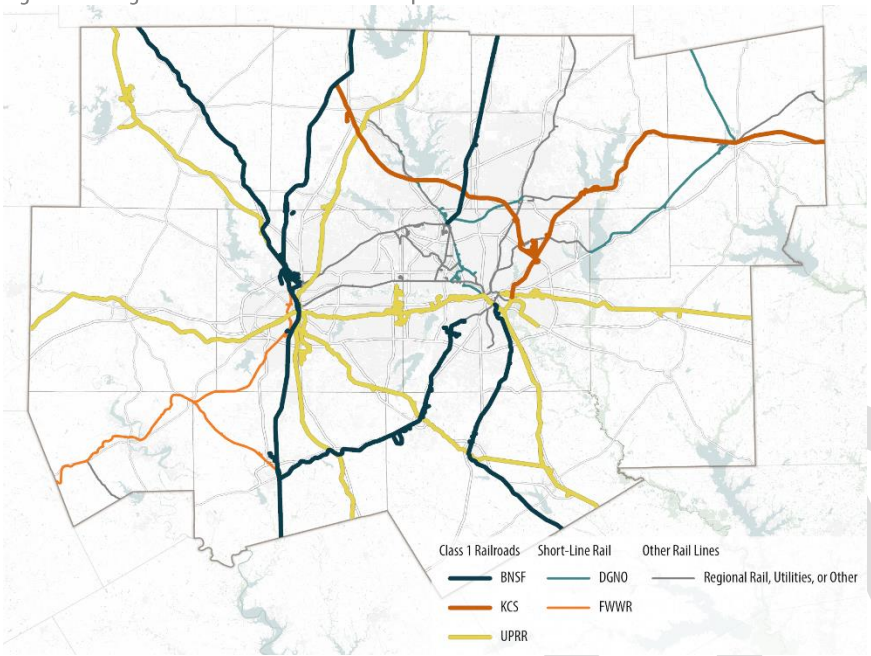
RAIL PLANNING

As a vital part of the nation's freight network, Texas has over 10,000 miles of freight tracks, the most of any state.[8] Three of the nation's Class 1 railroads operate within North Central Texas: 1) BNSF Railway, 2) Kansas City Southern, and 3) Union Pacific Railroad. These railroads can be seen in **Figure 6-6**. Each of these Class 1 railroads operates at least one intermodal facility in the region. In addition, several short-line railroads have local operations in the region, including the Dallas, Garland & Northeastern Railroad and the Fort Worth & Western Railroad. These rail lines combine to serve all 48 contiguous states, Alaska, Canada, and Mexico, and they work cooperatively with

[8] https://ftp.txdot.gov/pub/txdot/sla/education-series/rail.pdf

trucking firms and ocean shippers to expedite intermodal freight movements.

Figure 6-6: Regional Rail Network Owners Map



Key freight railroad facilities in North Central Texas include:

- BNSF Railway Intermodal and Carload Transportation Center at Alliance
- Canadian Pacific Kansas City Intermodal Terminal in Wylie
- Union Pacific Railroad Dallas Intermodal Terminal in Wilmer
- Union Pacific Railroad Mesquite Intermodal Terminal in Mesquite

Rail is an important part of the region's freight system and working with the rail industry to create a more complete freight network is critical. NCTCOG has several policies and programs pertaining to freight rail planning. These include promoting proper land-use planning, monitoring and/or preserving right-of-way for future transportation projects, encouraging safe and efficient rail crossings, and improving access to intermodal facilities.

North Texas Multimodal Operations, Velocity, Efficiency, and Safety Program

NCTCOG's NT MOVES Program is a program focused on railroad and road improvements in the North Texas region intended to enhance freight and passenger mobility across all modes. NT MOVES is a long-range program that seeks to address rail mobility issues through collaboration and strategic investment into rail infrastructure. The program is an ambitious and innovative approach to resolving longstanding congestion issues. Both public and private rail sectors have come together to help identify and resolve rail bottlenecks and operational issues within the North Central Texas region. This has resulted in the identification of high priority projects that, in turn, have been submitted to federal grants with all partners committing funding to the efforts. As a result, NCTCOG was awarded $25 million through the Fiscal Year 2020 Better Utilizing Investments to Leverage Development Grant to progress projects.

Better Utilizing Investments to Leverage Development Grant

As stated above, NCTCOG's NT MOVES submittal for the Better Utilizing Investments to Leverage Development (BUILD) Grant was selected and awarded $25 million to progress projects. These projects will eliminate 3.6 miles of single track, bringing the single-track mileage to just 8.4 miles and increasing the double-track mileage to 26.6 miles on the Trinity Railway Express (TRE) corridor. The TRE corridor is used as the main passenger rail corridor between Dallas and Fort Worth, with TRE, Amtrack, and multiple freight railroads operating on the corridor. It is one of the region's most congested rail corridors, being

highly used for both freight and passenger rail. These project improvements include:

- Double track Medical Market Center to Stemmons Freeway (milepost 639.5) to the beginning of the existing double-tracked section west of Medical Market Center Station (approximately milepost 640.7), a distance of about 1.2 miles.
- Rehabilitate the existing bridge over Inwood Road (milepost 640.41) and add an adjacent bridge for the second track.
- Add a new bridge at Knights Branch (milepost 640.32) for a second track.
- Replace the current Noble Branch Bridge and add an adjacent bridge for a second track (milepost 639.62).
- Replace bridges at Walkers Creek (milepost 620.60) and Mesquite Creek (milepost 621.06) and construct 2.4 miles of a new second track from east of Handley Ederville Road to east of Precinct Line Road (milepost 618.7 to milepost 621.1).

Regional Rail Information System

In addition to the physical infrastructure project, the BUILD Grant award also included funding for the implementation of a Regional Rail Information System, using Clear Path technology developed for the Chicago Rail Complex. The goal is to design and develop the concept of operations and implement a hardware and software backbone structure. This will enable all agencies and users of the Dallas-Fort Worth regional rail system to exchange timely, accurate, and actionable information on train movements in the terminal complex. This system will increase the capacity of the Dallas-Fort Worth rail network by facilitating intercarrier operations and enhancing the flow of passenger and freight trains through the complex.

Rail Crossing Analysis

At-grade crossings are receiving national attention and are a major concern for the country. These concerns include safety, efficiency, and reliability for the railroads and motorists passing through the crossing. NCTCOG continued to address these concerns by conducting an evaluation in 2023 to assess, analyze, and provide input for the at-grade rail crossings within the city of Fort Worth. The city of Fort Worth was chosen as the first city to evaluate due to the high number of train movement, railroads, and railroad-to-car interactions that pass through the city daily. The scope of work for this evaluation included identifying all crossings, a field review of each crossing, an analysis of the crossings, and recommendations with a prioritized list of crossing improvements. In late 2024, NCTCOG began the Dallas Rail Crossing Analysis. The Dallas Rail Crossing Analysis will take inspiration from the Fort Worth Rail Crossing Analysis. The scope of work for the city of Dallas includes identifying all crossings, a field review of each crossing, an analysis of the crossings, and recommendations with a prioritized list of crossing improvements.

Regional Rail Study

A Regional Rail Study has been conducted by NCTCOG and the Texas Department of Transportation to inventory rail assets, constraints, and safety issues on the rail network. The Regional Rail Study was completed in September 2020. The study includes a list of rail enhancements prioritized in the best interest of the North Central Texas region; the enhancements address current passenger- and freight-rail performance concerns. To improve coordination between regional transit agencies and freight rail carriers, the study identified policies, programs, and agency-specific strategies to reduce freight delays and maintain on-time passenger rail service. The study contains

information and project recommendations for the rail system and emphasizes the integration of passenger and freight rail.

NCTCOG currently has several rail initiatives, including the Railroad Crossing Analysis Program. These initiatives help to create safer and more efficient rail movement in the region.

AIR CARGO

North Central Texas has two major air cargo facilities: Dallas Fort Worth International Airport and Alliance Airport. Alliance is exclusively an air cargo airport. Trucks are the primary method used to transport cargo away from the airports. Although air cargo carries a higher value than the other modes of freight, it does not have as big an impact on the regional freight network as other modes. Air cargo creates less impact because it has a relatively low weight compared with that of truck or rail cargo. Despite this low weight, the location of air cargo terminals and the volume of their goods movements still need to be considered in freight transportation planning. For more information about air cargo in the region, please refer to the **Aviation** section of this chapter.

HIGHWAY PLANNING

The US transportation system moved $88.3 billion of freight on America's highways in 2023.[9] Most freight in the US is moved via truck. Deregulation of the trucking industry, the passage of the United States-Mexico-Canada Agreement, reductions in rail service, and growth in time-sensitive freight have greatly impacted the number of trucks on the nation's roadways, including those in North Central Texas.

Key freight truck facilities in North Central Texas include:

- BNSF Railway Intermodal and Carload Transportation Center at Alliance
- Canadian Pacific Kansas City Intermodal Terminal in Wylie
- Union Pacific Railroad Dallas Intermodal Terminal in Wilmer
- Union Pacific Railroad Mesquite Intermodal Terminal in Mesquite
- Dallas Fort Worth International Airport
- Alliance Airport Air Cargo Terminals
- Peterbilt Motors Company Manufacturing in Denton
- FedEx Ground Dallas Hub in Dallas
- United Parcel Service in Dallas
- Coca-Cola Bottling and Distribution in Mesquite
- Foreign Trade Zone Numbers:
  - 39: Dallas Fort Worth International Airport[10]
  - 113: Ellis County[11]
  - 168: Dallas-Fort Worth[12]
  - 196: Fort Worth (Alliance)[13]

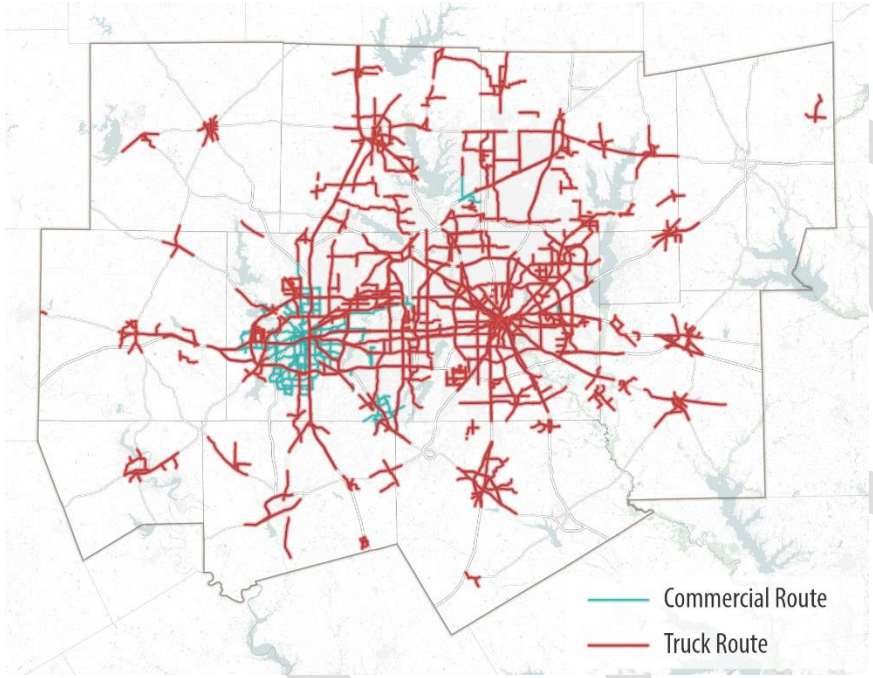
Truck travel characteristics and routes are continuously monitored and inventoried. This information helps to forecast the impact of proposed transportation planning and infrastructure projects on the movement of freight. Additionally, as more precise data is collected and monitored, models that forecast truck flow may be used to evaluate proposed changes to the transportation system.

[9] Bureau of Transportation Statistics, North American Transborder Freight up 3.5% in October 2023 from October 2022 | Bureau of Transportation Statistics (bts.gov)
[10] Zone Details - FTZ (trade.gov)
[11] Zone Details - FTZ (trade.gov)
[12] Zone Details - FTZ (trade.gov)
[13] Zone Details - FTZ (trade.gov)

Regional Truck Routes

Dedicated truck routes are an important component of the regional freight system. The truck routes for the region can be seen in **Figure 6-7**. Federal, state, and local governments may establish truck routes to direct freight traffic to minimize congestion for passenger and freight vehicles. Truck routes also offer designated routes to key freight facilities. Within North Central Texas, 100 municipalities have some form of truck route designated by ordinance.

Figure 6-7: Regional Truck Routes

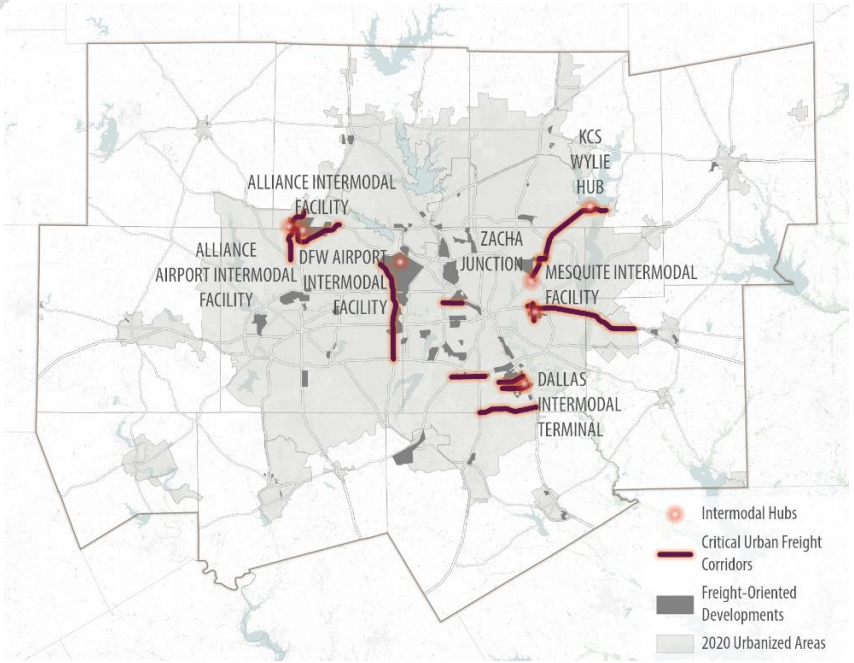


Critical Urban Freight Corridors

Connecting the region's freight network to the Federal Highway Administration's (FHWA) National Highway Freight Network (NHFN) is vital to the region's freight movement. NCTCOG engaged in developing a Regional Critical Urban Freight Corridor system. The goal was to identify important freight corridors that provide critical connectivity to the state freight network and the NHFN. The Regional Critical Urban Freight Corridor system aligns with Mobility 2050, the Transportation Improvement Program, and the state's 10-Year Plan.

Critical Urban Freight Corridors (CUFCs) are a requirement of the Fixing America's Surface Transportation Act as part of FHWA's NHFN. Being a part of the NHFN allows these corridors to be eligible for state and federal funding. Twelve corridors were identified and approved by the Regional Transportation Council to submit to the Texas Department of Transportation (TxDOT) and FHWA as the current CUFCs. As illustrated in **Figure 6-8**, CUFCs in Dallas-Fort Worth work together with intermodal hubs, which play a role in getting products to distribution centers and fulfillment centers before they reach the end consumer. NCTCOG will work with TxDOT staff every year to ensure the proper roads in the region are identified as CUFCs.

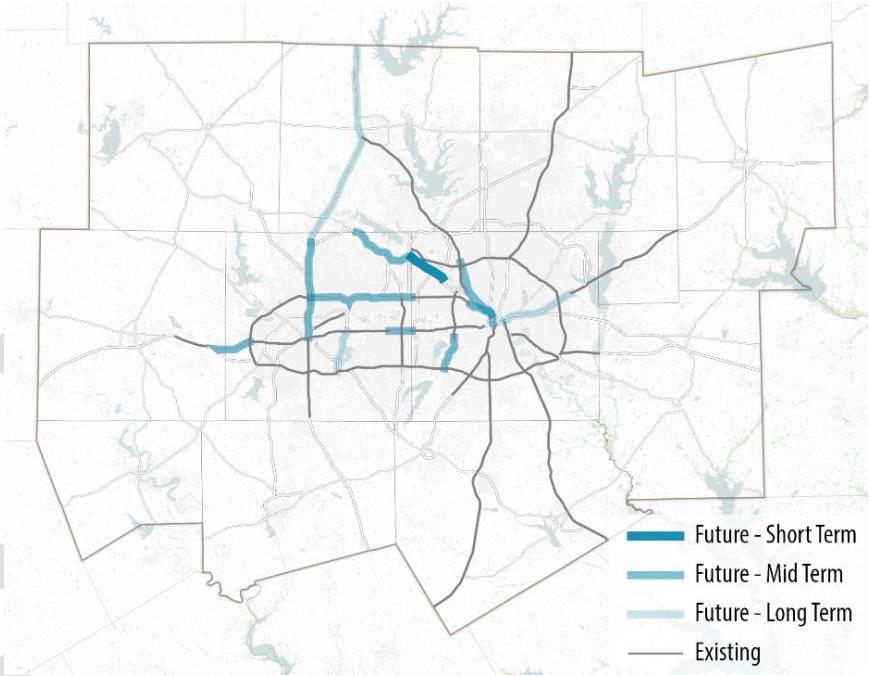
Figure 6-8: Critical Urban Freight Corridors



Truck Lane Restrictions

As the Texas region continues to grow, truck lane restrictions will likely be a more common practice on Texas roads. Truck lane restrictions allow for highways to control where trucks can and cannot drive and based on traffic studies, truck lane restrictions have been shown to improve mobility, safety, and air quality. For a corridor to be considered for truck lane restrictions, there must be three or more traffic lanes (excluding frontage roads) in each direction and there cannot be left exits. In these corridor sections, trucks with three or more axles are prohibited from using the inside left lane, except when passing traffic. The truck lane restrictions proposed in the 2005 Truck Lane Pilot Study and 2009 Truck Lane Restriction Expansion Study are operational along sections of highway segments in Collin, Dallas, Ellis, Parker, Rockwall, and Tarrant counties. These were further expanded in 2013 and 2019. Then in 2022, NCTCOG and the TxDOT Dallas District worked together on an expansion of the region's truck lane restrictions, including those across the eastern side of the region. The majority of the operational truck lane restrictions are in Dallas and Tarrant counties. **Figure 6-9** illustrates plans for future truck lane restrictions, which will eventually reach Denton County. Combined, these truck lane restrictions are expected to improve highway safety and mobility and the region's air quality. The implementation of these additional truck lane restrictions will help to ease congestion for passenger vehicles and increase safety in the proposed corridors.

Figure 6-9: Regional Truck Lane Restrictions

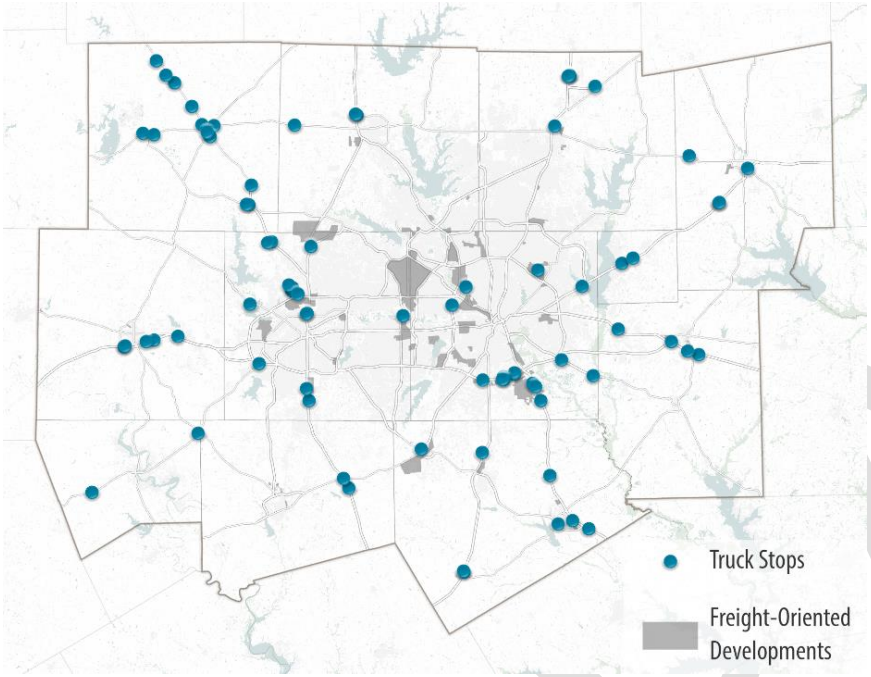


Truck Parking

In 2018, NCTCOG completed the Regional Truck Parking Study. The recommendations included in this study provide verifiable data to local, regional, state, and private entities such as truck parking locations, truck counts, and truck travel times. The recommendations also include opportunities to improve truck parking infrastructure by enhancing existing, and developing additional, truck parking facilities. Increasing the number of viable truck parking spaces would help truck drivers comply with federally mandated regulations, improve safety on roadways, and enhance regional economic development (see **Figure 6-10**). As our region continues to grow, the importance of having adequate truck parking will become increasingly more important; thus, the Goods Movement Team at NCTCOG completed the 2024 Truck

Parking Study Update. This update provides an analysis of new funding opportunities, new truck parking technologies, and discusses corridors of concern and opportunity zones within the Dallas-Fort Worth region.

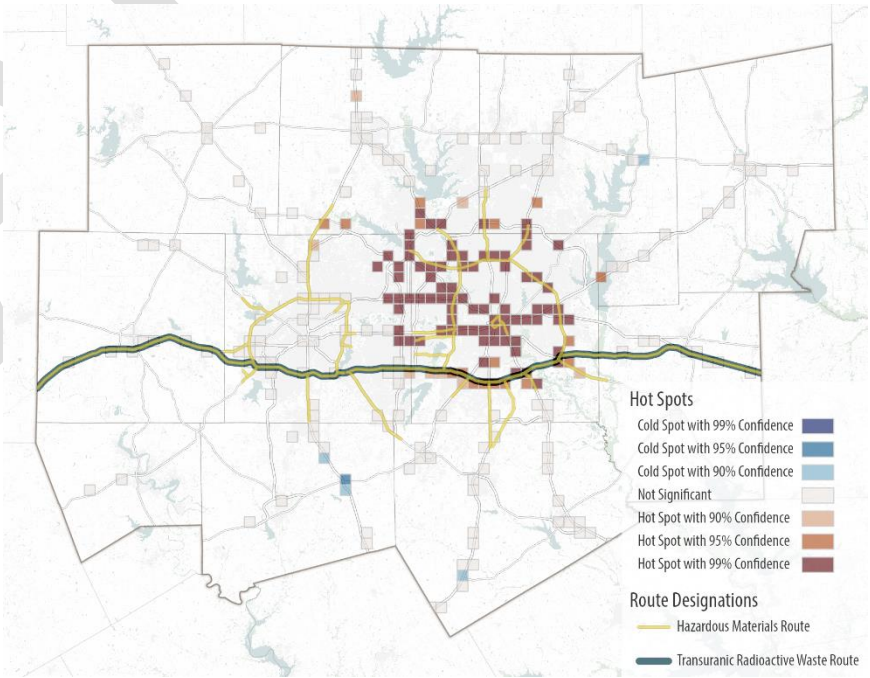
Figure 6-10: Regional Truck Stops



Freight Safety

As stated earlier, safety in freight movement is a high priority in the goods movement industry and needs to be properly tracked and evaluated on a consistent basis. Freight highway safety in the region is annually tracked by reviewing and analyzing truck-involved crashes. Analysis focuses on the crash location, possible causes, impact on traffic congestion, and potential solutions to improve highway safety involving truck movements. Freight safety is a top priority at NCTCOG. Every two years the **Freight Safety Campaign** is conducted to increase awareness about safe practices near freight vehicles. In addition, work and analysis continues on recommended follow-up studies on freight safety and working with other agencies to ensure the roads are safe for all trucks and drivers. Additionally, to ensure that our roads remain safe for all drivers and pedestrians, NCTCOG completed the Fort Worth Rail Crossing Analysis. This analysis included evaluating all at-grade crossings in the city of Fort Worth. This analysis focused on evaluating each at-grade crossing on a variety of different levels such as safety, traffic counts, blocked crossings, and conditions near the crossings. NCTCOG began the Dallas Rail Crossing Analysis in late 2024. Please see **Figure 6-11** for hotspots related to truck-involved crashes. For more information about safety, see the **Operational Efficiency** chapter, **Transportation System Safety** section.

Figure 6-11: Commercial Vehicle Incident Hot Spots



Freight Safety Campaign

The Freight Safety Campaign is conducted every two years and begins in the spring and ends in the fall. The next safety campaign will take place in 2025. The goal for the campaigns is to reduce freight-related accidents and inform the public about safe driving practices near large commercial motor vehicles. Truck and passenger vehicles interact daily, which can present possible life-threatening incidents. These can be mitigated through greater awareness and safer driving habits. The saying goes, "Share the Road Responsibly and Stay Back 30 feet." **Figure 6-12** is an example of a freight advertisement that was used to promote the 2023 Safety Campaign. Operation Lifesaver, which aims to reduce rail crossing-related accidents and inform the public about safe rail crossing practices, will again collaborate with NCTCOG for the railroad crossing portion of the campaign. It is important to keep our communities safe through continued rail crossing safety education, NCTCOG will continue the Freight Safety Campaign and will begin the 2025 Freight Safety Campaign in early 2025.

Figure 6-12: Freight Creative

LOGISTICS, THE ECONOMY, AND NONDISCRIMINATION

Logistics operations have far-reaching impacts in nearly every major commercial, institutional, and industrial sector. As such, the infrastructure that facilitates goods movement plays a vital role in sustaining and developing the economy. Therefore, broad spectrum land-use policies that do not consider the needs of the freight industry are both environmentally and economically detrimental. NCTCOG seeks to assist with comprehensive analysis of freight land uses in the North Central Texas region and will provide a toolkit to municipal governments as an aid in refining and updating current land-use policies. Ensuring that freight industry needs are accounted for in municipal and county codes maximizes the economic benefit of freight activity while minimizing any environmental and quality-of-life externalities that result from logistical operations.

Nondiscrimination analysis helps identify locations in the region where there is a potential for disproportionate negative impacts to occur because of freight land use or land developments near populations protected by nondiscrimination laws. The results will help determine the locations and potential adequate areas for freight located in the North Central Texas region. For more information on the nondiscrimination analysis, see the **Social Considerations** chapter.

TECHNOLOGY

New and emerging technologies have the potential to affect freight transportation. These include electronic driver logs, automated vehicles, connected vehicles, and alternative delivery methods. In addition to these, NCTCOG has moved forward with automated transportation system and freight signal optimization. These projects represent a technological approach to traditional freight problems such as truck congestion caused by signal timing in freight-oriented areas and the need for short, closed freight networks. These and other new technologies will have a sizable impact on the movement of freight. NCTCOG will continue to monitor and incorporate potential

impacts of new technologies into the planning process as they emerge. For more information on automated vehicles, see the **Connected/Automated Vehicles and Technologies** chapter section.

NCTCOG will also continue to monitor the impacts on freight movement that result from major infrastructure projects external to the region, including the Panama Canal Expansion and potential Red River Navigation projects.

CERTT Program

New freight transportation technology is developing every day. To assist in the development NCTCOG has developed a program helping emerging technologies. The Certification of Emerging and Reliable Transportation Technology (CERTT) Program was established by the Regional Transportation Council to connect providers of innovative transportation technology with our partners in local governments throughout the region.

NCTCOG will also continue to monitor the impacts on freight movement that result from major infrastructure projects external to the region.

SUMMARY

Goods are moved, transferred, and distributed from North Central Texas to destinations across the United States and around the world via truck, train, and aircraft. Providing reliable infrastructure and freight planning that integrates multiple moves is crucial to the region's economy and is vital to the local, state, and national economies and residents' quality of life. Mobility 2050 recommends a variety of goals, policies, and programs to support the efficient, safe, and reliable movement of freight in North Central Texas.

6-3. ACTIVE TRANSPORTATION

OVERVIEW

Active transportation, or bicycle and pedestrian modes, is an integral component of Mobility 2050. Active transportation offers numerous options to improve the existing transportation system efficiently and cost-effectively through a variety of systematic enhancements. Active transportation also includes micromobility; as defined by the Federal Highway Administration, micromobility is any human- or electric-powered transportation device, including bicycles, scooters, electric-assist bicycles (e-bikes), electric scooters (e-scooters), and other small, lightweight, wheeled conveyances.

Safe and efficient active transportation infrastructure continuously emerges as a high priority in public feedback and benefits all road users by creating more livable and 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 not only for recreational use; it is also 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 United States Department of Transportation (USDOT) policy statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations signed on March 11, 2010 highlights the importance "*to incorporate safe and convenient walking and bicycling facilities into transportation projects.*" The policy emphasizes 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, the Texas Department of Transportation Roadway Design Manual contains guidance to plan, design, and construct facilities that safely accommodate bicyclists and pedestrians.

Providing Traveler Choice

The following are considerations that should be given when planning and implementing active transportation facilities:

- All trips less than two miles in length in the urbanized areas should have options available to be accomplished by nonmotorized, transit, or micromobility modes of travel.
- All roadways in the urbanized areas 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.

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

MOBILITY 2050 SUPPORTED GOALS

MOBILITY

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.

QUALITY OF LIFE

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

Encourage livable communities which support sustainability and economic vitality.

SYSTEM SUSTAINABILITY

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

Pursue long-term sustainable revenue sources to address regional transportation system needs.

IMPLEMENTATION

Provide for timely project planning and implementation.

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

MOBILITY 2050 POLICIES AND PROGRAMS

Mobility 2050 includes policies and programs that address regional priorities and public needs. Policies guide decision-making and set the framework for long-term goals, while programs provide the funding and resources to turn plans into action across the transportation system.

Policies

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

For more information on program funding and implementation, see the **Mobility Options** appendix.

BP2-001: Active Transportation Planning and Design

BP2-002: Active Transportation Network Implementation

BP2-003: Active Transportation Education and Outreach

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. Locally adopted community bicycle and trail master plans are used in the development of Mobility 2050 to ensure regional connectivity and continuity.

The types of pedestrian and bicycle facilities available differ from community to community, based on the context and density of the surrounding area where they are located. These facilities provide for nonmotorized modes of transportation, and enhance travel throughout the region.

In urban areas of the region, the active transportation network typically includes the greatest density of interconnected sidewalks, off-street shared-use paths, and on-street bikeways. The density of active transportation facilities is greatest in urban areas where there are high volumes of users requiring connections to transit and major destinations. These urban areas also have a significant number of short distance trips that can be achieved by walking, bicycling, and micromobility devices in contrast to suburban or rural areas.

Options for Short Distance Trips

According to the 2022 National Household Travel Survey, for households located in urban areas, 47 percent of all trips were three miles or less in distance, and 19 percent of all trips were one mile or less. These trips are ideal for biking, walking, transit, micromobility, or a combination of these modes of travel. By encouraging investment in facilities that support these forms of transportation, the region can shift short trips to walking and bicycling modes, resulting in more transportation choices and improved air quality. Therefore, Mobility 2050 aims to provide options for nonmotorized or transit modes of travel for all trips in the urbanized area that are less than two miles in distance. **Figure 6-13** shows the types of recommendations included in the plan.

Figure 6-13: Active Transportation Recommendation Types

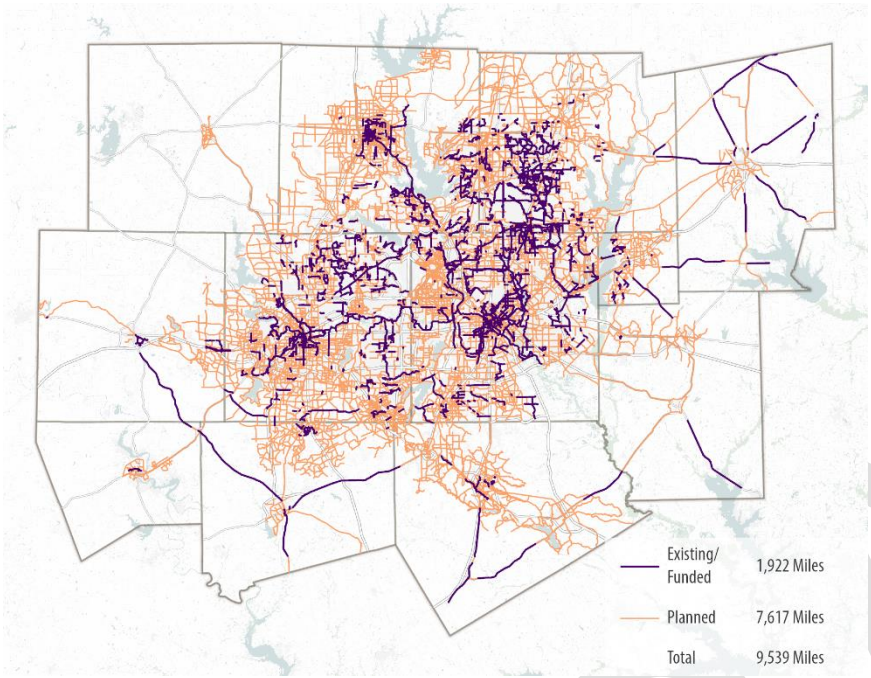
ACTIVE TRANSPORTATION NETWORK RECOMMENDATIONS

Combined Active Transportation Network

The active transportation network in the region consists of supporting community shared-use paths, the on-street bikeway network (including on-street wide shoulders in rural areas), and regional shared-use paths (Regional Veloweb). This network is reflected in the map in **Figure 6-14** and mileage data can be found in the **Mobility Options** appendix.

Mobility 2050 includes extensive research on and the 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, areas of highest demand for active transportation travel, and other policies for active transportation infrastructure investment and safety. Mobility 2050 represents the compilation of 84 locally adopted plans with shared-use paths (trails) and 45 locally adopted plans that include on-street bikeway facilities. New and updated regional plans are adopted each year, and the North Central Texas Council of Governments regularly coordinates with local jurisdictions to update a geodatabase of existing, funded, and planned active transportation facilities.

Figure 6-14: Combined Regional Veloweb, Community Paths, and On-Street Bikeway Network



- 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.
- Regional Veloweb and Community Path facility mileages are based on linear miles. On-street bikeway facility mileage is based on centerline miles.

Recommended Off-Street Network: The Regional Veloweb

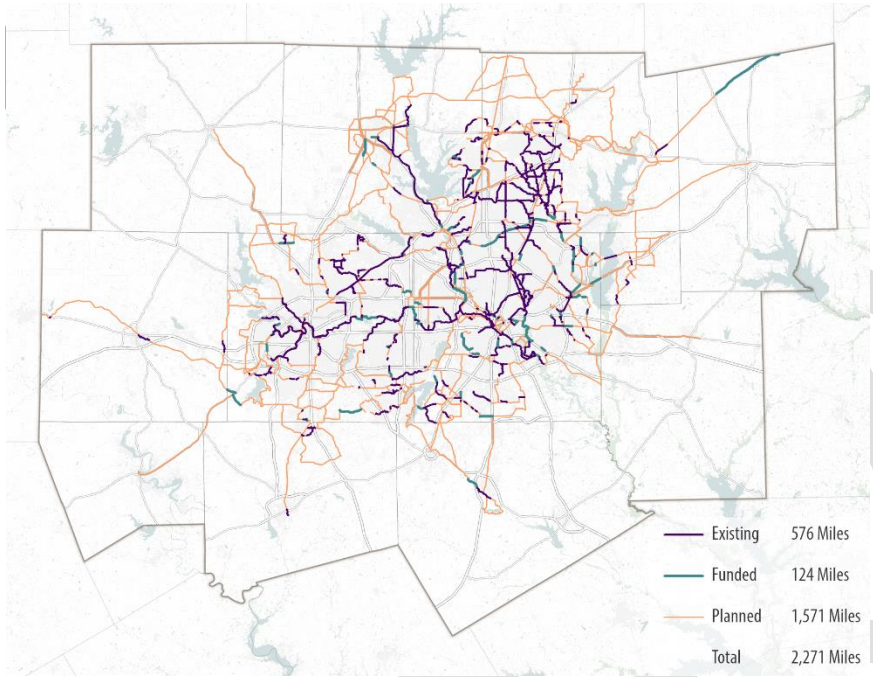
The Regional Veloweb is a network of off-street shared-use paths (trails) designed for non-recreational trip purposes by bicyclists, pedestrians, and other nonmotorized forms of transportation. The Regional Veloweb serves as the regional expressway network for active transportation, and it extends the reach of the region's roadway and passenger rail transit network for nonmotorized transportation. The Regional Veloweb has planned connections in 12 counties and 119 cities in North Central Texas. Alignments were determined through the cooperative efforts of local governments and North Central Texas Council of Governments 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 **Figure 6-15** and includes approximately 2,271 miles of shared-use path facilities in various stages of development. The Regional Veloweb's shared-use paths are expected to be consistent with the recommendations and design guidance set forth by the American Association of State Highway and Transportation Officials' (AASHTO) *Guide for the Development of Bicycle Facilities, 5th Edition*. The primary design considerations of Regional 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 **Table 6-1**. The Regional Veloweb network incorporates certain alignments identified as regionally significant trail corridors, as well as those reflected as statewide priorities in the Texas Department of Transportation statewide Bicycle Tourism Trails Study**.** The statewide

network is comprised of cross-state spines, connecting spurs, and regional routes which extend throughout the North Central Texas region. As such, these corridors are prioritized in the plan for implementation. These alignments are reflected in the **Mobility Options** appendix.

Figure 6-15: The Regional Veloweb



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

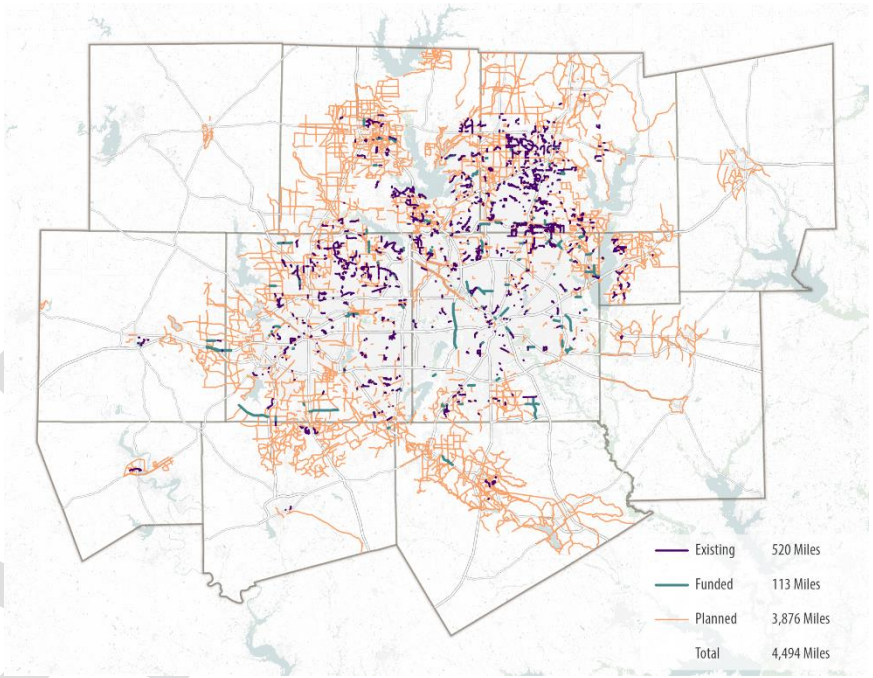
Table 6-1: Regional Veloweb 2050 Pathways Classifications and Primary Design Considerations

Regional Pathways 2050 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.
Minimum width: 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.	Minimum width: 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 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 regional network by connecting it to local and neighborhood destinations. Approximately 4,494 miles of these paths, shown in the map in **Figure 6-16**, are in various stages of development. These facilities are also expected to be consistent with the recommendations and guidance set forth by AASHTO's *Guide for the Development of Bicycle Facilities, 5th Edition*. 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 2050 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 major local destinations. While not fully funded by Mobility 2050, community shared-use paths provide important connections within communities and will be implemented as funding is available.

Figure 6-16: Community Shared-Use Paths



- 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.
- Community Path facility mileages are based on linear miles.

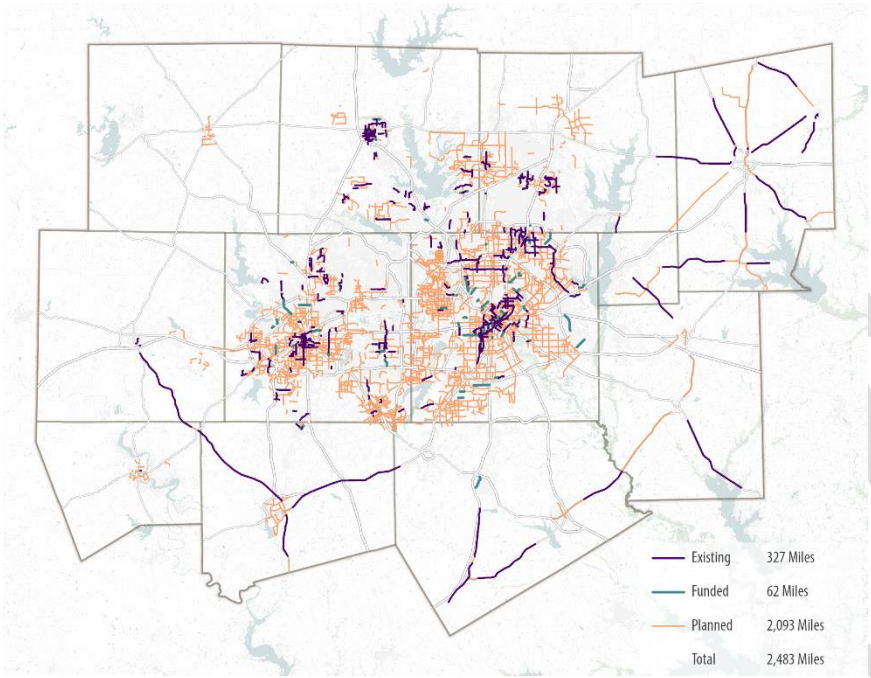
Regional On-Street Bikeway Network

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 nonmotorized travel connections between housing, employment, major destinations, and transit facilities. The existing and planned on-street bikeway network is shown in **Figure 6-17**. Currently more than 45 locally adopted plans include on-street bikeway facilities representing more than 2,483 linear miles in various stages of development.

Consistent with guidance from AASHTO, National Association of City Transportation Officials, and the Federal Highway Administration's *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. The primary factors impacting a bicyclist's level of comfort while riding are motor vehicle speed and volume. **Figure 6-18** illustrates the need for more separation from motor vehicles on roadways with higher volumes and speeds. Bikeways in urban and suburban areas of the region are recommended to include the following:

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

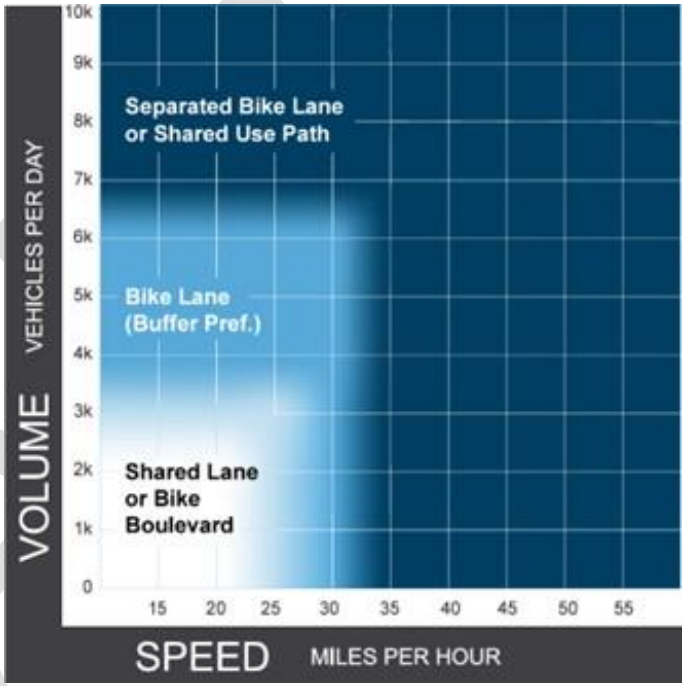
Figure 6-17: On-Street Bikeway Network



- 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.
- On-street bikeway facility mileage is based on centerline miles.

Safe and comfortable intersections must be addressed when implementing bikeway facilities at the corridor level. Innovative designs such as protected intersections, where bicyclists are physically separated from motor vehicles, serve people of all ages and abilities bicycling for travel.

Figure 6-18: Bicycle Facility Selection Criteria



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 2050. 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.

Regardless of whether a community is urban, suburban, or rural, end-of-trip facilities such as short- or long-term bicycle parking support bicycling as a mode of travel. *The Essentials of Bike Parking* by the

Association of Pedestrian and Bicycle Professionals contains guidance on site selection and recommended designs.

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 distance 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 on busy streets and major barriers, which 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, the Federal Highway Administration will seek a voluntary compliance agreement. If an agreement cannot be met, the Federal Highway Administration will send the case to the Attorney General for action.

The North Central Texas Council of Governments is helping local jurisdictions comply with ADA through policy, funding, and training for officials.

DEMAND ZONES FOR WALKING AND BICYCLING TRAVEL

Demand for pedestrian and bikeway facilities varies across the region, with multiple factors affecting where people can and will walk and bicycle as a means of travel. To identify the demand for walking and bicycling travel, a variety of criteria were used to identify the greatest demand to walk or bicycle for transportation in Adjusted 2020 Census Urbanized Areas with a population over 5,000. Those criteria include:

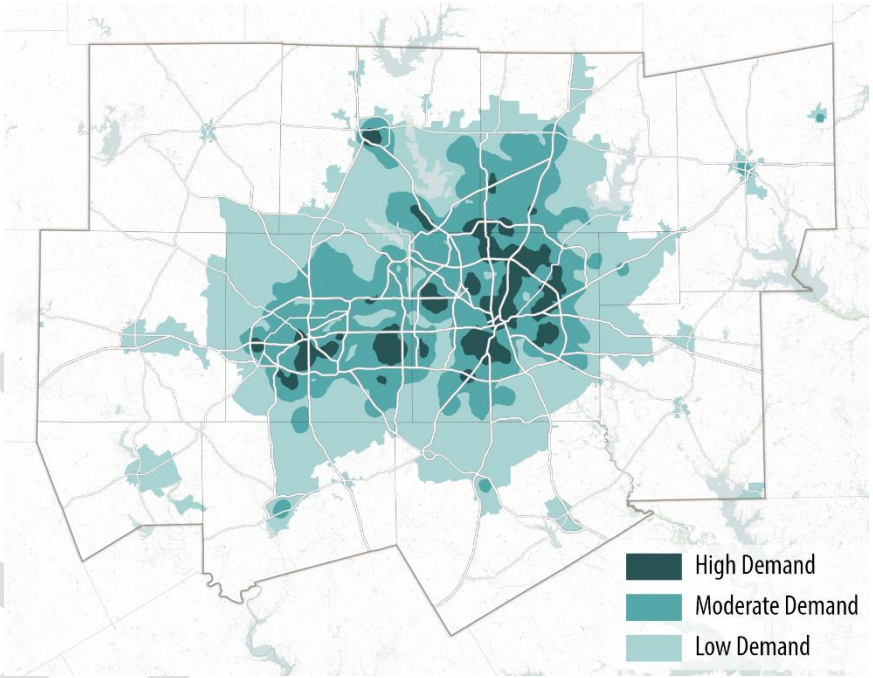
- Employment and population density
- Density of short-distance trips
- Density of low-income populations
- Density of zero-car households

The urban areas represented in **Figure 6-19** are expected to have the highest demand for walking and bicycling travel, thus also have the greatest demand for active transportation infrastructure. As such, these areas with the highest demand should be prioritized for future infrastructure investment, particularly those suited for an urban environment such as on-street bicycle accommodations and sidewalks.

PRIORITY AREAS TO IMPROVE FACILITIES AND ACCESSIBILITY

Mobility 2050 recommends prioritizing improvements to active transportation facilities to close gaps within the larger network, increase the use of facilities, improve safety and the level of comfort for pedestrians and bicyclists, and create easier access to destinations in areas with the highest demand for walking and bicycling trips.

Figure 6-19: Demand Zones for Walking and Bicycling Travel



Demand Zones depict areas with greater demand for walking and bicycling infrastructure. Areas shown as high demand are not project recommendations. These areas have high population/employment density, density of short distance trips, density of low-income populations, density of zero-car households, and vehicle congestion. As such, these areas with the highest demand should be prioritized for future infrastructure investment, particularly those suited for an urban environment such as on-street bicycle accommodations and sidewalks.

In addition to the criteria used in developing the Demand Zones for walking and bicycling travel, prioritization of pedestrian and bicycle facilities improvements should be based on:

- Access to public transportation facilities (transit stations and bus stops)
- Destination density (e.g., mixed-use/transit-oriented development areas, employment centers, central business districts, education institutions, neighborhood services, community centers)

- Safe crossings of existing travel obstacles (e.g., intersections, major roadways, Interstate interchanges, railroads, and bodies of water)
- Neighborhoods with transit-dependent populations and zero-car households
- Areas with pedestrian and bicycle safety concerns and high rates of crashes
- Connections to existing bicycle and pedestrian facilities
- 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.

SUMMARY

Active transportation is an important element in providing for the region's diverse needs and enhancing transportation choice. Active transportation provides 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 2050 seek to increase active transportation as a viable transportation mode for the residents of North Central Texas.

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6-4. PUBLIC TRANSPORTATION

OVERVIEW

Public transportation provides thousands of people in North Texas with daily access to essential life opportunities, reducing cars on roads, relieving congestion, and supporting regional economic competitiveness. Based on extensive public input, transit emerges as a top priority, with residents urgently calling for an expansion of public transportation across the Dallas-Fort Worth metropolitan area. Mobility 2050 supports the creation of a regional transit system that provides travelers with more choices for getting around, directly responding to the community's strong desire for improved transit connections among cities.

Mobility 2050 outlines strategic policies and programs that will guide cost-effective investments in expanding, improving, and modernizing public transportation services throughout the region. A comprehensive assessment of transit system performance and asset conditions can be found in the **Regional Performance** chapter.

Public transportation funding is limited at the federal, state, and local levels, and it competes with other funding priorities in our region. The need to balance equity, environmental, social, and economic factors influence the implementation of existing and future transit services. Demographic trends, including population and job growth patterns, residents' age, ability, income, and mobility preferences, significantly influence existing and future transit needs and demand.

MOBILITY 2050 SUPPORTED GOALS

MOBILITY

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.

QUALITY OF LIFE

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

Encourage livable communities which support sustainability and economic vitality.

SYSTEM SUSTAINABILITY

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

Pursue long-term sustainable revenue sources to address regional transportation system needs.

IMPLEMENTATION

Provide for timely project planning and implementation.

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

Regional Transit Authorities

Community Connectors

The Dallas-Fort Worth region is host to three transit authorities, which are state-authorized taxing authorities with dedicated sales tax funding for transit services.

Dallas Area Rapid Transit

Source: DART Digital Library, 2025

Trinity Metro

Source: Ride Trinity Metro, 2025

Denton County Transportation Authority

Source: DCTA, 2025

Diverse Modes of Transit

As shown in **Figure 6-20**, the transit authorities provide regional and local services through various modes: fixed-route (bus or rail), on-demand, and vanpool. Additionally, transit authorities operate complementary Americans with Disabilities Act (ADA) paratransit service within their respective service areas for individuals whose abilities limit their use of fixed-route services.

Annual Transit Ridership

Collectively, the transit authorities covered more than 57 million trips in the region in 2023, with bus and rail as the predominant modes. Dallas Area Rapid Transit (DART) is the main contributor to the annual total as it accounts for 85 percent of all trips, followed by Trinity Metro and Denton County Transportation Authority (DCTA), at 10 percent and 5 percent, respectively.

Figure 6-20: Summary of Service Consumption by Transit Authority

Annual Passenger Trips by Mode					
Transit Authorities	Member Cities[1]	Bus	Demand Response[2]	Rail[3]	Vanpool
DART	13	25,874,861	1,136,114	21,795,426	0
DCTA	3	1,581,198	884,060	225,235	239,407
Trinity Metro	2	4,041,044	291,182	652,195	373,764

Source: National Transit Database, 2023

[1] Some cities may only pay a portion of the required sales tax to be a "junior" member of a transit authority, where only rail access is provided; however, only cities that allocate a full portion of the required sales tax to the respective transit authority are shown

[2] The National Transit Database combines ridership data for both traditional demand-response services and on-demand/micro transit services under "Demand Response"

[3] Rail includes commuter, regional, and light rail

INTERACTIVE MAP OF TRANSIT PROVIDERS IS AVAILABLE ONLINE[14]

14 https://nctcoggis.maps.arcgis.com/apps/instant/minimalist/index.html?appid=99142da61a50483c908675df7d811d5a

MOBILITY 2050 POLICIES AND PROGRAMS

Mobility 2050 includes policies and programs that address regional priorities and public needs. Policies guide decision-making and set the framework for long-term goals, while programs provide the funding and resources to turn plans into action across the transportation system.

Policies

TR3-001: Public transportation needs should be met by existing transportation authorities and providers through a comprehensive, coordinated, and cooperative approach to maximize existing transportation resources. Alternative implementation approaches may be necessary if existing transportation authorities and providers are unable to provide needed services in a timely manner (consistent with Regional Transportation Council Policy P09-03).

TR3-002: Work with the region's existing public transit providers to ensure a seamless multimodal transit system through:

- Seamless connections
- Coordinated fare structure
- One-stop access to services
- Standardization of assets, technologies, and service characteristics that promote interoperability
- Improved interaction between public, private-for-profit, and private-nonprofit transit providers (consistent with Regional Transportation Council Policy P09-03)
- Elimination of service gaps to establish a minimum level-of-service
- Service expansion

TR3-003: Existing and future public use rights-of-way should be monitored for appropriate public transportation services.

TR3-004: Transportation authority members who receive funds for the implementation of projects that promote transit accessibility will be required to pay back funds, as determined by the Regional Transportation Council, should the entity choose not to continue as a member of that authority.

TR3-005: Support the planning and development of high-speed rail to, through, and within the North Central Texas region by leading project development efforts and coordinating with federal and state initiatives as appropriate.

TR3-006: Maximize the efficient use of public transportation resources in North Central Texas, including public, private-nonprofit, and private-for-profit providers of services.

TR3-007: Implement safety, management and operations, and multimodal system integration projects and programs as appropriate.

TR3-008: Ensure the efficient operation of the existing public transportation system by evaluating, procuring, and/or implementing maintenance, rehabilitation, enhancement, replacement, and/or operational projects to maintain safe, cost-effective, and reliable public transportation.

TR3-009: Support efforts to make accommodations for rail and other public transportation services to major events centers during special events.

TR3-010: Support efforts by transit authorities to secure funding through local, state, federal, and other sources for the development and implementation of public transportation, including the Federal Transit Administration's Capital Investment Grant Program.

TR3-011: Establish policies fostering high-speed rail system interoperability, resulting in a "one-seat" ride system operation to, through, and within the North Central Texas region.

TR3-012: Establish policies encouraging regional access by identifying grade-separated high-speed rail station locations in downtown Fort Worth, Arlington, and downtown Dallas.

TR3-013: Support the planning and development of sustainable land uses near high-speed rail station locations by coordinating with the cities' hosting stations.

TR3-014: Support investment of a general-access public transportation service that addresses existing and forecasted transit needs/demand in communities and promotes the integration of transportation services through shared technology, transit policy, or other means.

TR3-015: Support the development and operation of transit as part of a balanced intermodal transportation network through the identification and pursuit of expanded and modified funding from both public and private sources.

Programs

For more information on program funding and implementation, see the **Mobility Options** appendix.

TR2-001: State and National Transit Connections Program

TR2-002: Regional Connections: Next Generation Transit Program

TR2-003: Transit Enhancements and Mobility Improvements Program

TR2-004: Local Technology Corridors Program

TR2-005: Community Access Transit Program

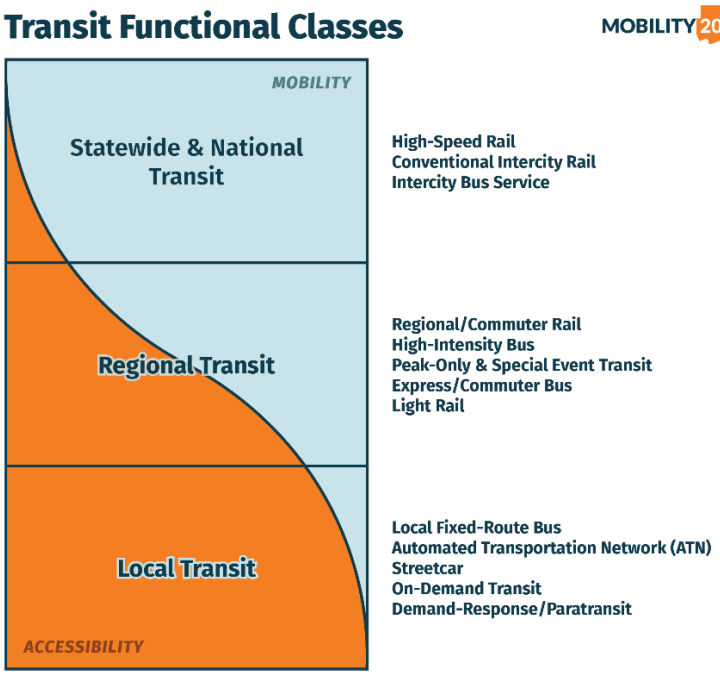
TR2-006: Last-Mile Transit Connections Program

TRANSIT FUNCTIONAL CLASS CONCEPT AND STRUCTURE

For Mobility 2050, the public transportation section of the **Mobility Options** chapter will follow a concept of transit functional classification. Functional classification is a longstanding authoritative practice in roadway planning and funding, where transportation agencies from the local to the federal level assign a classification for roadways based on its intended purpose and travel objectives, location, and observed performance. The concept of transportation facilities and services being built for and used for a spectrum of higher speed, longer distance mobility and slower, more local access is not unique to roadways, and can be quite useful for understanding transit planning projects and operations. In practice, transit planners and providers take this into account with various services that serve a market, or several markets, which fall somewhere along this spectrum between mobility and access. As is the case with all transportation systems, there is no "one size fits all" solution for public transportation.

The diagram below broadly highlights these two primary functions of transit and includes the functional class titles and examples of modes and technologies that fit under each class, as well as where they all fit on the spectrum from mobility to accessibility. At a high level, most transit modes can serve all needs, depending on the vehicle technology, routing, or guideway alignment, and how they are operated in terms of frequency and stop spacing. However, transit cannot serve both mobility and accessibility fully at once, as the required vehicle types and service characteristics for greater mobility necessitate reducing

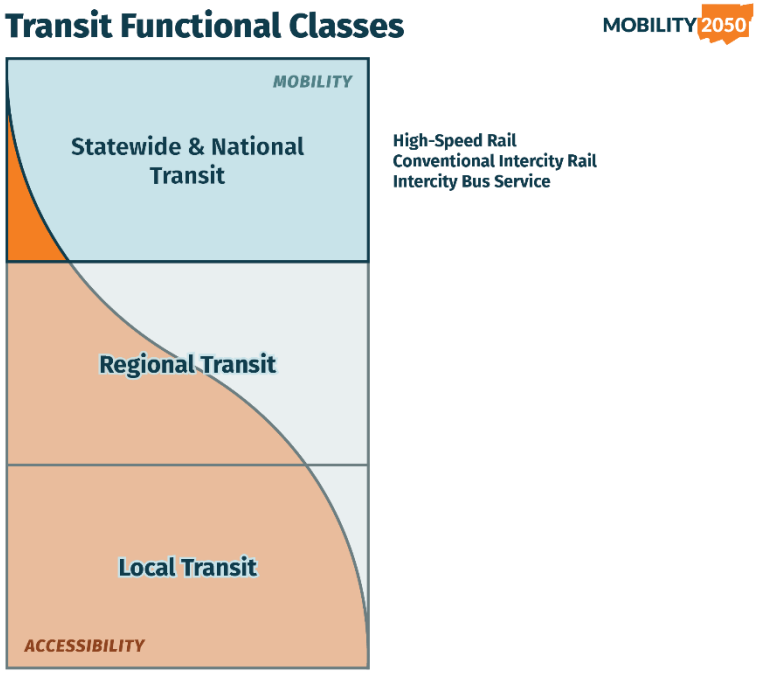
attributes that increase accessibility such as the number of stops or frequency.



It should also be noted that an efficient and effective regional transit system needs to serve both mobility and accessibility to enable broader connections and usability at all scales. This can be achieved by leveraging the advantages that each mode and functional class offer, and, most importantly for a cohesive system, connecting them through vehicle and operations technology and fare integration, as well as the optimal placement of transportation hubs. These factors come together to create a seamless, interconnected system that serves North Texans for all their transportation needs, key to fulfilling the goals of this plan. A more detailed description of each of the functional class concepts and specific transit modes, technologies, and programs that are operating or planned in the region will be included in the introduction sections for each functional class.

STATEWIDE AND NATIONAL TRANSIT

The Statewide and National Transit Functional Class includes modes that function to enhance mobility by prioritizing speed and connecting activity centers within an urbanized area or cities and towns outside that urbanized area. They utilize faster, higher capacity vehicles along trunk rail or bus routes to meet the high demand for travel at higher speeds over longer distances between those major regions and activity centers. As a result, they have fewer stops but provide convenient alternatives to long distance car travel and short haul flights, especially with the projected increases in roadway congestion covered in this plan and limitations to expansion of commercial airline service throughout the state. Conventional intercity rail services from Amtrak



within Texas and to other states are currently operating examples of this functional class. The North Central Texas Council of Governments' (NCTCOG) high-speed rail planning efforts are also aimed at serving mobility needs within and beyond the region with the fastest mode of transit in the world. Planned projects and studies to implement or enhance services in this functional class are included in the Statewide and National Transit Program.

TR2-001: State and National Transit Connections Program

Transit links North Central Texas to neighboring regions, the rest of Texas, and the nation. Existing services include intercity bus and intercity rail via Amtrak. Mobility 2050 includes plans for high-speed transportation services that will connect North Central Texas to other regions.

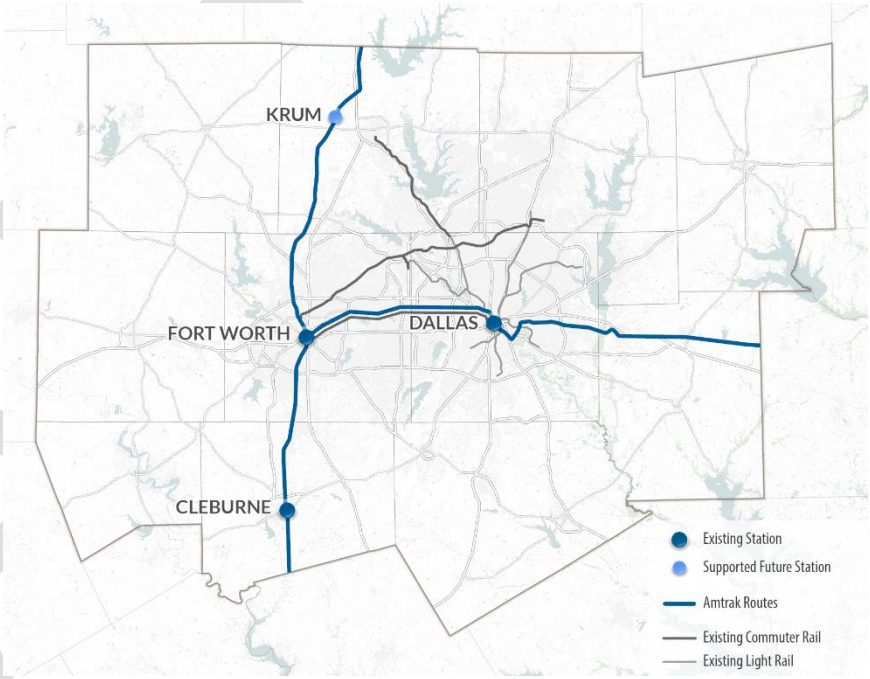
Private Transportation Providers

The private sector plays a significant role in providing transportation services. Because of its business-friendly environment and growing need for innovative transportation solutions, North Central Texas has become a service hub for private companies offering transportation options. In addition to traditional for-hire transportation services like taxis and airport shuttles, transportation network companies and other mobility providers, described below, provide ride hailing services to many areas in the region.

Intercity Bus and Rail

Regional and national rail and bus carriers link the region to outside destinations with services operated by Amtrak, Greyhound, Flixbus, Tornado Bus Company, and El Expreso Bus Company. These bus carriers service multiple locations in the region and some also provide a direct connection to Mexico. Amtrak is a nationwide passenger rail system that provides medium- and long-distance intercity service. Two Amtrak routes travel through North Central Texas, as shown in **Figure 6-21**.

Figure 6-21: Amtrak Routes and Stations



The Texas Eagle Amtrak route connects the region to major cities, including Chicago, St. Louis, San Antonio, and Los Angeles. The Texas Eagle provides daily connections between Chicago and San Antonio through North Central Texas with continuing service to Los Angeles via San Antonio three times a week. The Heartland Flyer is a daily Amtrak route between Oklahoma City and Fort Worth. The three Amtrak stations serving North Central Texas are Dallas Union Station in downtown Dallas, the Fort Worth Central Station in downtown Fort Worth, and the Intermodal Transportation Depot in Cleburne. Future service improvements along the Heartland Flyer by Amtrak, including

increased service frequency and an additional station in Krum near Denton, are supported by the Regional Transportation Council (RTC). This is in addition to support for a proposed service from Dallas-Fort Worth to Atlanta, and several other recommended long-distance services that could have stops in the region from the Federal Railroad Administration's Long-Distance Service Study to restore and build on a national, interconnected rail system.

High-Speed Transportation

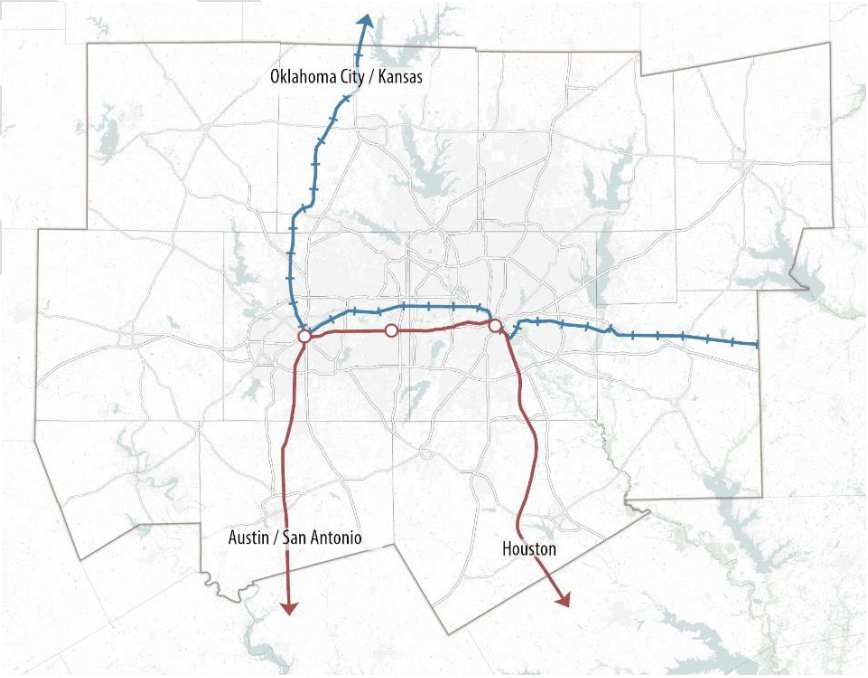
The North Central Texas region has been identified as a potential hub for passenger rail routes serving distant regions. Federal and state plans indicate a need for high-speed passenger rail service to, through, and within the region. Corridors traveling through North Central Texas include proposed service to Oklahoma City; Austin; San Antonio; Houston; Shreveport, Louisiana; and Little Rock, Arkansas. Planning is progressing for some of these corridors. Three corridors are proposed: 1) Fort Worth to Dallas to Houston, 2) Oklahoma City to South Texas through Fort Worth, and 3) Fort Worth to Shreveport. With new high-speed technologies such as maglev (magnetic levitated trains) and hyperloop advancing rapidly, some of these corridors could utilize a technology other than high-speed rail. The proposed corridor extending from Oklahoma City to South Texas also exhibits high ridership potential, particularly segments south of Fort Worth. Initial planning indicates a need for at-grade higher speed passenger rail service from Fort Worth to Oklahoma City. Additional analysis is needed to refine the corridor alignment, specific high-speed technology, and service types. Planning for the proposed corridor extending eastward from Dallas to Shreveport, Louisiana indicates a need for higher speed at-grade passenger services.

The Dallas–to-Houston corridor has long been identified as having significant potential for grade-separated high-speed passenger rail service. An effort led by the private sector, and now in partnership with Amtrak, has analyzed the corridor for environmental impacts, alignment options, station locations, and funding options.

The RTC determined the most effective and efficient plan for the region would provide a seamless service—a "one-seat" ride—for passengers, meaning passengers would not be required to transfer to reach their destination in high-speed corridors. High-speed passenger service within North Central Texas is not intended to be a stand-alone service; rather, service within the region is an integral component of a larger statewide and potential national network.

Recommendations for Mobility 2050 include at-grade and grade-separated high-speed transportation service within the region, as identified in **Figure 6-22**.

Figure 6-22: High-Speed Rail Recommendations

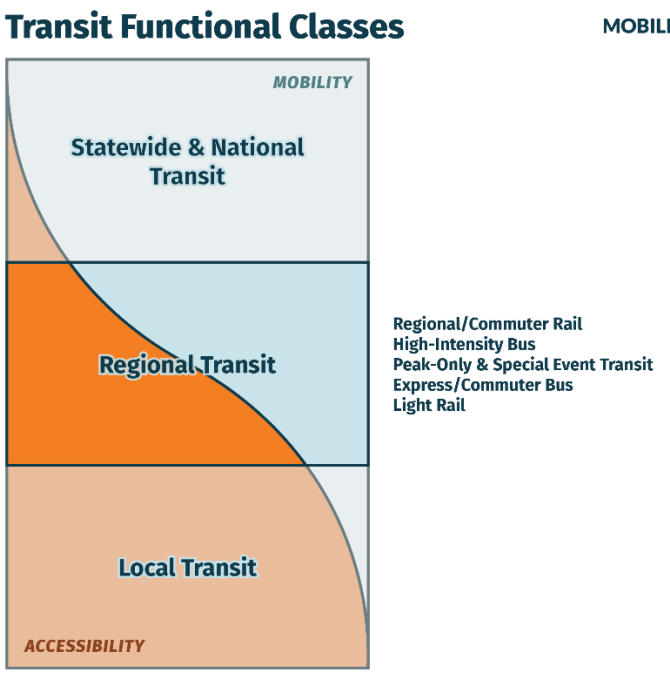


Within the North Central Texas region, both at-grade high-speed passenger rail and grade-separated high-speed transportation rail are recommended from Fort Worth to Dallas. The grade-separated high-speed rail service in this corridor, recommended to follow the IH 30 alignment for a majority of the distance, includes three stations, per RTC policy, in downtown Fort Worth, Arlington, and downtown Dallas. Additionally, the RTC approved the Phase 1 study recommendations, which included a travel time of 20 minutes or less between downtown Dallas and downtown Fort Worth, to provide fast and reliable travel regardless of traffic conditions. By connecting the identified grade-separated high-speed transportation corridors, the region supports the development of one-seat/one-ticket high-speed transportation connectivity between Fort Worth, Arlington, Dallas, Houston, and South Texas through the Dallas station.

Cost estimates for the Fort Worth-to-Dallas project, which is expected to be funded through a public-private partnership, are included in the transit projects listing table in the **Public Transportation** section of the **Mobility Options** appendix. All high-speed corridors are expected to be funded through a variety of sources that are still being determined.

REGIONAL TRANSIT

In the middle of the mobility to accessibility spectrum are transit modes and technologies that balance both functions to serve a variety of travel needs within the region. These services are still higher capacity and higher speed, but they have more stops and often higher frequencies than high mobility-focused transit modes. Similarly, they do not provide maximum levels of access but, depending on the mode, services can be used for local travel or to connect to another activity center nearby. An example of this is the Trinity Railway Express, which connects downtown Fort Worth with downtown Dallas and stops at several other communities between those regional centers. The



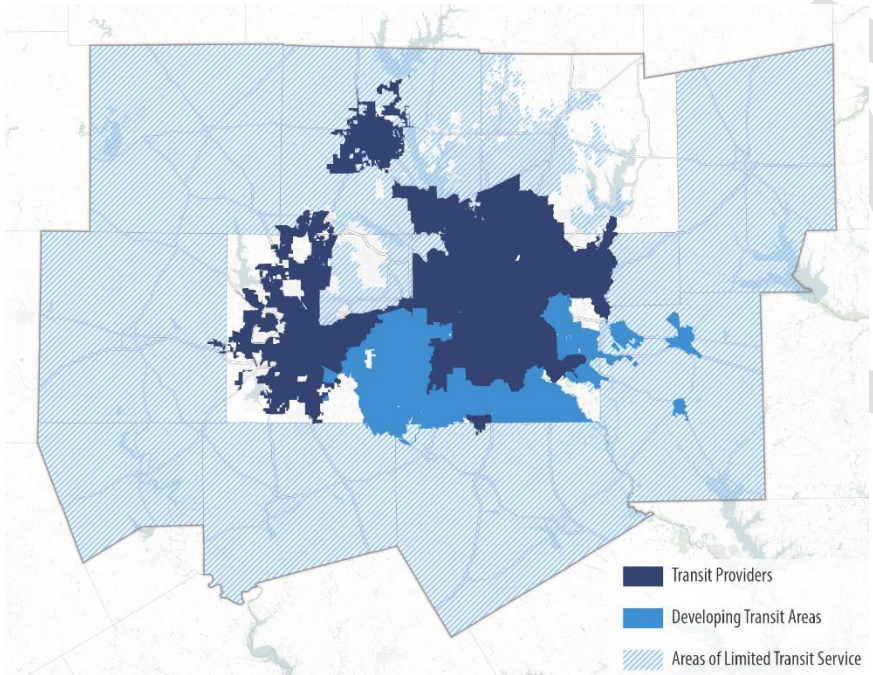
diverse range of regional mobility and access this functional class addresses are best captured by the two rail modes. Regional rail services emphasize mobility in their longer distance operation and higher speed vehicle types while light rail tends to be more optimized for local travel with stops in closer proximity. However, both regional and light rail are operated to serve some mix of local and regional travel depending on the location. DART's light rail stations in downtown Dallas are in close proximity and embedded into the urban fabric, but those same lines serve most of the outlying suburbs and communities in the service area with larger stations surrounded by park-and-ride lots that are also characteristic of regional rail stations. Some of the largest planned capital projects for transit in the region are part of this functional class in the form of continued expansion of the regional rail network, which are documented in the Regional Connections: Next Generation Transit Program. Optimizations for the

current network through infill stations and double-tracking rail alignments, included in the Transit Enhancements and Mobility Improvements Program, are also key elements of this functional class.

Transit Outlook and Regional Growth

A range of transit services is available in the metroplex to connect the region, ranging from demand-response and on-demand transit to fixed-route bus and rail services, from prequalified services to services open to the public (*general access*). The range of transit services and type(s) is illustrated in **Figure 6-23.**

Figure 6-23: Transit Authorities, Developing Transit Areas, and Areas with Limited Transit Service



Transit Authorities (DART, DCTA, and Trinity Metro) offer a full suite of services as options to member cities, whereas *Developing Transit Areas* are non-member cities that generally provide on-demand rideshare services to members of their respective communities without becoming full-fledged members of a transit authority; the exception in this group is certain TEXRail cities (e.g., North Richland Hills and Grapevine) that allocate transit funding specifically for that commuter rail service alone and are considered "junior" member cities. Additionally, transit authorities also provide contracted services to some non-member cities that are still interested in providing a transit option to their communities' residents. For example, the cities of Allen and Fairview formally contracted with DART and have transitioned over their contract to DCTA to operate Collin County Rides; and the city of Frisco contracts with DCTA for transit service. Some of these contracted services are limited to seniors, individuals with disabilities, and low-income residents. *Limited Transit Service Areas* are those that offer specialized transit services (typically demand-response) to rural areas or may predominately provide services to prequalified populations based on income, age, and/or disability.

Table 6-2 shows existing and forecasted growth trends in the region relative to existing transit areas: a large proportion of the region's population lives outside of Transit Authority and Developing Transit areas (combined, these areas form *general access* areas). Much of the forecasted growth is expected to occur outside of these areas.

Table 6-2: Growth Patterns Relative to Existing Transit Areas

	Estimated Population Total			
	2026: 8,595,345		2050: 12,297,156	
Category	**Inside Population**		**Outside Population**	
Authorities	2026	46%	2026	54%
	2050	39%	2050	61%
Authorities + Developing	2026	61%	2026	39%
	2050	51%	2050	49%

To ensure the region's public transportation system develops in a manner that meets existing and forecasted transit demand/needs, NCTCOG is proactively working with partners to prioritize investment

in public transportation to expand access, mobility, and development of a multimodal transportation network and to increase the reach of these *general-access* areas so that all have access to quality transit services.

TR2-002: Regional Connections: Next Generation Transit Program

The Regional Connections: Next Generation Transit Program supports a broad range of innovative bus and rail services as part of the region's robust transit network. The program includes, but is not limited to, regional rail, light rail, peak-only commuter and special event rail, and high-intensity bus. Mobility 2050 calls for transit service expansion, including:

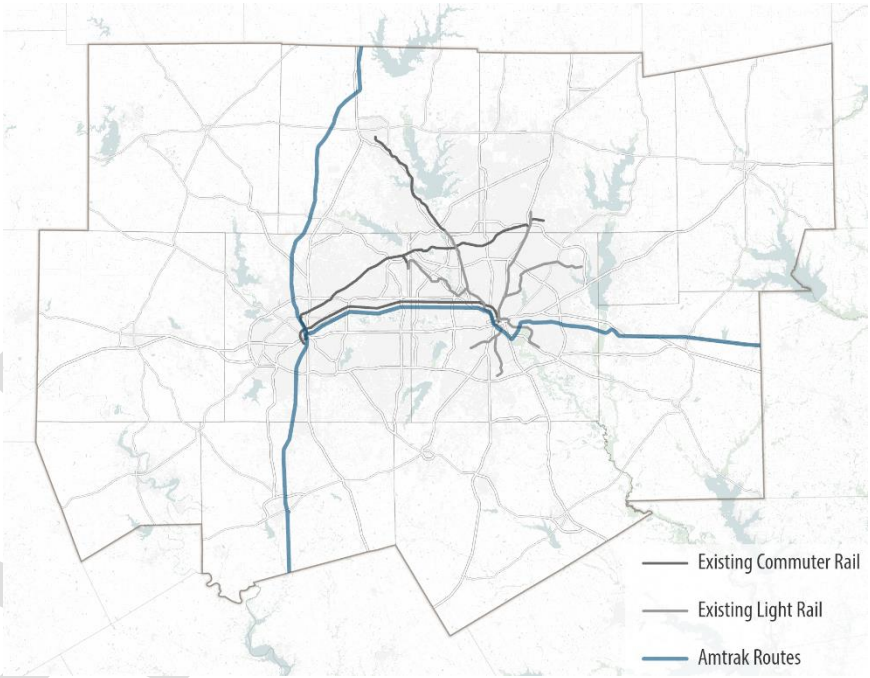
- New service in high-intensity transit corridors
- Extensions of transit lines into emerging transit markets
- Expansion of core capacity aimed at improving overall system capacity

Regionally significant projects are outlined in the **Public Transportation** section of the **Mobility Options** appendix. The success of all transit services depends on supportive land uses, which should be developed well in advance of new service. More information about transit-oriented development is included in the **Sustainable Development** section of the **Operational Efficiency** chapter.

Rail Network and Services

Each transit authority operates passenger rail service. DART's rail services are concentrated primarily within Dallas County but provide essential connections to other rail services operated by Trinity Metro and DCTA in neighboring counties. The region's rail system is shown in **Figure 6-24.**

Figure 6-24: Existing Rail Services



The Trinity Railway Express is jointly owned and operated by DART and Trinity Metro and connects downtown Fort Worth to downtown Dallas. DART operates a hub-and-spoke light-rail system with four light-rail lines, which connect to other key transit nodes of the regional system. DART's Green Line connects to DCTA's regional rail service (A-train), which extends rail service to the city of Denton (terminus) in Denton County. DART's Orange Line connects to Dallas Fort Worth International Airport. At the airport, passengers can also connect to Trinity Metro's TEXRail service.

TEXRail extends from downtown Fort Worth, across northeast Tarrant County, and into Dallas Fort Worth International Airport. A 2.1-mile extension of TEXRail is currently being planned and designed between downtown Fort Worth (terminus) and the Fort Worth Medical District.

The TEXRail extension is slated to be complete and ready for revenue service in the next few years.

DART's Silver Line, extending along a 26-mile corridor, will provide passenger rail service between the city of Plano and Dallas Fort Worth International Airport, while serving several communities in the northern part of DART's service area. The Silver Line will link to other key passenger rail services in the regional system, interfacing with three DART light-rail lines and connecting to Trinity Metro's TEXRail line at Dallas Fort Worth International Airport. The Silver Line will have 10 stations along the corridor. Construction began in November 2019 and is expected to be completed in 2026, with service beginning in late 2026.

Once operational, future connections between TEXRail and the Silver Line can provide a potential opportunity for a one-seat ride between Plano and Fort Worth's Medical District. The RTC has taken a policy position for a seamless connection between these two systems as further described in P16-01: RTC Position on Transit Implementation in the Cotton Belt Corridor located in the **Public Transportation** section of the **Mobility Options** appendix.

Rail Network Principles

Mobility 2050 envisions a long-term, high-performance rail transit network linking communities throughout North Central Texas guided by the following principles:

- **New corridors to be constructed as regional rail:** Differences in the infrastructure requirements for light rail and regional rail mean that light rail generally carries a higher cost. Thus, all recommended rail corridors in the Dallas-Fort Worth region are anticipated to be built as regional rail.
- **Seamless connections:** Where possible, the rail network should provide a "one-seat ride" that allows a passenger to reach a destination without a time-consuming transfer. For example, the 2021 Irving to Frisco Corridor Study identified the possibility of interlining (i.e., running two separate services over the same track) with the western leg of the Trinity Railway Express. The combined service would create more efficient connections between the residential and employment centers of each rail corridor.
- **Coordination between different technologies:** The decision to pursue regional rail for all future corridors presents a challenge in terms of extending corridors that currently exist as light rail. These challenges may one day be resolved through the procurement of trainsets that can operate seamlessly through both environments. Meanwhile, the challenge may be reduced by timing the services to minimize the wait time at interchange stations.
- **Minimal disruption to freight operations:** Strong communication, coordination, and cooperation with freight rail operators are essential for the success of passenger rail and freight rail operating on shared tracks. The RTC does not intend to degrade current or future freight rail service, but rather to enhance transportation options for the traveling public. Key elements of successful interaction between passenger rail and freight rail include identifying and addressing physical constraints on infrastructure and facilities for both types of services through pathing studies, integrated dispatching and scheduling, transparent and shared costs, shared responsibility, and technology upgrades.
- **Rail ready land use planning:** Many of the planned regional rail projects are along existing freight corridors, which are often characterized by land uses that are not compatible with transit (low density uses, industrial uses, etc.). Planning for future transit service along such corridors should stress the critical importance

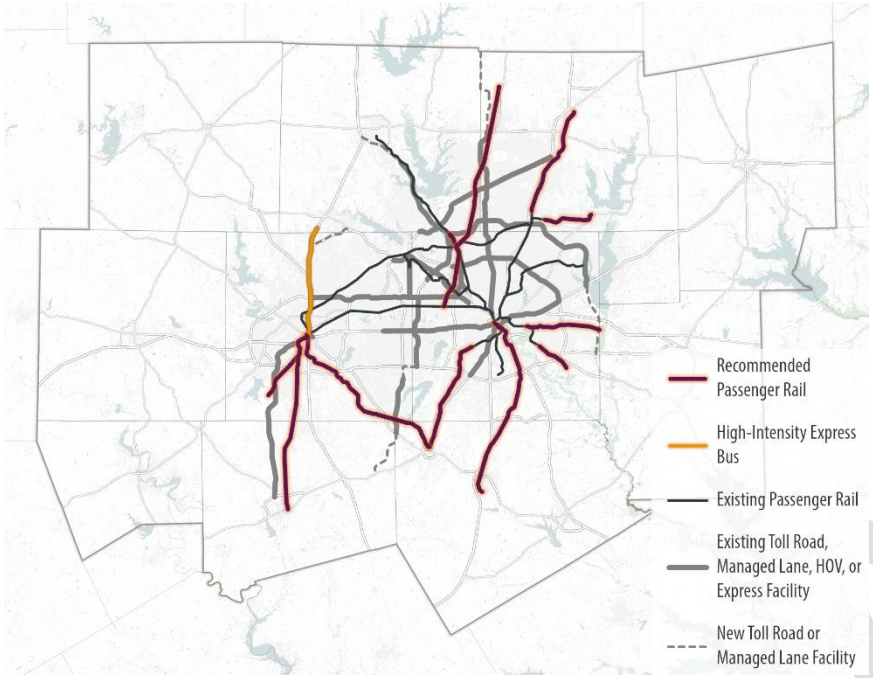
of developing transit-supportive conditions in the built environment via land use, zoning, infrastructure, and policy, as well as the availability of first/last-mile transit solutions that can expand the catchment area of the rail service.

- **Phased implementation where practical:** For certain projects in active freight corridors where, at a minimum, rail infrastructure is expected to be in operable condition, targeted improvements such as sidings and grade separations can increase track capacity incrementally as funding permits, creating opportunities to run additional trains over time without degrading the performance of the host railroad. For other projects not located in active freight corridors where the track is in poor condition, a high-quality bus service may serve as an initial phase to generate ridership before implementing full buildout of a regional rail facility. After initial phases are implemented and ridership grows, funding would need to be identified to plan and implement expansions to a full buildout. Monitoring and preserving rail right-of-way for future public transit use is a crucial step in community planning to maintain the future potential of rail transit corridors.
- **Peak-only stacked commuter rail:** Peak-only commuter rail in active freight corridors with available capacity can be a cost-effective strategy to address high travel demand during peak hours with limited funding. High demand for commuting trips in the peak direction during peak hours may be served by "stacked" commuter rail, which operates inbound in the morning, holds the trains during the day, and operates outbound in the evening peak. Additionally, special events rail shares this philosophy by addressing temporary spikes in demand, using new, lower-cost locomotives and spare commuter railcars already in the region.
- **Infill stations:** Cities and transit agencies should pursue infill stations as a cost-effective tool to improve transit access within existing transit service areas. Infill stations may be newly built between existing stations on existing fixed guideways in areas experiencing significant growth or redevelopment. Several infill stations have been built or are planned within the region; the Hidden Ridge Station along DART's Orange Line is a recent example.

Rail service requires extensive capital investment in infrastructure such as stations, rail cars, maintenance facilities, guideways, signals, and overpasses/underpasses. Planning and implementing regional passenger rail service can take 10 to 20 years, depending on funding, support, governance, and other factors. Regional rail corridors vary by track condition, travel demand, freight service, costs, station area planning, transit-friendly land uses, first/last mile connections, and governance. These factors affect the cost and benefits of service and influence project prioritization amid limited funding.

The region is planning 12 regional rail projects, including TEXRail's extension to the Fort Worth Medical District. Projects are included in the **Public Transportation** section of the **Mobility Options** appendix and are shown in the Major Transit Corridors Recommendations map, **Figure 6-25**.

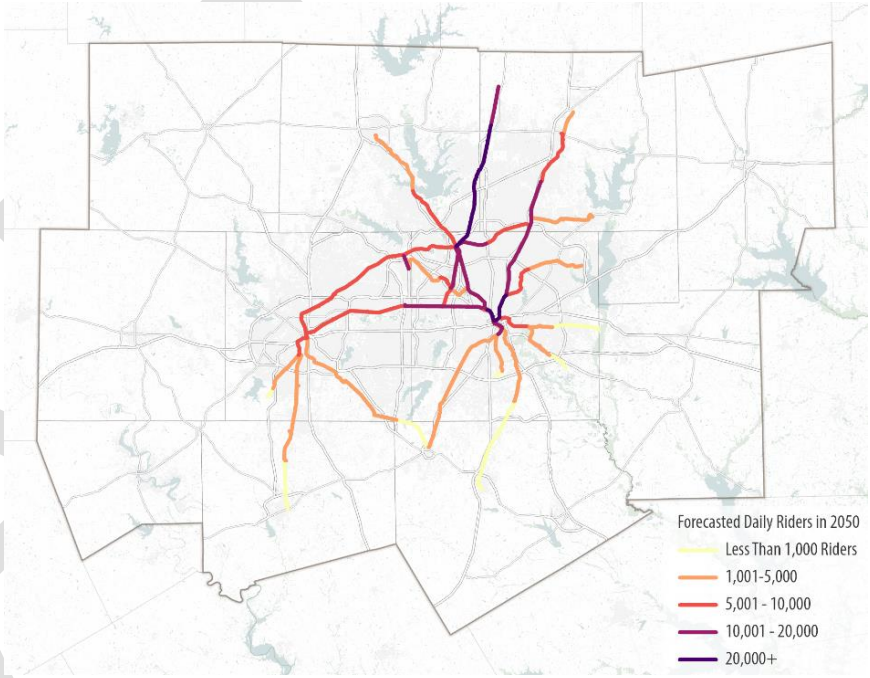
Figure 6-25: Major Transit Corridors Recommendations



Planning involves technical analysis and extensive participation from transit agencies and communities to ensure long-term sustainability. Recent studies on high-priority corridors, such as the Cotton Belt (TEXRail and Silver Line), Waxahachie Line, and Irving to Frisco (Frisco Line), have been completed. Due to high growth in Collin County, the next priority is the McKinney Line, which is mostly unused and in disrepair. This study will assess necessary improvements, estimate ridership, and explore interim solutions like high-capacity bus service along parallel roads.

Further corridor-specific planning efforts, which inform these planning factors affecting rail ridership forecasts, will be incorporated to continually test these planning judgments, developing a more comprehensive and robust ridership forecast. Potential ridership in the year 2050 for rail service recommended in this plan based on regional standard headways (frequency) assumptions, potential station locations, the 2050 demographic forecast, future connecting transit services and other planning factors are shown in **Figure 6-26.**

Figure 6-26: 2050 Ridership on Recommended Rail Transit Corridors



High-Intensity Bus

As development occurs, high-intensity bus (HIB) service can respond to growing demand for transit relatively quickly. HIB can operate in areas where the capital cost requirements of rail service may be prohibitive, in areas where passenger rail demand is uncertain or expected to slowly mature over time, and where a parallel managed-lane roadway facility is available to provide reliable trip making for the HIB service. Successful services can evolve over time and lay the groundwork for higher capacity transit options in the future such as passenger rail.

HIB features enhanced operating characteristics and service attributes, which collectively represent a higher class of transit service to attract riders. The primary objective of HIB service is to ensure travel time reliability to provide a competitive mode choice for riders. Guaranteed Transit, a service attribute in which passengers are reimbursed in some form for trips that fail to arrive on schedule, emphasizes the importance of maintaining travel time reliability. As envisioned for the region, reliability of HIB service can be achieved by operating on tolled managed lanes (to the extent possible) where travel speeds and corresponding travel times can be maintained. The list below highlights key service features and amenities that can be pursued as HIB services are planned, designed, and implemented.

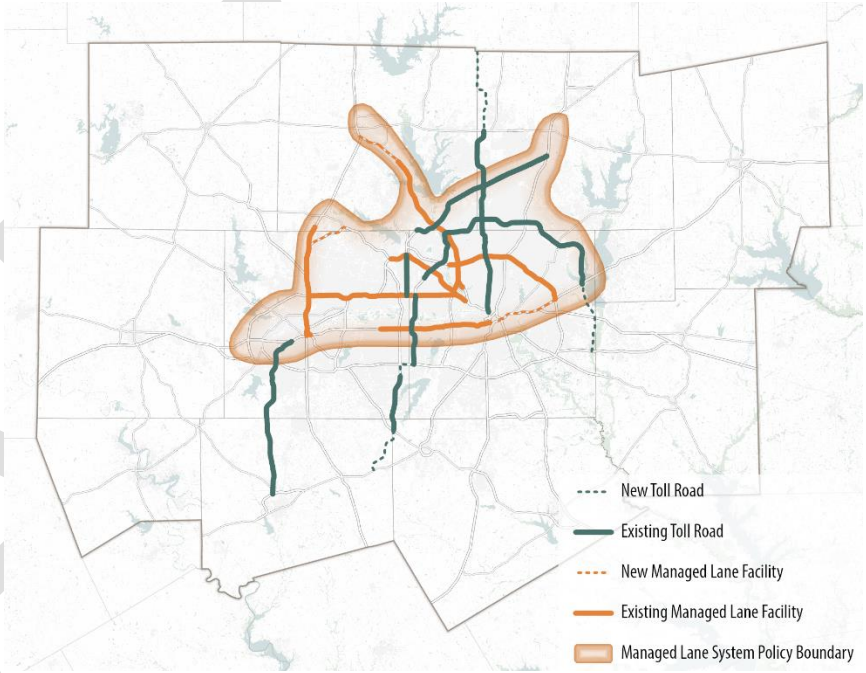
- Enhanced stops and on-board amenities
- Guaranteed transit
- More frequent service (than conventional local bus service)
- Off-board fare collection
- Technology integration
- Operation on tolled managed lanes

Currently, HIB service is planned for the IH 35W corridor between downtown Fort Worth and the Alliance area. Mobility 2050 supports strategically operating high-intensity buses in all existing and future tolled managed lanes in the region, as shown in **Figure 6-27**.

TR2-003: Transit Enhancements and Mobility Improvements Program

The Transit Enhancements and Mobility Improvements Program supports optimizing the lifespan and utilization of existing transit assets by prioritizing the following in the transit system: safety improvements, capacity-expansion projects, coordinated services, accessibility improvements, and technology integration. Optimization of existing transit assets will enhance the efficiency, effectiveness, and safety of the transit system while continuing to support transit as a mode of choice for the region.

Figure 6-27: High-Intensity Bus Opportunities (Priced Facilities)



Mobility 2050 supports the implementation of transit agency-developed asset management and safety plans to achieve program objectives for the region. **Table 6-3** summarizes the types of improvements this program supports.

Table 6-3: Transit Enhancements and Mobility Improvements

Type of Improvement	Example Enhancements
Operations	Asset management plans and performance measures Wayfinding signage Service for special events
Mobility Management	Coordination of services across transit providers Trip planning information and services Specialized services for seniors and individuals with disabilities

Type of Improvement	Example Enhancements
Capital	Platform extensions at rail stations Double-tracking along passenger rail corridors Expansion and replacement of bus/rail fleets Bicycle and pedestrian accessibility to stations, including sidewalks
Safety and Security	Positive train control Security equipment Safety management plans
Technology Integration	Signalization equipment and software Scheduling/dispatch software

Regional Transit Initiatives

Transit Studies

In 2018, the RTC approved funding for NCTCOG to develop coordinated implementation plans for innovative transit and mobility service options in three study areas: Collin, southern Dallas, and Tarrant counties. The three studies focused on municipalities that are currently not member cities of an existing transit authority. The recommended transit implementation strategies focused on near-term implementation (within 10 years) within the context of the transit policies and projects outlined in Mobility 2050. The year-long studies were completed in mid-2021, and three additional transit studies that aim to achieve similar objectives have also been completed or are in progress: one for Denton County, another for eastern Dallas, Kaufman, and Rockwall counties, and one for Western Tarrant and Parker counties. The common theme among all these studies was that a unified governance and operations management approach is needed to advance transit recommendations outside of traditional transit authority boundaries.

Transit 2.0

Building on this innovation is the Transit 2.0 Study, led by NCTCOG, to ensure that transit is sustainable, growing, and serving the rapidly expanding needs of the region for the next 40 years. This regional transit study includes policy, governance, operating, and economic development recommendations shaped by existing policies and programs in the Metropolitan Transportation Plan and among regional transit authorities, informing new or improved policies and programs in Mobility 2050. It seeks to enhance communication and collaboration among transportation authorities and cities, addressing expanding transit needs across the region and performing independent transit needs assessments and strategic implementation plans for areas not included in existing transit authority service areas. While the Transit 2.0 initiative does not answer all questions or address exactly how to implement such a system, it sets the direction for a seamless transit system with connected systems, efficient governance, sufficient funding, and continuous and frequent operations. Some of the early pillars of Transit 2.0 include economic development, competitive transit, crime/safety, private sector pilot services, advance new member city and contracted service policy, and maintain support for transit authorities and their funding sources. This includes recommendations to improve regional transit connections and services, reduce obstacles to transit usage, and create a more aligned regional transit network through coordinated governance and partnerships.

Transit Network Redesigns

In the last five years, the region's three transit authorities have assessed and implemented significant transit network redesigns for their bus and on-demand transit services. Though the network redesign efforts are tailored to meet the unique needs of each respective service area, the separate efforts share a common objective: attract higher transit ridership through strategic placement of bus routes and deployment of right-sized service options in areas where transit demand is still developing. All three agencies have continued to

refine these new transit networks by increasing frequencies, adding, or removing bus routes and on-demand zones based on service performance, and optimizing connections to the regional light rail and commuter rail network.

Mobility as a Service in the Region

Mobility as a Service (MaaS) is a concept that describes the effort to integrate various transportation services into one easy-to-use, accessible platform. While Mobility on Demand focuses on managing different services within the same transit network, MaaS combines various mobility services and providers into the same platform. Both share the goal of integrating platforms and modes through technology to give passengers convenient and affordable transportation options. An effective MaaS platform enables users to easily plan their trips (including payment) across different transportation modes and various providers, providing a seamless experience from origin to destination. The keys to accomplishing this are technology and collaboration among the various transportation service providers. One of the industry leaders in MaaS development is DART. Since 2013, DART has continued to develop and refine its MaaS platform, GoPass, expanding transportation service offerings each year. Currently, GoPass links services to DCTA, Trinity Metro, and Specialized Transportation for Arlington Residents (STAR) Transit, as well as third-party mobility providers (e.g., transportation network companies).

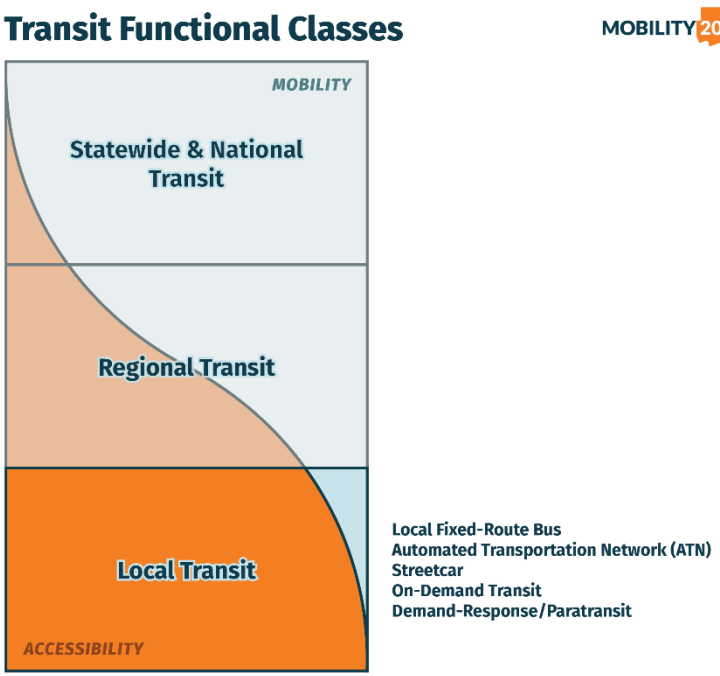
To support and promote regional coordination on MaaS, NCTCOG established a working group in 2017, which will continue to support emerging and innovative efforts in the region. The Emerging and Innovative Transit Solutions Program will provide a forum for transit agencies, local government, and other interested parties to discuss, coordinate, and promote demonstrations of MaaS concepts and solutions in the region. In addition, the program will develop a regional on-demand service strategy and evaluate a regional fare solution that includes smaller providers.

Vehicle Automation and Technology Advancements

Cities like Arlington and Frisco previously tested leveraging autonomous vehicle technology for low-speed, short transit trips within their community. Arlington is currently partnering with the University of Texas at Arlington (UTA) on the Rideshare, Automation, and Payment Integration Demonstration autonomous on-demand transit service that operates in the vicinity of the UTA campus and downtown Arlington. As autonomous vehicles begin to enter mainstream transit, transit agencies are working to proactively address the evolution of workforce needs, availability, training, and skillset.

LOCAL TRANSIT

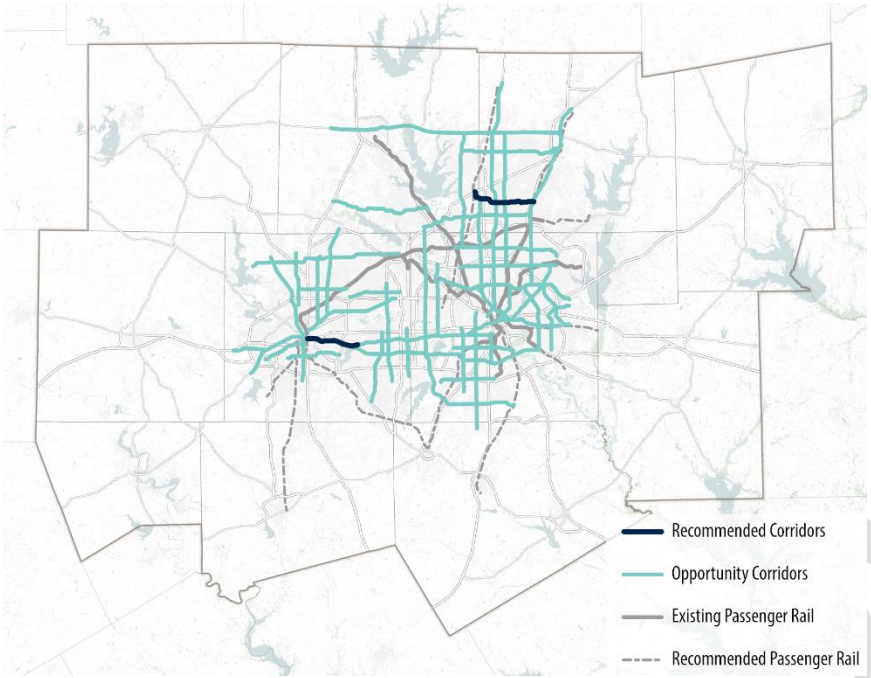
This functional class includes locally serving modes and technologies that prioritize access to destinations within close proximity. These types of transit services often have shorter routes with frequent stops to maximize access to residents, jobs, and other amenities in an urban area or town center. The most accessible modes of transit are on-demand or demand-response because these modes enable direct curb-to-curb trips and do not rely on set schedules, but even local buses and other modes with fixed routes and schedules can offer a significant level of access when run at higher frequencies. Fixed-route buses operated by the three major transit authorities in the region are the most common and apparent transit mode in this class, but increasingly, transit authorities, smaller providers, and cities are turning to on-demand micro transit services to meet local needs. This is especially the case in lower density areas where running fixed-route services at high frequencies is not cost effective or efficient. In addition, cities and transit providers are exploring new streetcar lines, technology-based transit, and automated transportation networks to serve as local connectors or circulators for the highest density activity centers in the region. While still not at the level of regional transit, there has been significant recent interest and investment in serving local trips as travel patterns have changed in recent years. The three programs covered in the Local Transit Functional Class exemplify the significant levels of technological innovation and economic development that are driving this increased investment and are in turn being catalyzed by these existing and planned local transit services.



TR2-004: Local Technology Corridors Program

The Local Technology Corridors Program is a new program that supports the planning, funding, and development of enhanced transit services on regionally significant and local corridors throughout the region. This includes transit services and vehicles, as well as the associated technology and infrastructure to enable these services to have higher frequencies, reliability, and capacity. This program applies to urban and suburban corridors that have a high intensity of mixed-use activity along a corridor or at hubs within close proximity. These corridors may already have a high-frequency transit route in operation or show great propensity and need for enhanced transit services. Finally, these corridors should also have, or have the potential for, higher density, transit-oriented land uses that can increase demand for enhanced transit services now and into the future. Corridors providing local technology opportunities are summarized in **Figure 6-28.**

Figure 6-28: Local Technology Corridor Recommendations and Opportunities



High-Capacity Transit

High-capacity transit refers to transit modes, including buses along designated corridors such as major arterials, designed to move a large volume of passengers more efficiently and effectively than conventional public transit by using a combination of smart city technology integration (e.g., signal prioritization) for transit priority, operating improvements (e.g., more frequent service), and infrastructure enhancements (e.g., dedicated turnouts). In North Central Texas, there are several corridors for which high-capacity transit is planned or could be considered in the future, including East Lancaster Avenue in Fort Worth.

The East Lancaster Technology Corridor is a 9-mile segment between Fort Worth Central Station and Dottie Lynn Parkway/Green Oaks Boulevard (east Fort Worth) and is undergoing continued analysis to better define the scope of the high-capacity service options as part of the design of a rebuilt multimodal corridor. The segment of the corridor from US Highway 287 to IH 820 was granted $20 million through the Rebuilding American Infrastructure with Sustainability and Equity Grant Program for these roadway and transit improvements. Stakeholders and the public are collaboratively shaping the broader economic development vision for East Lancaster, which will influence the follow on multimodal, access management, and context-sensitive street and streetscape designs.

TR2-005: Community Access Transit Program

The Community Access Transit Program supports transit services, primarily demand-response transit, that link people to essential opportunities such as employment, education, job training, medical care, healthy food, and enriching activities. Some of these services are limited to pre-qualified customers based on income, age, or disability. Due to its high flexibility in operation, including routing and scheduling, demand-response transit is common in areas with low passenger demand where fixed-route bus service would not be financially viable. It typically operates in shared-ride mode with van-size vehicles and requires riders to book their trip in advance. In recent years, technology has increasingly enabled the instant dispatch of vehicles, significantly improving the booking timeframe and allowing for same-day on-demand services.

Access North Texas

Access North Texas is the regional public transportation coordination plan for the 16-county North Central Texas region, focusing on the transportation needs of older adults, individuals with disabilities or lower incomes, and others with transportation challenges. The plan

outlines strategies to address identified needs and serves as a guide for implementing agencies. View the plan online ↗.

Mobility on Demand

As the population grows, transit agencies and local governments are collaborating to efficiently connect riders where previously there was little to no service. Mobility on Demand uses technology to introduce services in new places and enhance services in lower-density areas. Transit providers in the North Central Texas region are expanding their transit service options and partnering with transportation network companies to put Mobility on Demand into practice.

Trinity Metro's ZIPZONE serves riders in Fort Worth through the Alliance, Mercantile, North Side, Southeast, Southside, and South Tarrant zones and has introduced ZIPZONE services with partner cities in Mansfield and Forest Hill. DCTA operates GoZone in Denton, Lewisville, and Highland Village. DART's GoLink covers over 30 zones across cities in Dallas and Collin counties. Arlington and Grand Prairie offer services through the Via rideshare platform. Additionally, STAR Transit's STARNow, which operates across select cities in Dallas and Kaufman counties, introduced service to Cedar Hill and Duncanville in 2023. NCTCOG is actively supporting transit agencies and local governments to develop strategies for urban and rural areas to introduce Mobility on Demand services.

Smaller Providers

Smaller transit providers in the region provide essential service to many areas outside of transit authorities' service areas, as well as complement several areas currently served by transit authorities. Since smaller providers do not have a dedicated sales tax revenue source to fund transit service (or other comparable local funding source), many of them focus their limited resources on prioritizing specific prequalified populations (by age, disability, or income), and/or certain trip purposes (e.g., medical trips, commute trips).

Demand-response service, which requires customers to schedule a trip in advance by telephone, is the common transit mode operated by small providers, though not in all cases. For example, STAR Transit operates a demand-response service, but also has several bus routes (fixed route) and on-demand (micro transit) service in parts of its service area. Several smaller providers operate demand-response service only for "lifeline" trips on a limited basis (hours per day or days per week). Additionally, nonprofits or others offer client-specific transportation in support of their overall mission, which may be job training, nutrition, or services for specialized populations like cancer patients, individuals with disabilities, or older adults. North Central Texas has nine small service providers operating demand-response, on-demand, and bus services within the region. According to the National Transit Database, these providers collectively provided over 1.53 million trips in 2023.[15]

As the region continues to grow, smaller providers that historically served the region's smaller communities and rural areas have expanded to serve communities with suburban development and emerging growth. Some of these providers connect outer communities to the region's core so riders can access jobs and services. For example, Public Transportation Services connects residents of Mineral Wells and Weatherford to Fort Worth; and City/County Transportation connects residents of Cleburne and Burleson to Fort Worth.

[15] National Transit Database, 2023, reflects data for nine providers for which data is available; includes entire service area of respective providers.

TR2-006: Last-Mile Transit Connections Program

The Last-Mile Transit Connections Program supports transit services that provide last-mile transit solutions for passengers to access their final destinations after using regional transit. While enhanced bicycle and pedestrian networks play a critical role in first- and last-mile connections (see the **Active Transportation** section of this chapter), the program focuses on last-mile transit connections.

The suite of Mobility 2050 transit solutions include rail, fixed-route bus, and on-demand service. Streetcars, trolleys, and automated transportation networks are fixed-guideway services moving people around a specific area such as a downtown, regional activity center, or transit-oriented development. Buses can provide last-mile connections via local bus service or site-specific shuttles that feed into the regional transit system. On-demand service (i.e., micro transit) can also satisfy needs for short trips, as well as autonomous transit vehicles in the future.

Shared Mobility Services

Transportation network companies, like Uber or Lyft, connect individual riders with drivers that operate their personal vehicles to provide transportation services. Transportation network companies have also partnered with transit agencies to provide supplemental services such as first/last mile connections to transit stations and a same day alternative service option for paratransit riders. For example, Uber and Lyft are working with DART, DCTA, and Trinity Metro to provide convenient mobility options that can be accessed via mobile applications (smartphone) or by a call-in option.

In late 2017, the city of Arlington partnered with Via Transportation to provide an on-demand shared mobility service to its residents that aims to fill a public transportation need in the city. Initially, Arlington focused its shared mobility service in select activity centers within city limits but, since January 2021, has expanded its service area to include the entire city limits, while also continuing to provide a connection to an important regional transit node in the region: CentrePort Station on the Trinity Railway Express.

Though on-demand shared mobility services typically focus on first/last mile connections or on serving communities with lower densities and public transit demand, the service model may also be used to serve a much larger area (as in the case of Arlington) to provide mobility options with lower implementation costs. Given the flexibility of on-demand service (can scale up or down with fluctuating demand for ridership) and that it's a relatively low-cost and quick-to-implement service option, the attractiveness of on-demand services as an alternative mobility option for communities within the region is likely to grow.

As shared mobility services become more prevalent in the region, it is critical to ensure that equitable access to such services is ensured for all users, including cash-dependent populations and those with limited to no access to an internet-enabled device—given that such devices (e.g., smartphones) are the primary means through which shared mobility services are accessed.

Streetcars

Streetcars tend to be more adaptable to the existing urban built environment and are widely recognized as a tool to attract development along a streetcar corridor. Mobility 2050 supports the transit role streetcars serve, which typically connects residents to employment and other life-essential opportunities in the urban core, as well as supports multimodal connections.

Two streetcar lines connect to downtown Dallas: the Dallas Streetcar and the M-Line Trolley. DART operates the former under agreement with the owner (city of Dallas), and the McKinney Avenue Transit Authority operates the latter. The 2.45-mile modern Dallas Streetcar line connects downtown Dallas' Union Station to the Bishop Arts District in Oak Cliff. The 4.6-mile M-Line Trolley, a modern-vintage streetcar system, connects the downtown Dallas Arts District with shops, entertainment, dining, and attractions in Uptown, as well as provides convenient access to DART's light rail system at the Cityplace/Uptown Station on the northern end and the St. Paul Station or Pearl/Arts District Station on the southern end.

Photo Credit: NCTCOG Staff

Efforts to integrate the Dallas Streetcar and the M-Line Trolley into a seamless, connected system (Dallas Streetcar Central Link project) are underway. An important goal of this effort is to reconcile the differences between the two systems while maintaining the best of both. The city of Dallas is also looking into creating operating and maintenance efficiencies while evaluating potential streetcar extensions. Additionally, efforts are underway to examine the feasibility of modernizing the M-Line Trolley. The first study will evaluate options for the trolleys to be ADA accessible and the second study will focus on extending the trolley north into the Knox-Henderson neighborhood, while being mindful of the future vision for the comprehensive streetcar system (M-Line and Dallas Streetcar).

The city of Fort Worth is also studying the feasibility of introducing a streetcar service in the downtown area. Initial analysis was completed in 2010, and stakeholders will be conducting a study to explore alignment and potential funding sources.

Automated Transportation Networks

Automated Transportation Networks (ATNs) circulate travelers across a geographically small area, typically using automated, electrically powered vehicles operating on elevated guideways. ATNs connect districts or single destinations to larger-scale regional transit. While these systems can be similar to regional light rail, ATNs typically operate smaller vehicles that serve small areas more frequently with stations spaced closer together, providing a higher level of service. When properly planned and carefully implemented, these systems can reduce congestion, enhance transit-oriented developments, optimize parking, and expand the reach of transit.

ATNs may take many forms, with models including either private or public ownership and operation. Vehicles may run on flat surfaces, rails, or cable systems such as Swyft Cities' proposed Whoosh technology. Unlike more conventional transit systems, ATNs typically operate as an on-demand service, offering direct origin-to-destination travel along the route rather than a scheduled all-stops service. This provides a faster movement for individual travelers and potentially lower operating costs since vehicles only travel when there is demand. This improvement in service, though, comes at the cost of lower

capacity. In high-demand applications, such as travel among airport terminals though, a continuous, all-stops service model may be more appropriate.

ATNs are commonly built in the following locations:

- Airports, where terminals are large and/or not immediately adjacent to one another (Dallas Fort Worth International Airport, Newark, and Tampa, for example).
- Entertainment districts where a large number of visitors travel between closely spaced destinations (Las Vegas, Orlando).
- Downtowns, in areas where an ATN could connect to other forms of transit or serve areas with many residents and non-office commercial activity (Miami, Las Colinas, Jacksonville).

Two automated transportation networks currently exist in North Central Texas: the Dallas Fort Worth International Airport Skylink and the Las Colinas Area Personal Transit. The Skylink operates on the air-access side of airport security checkpoints, shuttling passengers among Dallas Fort Worth International Airport's terminals. The Las Colinas Area Personal Transit (APT) was completed in 1989, making it one of the oldest ATNs in the United States. Connected to DART light rail with the opening of the Orange Line in 2012, the system provided transit access to the Las Colinas Urban Center from the rest of the DART transit area. However, low ridership and aging vehicle technology led to the suspension of services.

Potential freight applications of ATNs are also attracting increased attention. The original ATN at Dallas Fort Worth International Airport did accommodate freight operations. Recent advancements in automated transportation technology have led to more manufacturers entering this automated transportation development space, creating more flexible vehicles/systems for various applications.

Current efforts described below offer potential for a retrofit of the existing transportation system to accommodate next-generation automated technology and a recommission of the system at Las Colinas.

Skylink people mover trainset in operation at Dallas Fort Worth International Airport. Photo credit: Dallas Fort Worth International Airport, 2014.

A subset of ATNs, Automated Transportation Systems (ATS) are characterized by a flat grade-separated viaduct traversed by automated vehicles using on-board guidance ("smart vehicles on dumb guideways"). NCTCOG has developed a regional standard and guide for implementing the next-generation ATS at any feasible location. This guide includes evaluation and short-listing of available vehicle technologies, modular infrastructure designs to serve as a grade-separated guideway for ATS, and evaluation of wireless charging technology—all with the goal of maximizing economies of scale in developing separate ATS facilities across the region. The Las Colinas retrofit ATS is being advanced to the engineering phase and will serve as the initial implementation of the standards included in the guide.

Mobility 2050 recommends the following strategies to further the implementation of automated transportation systems in the region:

- Continue research and analyze the feasibility of ATS in the region.
- Support efforts to retrofit and expand the Las Colinas APT with next-generation ATS technology to serve the Irving Convention Center and future developments in the area.
- Continue ongoing efforts to implement ATS identified by regional stakeholders at sites identified throughout the region, including Legacy Area in Plano, Dallas Love Field, the Southwestern Medical District, Dallas International District (formerly Midtown/Galleria), Dallas Fort Worth International Airport to Arlington, and General Motors in Arlington. Efforts include exploring high density transit-oriented development opportunities such as the former Texas Stadium site (SH 183 at Loop 12).
- Encourage developers and local governments to work cooperatively using land use and complementary policies on existing and planned developments to increase and enhance access to regional transportation systems.

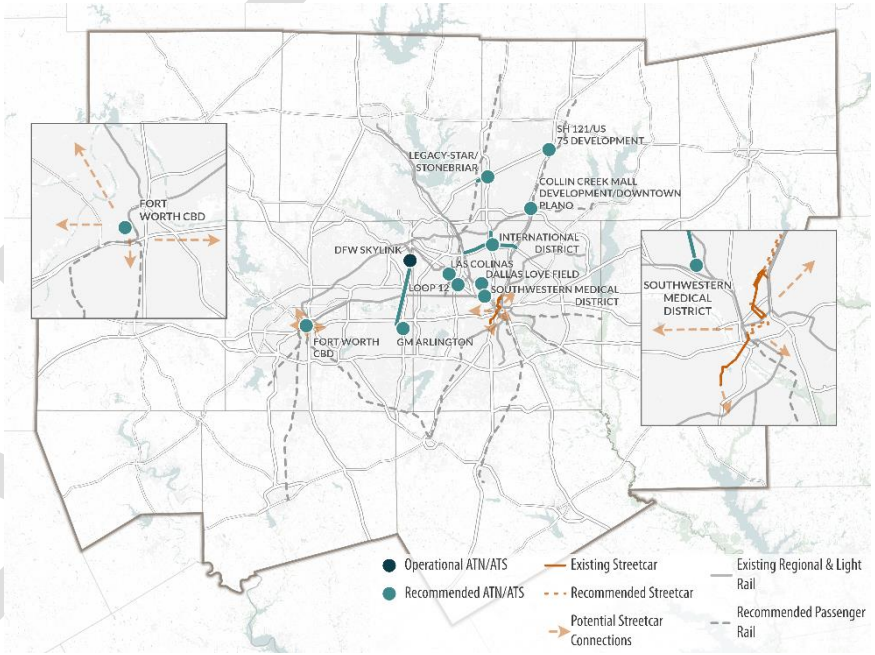
Operational and recommended ATS projects are shown in **Figure 6-29**.

Other Technologies

In addition to the streetcar, trolley, and ATS modes, there may be other new technologies that may serve the same purpose more efficiently, depending on the context of a project location.

In 2022 the RTC adopted Policy P22-02, Policy Support to Develop Process for the Innovative Transportation Technology Infrastructure Certification Program, to outline the process by which the RTC and NCTCOG can coordinate transparently with emerging transportation technology providers and encourage new transportation solutions to help solve the region's growing needs. This created the Certification of Emerging and Reliable Transportation Technology (CERTT) Program.

Figure 6-29: Local Fixed Guideway Transit Recommendations



*There is a larger version of this map in the **Mobility Options** appendix.*

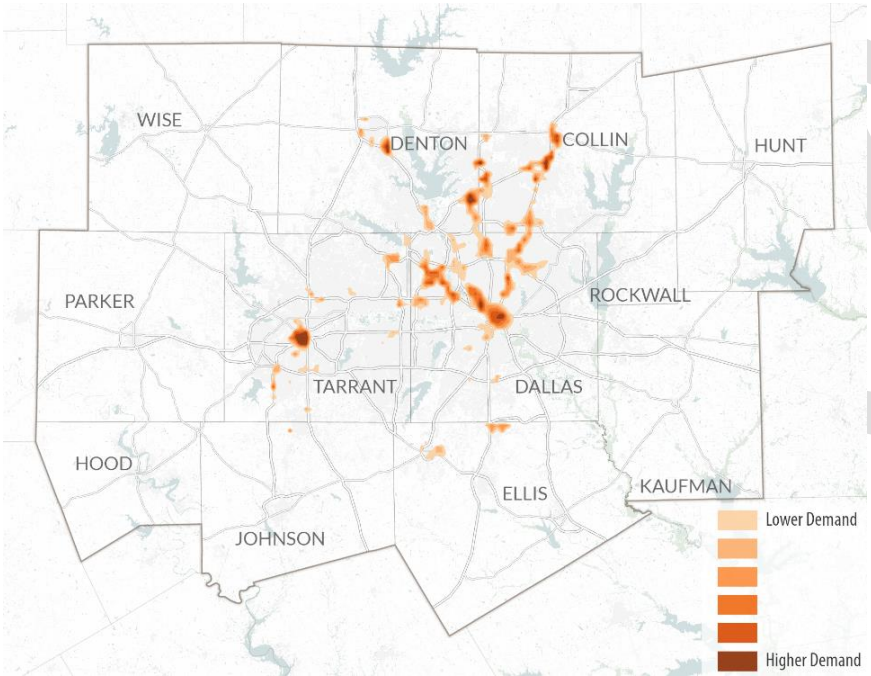
The CERTT Program provides an environment in which companies seeking to provide these new technologies can be matched with cities interested in deploying them to meet their needs. One promising new technology identified through this program uses a modern gondola system, in which automated gondolas navigate a system of overhead wires and conduits to reach a programmed destination. Such new technologies, as they mature, can be added to the mix of potential solutions that can be considered to address needs in a given location.

In response to renewed interest from regional stakeholders in last-mile connections, NCTCOG developed a stepped approach to evaluating the feasibility of ATNs in the region. The initial step utilizes Geographic

Information Systems tools to perform a regionwide spatial analysis. This analysis revealed areas that are generally conducive to ATNs and other transit modes focused on first/last-mile movements such as streetcars based on factors like population and employment densities and land uses as shown in **Figure 6-30.**

Future studies will examine the applicability of these areas using subarea methods (step two) and ridership models (step three) to quantify local demand and the feasibility of specific systems. Individual project locations can be analyzed to identify the most suitable technology for that context.

Figure 6-30: Areas of Potential Demand for Local Fixed Guideway Transit



FINANCIAL SUMMARY

The cost to implement public transportation programs through 2050 is approximately $93.57 billion. Programs are financially constrained to expected revenues. More details on the transit programs can be found in the **Public Transportation** section of the **Mobility Options** appendix. The **Financial Reality** chapter provides information on the overall financial resources supporting the implementation of this plan.

Federal Funding

Federal funding sources are available for capital investments, pilot projects, and transportation planning. In limited cases, this funding also is available for transportation operations, with some sources intended specifically for transit-dependent populations. Federal funding programs are either formula-based or discretionary. Formula-based programs allow transit providers to access federal funds that are distributed to urbanized areas based on a formula using population, population density, and other factors related to ridership. Discretionary funding, when available, typically involves submitting a project or program as part of a competitive selection process.

Federal funding for public transportation in North Central Texas, including funding for the Urbanized Areas from the Federal Transit Administration (FTA), is programmed by the RTC. Federal funding from FTA for rural transit districts and small urbanized areas is programmed by the Texas Department of Transportation (TxDOT).

Transit Strategic Partnerships Program

In September 2021, NCTCOG launched a redesigned funding program to fund innovative, solutions-oriented transit and shared mobility projects in the region. The program utilizes FTA funding sources to fund selected projects for two to three years within the urbanized

areas of Dallas-Fort Worth-Arlington, Denton-Lewisville, and McKinney-Frisco. Submissions are accepted on a rolling basis to be more responsive to immediate needs. The RTC calls for 2 percent of the funding of the FTA awards to North Texas annually to be set aside for eligible transit and shared mobility projects.

For a project to be selected and awarded program funds, it is evaluated to ensure that it addresses identified transit needs based on NCTCOG-led studies and planning documents, as well as other key criteria. The program's evaluation criteria for project proposals are: Needs Assessment, Strategic Value and Innovation, Project Funding and Sustainability, and Implementation Capacity and Collaboration.

State Funding

TxDOT also provides funding for public transportation allocated by the Texas Transportation Commission. Public transportation formula programs through TxDOT primarily focus on rural and small urban systems, but state funding is sometimes available on a discretionary basis for other public transportation projects.

Local Funding

Cities and counties have the option to contribute to transit services through their own revenue sources such as general funds and sales tax revenues. Aside from federal sources, most transit funding for operations and maintenance comes from local sources. Public transportation competes for local funds against other priorities, such as roadway projects, crime prevention, libraries, and parks, unless funding is specifically dedicated to transit. Local sales tax can provide reliable and dedicated revenue for transit services.

Currently, the State of Texas limits the combined sales tax for all taxing authorities to 8.25 percent. The state sales tax rate is 6.25 percent, leaving up to 2 percent for cities to apportion in a variety of ways. Cities that are members of DART, Trinity Metro, and DCTA currently dedicate a portion of their sales tax to those transit authorities. Cities that want to support public transportation, but do not already dedicate a transit sales and use tax, may have opportunities to reallocate existing sales tax revenue to fund transit services or identify a different source of public funds to support transit.

Innovative Finance, Public-Private Partnerships, and Private-Sector Funding

Depending on the scale of the transit service to be implemented, a variety of innovative financing techniques, public-private partnerships, and private-sector participation may be needed to leverage other federal, state, and local funds. To implement the system of rail service included in Mobility 2050, creative partnerships involving all of these approaches will be needed. For bus service, private-sector participation from employers, merchants, retail establishments, and private-nonprofit organizations can be incorporated on a case-by-case basis.

SUMMARY

This chapter section outlines opportunities to cost-effectively expand, improve, and modernize public transportation service throughout the region in the form of recommended projects, programs, and policies. Mobility 2050 supports the creation of a seamless, well-maintained, and technology-supported regional transit system that provides travelers with more choices for getting around.

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6-5. ROADWAY

OVERVIEW

Maintaining a roadway system that keeps pace with regional growth is one of the top two priorities in public feedback. North Texans desire an optimized roadway network coupled with viable alternative transportation modes so they can access vital resources in a timely and cost-efficient manner. The roadway system recommendations included in Mobility 2050 represent strategic investment in improvements, expansions, management, and new capacity for the region's mobility. The following sections detail these improvements, which include freeways, tollways, managed lanes, frontage roads, and major arterials. Managing congestion as North Central Texas grows to a region of 12.3 million people by 2050 will require strategic and ongoing investment in these identified corridors, which form the basis of the regional roadway system and serve millions of travelers each day.

Mobility 2050 assumes the current highway system will operate similarly to the past, with human-driven, individually owned vehicles. However, significant changes are expected by 2050, including advancements in vehicle automation, shared mobility, and electrification. These technologies could increase roadway carrying capacity and efficiency without requiring traditional physical expansion. The North Central Texas Council of Governments (NCTCOG) and its partners will monitor and respond to these developments to improve the region's highway system cost-effectively.

MOBILITY 2050 SUPPORTED GOALS

MOBILITY

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.

QUALITY OF LIFE

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

Encourage livable communities which support sustainability and economic vitality.

SYSTEM SUSTAINABILITY

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

Pursue long-term sustainable revenue sources to address regional transportation system needs.

IMPLEMENTATION

Provide for timely project planning and implementation.

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

MOBILITY 2050 POLICIES AND PROGRAMS

Mobility 2050 includes policies and programs that address regional priorities and public needs. Policies guide decision-making and set the framework for long-term goals, while programs provide the funding and resources to turn plans into action across the transportation system.

Policies

RD3-001: The Regional Transportation Council does not support converting existing free non-high-occupancy vehicle/managed lane corridors to tollways.

RD3-002: Evaluate all new limited-access capacity for priced facility potential.

RD3-003: To maximize the use of available funds, where reasonable, priced facilities should be developed with no or minimal federal and state funding assistance.

RD3-004: Plan and program non-regionally significant arterial improvements cooperatively with local governments.

RD3-005: Management strategies consistent with the Regional Congestion Management Process, congestion management plans for regional tollway operators, and federal single-occupancy vehicle justification requirements, unless precluded by existing bond covenants, should be implemented when an existing freeway, tollway, or managed lane adds capacity. Future bond covenants should accommodate a full range of management strategies.

RD3-006: Systemwide high-occupancy vehicle occupancy will be consistent with the latest Regional Transportation Council policy.

RD3-007: Additional and improved interchanges, collector-distributor roads, frontage roads, and auxiliary lanes should be considered and implemented, as appropriate, on all freeway/tollway facilities in order to accommodate a balance between mobility, access, operational, and safety needs.

RD3-008: Encourage the early preservation of right-of-way in recommended roadway corridors.

RD3-009: Encourage the preservation of right-of-way in all freeway/tollway corridors to accommodate potential future transportation needs.

RD3-010: Corridor-specific design and operational characteristics for recommended roadways will be determined through the project development process.

RD3-011: Support advanced planning activities such as thoroughfare planning and subarea studies to aid in strategic decision-making regarding Metropolitan Transportation Plan and project development.

RD3-012: Corridor and environmental studies should be conducted with consideration for the region's air quality and financial constraints.

RD3-013: Support federal and state interregional corridor initiatives as appropriate.

RD3-014: Evaluate and implement all reasonable options such as Asset Optimization to maximize corridor capacity, functionality, accessibility, and enhancement potential utilizing existing infrastructure assets and right-of-way.

RD3-015: Support the asset management objectives in the Texas Department of Transportation's Statewide Long-Range Transportation Plan to maintain and preserve multimodal facilities using cost-

beneficial treatments and to achieve a state of good repair for pavement, bridge, and transit assets.

RD3-016: Use multimodal level-of-service (LOS) analysis as part of the roadway planning and design process to evaluate the LOS for each mode, to holistically balance the LOS needs of automobile drivers, transit riders, bicycle riders, and pedestrians, with priority given to the safety and comfort of the most vulnerable road users.

Programs

For more information on program funding and implementation, see the **Mobility Options** appendix.

RD2-001: Non-Regionally Significant Arterial Program

RD2-002: Asset Optimization Program

TSMO2-003: Bottleneck Program for Regional Corridors (see the **Operational Efficiency** appendix)

Impacts of Technologies on Roadways

The roadway recommendations contained within Mobility 2050 assume that the current highway system will continue to operate through 2050 as it has for the past half century. This operating model features humans driving vehicles that are owned by individuals and typically carry a single person.

These longstanding operating assumptions may be subject to extensive changes between now and 2050, and those changes will be reflected in later editions of the region's long-range transportation plans. The possible changes to consider include:

Vehicle Automation: Multiple companies and countries around the world are developing automated vehicle systems. These vehicles range from low-speed shuttles to high-speed vehicles. Test deployments are going on all over the world.

Shared Mobility: The emergence of transportation network companies such as Uber and Lyft, and other forms of shared mobility such as bike share, has given birth to a Mobility as a Service approach. This approach allows people to seek mobility through ridership on fleet vehicles purchased and operated by third parties.

Electrification: Electric vehicles are increasingly competitive with internal combustion engine vehicles on performance and price. Most of the automated vehicles are being developed on an electric platform. Electric powertrains can support a wide variety of vehicle types and use cases.

Developing technologies offer more options for managing the highway system. Automated vehicles and wireless communications can increase roadway capacity without physical expansion. Compact, precise vehicles may reduce lane widths, further boosting capacity. NCTCOG and partners will monitor these developments to cost-effectively enhance the highway system. For more information on the impact of technologies, see the **Connected/Automated Vehicles and Technologies** section of the **Operational Efficiency** chapter.

Roadway At-A-Glance

Regional Roadway System Operators

- Texas Department of Transportation Dallas District
- Texas Department of Transportation Fort Worth District
- Texas Department of Transportation Paris District
- North Texas Tollway Authority
- Collin County Toll Road Authority

Roadway System Figures

Freeway/Tollway Lane Miles per County		
County	**Year 2026**	**Year 2050**
Collin	544	1,134
Dallas	2,224	2,462
Denton	456	786
Ellis	429	551
Hood	0	0
Hunt	118	183
Johnson	159	252
Kaufman	224	308
Parker	166	231
Rockwall	77	152
Tarrant	1,583	1,986
Wise	12	44

Source: Transportation Analytical Forecasting Tool

Express/HOV/Tolled Managed/Technology Lane Miles Per County		
County	**Year 2026**	**Year 2050**
Collin	24	24
Dallas	200	241
Denton	23	83
Tarrant	149	186

Freeway/Tollway Vehicle Miles Traveled Per Day	
Year 2026	106,600,000
Year 2050	163,000,000
Total Change	56,400,000
Percent Change	53%

REGIONAL IMPLEMENTATION AGENCIES AND DEFINITIONS

Regional Roadway Agencies

Freeways and tollways in North Central Texas are constructed, operated, and maintained by both public and private agencies. The freeways in the region are managed by the Texas Department of Transportation (TxDOT) whose Dallas, Fort Worth, and Paris districts encompass the North Central Texas region. The toll roads in the region have been constructed and are managed by the North Texas Tollway Authority (NTTA). These public agencies work independently and in collaboration to improve existing roadways and develop new corridors to meet the growing demand for regional travel.

Controlled Access Roadways

The freeways and tollways in North Central Texas are primary elements in the regional roadway system. These roadways are characterized by controlled access freeway and tollway lanes where traffic enters via ramps, and cross streets use overpasses or underpasses rather than halting the flow of traffic on the freeways and tollways. Controlled access roadways often include parallel frontage roads. The freeway and tollway system accounts for a small percentage of the total miles of roadway lanes in the region, but the system carries nearly half of all vehicular travel. Mobility 2050 projections indicate that significant demand will continue to be placed on freeways and tollways.

Roadway Classifications

The controlled access roadways discussed in this section are described as freeways, tollways, and managed lanes; the latter include express lanes, express/high-occupancy vehicle (HOV) lanes, technology lanes, and tolled managed lanes. Freeways are generally funded with tax revenues and do not charge a toll for usage. Tollways, or toll roads, are corridors built and maintained primarily through user fees or tolls.

On general purpose toll lanes, tolls only vary by vehicle type and are fixed throughout the day. However, as a form of congestion management, toll roads could be managed through additional pricing variations such as time of day, occupancy, or other forms of operational management. Express/HOV lanes and tolled managed lanes are typically barrier-separated from general purpose freeway lanes. Drivers can pay a toll to use these lanes instead of using the parallel freeway lanes.

Mobility 2050 and Regional Transportation Council (RTC) policies both allow variable pricing on express/HOV and tolled managed lanes based on the time of day, the facility's congestion level, and the number of occupants in the vehicle. During certain hours of the peak morning and evening commute periods, and possibly in only the peak direction, technology lanes and tolled managed lanes will be either free or discounted for vehicles with at least two occupants.

Technology lanes are typically improvements where the shoulder lane is utilized during peak periods to allow additional capacity in a congested corridor. Vehicles with more than one occupant in a technology lane would receive an incentive, monetary or otherwise. As with all forms of managed lanes, these operating requirements may be adjusted or changed due to system or corridor conditions. For example, in the US 75 technology lane, the inside shoulder operates as a technology lane for certain hours in the peak direction of the AM and PM peak periods. HOV travel will be incentivized by a differential cost relative to single-occupant vehicles using the region's GoCarma occupancy verification system. In the off-peak, the cost differential may not be necessary.

Interstate Highway Designations within Mobility 2050

TxDOT, in collaboration with local governments and NCTCOG, may choose to designate existing or future freeways as Interstate Highways (IH). This requires building or updating the road to federal IH standards, as well as including the designation in legislation.

Constructing a completely new IH or upgrading existing roadways to IH standards can take multiple years, or even decades. It requires coordination with partners, identifying funding, and completing environmental assessments, public involvement periods, and design before beginning construction. Upon construction completion, the IH designation process can begin, which may take months or years to complete.

Figure 6-31 and **Figure 6-32** highlight the IH designation methods and procedures/requirements for IH conversion, as directed by the Federal Highway Administration. It is recommended that when freeway improvements are recommended and implemented, they do not preclude future conversion to Interstate standards, if there is interest in a future IH corridor by local governments, TxDOT, or NCTCOG.

Figure 6-31: US Department of Transportation Designation Process

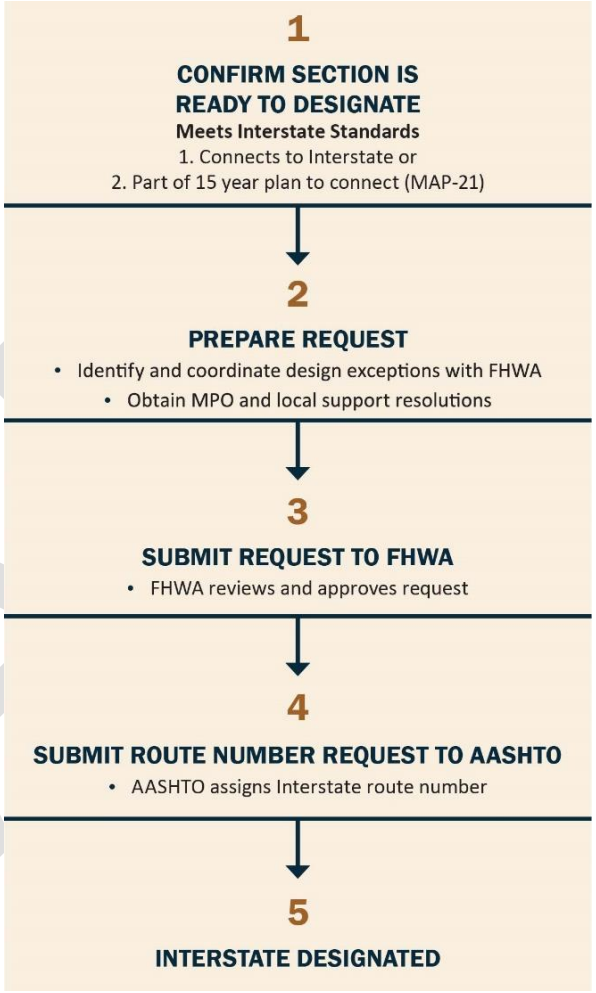


Image Source: TxDOT

Figure 6-32: Congressional Designation

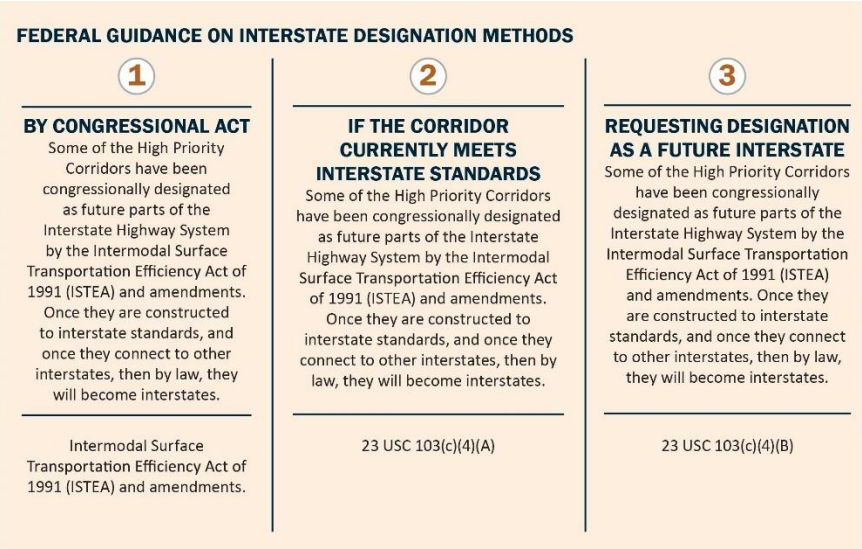


Image Source: TxDOT

TOLLING POLICIES AND TERMS

Because of the ability for multiple entities to become involved in tollway construction and the operation of toll roads and tolled managed lanes, the RTC has expanded regional policies for these priced facilities.

Managing Capacity of the Roadway System

As North Central Texas continues to experience population growth and traffic congestion, emphasis will continue to be placed on actively managing the capacity of major roadway facilities. New hardware and software technologies that provide an increased ability to monitor and operate roadways will enhance the reliability of tax-supported roads and toll roads. Tolled managed lanes have been added to existing freeways across the urban core of the region. In these corridors, drivers have the choice of paying a toll to use the managed lanes or traveling for free on the parallel freeway lanes or frontage roads. It is RTC policy that no existing free lanes will be eliminated in corridors where tolled managed lanes are constructed. Additionally, in some corridors, the construction of tolled managed lanes leverages funding to build more freeway lanes. The tolls collected from tolled managed lanes help finance the expansion, reconstruction, and operation of not just the tolled lanes, but the freeway lanes and frontage roads as well.

Managed lanes maximize the efficiency of a roadway through the introduction of tolls, time-of-day pricing, vehicle occupancy, and/or vehicle type requirements. Different forms of managed lanes can be implemented based on the circumstances of the corridor:

- In the conversion of HOV lanes to express/HOV lanes or technology lanes, excess capacity may allow vehicles with one occupant to access these lanes by paying a toll.
- In selected toll roads, capacity could be managed through incentives that encourage a higher number of occupants per vehicle or by using congestion pricing that varies the toll based on traffic levels at different times of day.
- In freeway corridors where additional capacity is warranted, added capacity could be provided based on vehicle type, vehicle occupancy restrictions, or tolling while existing lanes remain free.

Toll Road Business Terms

In 2006, the RTC approved new business terms for tollways on state highways. These terms, detailed in the **Mobility Options** appendix, aim to increase local participation in public-private toll projects, set equitable toll rates, and introduce variable time-of-day pricing.

Toll-Related Roadway Terms to Know

Toll Road: On a toll road, or tollway, all drivers using the general-purpose lanes pay a toll.

Managed Lane: In managed lanes, operational strategies are proactively implemented in response to changing conditions. Managed lanes improve traffic operations and maximize the efficiency of a roadway through active management of the lane(s). According to Federal Highway Administration guidance, strategies for managing lanes typically fall into one of three categories:

- Vehicle eligibility based on occupancy requirements and/or vehicle type restrictions (e.g., trucks, buses).
- Access based on limiting access point(s) to the lane(s), time of day, contraflow and/or reversible operations, and/or ramp metering.
- Pricing/tolling based on occupancy, vehicle type, and/or time of day.

Express/HOV Lanes: Existing interim HOV lanes that will be converted to managed operation with minimal reconstruction efforts are called express/HOV lanes. These lanes will allow single-occupant vehicular use for a toll based on a fixed-fee schedule while high-occupancy vehicles, vanpools, transit vehicles, and motorcycles will remain free at all times. Vehicles using parallel freeway lanes or frontage roads in the corridor do not pay a toll.

Tolled Managed Lanes: New toll lanes added to existing freeway corridors where significant reconstruction occurs are called Tolled Managed Lanes. The existing number of free lanes in the corridor remains the same or is increased, while dynamically priced toll lanes provide additional capacity and mobility choices with a discounted toll for high-occupancy vehicles during peak periods. The tolled managed lanes in the North Central Texas region are called TEXpress lanes. Vehicles using parallel freeway lanes or frontage roads in the corridor do not pay a toll.

Express Lanes: Similar to tolled managed lanes, express lanes are typically built in the median of freeway corridors and separated from parallel traffic by barriers. Express lanes do not have a toll component, so they cannot offer a guaranteed speed. Express lanes have significantly fewer entrance and exit ramps than parallel freeway lanes and allow through traffic to avoid congestion that results from local trips. Express lanes are a new concept for the North Central Texas region and are being planned for corridors previously designed for tolled managed lanes where additional tax funding allows the roadway to be built without tolls.

Technology Lanes: Typically, interim improvements, the shoulder lane is utilized during peak periods to allow additional capacity in an already congested corridor.

Excess Revenue Policy

The excess revenue policy for all TxDOT-sponsored toll facilities honors all previous RTC agreements and puts forth the following:

- All excess revenue generated from individual toll projects shall remain in the TxDOT district in which that revenue-generating project is located.
- Excess revenue generated from individual toll projects shall be placed in county-specific accounts and prorated based on the residential county of all toll payers on all tollways.
- Projects funded with excess toll revenue should be selected in a cooperative TxDOT/RTC selection process, which considers the desires of the cities and counties where the revenue-generating project is located.

The policy enables non-tolled roadways, either on or off the State Highway System, to be improved or reconstructed using excess toll revenue funds. It also ensures that input from local governments will help determine which projects should receive funding. The RTC's policies regarding business terms and excess revenues further establish the region's commitment to toll projects where feasible, allowing swifter implementation of some projects that would be delayed if they were funded strictly with traditional revenue sources.

Tolled Managed Lane Policy

TxDOT and the RTC have developed additional policies for tolled managed lane projects. These policies support regional goals such as ensuring travel reliability, providing revenue for public-private partnership projects, and providing incentives for travelers to use HOV and transit. These policies support dynamic pricing, which provides flexibility in setting the toll rate within allowable limits. This type of pricing allows operators to set market-based toll rates based on the demand being placed on the corridor and real-time congestion levels; the toll rates could fluctuate throughout the day in response to changing traffic conditions. Dynamic pricing is currently used on some managed lanes in the region.

The policies for tolled managed lanes, as shown in the **Mobility Options** appendix, were approved by the RTC in May 2006; and modified in September 2006, September 2007, and December 2012.

The RTC approved other existing policies regarding excess toll revenue for tolled managed lanes in June 2005. The policies are nearly identical to those established for TxDOT-sponsored tollways, with one notable exception—local governments and transportation authorities shall be given the right to invest in a tolled managed lane project as a means to fund the project, as well as to generate local revenue. Shares offered by the RTC would be allocated into programs related to air quality and sustainable development. These shares would also be used to leverage federal transportation funds. In some corridors, the RTC has committed to serve as a financial backstop to offer assurances and to hold bond holders harmless if revenues are negatively impacted by techniques used to manage congestion.

Express/HOV Lanes Policy

The freeway corridors that currently include HOV lanes will be completely rebuilt over time, improving the flow of traffic on the general purpose freeway lanes and frontage roads. In some cases, the HOV lanes may be reopened as tolled managed lanes, but some of the existing HOV lanes will be converted into express/HOV lanes as an interim improvement until the corridor can be fully reconstructed. Due to geometric and design constraints, the express/HOV lane facilities would have a fixed toll schedule that will vary by time of day and vehicle occupancy, but in some corridors, pricing could be impractical. In December 2012, the RTC adopted a new policy to specifically

address the operation of the express/HOV lane system, as provided in the **Mobility Options** appendix.

The proposed express/HOV lanes differ from existing HOV lanes in operation today. HOV lanes on IH 30 are considered immediate action or interim facilities. These are temporary solutions in a corridor where a permanent facility is expected to be constructed at the same time the freeway is widened or reconstructed. Mobility 2050 recommends reconstruction for all corridors that currently include interim HOV lanes. These lanes will eventually be replaced with express lanes, technology lanes, tolled managed lanes, or general purpose lanes.

The existing interim HOV lanes are located in the following corridors:

IH 30: East R.L. Thornton Freeway

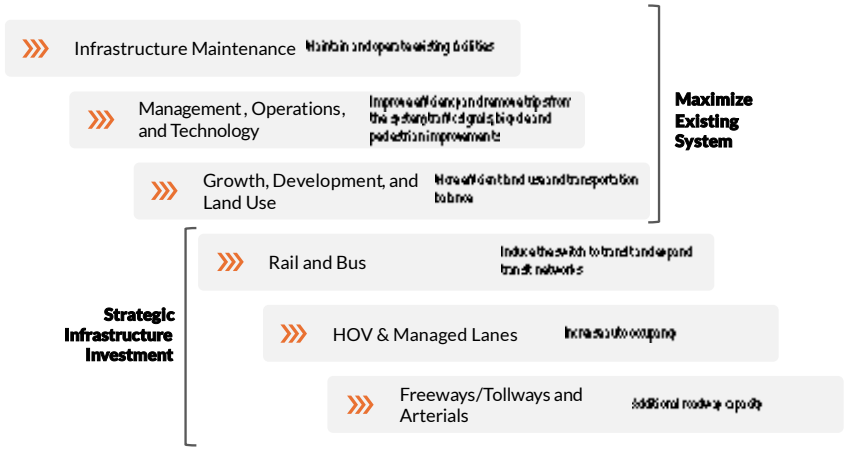
- Contraflow lane with a moveable barrier; operates during peak travel hours only
- Limits: Dallas Central Business District to Northwest Drive in Mesquite

DEVELOPMENT OF ROADWAY RECOMMENDATIONS

The process to select programs and projects to include in the Metropolitan Transportation Plan (MTP) first considers those that maximize the existing transportation system. Only after these strategies are reviewed and incorporated into the plan are strategic infrastructure projects such as rail lines, arterial roadways, freeways, and tollways considered. This approach ensures that regional travel demand is first addressed through those strategies that have the greatest air quality benefit; these programs and projects also are generally more cost effective than adding capacity for single-occupant vehicles on major roadways.

To begin evaluating which freeway and tollway projects should be included in the plan, the recommendations from previous MTPs are reviewed. Discussions with TxDOT and NTTA are conducted to determine potential modifications to those recommendations. The recommendations are then updated to include results from ongoing corridor studies, environmental assessments, environmental impact statements, and advanced planning studies. After potential projects are identified, technical, environmental, socioeconomic, and financial analyses take place. These analyses are considered while the potential freeway and tollway projects are evaluated, selected, and prioritized. Project prioritization principles are shown in **Figure 6-33.**

Figure 6-33: Prioritization Principles of Improvements



Technical Analysis

The technical analysis of freeway and tollway projects relies on data from the Transportation Analytical Forecasting Tool (TAFT), the regional travel model. Travel modeling is used to identify system deficiencies, determine demand on new or expanded facilities, and to test the impact of potential improvements on corridor and regional

congestion measured by level-of-service (LOS). LOS is determined based on:

- Projected daily volumes
- Facility type (freeway, tollway, managed lane, arterial, etc.)
- Number of lanes
- Area type (urban, suburban, rural)

Project Evaluation, Selection, and Prioritization

Mobility 2050 projects were evaluated, selected, and prioritized using a technical and analytical process carried over from the Mobility 2045 Update. The approach strategically prioritizes projects, a necessity because of the limited amount of funding available for improvements to roadway capacity. All candidate roadway projects and corridors were scored and ranked based on the seven national performance goals identified in federal transportation laws on performance-based planning originally passed in 2012 and carried forward to present day.[15] Future MTPs will address and respond, as appropriate, to any new and/or adjusted goals which may be released as part of regulations subsequent to the Infrastructure Investment and Jobs Act (IIJA). The project selection criteria using the federal performance goals are highlighted in **Table 6-**4.

Table 6-4: Evaluation and Project Selection Criteria

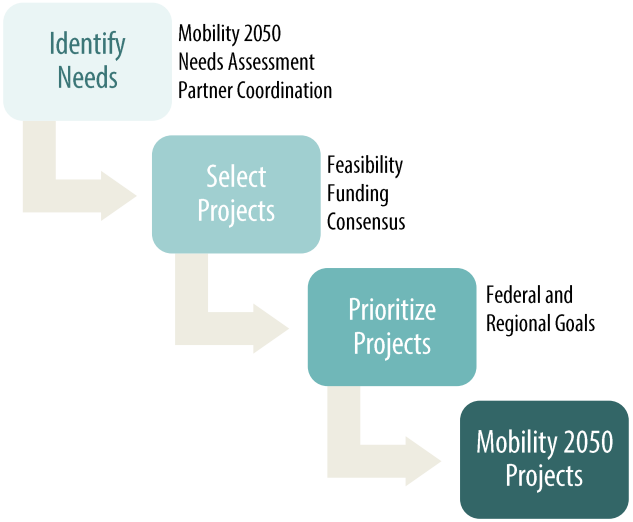
Federal Performance-Based Goal	Criteria Used	Unit Measure
Congestion Reduction	Traffic Volume/Roadway Capacity	Traffic Volume/Roadway Capacity Ratio
System Reliability	Level of Travel Time Reliability	80th Percentile of Travel Time Divided by the Median (50th percentile) Travel Time
Safety	Crash Rate	Fatal, Serious, and Total Crashes per 100 Million Vehicle Miles Traveled
Infrastructure Condition	Pavement and Bridge Conditions	Good, Fair, and Poor Ratings Associated with PM2 Performance Measures
Freight Movement	Truck-to-Car Travel Time Ratio	Truck Travel Time Index Divided by Passenger Vehicle Travel Time Index
	Truck Volume Percentage	Daily Truck Volume Divided by Daily Volume
Economic Vitality	Recent Activity Density Change	Percent Change in Activity Density (population and employment) from 2000 to 2023
	Future Activity Density Change	Percent Change in Activity Density (population and employment) from 2023 to 2045
Environmental Sustainability	Estimate of Environmental Impact Based on Project Type	**High Impact:** New Location Project **Moderate Impact:** Expansion of Existing Facility **Low Impact:** Asset Optimization
Reduced Project Delivery Delay	Planning Status, Funding Availability, Constraints, and System Continuity	Information Only

Roadway and transit project recommendations included in Mobility 2050 went through a continuous, coordinated, and comprehensive process. The process began by identifying the needs of the region. Recommendations in the Mobility 2045 Update were reanalyzed to determine whether their scope was sufficient for Mobility 2050. All

[15] Moving ahead for progress in the 21st Century (2012); Fixing America's Surface Transportation Act (2015); Bipartisan Infrastructure Law/Infrastructure Investment and Jobs Act (2021)

other corridors in the region were also evaluated based on the federal performance goals. Project prioritization is illustrated in **Figure 6-34.**

Figure 6-34: Project Prioritization



The candidate corridors must meet technical feasibility, have acquired local consensus, and have an anticipated funding source identified. Project delivery was an essential factor because it focused on planning elements such as system continuity, physical barriers, and right-of-way constraints. It also focused on the project's planning status; for example, whether it had received environmental clearance or been included in previous MTPs. Preference was given to projects that had a stage or stages under construction but needed additional funding to complete the final elements. Continuous coordination with transportation partners was essential in all areas of Mobility 2050 development.

The final methodology incorporates input from the RTC and absolute data for metrics related to each federal performance goal. Each performance metric was assigned a weight based on feedback and polling data received from the RTC. The weighted scores were then used to rank the candidate corridor segments.

Lastly, the rankings were analyzed to identify whether federally protected populations may face a delay in benefits. No delay was found. The methodology and results of this analysis are described in the Regional Nondiscrimination Analysis section of the **Social Considerations** chapter.

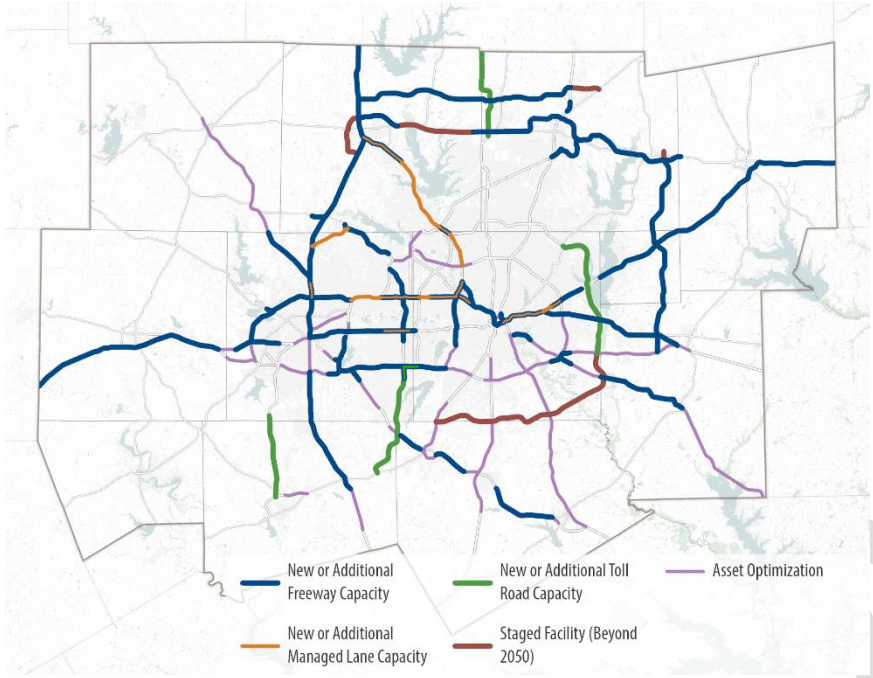
Controlled Access Roadway Recommendations

The total cost for implementing the recommended freeway, tollway, and managed lane improvements is approximately $80 billion. Costs from the plan are based on current planning and engineering studies, were reviewed by TxDOT and NTTA and represent total project costs reflected in year-of-expenditure dollars, which is consistent with federal planning requirements. Mobility 2050 recommendations for controlled access roadways are shown in **Figure 6-35.**

Tolled Facilities

The network of tolled roads and tolled managed lanes recommended in Mobility 2050 includes the existing toll road system managed by NTTA, new tollways expected to be constructed by local toll authorities, regional mobility authorities, and TxDOT, as well as the express/HOV and tolled managed lane system being developed cooperatively between NCTCOG, TxDOT, and NTTA. Tollways play an integral role in the recommendations of Mobility 2050, as shown in **Figure 6-36.**

rFigure 6-35: Major Roadway Recommendations



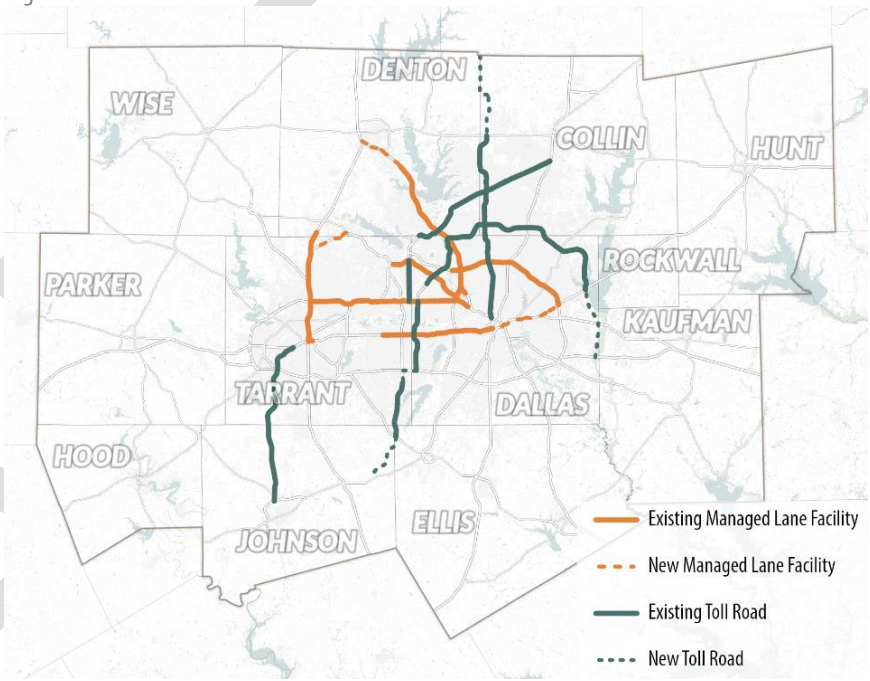
*A larger version can be found in the **Mobility Options** appendix, and an interactive version is available on our website [link to be added after plan adoption].*

Non-Controlled Access Facilities

Regional Arterials

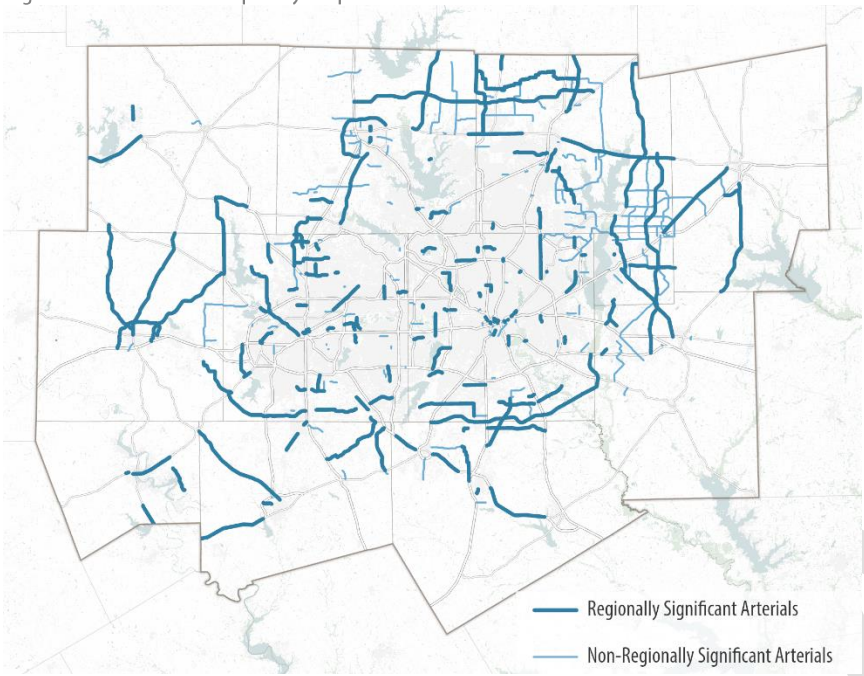
In addition to controlled access roadways, arterial streets play a key role in urban mobility, carrying traffic from highways to local streets. By 2050, approximately 38 percent of vehicle miles traveled will be on the region's principal and minor arterials. Arterials pass through areas where a controlled access roadway would be unwarranted or undesirable and through areas with high concentrations of intensive land use such as central business districts. These streets may also supplement highways by providing an alternative route in the event of crashes, road construction, or recurring congestion. Arterials must provide needed transportation capacity while being compatible with and providing access to adjacent land uses.

Figure 6-36: Tolled Facilities



Regionally significant arterials (RSAs) form the backbone of the arterial roadway system. Arterials are identified as regionally significant if they serve regional transportation needs, provide service to regional activity centers, connect communities, and maintain access to and from areas outside of the region. RSAs are forecast to carry approximately 20 percent of all vehicular traffic in the region by 2050. Roadways that are designated as RSAs require federal review for air quality conformity. The designation does not imply that all RSAs will be guaranteed funding. Other non-regionally significant arterials are also eligible for federal funding but are not required for federal review for Transportation Conformity. The arterials that are currently funded for improvement or are anticipated to be funded within the timeframe of Mobility 2050 are shown in **Figure 6-37**.

Figure 6-37: Arterial Capacity Improvements



The Design of Arterials and Thoroughfares

Mobility 2050 promotes a multimodal approach to arterial and thoroughfare design, incorporating LOS assessments for all modes of travel. This multimodal LOS considers the safety and comfort of all roadway users, including both motorized and nonmotorized modes. Furthermore, Mobility 2050 encourages the use of Federal Highway Administration (FHWA) endorsed principles for context-sensitive solutions and the development and implementation of local Complete Streets policies to accommodate all users (e.g., pedestrians, transit users, bicyclists, motorists, freight providers). Street design should depend on the context of the community, street, and potential users. The goal is not necessarily to include all these components to make a street complete; the goal is to balance the safety and convenience of all road users, regardless of development density.

Context-Sensitive Complete Streets

In supporting regional goals related to mobility, land use, the environment, the economy, and public health, Mobility 2050 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 context-sensitive Complete Streets applications, and they should be interconnected with transit services and other modes of transportation such as micromobility devices. This seamless multimodal transportation network can connect housing and key destinations, including employment centers, education facilities, medical campuses, retail hubs, entertainment complexes, and others. Additional information on context-sensitive design can be found in the **Sustainable Development** section of the **Operational Efficiency** chapter.

Urban Thoroughfare Revitalization

The region contains many corridors where Complete Streets principles could be applied, particularly aging urban thoroughfares in the Metropolitan Planning Area. These state highways, once serving through traffic but now largely accommodated by the region's freeway system, are underutilized, in need of repair, and may have adjacent land uses requiring reinvestment and revitalization. Despite their reduced role in through traffic, these streets remain key gateways in communities and are ideal candidates for Complete Streets improvements and multimodal level-of-service assessments due to

their wide right-of-way and underutilized capacity. Integrating land-use contexts in transportation planning is essential, as context-sensitive projects can spur reinvestment compatible with the community vision.

Local governments seeking to revitalize urban thoroughfare corridors have undertaken various planning and implementation efforts. NCTCOG has partnered with local governments and TxDOT on several corridor studies, including the Garland Road Vision, SH 5 Corridor Planning Study, SH 183 Corridor Master Plan, SH 199 Corridor Master Plan, Harry Hines Master Transportation Plan, Preston and Northwest Highway Area Plan, Balch Springs Hickory Tree Road Study, and the Forest Hill/Fort Worth/Everman Forest Hill Drive Study.

Regional guidelines now under development should provide consistent strategies for selecting corridors to redevelop based on the needs of a community. These guidelines will form the basis of a needs assessment through which strategic investments can be selected to revitalize thoroughfares. Such guidelines could include the following strategies:

- Repairing and maintaining aging infrastructure.
- Converting to Complete Streets as necessary by adding alternative modes of transportation.
- Coordinating with independent school districts and related social/education entities on school location decisions and school related traffic safety, as well as working with local governments, TxDOT, and public-private partnerships to complete projects.

Maintenance and Asset Optimization

The maintenance and preservation of the existing roadway system is an important factor for reasons related to safety, operations, economics, and sustainability. Existing roadways must be maintained to ensure their reliability and to maximize their useful life. Maintenance activities can be routine (simple cleaning or sweeping, restriping, and pothole repairs), preventive (overlays, crack sealing), or major (complete reconstruction and replacement).

TxDOT currently maintains more miles of highway lane miles (nearly 700,000 in 2022) and more bridges (over 57,500 in 2022) than any other state in the US. There are currently 95,052 lane miles of public roadways in the 12-county Dallas-Fort Worth Metropolitan Planning Area that must be maintained and preserved.[16] This number is expected to increase substantively through 2050 as new roadways are constructed and widened to accommodate future population and economic growth. To address this existing and future demand to maintain a state of good repair, approximately 15 percent of the funding identified in Mobility 2050 is dedicated to preserving the functionality and condition of the region's roadway system.[17]

Existing federal regulations now require MTPs to identify strategies to preserve the existing and future transportation system and evaluate the condition and performance of transportation assets through the preparation of Transportation Asset Management Plans.[18] Additional information related to these regulations, including the performance measures utilized for pavement and bridge conditions, is provided in the **Regional Performance** chapter.

Asset Management Policy

The improvement and management of the regional roadway system is guided by the following policy. This policy directs the planning and

[16] TxDOT Roadway Inventory 2022 Annual Report, https://ftp.txdot.gov/pub/txdot-info/tpp/roadway-inventory/2022.pdf.

[17] Approximately 15 percent of the funding identified in Mobility 2050 is dedicated to maintaining and operating the transportation system, including roadway and transit.

[18] 23 CFR 450.324(f)(7) and 23 CFR 450.324 (f)(4)

development of roadways in a consistent manner beyond their initial capital investment and recognizes, among other principles, the need to:

- Determine more cost-effective strategic improvements that consider asset life cycle
- Pursue innovative funding opportunities
- Actively manage roadway demand

RD3-015: Support the asset management objectives in the Texas Department of Transportation's Statewide Long-Range Transportation Plan to maintain and preserve multimodal facilities using cost-beneficial treatments and to achieve a state of good repair for pavement, bridge, and transit assets.

Asset Optimization

Financial realities make it difficult to continue large-scale projects that require total reconstruction to improve capacity. Other proactive, less costly, and more efficient options to optimize the regional transportation system must also be considered. Consistent with FHWA initiatives on context-sensitive solutions and performance-based practical design, Asset Optimization involves a strategic design and performance-oriented approach to address corridor improvement planning through incorporation of the business principles of asset management.[19] Projects identified as Asset Optimization are those where corridor segment reliability deficiencies, performance gaps, safety enhancements, accessibility needs, and/or community reconnection opportunities can be addressed using lower cost techniques or mitigation strategies that are quicker to implement than more conventional and higher cost capacity expansion projects. Such improvements are also designed predominantly to occur within the existing corridor right-of-way, where possible. These cost-effective and timesaving approaches are examples of asset management, efforts meant to either alleviate asset performance/condition deterioration and its impacts to the surrounding community, or to extend its lifecycle functionality. The range of potential Asset Optimization improvements include, but are not limited to, the following types:

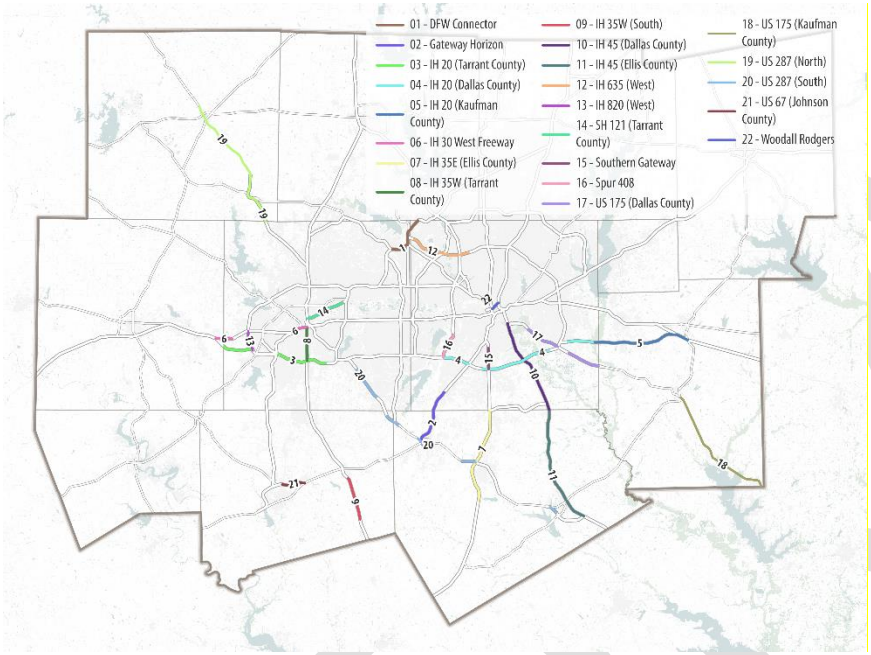
- Continuous frontage roads or filling frontage road gaps
- Entrance/exit ramp relocations or reversals
- Auxiliary lanes between ramps
- Collector-distributor facilities
- Addition or conversion of surface street interchanges
    - Conventional Diamond Interchange
    - Single-Point Urban Interchange
    - Displaced Left-Turn Interchange
    - Diverging Diamond Interchange
    - Single-/Dual-Roundabout Interchange
    - Jughandle Ramp Interchange
- Bridge rehabilitation or replacement
- Increasing infrastructure durability and/or adaptability of corridor foundational infrastructure (including retaining walls, drainage, etc.) to changing environmental conditions
- Freeway caps or lids

In North Central Texas, initial pilot projects have helped inform the identification of potential Asset Optimization improvements. These projects have provided valuable lessons and potential direction for future efforts, including strategies to alleviate bottlenecks and promote greater system efficiency. Partnerships were formed with transportation providers and local stakeholders to collect and analyze data. These partnerships helped develop the data management system and created a more holistic understanding of infrastructure planning and investing from the perspective of lifecycle costs and benefits. Additionally, by integrating local knowledge, statewide expertise, and

[19] https://www.fhwa.dot.gov/planning/css/ and https://www.fhwa.dot.gov/design/pbpd/

regional coordination with the data, staff were able to determine how to best proceed with potential projects. Decisions considered community needs, as well as safety, accessibility, and mobility attributes while planning improvements to existing roadways within available right-of-way. Projects could address critical needs and be something that all stakeholders could support. Asset Optimization recommendations are shown in **Figure 6-38.**

Figure 6-38: Asset Optimization Improvements



*A larger version can be found in the **Mobility Options** appendix, and an interactive version is available on our website [link to be added after plan adoption].*

Illustrative Projects and Corridors for Future Evaluation

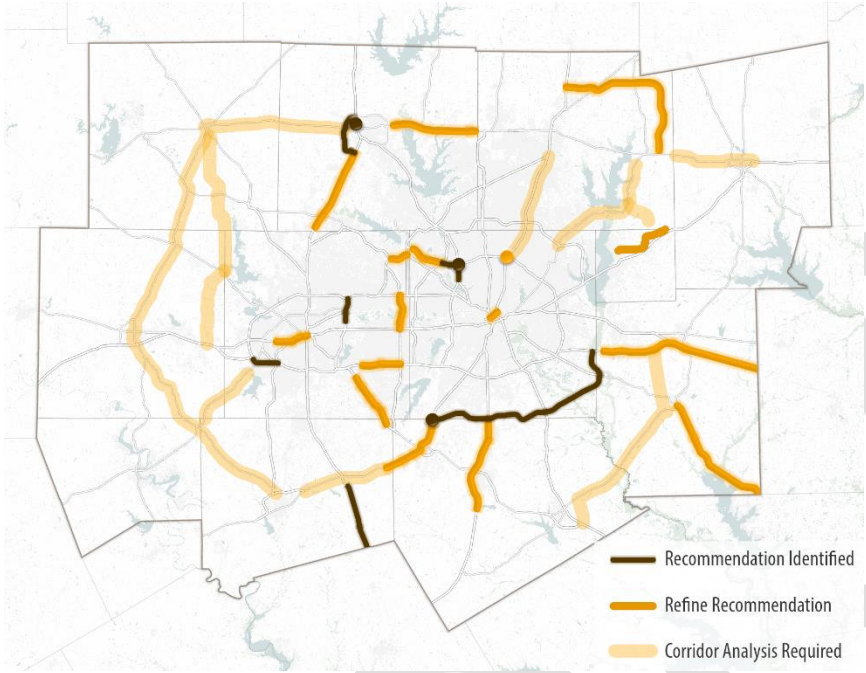
NCTCOG coordinates with transportation partners and local governments to identify needs and priorities on the roadway system. Due to financial constraint, some projects cannot be included in the formal MTP recommendations. Additionally, ongoing roadway studies in the region have resulted in identified corridors to be considered in future MTPs. Corridors identified for future evaluation highlight areas of additional need or locations where thoroughfare or subarea studies are beginning or ongoing; however, finalized recommendations must be produced before these corridors can be considered in future MTPs. For that to occur, the corridors will be subject to a project development process that includes feasibility studies, environmental analyses, development of and consensus for locally preferred alternatives, and identification of funding sources. An illustrative map of major roadway corridors not included in the financially constrained plan but flagged for future MTP consideration or evaluation is shown in **Figure 6-39**. Projects included in the illustrative map have been categorized into three groups: (1) projects where recommendations to address specific needs are yet to be determined and require analysis, (2) projects where a general recommendation may be identified but refinement is ongoing, and (3) projects where a potential recommendation has been identified but they cannot be included in the financially constrained recommendations. Roadway corridors for future evaluation identified as either Recommendation Identified or Refine Recommendation are detailed in the **Mobility Options** appendix.

Arterial Network Deficiency Analysis

In addition to developing the illustrative roadway corridors for future evaluation, a technical analysis was done to identify areas where anticipated growth would occur, but the existing arterial framework may be lacking or deficient in handling the future demand. The analysis

considered forecasted growth in population and employment density, arterial spacing and connectivity, and congestion on the arterials, as well as congestion on any surrounding facilities. These areas are not project-specific recommendations but may warrant further study. The results of the arterial network deficiency analysis are shown in **Figure 6-40**.

Figure 6-39: Illustrative Major Roadway Corridors for Future Evaluation

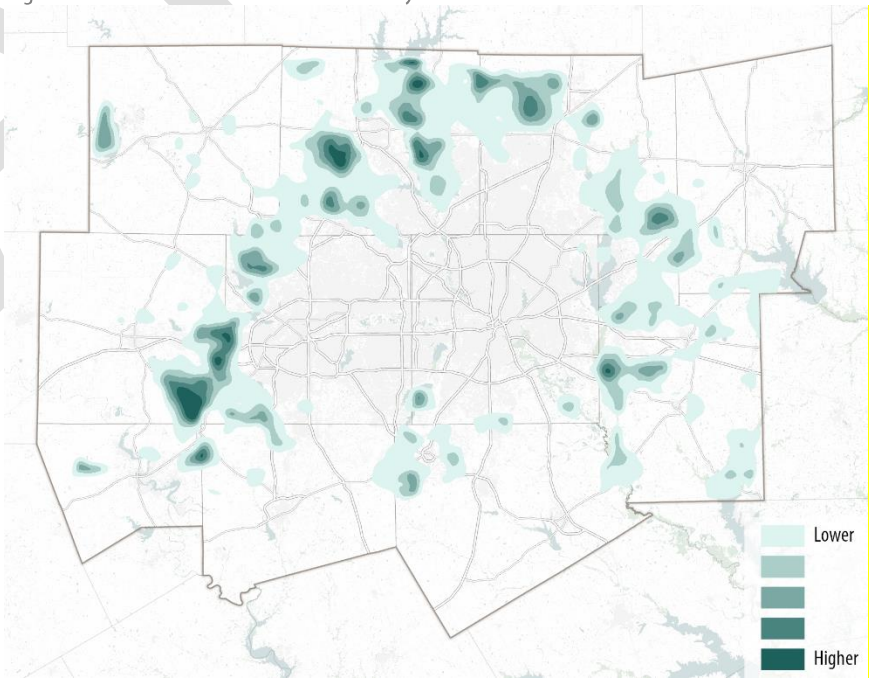


ROADWAY FUNDING CONSIDERATIONS

Traditionally, TxDOT has financed highway projects on a "pay as you go" basis using motor fuel taxes and other revenue deposited in the State Highway Fund. However, increasing population, growing traffic demand, inflation, and increasing fuel efficiency continue to outpace the ability of traditional funding and financing mechanisms to implement necessary transportation improvements.

Extensive improvements to the freeway and tollway system require high-cost initial elements, including right-of-way acquisition and construction, as well as expensive long-term costs, including maintenance, operation, and rehabilitation. Mobility 2050 continues to face the challenge of balancing huge demands on an aging and heavily used system with inadequate funding from traditional revenue sources, including fuel taxes and vehicle registration fees. For this reason, previous MTPs for the region relied heavily on tolls and innovative funding and financing to satisfy the demand for new roadway facilities and the expansion of existing corridors.

Figure 6-40: Arterial Network Deficiency Areas

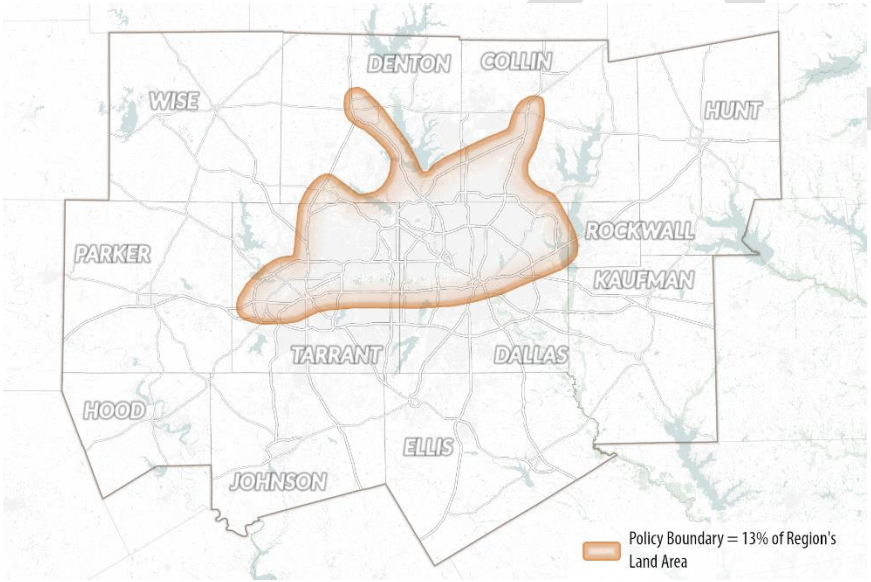


Past sessions of the State Legislature have focused on the reliance on tolls and the need to reevaluate the balance between tolled and non-

tolled roadways. A guiding principle in the previous development of the Mobility 2045 Update considered a pendulum swing away from tolled roadways and toward more tax-funded facilities. State Proposition 1 and State Proposition 7 continue to provide the region with more transportation funding toward general purpose lanes, and the state gas tax will no longer be diverted to non-transportation uses, aside from the constitutionally protected transfer of 25 percent to education.

The funding from these changes only accounts for approximately one-quarter of the identified need for transportation projects. For this reason, Mobility 2050 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. Mobility 2050 supports managed lane implementation within a tolled managed lane policy area, known as the Tolled Managed Lane System Policy Boundary. A map of the Tolled Managed Lane System Policy Boundary can be found in **Figure 6-41**. This boundary contains 13 percent of the region's land area but 75 percent of the region's congestion.

Figure 6-41: Tolled Managed Lane System Policy Boundary



As elected officials grapple with realistic options for additional funding, combined with recent input on managed lanes and informal polling demonstrating the lanes' users value reliability, it is anticipated that tolling and innovation will continue to be viewed as viable options under certain conditions and in certain corridors. As a result, the pendulum may swing back toward a more balanced position as is demonstrated in these MTP recommendations.

SUMMARY

The roadway system recommendations included in Mobility 2050 amount to a significant investment in improvements, expansions, management, and new capacity for the region's mobility. Managing congestion as North Central Texas grows to a region of 12.3 million people by 2050 will require strategic and ongoing investment in the regional roadway system. A map of Mobility 2050 funded roadway recommendations, including freeways, tollways, managed lanes, frontage roads, and major arterials in shown in **Figure 6-42.**

Figure 6-42: Roadway Recommendations