TEXAS RAIL PLAN

CHAPTERS

December 2019

Texas Department of Transportation

Table of Contents

CHAPTER 5 – TEXAS RAIL SERVICE AND INVESTMENT PROGRAM

CHAPTER 6 - COORDINATION AND REVIEW

APPENDICES

2019 Texas Rail Plan

Chapter 1

Texas Rail Vision

December 2019

TABLE OF CONTENTS

List of Figures

1.1 INTRODUCTION

The state's rail vision was developed by the Texas Department of Transportation (TxDOT) as part of the 2019 Texas Rail Plan effort. This Texas Rail Plan is intended to express the state's vision for rail and identify opportunities for future improvement. The Texas Rail Plan was developed to be consistent with the previous 2016 Texas Rail Plan, 2017 Texas Freight Mobility Plan (TFMP), and the Texas Transportation Plan (TTP) 2040.

The rail network in Texas is a critical component of a thriving economy, safely connecting industries, ports, and people without congesting highways. This chapter outlines the statewide planning context and describes how public-private collaboration can benefit the predominantly private rail network. In addition, the chapter describes how rail supports established goals and objectives for a multimodal transportation system. The chapter summarizes recent achievements and future plans for the rail system. Additional details are provided in subsequent chapters.

This 2019 Texas Rail Plan was developed in a manner consistent with and inclusive of elements required under Chapter 227, Title 49, United States Code, applicable sections of the Federal Railroad Administration's (FRA) Final Guidance on State Rail Plans, and requirements of Title 6, Subtitle A, Chapter 201, Sections 6012-6013, Texas Transportation Code.

1.2 TEXAS' GOALS FOR ITS MULTIMODAL TRANSPORTATION SYSTEM

Texas' vision and goals for its multimodal transportation system are outlined in a number of recently published planning documents that are updated periodically. The plans and strategies outlined in this Texas Rail Plan expand upon the objectives included in documents such as the previous Texas Rail Plan (2016), TFMP (2017), and TTP 2040 and outreach conducted to support development of the 2019 Texas Rail Plan.

1.2.1 Texas Transportation Plan 2040

The TTP 2040 was adopted by the Texas Transportation Commission (Commission) on February 26, 2015 to serve as TxDOT's long-range, performance-based transportation plan. The TTP addresses the statewide planning requirements under the current federal surface transportation act—Moving Ahead for Progress in the 21st Century (MAP-21), and Title 43, Texas Administrative Code, Chapter 16. The TTP outlines TxDOT's objectives to maintain a safe transportation system, address congestion, connect Texas communities, and become a best-in-class state agency.

Texas' adopted transportation goals and objectives are identified by category below.

Safety

- Improve multimodal transportation safety
- Reduce fatalities and serious injuries
- Improve safety of at-grade rail crossings
- Eliminate conflicts between modes wherever possible

- Increase bicycle and pedestrian safety through education, design, and construction of new facilities, and improvements to existing facilities
- Educate the public about the dangers of high-risk driving behaviors
- Coordinate with law enforcement to improve driver compliance with laws
- Improve incident response times

Asset Management

- Maintain and preserve multimodal assets using cost-beneficial treatments
- Decrease the number of bridges that are structurally deficient, functionally obsolete, or substandard-for-load
- Achieve state of good repair for pavement assets, keeping pavements smooth and pothole free
- Achieve state of good repair for transit assets such that they are comfortable and reliable
- Identify and mitigate risks associated with asset failure
- Identify existing and new funding sources and innovative financing techniques for all modes of transportation
- Build upon and regularly update the asset inventories for all transportation modes

Mobility and Reliability

- Reduce congestion and improve system efficiency and performance
- Plan, design, and construct strategic capacity projects
- Implement alternative strategies that reduce peak demand
- Improve operations within existing right-of-way
- Increase travel options and accessibility for all, especially elderly, disabled, and disadvantaged populations
- Increase freight and passenger travel time reliability
- Increase the capacity and efficiency of the transportation system across travel modes

Multimodal Connectivity

- Provide transportation choices and improve system connectivity for all passenger and freight modes
- Provide and improve access to jobs, transportation choices, and services for all Texans
- Provide safe and convenient travel choices for all Texans with a focus on the complete trip
- Support the efficient and coordinated movement of goods and services between freight modes to facilitate statewide, national, and global commerce
- Support multimodal and intermodal planning, project development, and investments
- Improve connectivity between urban, suburban, and rural areas and between travel modes

Stewardship

- Manage resources responsibly and be accountable and transparent in decision making
- Identify sustainable funding sources and leverage resources wisely to maximize the value of investments and minimize negative impacts
- Develop and implement a project development process that recognizes quality-of-life concerns for all system users and future generations of Texans
- Link transportation planning with land use
- Reduce project delivery delays
- Coordinate project planning and delivery with all planning partners and stakeholders
- Minimize impacts to natural, cultural, and historic resources and promote sustainability in project design and delivery

Customer Service

- Understand and incorporate customer desires in decision processes and be open and forthright in all agency communications
- Collect and integrate feedback using innovative engagement techniques and technology
- Promote and enable public participation in project planning and development
- Improve accessibility of information through innovative, understandable, and relatable communication techniques
- Educate the public and stakeholders on transportation costs, funding availability, and investment tradeoffs

Sustainable Funding

- Identify and sustain funding sources for all modes
- Identify and document costs to meet the state's future transportation needs
- Consider all funding sources to fill the needs-to-revenues gap
- Educate the public and stakeholders on the costs associated with constructing and preserving the system
- Evaluate the feasibility of innovative financing solutions
- Improve predictive capabilities for revenue forecasting and long-term needs assessments

Using the above goals and objectives as a guide, Texas has further identified key freight transportation needs and issues, including rail, in its 2017 Texas Freight Mobility Plan.

1.2.2 Texas Freight Mobility Plan

The TFMP (2017) identified that in 2016, Texas was ranked number one in the nation in exports by the U.S. Census Bureau, which was a position the state held for 14 consecutive years.[1] The TFMP was developed by TxDOT to provide a blueprint for facilitating economic growth potential in Texas through a solid but flexible strategy for addressing urban and rural multimodal freight transportation needs statewide that encompass highways, railroads, ports and waterways, airports, and pipelines. The TFMP, and its related recommendations, supports the National Multimodal Freight Policy and national freight goals. Texas' freight mobility goals, and their associated objectives related to the rail mode, generally include:

Safety – Improve multimodal transportation safety

- Reduce the number of rail-related incidents, including crashes at at-grade highway/rail crossings.
- Increase the resiliency and security of the state's freight transportation system in response to multi-hazard threats, including natural disasters and man-made threats.
- Support the deployment of innovative technologies to enhance the safety and efficiency of the Texas Multimodal Freight Network.

Economic Competitiveness – Improve the contribution of the Texas freight transportation system to economic competitiveness, productivity, and development

- Strengthen Texas' position as a global trade and logistics hub by improving and maintaining Texas' multimodal freight network infrastructure and connectivity.
- Expand public-private and public-public partnerships to facilitate investments in freight improvements that enhance economic development and global competitiveness.
- Identify critical freight infrastructure improvements necessary to support future supply chains and logistics needs, and consumer demands.
- Conduct outreach activities and develop educational programs to increase awareness of the importance of freight to the Texas economy.
- Support strategic transportation investments to address the rapid increase in key industries, such as energy, plastics, agriculture, and automotive production.

Asset Preservation and Utilization – Maintain and preserve infrastructure assets using cost-beneficial treatment

- Leverage and utilize the Texas Multimodal Freight Network.
- Utilize technology to provide for the resiliency and security of the state's multimodal freight transportation system in response to multi-hazard threats, including natural disasters and man-made threats.

[1] http://ftp.dot.state.tx.us/pub/txdot/move-texas-freight/studies/freight-mobility/2017/summary.pdf

Mobility and Reliability – Reduce congestion and improve system efficiency and performance

- Apply the most cost-effective methods to improve system capacity and reliability (including technology and operations).
- Partner with U.S. and Mexican federal, state, regional, local, and private sector stakeholders to address Texas-Mexico border crossing challenges.
- Support the development and deployment of integrated Texas-Mexico border crossing management through Intelligent Transportation Systems (ITS).
- Leverage technology to improve management and operations of the existing transportation system.

Multimodal Connectivity – Provide transportation choices and improve system connectivity for all freight modes

- Increase Texas supply chain efficiencies by improving connectivity between modes.
- Improve first / last mile connectivity between freight modes and major freight generators and gateways.
- Improve connectivity between rural and urban freight centers.
- Improve access into and out of Texas' seaports to facilitate projected future growth.
- Improve highway and rail connectivity to major freight gateways and generators through increased capacity improvements.
- Improve multimodal connectivity to Texas-Mexico border crossings.
- Leverage multi-state organizations to increase multimodal freight connectivity across state lines.

Stewardship – Manage environmental and TxDOT resources responsibly and be accountable in decision making

- Implement a performance-based prioritization process for freight system investment.
- Reduce adverse environmental and community impacts of the Texas Multimodal Freight Network.
- Lead efforts to foster greater coordination among the agencies responsible for freight network investment.
- Reduce delays in freight project planning, programming, and implementation.
- Coordinate freight project planning and implementation with all planning partners and stakeholders.

Customer Service – Understand and incorporate citizen feedback in decision-making processes and be transparent in all TxDOT communications

- Develop and sustain partnerships with private-sector industries, communities, agencies, Metropolitan Planning Organizations (MPOs), and other transportation stakeholders and partners.

- Increase freight expertise in TxDOT districts, across departments, and among elected officials.
- Partner with public and private sector stakeholders to enhance workforce recruitment and retention in the transportation and logistics industry.
- Facilitate statewide dissemination of real-time freight movement information by integrating existing traffic management centers.

Sustainable Funding – Identify sustainable funding sources for all freight transportation modes

- Identify funding sources for high priority multimodal freight projects.
- Identify and document the needed transportation investment costs to meet the state's future freight transportation needs.
- Educate the public and stakeholders on the costs of constructing and preserving the freight transportation system.
- Improve predictive capabilities for revenue forecasting and long-term needs assessments.

This Texas Rail Plan is intended to educate the public as to how the rail mode will contribute to meeting the above goals. It will accomplish this by describing rail's role in Texas' multimodal system and its contributions and benefits to the state's transportation system and economy. The Texas Rail Plan also details the relationship of rail in the established transportation goals and objectives of the TFMP (2017) and TTP 2040 and includes potential projects to further those goals.

1.3 RAIL TRANSPORTATION'S ROLE IN THE TEXAS TRANSPORTATION SYSTEM

Construction of Texas' rail network had a profound economic and social impact on the development of the state. Early settlers in Texas found a sparse and disjointed transportation system, primarily consisting of poor roads and rivers that were too shallow for dependable year-round transportation. The construction of railroads boosted the state's economy by improving how people and products moved across Texas.

The first railroad line was the Buffalo Bayou, Brazos & Colorado Railway, started in 1853, which operated between Harrisburg (Houston) and Stafford, Texas. Early Texas railroads were established primarily along the Gulf Coast. Based on this new transportation mode's potential, the Texas legislature and some localities provided incentives for rail construction in the form of land grants and loans.

By the start of the Civil War, there were nine railroad companies with 470 miles of track in Texas, primarily in the Houston area or serving sea and river ports. While construction paused during the Civil War, the 1870s saw significant new construction of rail track reaching a total of 2,440 miles by the end of 1879. This decade also marked the connection of the Texas network to the national rail network when the Missouri, Kansas & Texas Railway (MKT) reached Denison, Texas, from the north in 1872. Beginning in the 1880s, rail construction turned to the western part of the state, reaching a total of 4,000 miles by the end of the decade. During this time, several smaller Texas railroads were acquired by larger holding companies, such as the Atchison, Topeka & Santa Fe Railway (AT&SF) and the Missouri Pacific Railroad (MP) and gained broader context and importance as components of larger regional and national networks.

In 1891, the Texas Railroad Commission was created to address perceived railroad abuses and became the first rail planning agency in the state and one of the oldest in the country.

By 1911, more rail mileage was operated in Texas than in any other state. Rail mileage in Texas ultimately reached its peak at 17,078 miles in 1932. In the 1920s and 1930s, railroad consolidation continued, and by the mid-1930s, large Class I railroads AT&SF, MP, Chicago, Rock Island & Pacific Railroad (CRI&P), and Southern Pacific Railroad (SP) controlled more than 70 percent of the state's rail mileage.

The growth of railroads allowed commerce to move more reliably and efficiently and for passengers to travel safer, faster, and more inexpensively. Railroad passenger service was once vital to connect Texas' rural and urban areas, and to provide Texas with access to the rest of the nation. Starting in the 1920's, passenger rail service in Texas began to decline with the improvement of roadways and the affordability of automobiles. Following World War II, a marked shift in population from rural to urban areas added to the decline in service. Beginning in the 1960s, hundreds of miles of rail line were abandoned due to the poor financial condition of railroads and an increased dependence on highways. The National Railroad Passenger Corporation was established in 1970 to create and operate a national network (as Amtrak) cobbled together from several remaining passenger rail routes and services operated by Class I railroads, including several routes in Texas. A railroad bankruptcy (CRI&P), multiple rail line abandonments, several rail mergers (since 1980), and regulatory changes have had a major and long lasting impact on the Texas railroad network.

The passage of the Staggers Rail Act of 1980, which deregulated the railroad industry, proved to be the beginning of a gradual improvement in the financial condition of the freight railroad industry, spurred largely by shedding poorly performing or duplicative rail lines and taking advantage of rate flexibility. The Texas rail network has been pared down since 1980. Currently the network consists of approximately 10,539 miles of track.[2]

Today's major Texas rail carriers have been created from the consolidation and mergers of several smaller predecessor Class I railroads that served the state for well over a century. These carriers have strong national and international networks and are financially sound.

The major Class I rail carriers operating in Texas include:

- BNSF Railway (BNSF) – headquartered in Fort Worth, Texas
- Kansas City Southern Railway (KCS) – headquartered in Kansas City, Missouri
- Union Pacific Railroad (UP) – headquartered in Omaha, Nebraska

[2] Texas Department of Transportation 2019-2020 Educational Series, https://ftp.txdot.gov/pub/txdot-info/sla/education_series/rail.pdf

In addition, 55 Class III or short line railroads operate in Texas. A number of short line railroads have been established largely from rail lines spun off by the major rail carriers since 1980. These carriers continue to provide freight rail service at the local level.

Today, Texas' rail system plays an essential freight transportation role throughout the state, nationally, and internationally. Texas's location and position on principal national rail corridors provides rail access to every region of the U.S., as well as to Mexico and Canada. Texas also provides the majority of U.S. rail access points to Mexico, connecting this market to the Mid-Atlantic, Northeast, and Midwest regions of the country. Ports located on the Gulf Coast and on inland waterways also position Texas to be among the most important freight and intermodal transportation states in the nation. The combination of rail and trucking support a major intermodal freight transportation system with approximately 20 intermodal transfer facilities throughout the state. In addition, major freight intermodal logistics facilities have been developed in Fort Worth and at the Port of San Antonio where the interchange of freight between rail, truck, and air modes have produced opportunities for logistics and distribution industries. Connections exist elsewhere between the rail network and major international airports in large cities and regional or local airports in small cities and rural areas in Texas. Multimodal connections also exist between the state's rail network and commuter or rail transit networks in large cities like Dallas, Fort Worth, and Austin – and, in some cases – commuter rail services operate on shared-use corridors owned by freight railroads or public agencies. These multimodal connections are described in Chapter 2 of the Texas Rail Plan.

Texas plays a leading role among states with regard to its overall rail system, their employees and retirees, and rail movements. According to the 2017 Association of American Railroad Statistics, Texas ranked first in the number of rail miles, freight rail employment, freight rail wages, railroad retirement beneficiaries, railroad retirement payments, and total rail tons terminated; second in total number of railroads and total rail carloads carried; third in total rail tons carried, total rail tons originated, and total rail carloads terminated; and fourth in total rail carloads originated.[3]

Texas also ranked highly among all states for rail movements of many individual commodities. For commodities originating by state, Texas ranked first for chemicals, stone, clay and glass materials, and petroleum refining products; third for intermodal; fifth for waste and scrap; sixth for pulp and paper; eighth for metallic ores; and ninth for primary metal products. For commodities terminating in the state, Texas ranked first for chemicals, stone, clay and glass materials, and petroleum refining products; second for coal, farm products, food products, and lumber and wood; third for intermodal and primary metal products; sixth for pulp and paper; and eighth for waste and scrap.

Although intercity rail passenger service provides only a small portion of intercity travel in Texas, public and private initiatives continue toward expanding conventional rail passenger services, developing privately financed high-speed rail corridors, and expanding locally or regionally managed commuter rail operations. These efforts will also establish connections to other forms of passenger transportation (air, intercity bus, local transit, etc.), thus facilitating seamless intercity and commuter trips.

[3] https://www.aar.org/wp-content/uploads/2019/05/AAR-State-Rankings-2017.pdf

Chapters 3 and 4 provide details of Texas' current and future freight and passenger rail endeavors.

1.4 INSTITUTIONAL STRUCTURE OF TEXAS' STATE RAIL PROGRAM

The Texas rail network is largely privately owned. Investments are primarily market-driven and there are no consistent public funding sources to improve the state rail network. A number of state and local public entities collaborate with the private sector to carry out, administer, or assist in rail operations planning in the state, as noted in this section.

1.4.1 TxDOT

TxDOT was established as the Texas Highway Department in 1917 by the Texas Legislature. TxDOT is currently an organization of approximately 12,000 staff with responsibilities in all modes of transportation. There are 25 district offices located throughout the state. TxDOT's divisions provide support to the districts and manage statewide processes including finance, statewide planning, specialized design expertise, environmental coordination, and rail activities as defined below. TxDOT's administrative offices provide unified direction across the department to carry out policies set out by the Commission and the Texas Legislature.

1.4.2 TxDOT Rail Division

TxDOT's Rail Division (RRD) was established in December 2009 in response to a renewed and growing interest in rail transportation statewide for both the movement of people and goods. RRD implements rail-related policies; performs infrastructure and operational analysis and rail project planning; monitors potential rail line abandonments; oversees rail-highway safety and rail inspections; and manages the South Orient Railroad.

RRD has specific responsibilities for the following rail functions in Texas:

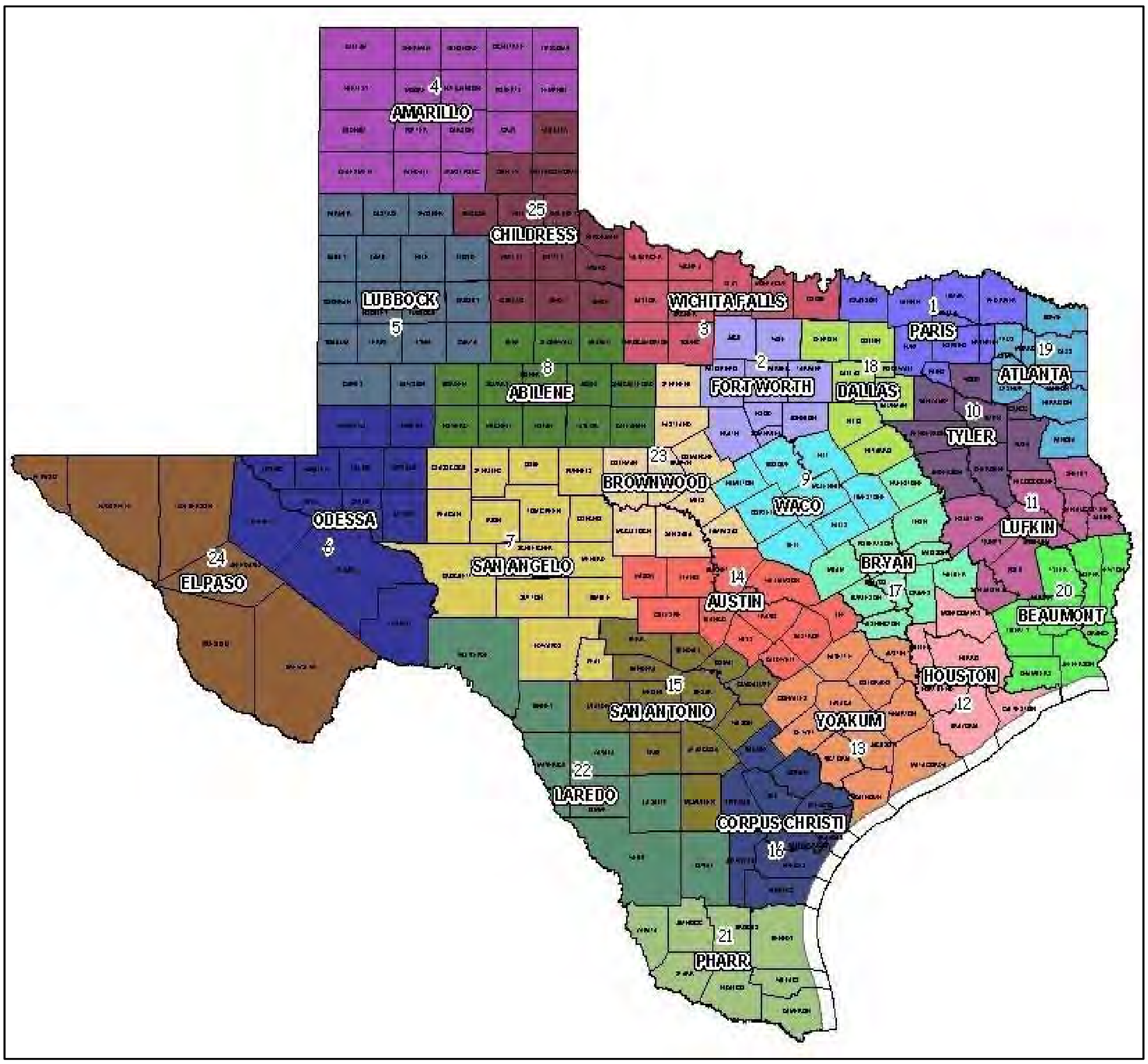
- Performing infrastructure and operational analysis of both state- and privately-owned rail facilities to develop needs assessments as part of the project development process.
- Planning and environmental analysis for potential intercity and high-speed passenger rail corridors and services.
- Monitoring potential rail line abandonments in Texas, as well as coordinating the state's involvement and response to abandonment filings.
- Administering lease and operating agreements on state-owned facilities and managing construction contracts for state or federally funded projects on those facilities, as well as private facilities.
- Implementing rail improvements by entering into public-private partnership agreements to provide investments in freight rail relocation projects, rail facility improvements, rail line consolidations, or new passenger rail developments.
- Analyzing local, state, and national railroad/multimodal trends, policies, and legislation.
- Performing research to develop more efficient use of the state's rail network.

- Acting as the departmental liaison to railroad companies, intermodal interests, the Federal Railroad Administration (FRA), local governments, and the public with regard to rail planning and project development.
- Administering the state rail safety inspection program in conjunction with the FRA, including accident and complaint investigations.
- Improving highway-rail grade crossings to reduce accidents.

1.4.3 TxDOT Districts

Figure 1-1 identifies TxDOT's 25 districts. District staff, led by the TxDOT District Engineer, are familiar with the unique demands and local needs in their areas of responsibility. All 254 of the state's counties are assigned to one of the districts shown below. Districts are further subdivided into area engineer offices and maintenance offices. Through this structure, TxDOT district offices offer local access to citizens who want to participate in the transportation development process. Public Information Offices serve as points of contact for citizens, news media, and various other entities.

Figure 1-1: TxDOT Districts



Some issues pertaining to rail transportation may be analyzed at the district level in coordination with Metropolitan Planning Organizations (MPO) (see below) based upon a classification of the district as either a metropolitan, urban, or rural district. The larger metropolitan districts often have rail transit and intercity passenger rail issues not shared by urban or rural districts.

The primary functions of both TxDOT district personnel and local and regional government agencies involved with rail planning are to monitor local rail transportation needs and, when necessary, initiate rail development projects by either working directly with the railroad or contacting RRD staff for assistance and/or guidance. Additionally, local and regional governments serve as additional oversight for the implementation of improved safety measures for their highway-rail grade crossings. Through their efforts, recommended improvements to the local highway-rail grade crossings can be executed to enhance the quality of life in their area.

1.4.4 Texas Commuter Rail Agencies

Currently, four commuter rail passenger services operate in Texas. These services are distinguished from light rail systems in that they may operate over existing rail freight lines. Regional or city authorities own, operate, and maintain commuter and light rail systems.

TxDOT has no funding role, and regulatory oversight is limited to safety programs of some commuter services.

The Dallas-Fort Worth region is served by the Trinity Railway Express (TRE), a 34-mile route linking Dallas and Fort Worth and serving 10 stations. The TRE is a joint service of Dallas Area Rapid Transit (DART) and Trinity Metro (formerly the Fort Worth Transportation Authority).

The Capital Metropolitan Transportation Authority's MetroRail Red Line connects Austin to its northern suburbs. The 32-mile line operates between downtown Austin and Leander and serves nine stations.

The Denton County Transportation Authority (DCTA) A-Train provides regional passenger rail service between Denton and Carrollton. The 21-mile route serves six stations, including a terminal transfer station in Carrollton that provides a connection to DART's Green Line light rail service to Dallas.

Trinity Metro inaugurated TEXRail commuter service in January 2019, on a 27-mile route between downtown Fort Worth, Grapevine, and the Dallas Fort Worth International Airport. The line serves nine stations, with endpoint terminals at the Fort Worth Texas & Pacific Station and DFW International Airport Terminal B.

1.4.5 Metropolitan Planning Organizations

Metropolitan Planning Organizations (MPOs) are federally mandated and funded transportation policy-making organizations comprised of local government and transportation officials. The formation of an MPO is required for any urbanized area with a population greater than 50,000.

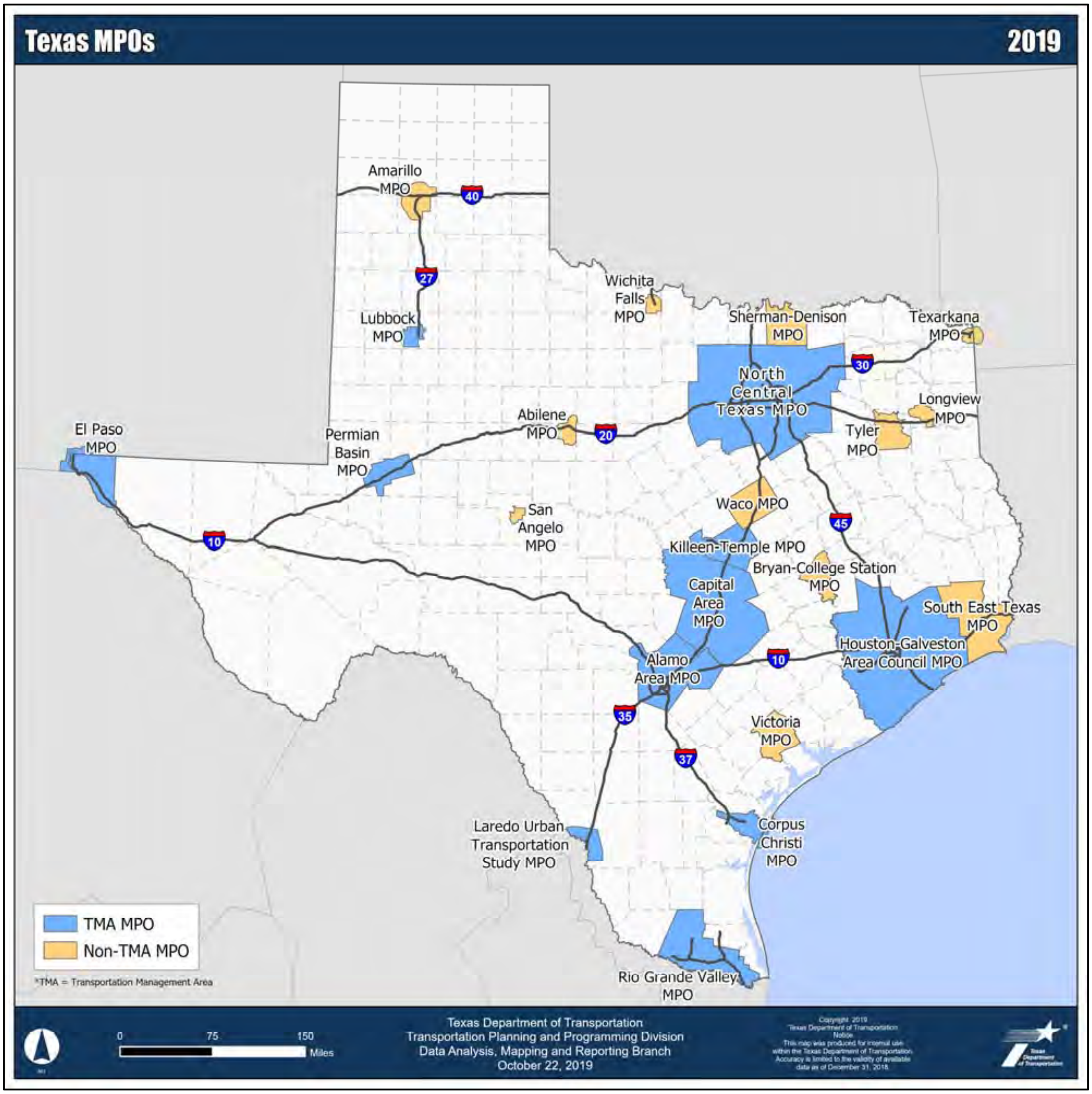
MPOs are required to maintain and continually update a Metropolitan Transportation Plan (MTP) as well as a Transportation Improvement Program (TIP). The MTP is a long-range plan spanning more than 20 years that must identify how the MPO will manage and operate a multi-modal transportation system, including rail, to meet the region's economic, transportation, development, and sustainability goals. The TIP is a list of upcoming transportation projects covering a period of at least four years. As MPO planning activities have evolved to address the movement of freight as well as passengers, they have also included consideration of multimodal solutions, improved intermodal connections, and more specific rail and rail-related project solutions. MPOs work with area transportation stakeholders to understand and anticipate the area's travel needs and to develop supplemental urban regional freight and passenger planning efforts that involve project initiatives to address rail capacity, service levels, and bottlenecks. Some rail projects identified in TxDOT Regional Freight Studies are included in MPO transportation improvement plans.

With the recent merging of the Brownsville, Harlingen-San Benito, and Hidalgo County MPOs into a single MPO, there are now a total of 23 MPOs in Texas. They are:

- Abilene MPO
- Alamo Area MPO (San Antonio-Bexar County)
- Amarillo MPO
- Bryan-College Station MPO
- Capital Area MPO (Austin)
- Corpus Christi MPO
- El Paso MPO
- Houston-Galveston Area Council
- Killeen-Temple MPO
- Laredo Urban Transportation Study MPO
- Longview MPO
- Lubbock MPO
- North Central Texas Council of Governments (Dallas-Fort Worth)
- Permian Basin MPO (Midland-Odessa)
- Rio Grande Valley MPO (Brownsville-Harlingen-Hidalgo County-San Benito)
- San Angelo MPO
- Sherman-Denison MPO
- South East Texas Regional Planning Commission (Beaumont-Port Arthur)
- Texarkana MPO
- Tyler MPO
- Victoria MPO
- Waco MPO
- Wichita Falls MPO

These MPO regions are outlined in **Figure 1-2**.

Figure 1-2: Texas Metropolitan Planning Organizations



1.4.6 State and Local Economic Development Agencies

Texas has a number of state and local public or private economic development agencies that recruit industries and businesses on the basis of their location, available labor force, capacity for growth, and access to rail and other transportation modes and assets.

The Texas Directory of Economic Development Organizations lists a number of entities around the state including economic development agencies and authorities, chambers of commerce, alliances, development councils, corporations, and associations at the regional, county, and local level of government. Many of these agencies offer incentives such as tax exemptions and credits and other means of assistance to attract business interests.

Although these agencies do not generally work directly with freight railroad operators, they do have a vested interest in the level of rail services and rail assistance programs available to supplement their incentives.

1.4.7 Rural Rail Transportation Districts

In response to concerns over the loss of rural rail service in the state, the Texas Legislature voted to allow the formation of Rural Rail Transportation Districts (RRTDs) in 1981. The only statutory funding source available to RRTDs, other than receiving donations of cash and real property, is to issue revenue bonds and the use of anticipation notes. This revenue assists RRTDs with preserving rail infrastructure and promoting economic development. Counties can establish RRTDs to acquire abandoned rail lines, construct new rail lines, or rehabilitate existing rail lines. They can also develop rail access to serve industrial parks, intermodal facilities, and transload facilities. There are currently 43 known RRTDs within Texas.

TxDOT and the Texas A&M Transportation Institute jointly completed the last full update report on RRTDs in June 2013.[4] The June 2013 Rural Rail Transportation Districts (RRTDs) Update noted a total of 42 RRTDs at the time, of which only 13 were active districts. They included:

- Centex (Brown, Comanche, Erath, Hood, and Johnson counties)
- Ellis County
- Fannin County
- Galveston County
- La Entrada Al Pacifico (Ector and Midland counties)
- North Texas (Archer and Wichita counties)
- Northeast Texas (Collin, Franklin, Hopkins, Hunt, and Titus counties)
- Nueces County
- Pecos County
- Presidio County

[4] Morgan, C., J. Warner, and B. Sperry. A report to Texas Department of Transportation (TxDOT) Rail Division (RRD) submitted by the Texas A&M Transportation Institute, Rural Rail Transportation Districts (RRTD) Update June 2013 (https://ftp.dot.state.tx.us/pub/txdot-info/rail/rural/rrtd-update.pdf)

- Rusk County
- San Patricio County
- Top of Texas (Hansford, Lipscomb, and Ochiltree counties)

Since the release of the 2013 report, only one additional RRTD has been formed, the Brazoria-Fort Bend Rail District (BFBRD), bringing the total number of known RRTDs in the state to 43.

As of 2013, a number of RRTDs, including Calhoun County, Gregg County, Gulf Link (Brazoria and Fort Bend counties), Liberty County, Matagorda County, McLennan County, Van Zandt County, and Webb County, were considered semi-active with boards in place to reactivate if viable.

The study also noted that "measuring progress of RRTDs toward outcomes related to their original motivation for forming is difficult based on the limited information available regarding RRTD activities." Changes in rail planning and activity patterns in specific regions highlight the need for improved coordination on a statewide level. Enhanced coordination strategies include identifying opportunities for interaction with other special districts (e.g., regional mobility authorities (RMAs) and MPOs, private railroads (especially Class I railroads), and TxDOT. The report concluded that TxDOT must determine its role for effectively coordinating the activities of RRTDs and incorporating these activities into statewide rail planning efforts.

RRTDs are discussed in more detail in Chapters 2 and 5.

1.5 TEXAS' AUTHORITY TO CONDUCT RAIL PLANNING AND INVESTMENT

Although a consistent source of public funding is only available for at-grade improvements, Title 5, Chapter 91 and Title 7 Chapter 201, Texas Transportation Code, provides TxDOT with authority to carry out rail planning, project development, and financing for both freight and passenger rail improvements in the state.

Chapter 91 provides TxDOT the authority to plan and make policies for the location, construction, maintenance, and operation of a rail facility or system in the state, as well as to acquire, finance, construct, maintain, and operate a passenger or freight rail facility or system. It also authorizes the department to accept grants or loans from federal or state agencies, as well as public or private entities. Public-private partnerships are an effective approach to leverage project development, in which a cooperative agreement between public agencies and private parties is used to plan for, finance, construct, and deliver projects.

Chapter 201 authorizes TxDOT to facilitate the development and interconnectivity of rail systems in the state, and to coordinate activities regarding the planning, construction, operation, and maintenance of a statewide passenger rail system. Under this authority, TxDOT shall coordinate with other entities involved with passenger rail systems, including governmental entities, private entities, and nonprofit corporations. TxDOT is also required to prepare and update a long-term plan for a statewide passenger rail system once every five years. Information contained in the plan must include:

- A description of existing and proposed passenger rail systems.
- Information regarding the status of passenger rail systems under construction.
- An analysis of potential interconnectivity difficulties.
- An analysis of short- and long-term effects of each proposed passenger rail system on state and local road connectivity, including the effect on future state and local road construction and road maintenance needs.
- Ridership projections for proposed passenger rail projects.
- Ridership statistics for existing passenger rail systems.

TxDOT is Texas' State Rail Transportation Authority (SRTAA) and State Rail Plan Approval Authority (SRPAA) and is the agency responsible for development of a Texas Rail Plan at appropriate intervals established by the U.S. Secretary of Transportation and the Federal Railroad Administration (FRA). Furthermore, the State of Texas is in compliance with the requirements of 49 U.S.C. Section 22102, which stipulates eligibility requirements for long-established FRA rail freight grant assistance programs pertaining to state planning and administration.

1.6 RECENT INVESTMENTS AND INITIATIVES IN THE TEXAS RAIL SYSTEM

The 2016 Texas Rail Plan focused its short-term (4 years) rail improvement financing plan on intercity passenger rail corridors and freight rail and grade crossing improvements within Texas. The goals for passenger improvements were to establish priority passenger rail corridors and to prepare Service Development Plans (SDP) and Service Level National Environmental Policy Act (NEPA) evaluations for the priority corridors. The short-term goals for the freight rail program were to eliminate freight rail bottlenecks on existing rail corridors; enhance freight rail network capacity, fluidity, and access; and improve public safety.

Although TxDOT does not have a funding program specifically dedicated to rail improvements outside of its grade crossing improvement programs, it has successfully applied for and been granted over $80 million from various federal discretionary programs. These funds were leveraged with local agency funding and significant project contributions from private railroads to develop the public-private partnerships necessary to finance major projects in recent years. In addition, Texas has a Railroad Grade Separation Program, funded under the Unified Transportation Program (UTP) by the Commission of approximately $25 million annually, to provide funding that supports grade separations of existing at-grade crossings and replacement of functionally deficient highway underpasses of railroads.[5]

Selected examples of major recent freight and passenger rail projects in Texas and their financing partnerships are discussed in the following sections. In addition to the projects identified below, Texas' Class I railroads make significant capital investments within the state annually to improve safety, capacity, velocity, efficiency, and state of good repair on their networks. These investments typically include improvements to track structure, bridges, network capacity (e.g. construction of

[5] http://onlinemanuals.txdot.gov/txdotmanuals/rho/railroad_grade_separation_program_rgs.htm

double-track segments or the enhancement of existing sidings and construction of new sidings), yards and terminals, wayside signal systems, facilities, locomotives and equipment, and other assets. Class I railroad capital program investment in Texas for 2018 is $375 million for BNSF[6] and $450 million for UP.[7] KCS also makes significant investments in the state; the details of its 2018 capital program for Texas are unconfirmed. Texas's Class III railroads also make considerable capital investments in their respective networks that improve safety, capacity, efficiency, and state of good repair. Additional details related to the capital investment by railroads in the state rail network are identified in Chapter 4.

1.6.1 Reconstruction of the Presidio-Ojinaga Rail Bridge

Reconstruction of the Presidio-Ojinaga Rail Bridge is scheduled for completion in 2019, after fires in 2008 and 2009 closed the bridge to rail traffic and severely damaged the structure. The bridge, spanning the Rio Grande River, is one of five rail border crossings between Texas and Mexico, and one of eight between the United States and Mexico. The bridge is part of the South Orient Rail Line (SORR), a 391-mile rail corridor owned by TxDOT and leased to shortline operating railroad Texas Pacifico Transportation. The bridge reconstruction is being funded by Texas Pacifico Transportation, as part of a funding partnership that includes a $7 million federal FASTLANE grant and contributions from TxDOT to rehabilitate 72 miles of SORR track and additional bridges in Presidio County leading to the international rail bridge.[8] This additional work will improve safety and train operations in support of the international rail bridge reconstruction.

1.6.2 South Orient Rail Line Train Speed Increase and Track Improvements

Freight rail operations on the TxDOT-owned South Orient Rail Line (SORR) improved in March 2019, when shortline operating railroad Texas Pacifico Transportation increased train speeds from 25 to 40 mph across approximately 70 miles of the corridor between Coleman and San Angelo. The speed increase, which will enhance operating efficiency and support regional economic development, was made possible under TxDOT's ongoing SORR Improvement Projects capital investment program. Part of the rehabilitation work included timing adjustments to highway-rail grade crossings with active warning devices to accommodate the higher train speeds.

Approximately $59.6 million has been invested in multiple projects to improve this state-owned railroad between 2009 and 2017 through a funding partership.[9] The funding partnership has included:

- Federal funds provided through the National Multimodal Freight Program, American Recovery and Reinvestment Act program, and FASTLANE grant program (authorized under the FAST Act); state legislative general revenue funds;
- Local funding assistance from the City of San Angelo, Texas; and
- Funding provided by Texas Pacifico Transportation.

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[6] https://www.bnsf.com/news-media/news-releases/BNSF-plans-$375-million-capital-program-in-Texas-for-2018.html
[7] https://www.progressiverailroading.com/union_pacific/news/UP-slates-450-million-for-2018-capex-in-Texas--54102
[8] https://www.txdot.gov/inside-txdot/media-center/statewide-news/013-2017.html
[9] http://ftp.dot.state.tx.us/pub/txdot-info/rail/south_orient/facts.pdf

The capital improvements have included installation of heavier rail and new crossties as well as related track surfacing and bridge repairs in distinct phases on certain segments of the 391-mile South Orient Corridor between San Angelo Junction and Presidio, Texas. These improvements have allowed increases in speed from 10 to 25 mph over select segments of the corridor and have resulted in a significant increase in carloadings on the line during the 2012-2017 period.[10] Additional asset improvement investments targeted at rehabilitating the South Orient Corridor in 2018-2019 have been identified in the TFMP and are described in Chapter 5.

1.6.3 Broadway Double Track Project

Completed in 2019, the Broadway Double Track Project expanded rail capacity and reduced operational constraints on a key rail link serving the Port of Houston.[11] The project added a second mainline track on the Port Terminal Railway Association's (PTRA) line between Manchester Junction and GH&H Junction in Houston, and included replacing a single-track rail bridge over Broadway Street with a double-track structure. The estimated $23 million project was administered by TxDOT and funded under a public-private partnership, which included federal $11.45 million in Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding secured through the Houston-Galveston Area Council, as well as major contributions from PTRA and three Class I railroads—BNSF Railway, Kansas City Southern Railway, and Union Pacific Railroad Railroad. The project is expected to generate up to $63 milion in benefits, will reduce train delays by 2 to 4 hours per day, and alleviates one of the largest rail bottlenecks on the PTRA system.

1.6.4 TRE Valley View Double Track Project

The TRE Valley View Double Track Project was advanced to improve existing passenger rail service between Fort Worth and Dallas along the Trinity Railway Express (TRE) corridor by adding 1.4 miles of double track, converting a turnout to a crossover, and constructing a new bridge. Equal contributions from a federal High-Speed Intercity Passenger Rail (HSIPR) grant and funding provided by DART provided a total of $14.4 million to complete the project. This project allowed Amtrak service to move off the UP main line onto the TRE corridor, improving the movement of freight and facilitating more frequent and reliable passenger rail service. Amtrak trains began using the TRE corridor at the start of 2016, and eliminated a time-consuming backup move through the Tower 55 rail intersection.

1.7 SUMMARY OF FREIGHT AND PASSENGER RAIL SERVICES IN TEXAS

Texas' rail system is comprised of more than 10,500 route miles. Including consideration of trackage rights where multiple railroads may operate over the same segments of track, the state's railroads operate over 14,500 miles of rail line within the state. These rail lines carry over 9.9 million rail carloads annually. In addition to rail activities between Texas and other U.S. states, Texas also receives over 750,000 rail cars across the Mexican border. In 2016, rail moved over 400 million tons of freight in Texas.

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[10] http://ftp.dot.state.tx.us/pub/txdot-info/rail/south_orient/facts.pdf
[11] http://blog.porthouston.com/broadway-double-track-project-complete-in-east-end

A total of 55 short line railroads and three Class I's operate within the state. The two largest carriers, UP, and Fort Worth-based BNSF, operate over almost 11,400 miles, or 78 percent of the total miles. The Kansas City Southern (KCS), the third Class I railroad in the state, operates over 820 miles. Short line railroads, comprised of local railroads or switching/terminal railroads, comprise the remaining almost 2,300 miles of rail line operated in the state.

In addition to rail carload traffic, the state's rail network moves more than 7.4 million tons of intermodal rail freight to and from regional, state, nation, and global markets. In total, Texas is home to approximately 20 intermodal rail facilities. There is also considerable port-rail interface in Texas. The state's rail network provides essential multimodal freight connections to sea ports on the Gulf Coast (e.g., Ports of Houston, Galveston, and Corpus Christi) and the inland waterway system, and is a key component of the local, state, and global supply chain. Texas also hosts five of the eight U.S. rail border crossings with Mexico and considerable capacity for international trade between the two nations. The Texas rail network and the Class I railroads serving the state have considerable connectivity to the rail network of Mexico through the principal land ports of entry (gateways) of Brownsville, Laredo, Eagle Pass, and El Paso, and a Class III railroad has access to a Mexico gateway at Presidio. Cross-border rail operations and the passage of freight between the U.S. (Texas) and Mexico faces several regulatory, institutional, security, financial, social, and legal challenges. Cross-border operations and related international trade also require specialized facilities, security and inspections practices (in cooperation with the U.S. Department of Homeland Security, U.S. Customs and Border Protection, and other federal and state agencies), and ample network capacity for staging and operating trains safely and efficiently within the vicinity of and through the international gateway.

A detailed description of the Texas freight and passenger rail network, individual railroads, and rail facilities and port-rail interface and cross-border rail operations are provided in Chapter 2.

Intercity rail passenger service in Texas is provided by three Amtrak routes. The *Texas Eagle* and *Sunset Limited* are part of Amtrak's long-distance service network. The *Texas Eagle* operates daily service between Chicago, and San Antonio. At San Antonio, the service connects to the *Sunset Limited* for continued service to Los Angeles. Twelve stations within Texas are served by this train. The *Sunset Limited* provides tri-weekly service between New Orleans, and Los Angeles. Seven Texas stations are served by this train.

The *Heartland Flyer* is a daily intercity passenger train that operates between Oklahoma City and Fort Worth. The service is operated by Amtrak under contract to the states of Texas and Oklahoma. The schedule is timed to allow transfers to the *Texas Eagle* in each direction.

Commuter rail operations also serve the Dallas-Fort Worth and Austin areas, and additional commuter rail services are under consideration.

In recent years, TxDOT has carried out planning studies for alternative routes, service development plans, federal grant applications, and related federal environmental requirements toward expanding intercity passenger rail operations in the state and region. TxDOT has also assisted FRA in providing oversight of the Texas Bullet Train Environmental Impact Statement (EIS) study being undertaken by

Texas Central Partners, LLC. The Texas Bullet Train is a privately funded project to develop high-speed passenger rail service between Dallas and Houston. No state or federal funds are being used to conduct the study, or for the development, construction, or operation of the proposed service.

In 2018, TxDOT completed a feasibility study, a service-level National Environmental Policy Act (NEPA) document, and a Service Development Plan for the Texas-Oklahoma Passenger Rail Corridor. These efforts, funded through a federal HSIPR grant ($5.6 million), Texas General Revenue funding ($1.4 million), the North Central Texas Council of Governments, the Oklahoma and Texas Departments of Transportation, and the Federal Highway Administration (combined $5.6 million), have developed preferred service alternatives for passenger rail service along an 850-mile corridor between Oklahoma City and South Texas. Because the study was federally funded, a service-level environmental impact statement (EIS) was prepared to comply with the NEPA. The service-level EIS documents the impacts, benefits, and costs of each passenger alternative compared to the no-build alternative.

In 2017, TxDOT completed a federally funded alternatives analysis report to study a high-performance, intercity passenger rail service between Dallas and Fort Worth. The 30-mile Dallas-Fort Worth Core Express Service project evaluated the potential for a dedicated, limited-stop passenger rail connector between the two cities. The North Central Texas Council of Governments is currently working with FRA on the preparation of an environmental impact statement for the project.

A detailed description of all Texas' proposed passenger and freight rail improvements and planning efforts are provided in Chapter 3 and Chapter 4, respectively.

1.8 TXDOT RAIL VISION

As part of the previous 2016 Texas Rail Plan and this 2019 Texas Rail Plan, TxDOT held a series of workshops and invited rail stakeholders to solicit input into the creation of a vision for Texas freight and passenger rail for the future. These rail visions were consolidated into the most essential needs of and opportunities for the state with regard to its rail network, and in consideration that freight and passenger rail improvements in Texas are predominantly a function of private investment to meet market demands. The state lacks available funding and has a limited regulatory role at present.

The consolidated vision for the 2019 State Rail Plan is provided below.

The State of Texas will work with private rail providers to improve the efficiency and connectivity of the rail network to expand the State's economic competitiveness, improve safety and reduce congestion on our roadways. The State supports a multimodal approach to expanding transportation opportunities for the citizens of Texas.

1.9 RAIL VISION AND GOALS' CONSISTENCY WITH OTHER TRANSPORTATION PLANNING

It is essential that the vision and policies advocated in individual modal plans, as well as proposed projects included in those plans, be consistent with the visions and transportation policies in other transportation plans. This 2019 Texas Rail Plan is intended to integrate with and expand upon the 2017 Texas Freight Mobility Plan and Texas Transportation Plan 2040.

The rail program vision encompasses goals and objectives consistent with the TFMP and TTP. These are:

- Safety – which includes the reduction of rail-related fatalities and serious injuries, especially with regard to safety at at-grade rail crossings.
- Asset Preservation and Utilization – which includes achieving a state of good repair of the rail plant, especially on those assets owned by TxDOT.
- Mobility and Reliability – which is aimed at reducing congestion and improving rail system efficiency, capacity, and performance, including rail freight and passenger travel time reliability.
- Multimodal Connectivity – which is aimed at providing both freight and passenger choices by improving the rail system and enhancing intermodal and multimodal connectivity.
- Economic Competitiveness – which involves selecting projects that strengthen Texas' position as a trade and logistics hub in the global transportation network, and those that support existing industries and attract new industries.

1.10 TEXAS RAIL PLAN CONSISTENCY WITH PLANNING IN OTHER STATES AND MEXICO

As Texas also shares rail corridors and services with its neighboring states and Mexico, and often coordinates planning activities with its neighbors to optimize cooperation and mutual benefits, it was essential to evaluate the state rail plans of surrounding states as well as published rail development plans in Mexico to determine whether the policies and plans outlined in these states were in concert with any of the Texas initiatives included in this 2019 Texas Rail Plan.

The most recent state rail plans available for the states of Oklahoma, Louisiana, and New Mexico were reviewed to ensure consistency of policies and plans among the states in the region. The results of this review found no conflicts with Texas planning initiatives or projects.

The Oklahoma State Rail Plan was supportive of continued improvement of the Amtrak *Heartland Flyer* intercity passenger rail service between Fort Worth and Oklahoma City and supported the concept of improving accessibility to the Trinity Railway Express (TRE) commuter rail service at Fort Worth for the purpose of connecting to the Dallas market. Oklahoma also supported continued study of the extension of *Heartland Flyer* intercity passenger rail service south of Fort Worth and north from Oklahoma City to Newton, Kansas, and potentially beyond.

Louisiana and New Mexico state rail plans indicated support for improvements to the existing Amtrak long-distance Sunset Limited service from Los Angeles to New Orleans via El Paso, San Antonio, and Houston in Texas.

TxDOT is currently developing the Texas-Mexico Transportation Border Master Plan Update (2018) through cooperation with the Border Trade Advisory Committee (BTAC), Federal Highway

Administration (FHWA), and public and private sector partnering agencies and stakeholders in Texas and Mexico. The purpose of the plan is to identify and prioritize binational goals for multimodal transportation systems, border crossings, and support facilities, and to develop an implementation plan for making multimodal transportation investments during short, medium, and long-term horizons. The stakeholder outreach and identification of needs and opportunities for the binational multimodal transportation network is in concert with, and can be used to support, rail projects identified and prioritized during the development of the 2019 Texas Rail Plan.

Mexico has considered the feasibility of a Mexico-US high-speed rail line from Monterrey in the state of Nuevo Leon to San Antonio with the potential to move passengers between the two cities in about two hours. TxDOT has attended meetings with officials from the USDOT and Mexico that included discussion of this proposed concept.

2019 Texas Rail Plan

Chapter 2

Existing Texas Rail System: Description and Inventory

December 2019

TABLE OF CONTENTS

List of Tables

List of Figures

Appendices

2.1 EXISTING TEXAS RAIL SYSTEM: DESCRIPTION AND INVENTORY INTRODUCTION

This chapter provides an overview and inventory of Texas's existing rail system as a baseline for planning and decision making in the state. Discussed in this chapter are three major aspects of the state's existing freight rail and passenger rail systems: a description of the services and physical characteristics of the state's railroad network as they are today (Section 2.1); rail service trends and forecasts (Section 2.2); and needs and opportunities (Section 2.3).

2.1.1 Texas' Existing Rail Network

Railroads have served Texas continuously since the first tracks were laid in 1853.[1] Owing to the state's vast resources, strategic location, and railroad competition, railroad trackage peaked in 1932 to 17,078 track miles within the state. Nearly 100 years later, Texas has approximately 10,539 miles of track,[2] primarily serving transcontinental routes and international border crossings. Railroads spurred development, most noticeably in Texas' largest cities, some of which became principal regional and national rail hubs. Today, Texas is served by 3 Class I freight railroads, 55 Class III freight railroads, 3 Amtrak intercity passenger routes, 4 commuter rail services, 6 light rail/streetcar transit operations, and 6 tourist or heritage railroads. **Figure 2-1** identifies the routes of railroads in the context of the state's rail network. A more detailed 2016 State Railroad Map is available at ftp.dot.state.tx.us/pub/txdot-info/tpp/maps/2016-railroad.pdf.

Operating freight railroads are divided into three categories: Class I railroads which are large, primarily long-haul national rail systems; Class II railroads which are medium-sized railroads that operate regional rail systems; and Class III railroads which are commonly referred to as short line and switching or terminal railroads, which operate at the local level.[3] Texas also has non-operating railroad owners, which own short segments of the Texas rail network and have agreements with Class III railroads to provide rail service.

The Texas passenger rail system is comprised of intercity passenger rail services operated by Amtrak, regional commuter rail and local rail transit services operated by public transit agencies, and privately owned tourist railroads.

Rail lines that have been abandoned or rail banked since 2007 are discussed later in this chapter.

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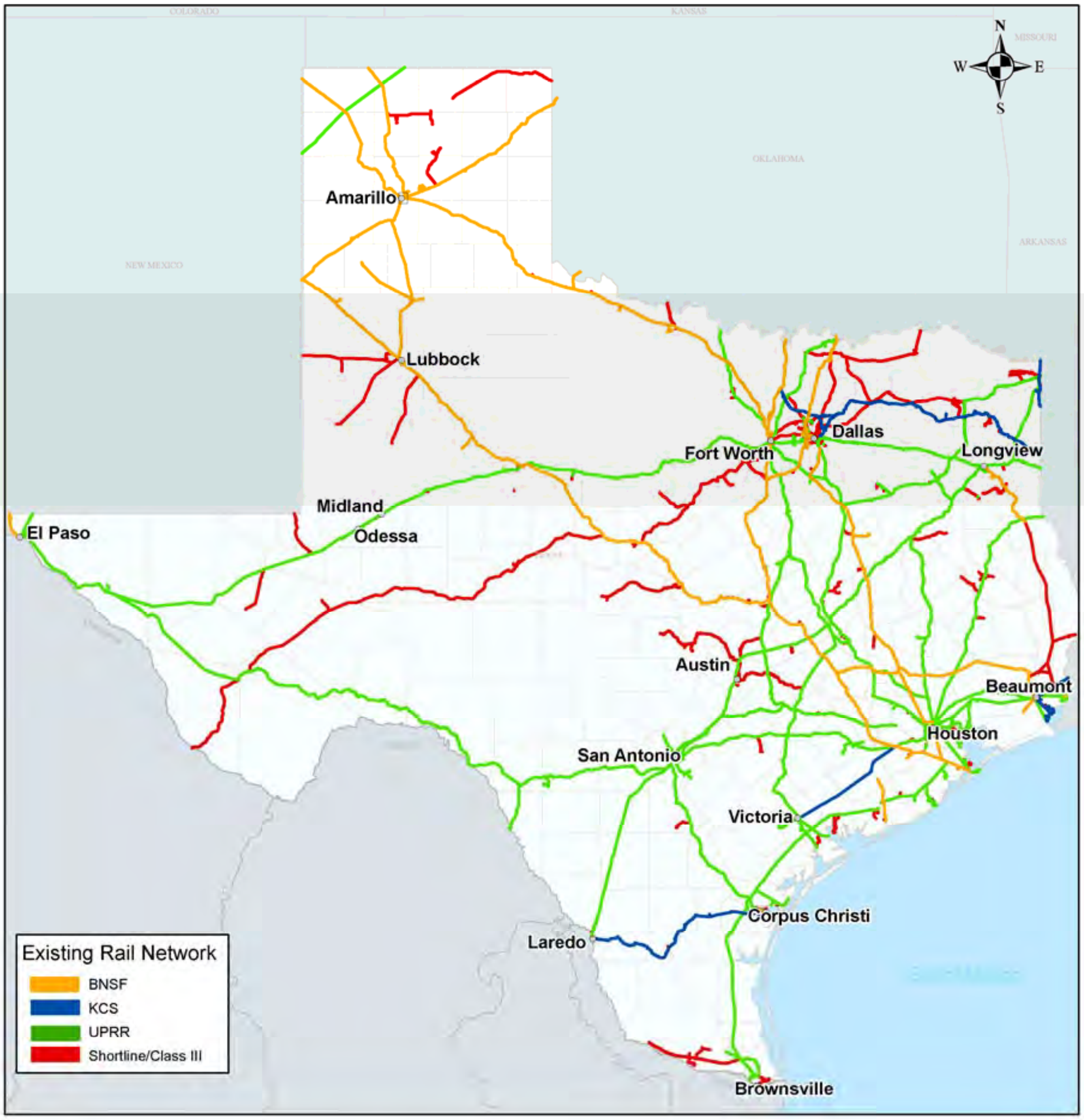
[1] http://www.rrc.state.tx.us/about-us/history/informal-history-toc/early-texas-railroads/
[2] Texas Department of Transportation 2019-2020 Educational Series, https://ftp.txdot.gov/pub/txdot-info/sla/education_series/rail.pdf
[3] See Federal Register, Volume 79, No. 111, June 10, 2014, p. 33257. The STB defines class of railroad based on revenue thresholds adjusted for inflation. For 2013, the most recent available, Class I carriers had revenues of $467.0 million or more. Class II carriers have revenues ranging from $37.4 million to under $467.0 million. Class III carriers have revenues under $37.4 million. All switching and terminal carriers regardless of revenues are Class III carriers. (See 49 CFR 1201.1-1).

Figure 2-1: Existing Rail Network in Texas



Source: HDR 2019

2.1.1.1 Freight Rail Network

Class I Railroads

Class I railroads are defined as those national railroads that typically operate over thousands of route miles, employ thousands of people, and have revenues and capital budgets in the billions of dollars collectively.[4] There are seven Class I railroads that operate in the United States and Canada; three have transportation linkages to Mexico.

Class I railroads provide several distinct rail services and, over time, the types of rail services have evolved to meet shifting customer demands and changing economic realities. A summary of the major types of rail services is described below.

Intermodal Services - In the context of railroad services, “intermodal” generally refers to trains that carry shipping containers between rail terminals where the shipping containers then move by truck between the rail terminals and shipper locations and/or by vessel between ports. The containers are interchanged between the various modes of transportation at the terminals by lifting equipment. Within the intermodal service categories, Class I railroads typically offer several tiers of service, with double stack containers being premium service, and containers or trailers on flatcars loaded at transload facilities being lower tier intermodal service.

Intermodal is the fastest growing rail service and competes most directly with trucking service, particularly long haul trucking. Intermodal is usually the fastest service and is, to some extent, the most resource-intensive. Railroads must commit to filling trainloads of intermodal boxes and adhere to strict schedules. In addition, the terminals are expensive to build, maintain, and operate.

Major intermodal rail facilities are located in Amarillo, El Paso, Dallas, Fort Worth, Houston, and Laredo with additional facilities located in smaller areas such as Donna, Rosenberg, and Wylie. In total, Texas is home to approximately 20 intermodal rail facilities, concentrated mostly in the eastern portion of the state. BNSF and UP operate intermodal facilities at the Port of Houston, which is the number two seaport, by volume (tonnage), in the U.S.[5] The state’s two intermodal logistics facilities, Alliance and Port San Antonio, have direct access with BNSF and UP. Intermodal facilities for KCS are located primarily in the Dallas/Fort Worth area and Laredo.

Manifest or Carload Service - The traditional method of moving goods by rail delivers goods from a shipper to a receiver using a relatively small number of cars. Manifest trains are typically assembled from a variety of railcars including boxcars, flatcars, hoppers, gondolas, and other specialized cars travelling in mixed trains of different commodities and going to different origins/destinations. Carload rail terminals usually contain numerous sidings for sorting the rail cars by destination. The service is relatively slow, since cars must be sorted between trains at classification yards.

Unit Train Services - Unit train service offered by Class I railroads refer to trains of typically over 100 cars that carry a single commodity between a single shipper and receiver. Unit train service is used

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[4] In the United States, the Surface Transportation Board defines a Class I railroad as “having annual carrier operating revenues of $250 million or more” after adjusting for inflation using the Railroad Freight Price Index developed by the Bureau of Labor Statistics.

[5] American Association of Port Authorities, *2017 U.S. Waterborne Foreign Trade*, http://aapa.files.cms-plus.com/Statistics/U.S.%20WATERBORNE%20FOREIGN%20TRADE%202017%20BY%20U.S.%20CUSTOMS%20DISTRICT.xlsx

for large volume commodities like coal, grain, automotive, and, increasingly, oil where the volume is sufficient to fill an entire train with the same commodity from one origin to one destination. Unit train service is much faster than manifest service. Demand for unit train service has grown in recent years in line with demand for the underlying commodities.

Texas is served directly by three Class I railroads: BNSF Railway (BNSF), Kansas City Southern (KCS), and Union Pacific Railroad (UP), totaling 8,396 track miles (not including trackage rights); see Table 2-1. A brief description of each railroad appears in the following sections. Details of the railroads' physical plant and operations appear in Appendix A.

Table 2-1 identifies by Class I railroad entity – standard alpha carrier code (an industry standard two- to four-letter abbreviation), total miles of Class I freight railroads owned and operated in Texas (including lines leased, operated under contract, trackage rights, and haulage rights, as applicable), and the percentage of the total Texas rail network that each Class I freight railroad owns. Note that miles leased and/or operated under contract, miles operated under trackage rights, and miles operated under haulage rights are included in the total miles operated figures, allowing total miles operated to exceed total miles owned.

Table 2-1: Texas Route Mileage of Class I Railroad Owners in Texas

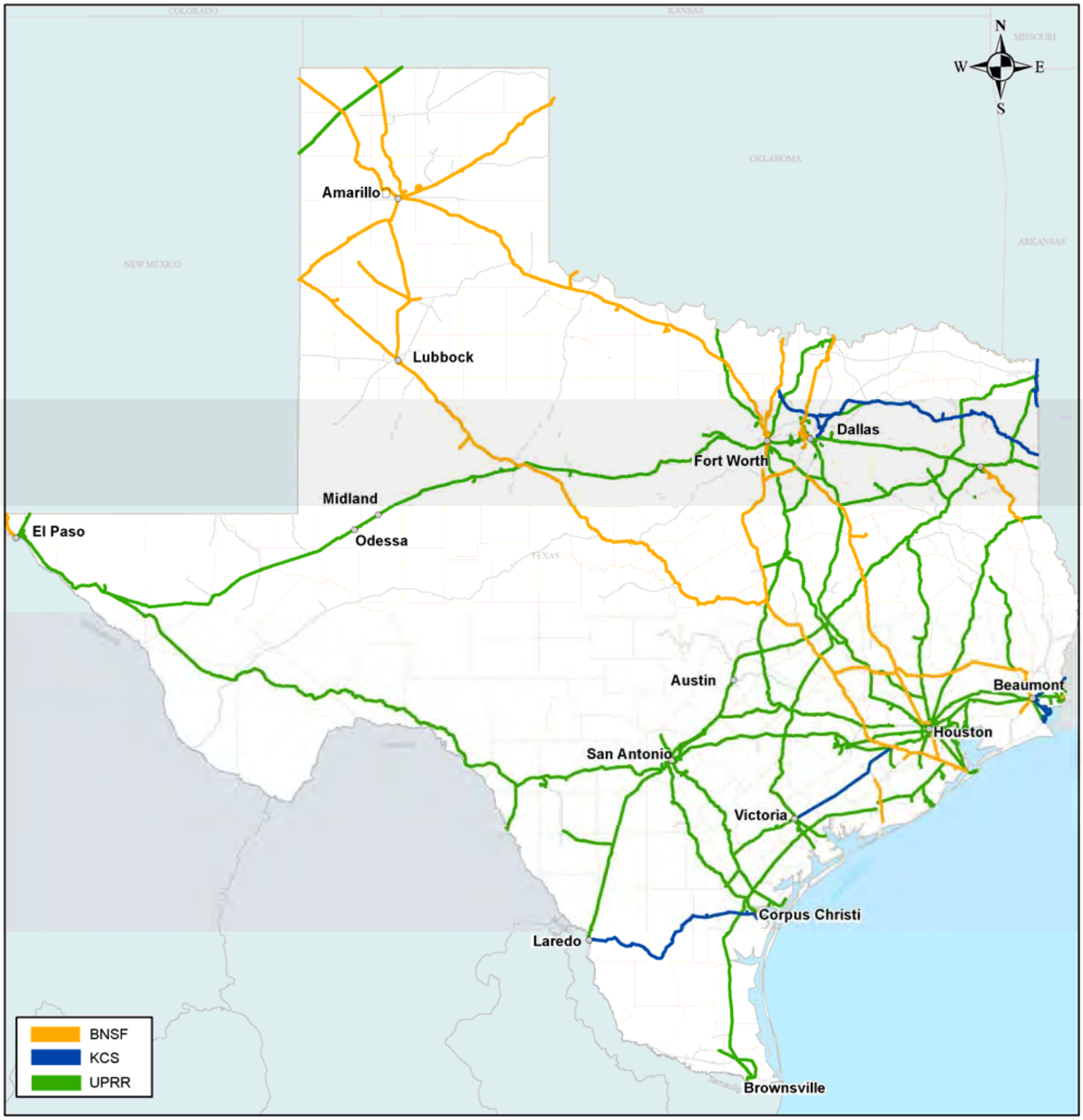
Railroad	Standard Carrier Alpha Code	Railroad Class	Total Miles Owned	Miles Owned and Operated	Miles Leased/ Operated Under Contract	Miles Operated Under Trackage Rights	Miles Operated Under Haulage Rights	Total Miles Operated
BNSF Railway[6]	BNSF	Class I	2,624	2,624	10	2,349		4,984
Kansas City Southern Railway[7]	KCS	Class I	580	580		349		929
Union Pacific Railroad[8]	UP	Class I	5,192	5,192		1,115		6,307
Total (Class I)			**8,396**	**8,396**	**10**	**3,813**		**12,221**

Source: TxDOT; Class I Railroad Annual Reports R-1 (2017); Texas Class I Railroads

Figure 2-2 depicts the locations of UP, BNSF and KCS rail lines in the state. UP has the most coverage in Texas with 6,307 miles of track operated, followed by BNSF with 4,984 miles operated and KCS with 929 miles operated within Texas.

[6] https://www.bnsf.com/about-bnsf/financial-information/pdf/17R1.pdf
[7] http://investors.kcsouthern.com/~/media/Files/K/KC-Southern-IR-V2/2017-r-1-kcs.pdf
[8] https://www.up.com/cs/groups/public/@uprr/@investor/documents/investordocuments/pdf_2017_r-1.pdf

Figure 2-2: Class I Railroads in Texas

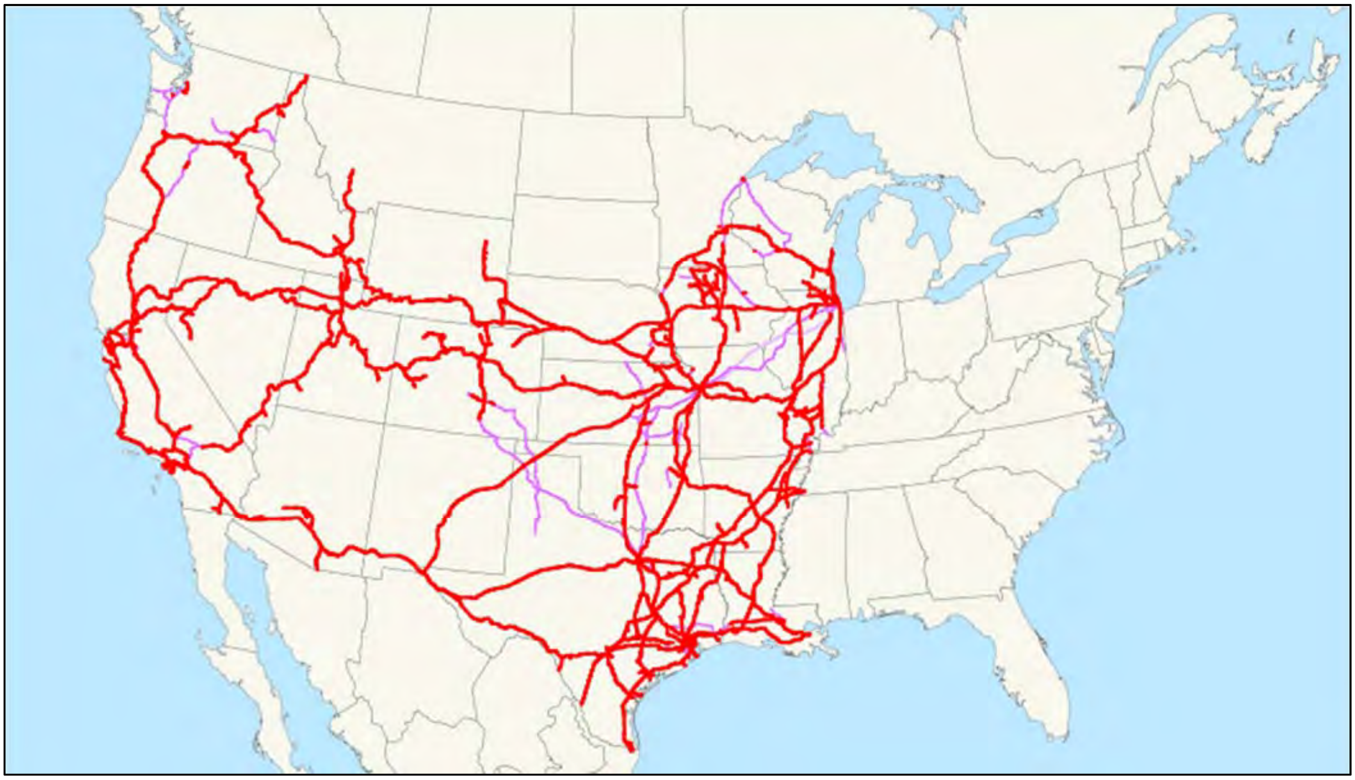


Source: 2015 Association of American Railroads

Union Pacific Railroad (UP)

Within the UP system (shown in Figure 2-3), UP's high-volume, major east-west lines connect California with the Gulf Coast and Memphis, and its north-south North American Free Trade Agreement (NAFTA) corridor connects Mexico to the northeast U.S. and Canada markets. Dallas, Fort Worth, Austin, and San Antonio are each on the heavily used rail corridor connecting Laredo with the Upper Midwest. Houston is a UP hub for six lines, linking the region with the Louisiana Gulf Coast, Midwest, West Coast, and Mexico. El Paso, San Antonio, Dallas, and Fort Worth are also on main east-west corridors going across the southern tier of the U.S. connecting to ports at Los Angeles and Long Beach. The Sunset Route, which ultimately connects New Orleans, Louisiana to Los Angeles, California, crosses the southern portion of the state, connecting Houston, San Antonio, and El Paso.

Figure 2-3: UP System Map



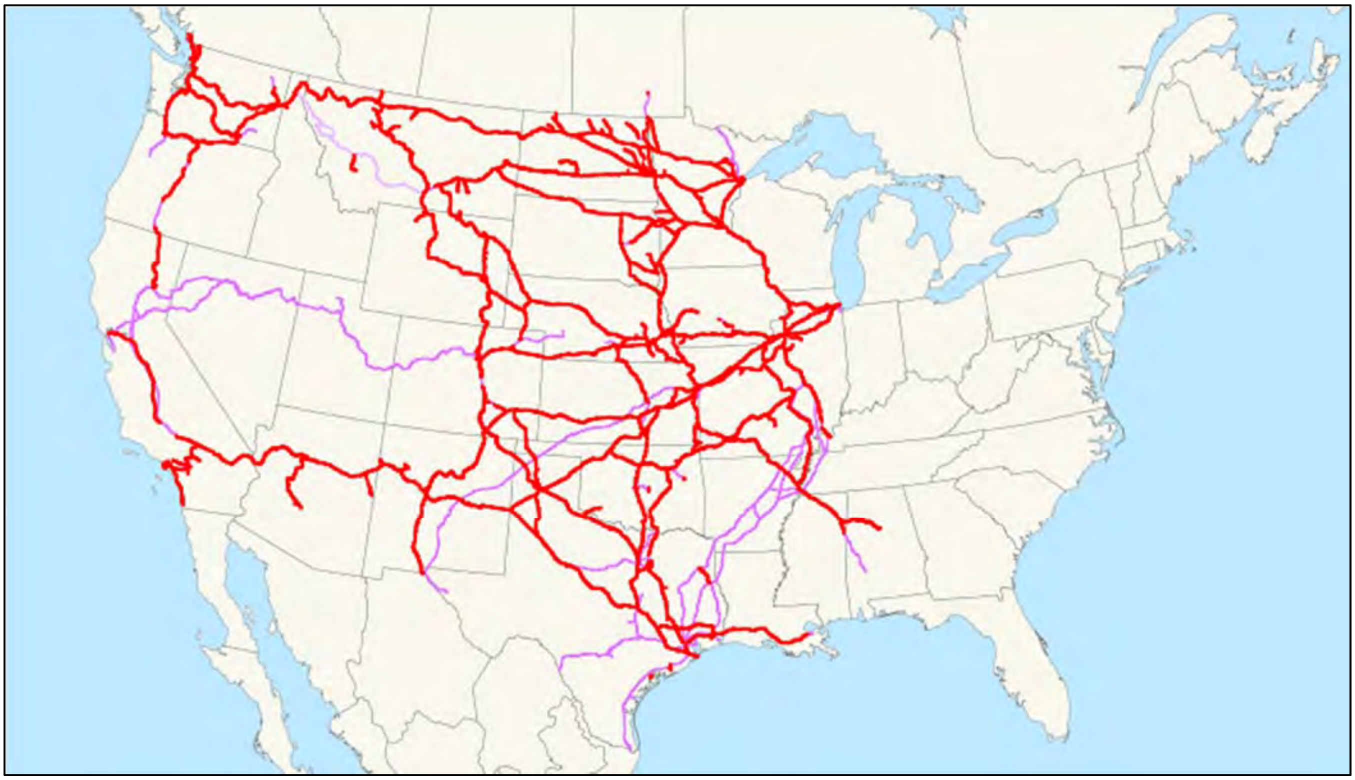
Source: 2015 Union Pacific Railroad

UP also maintains automobile distribution facilities in Texas. The UP Mesquite facility has both an intermodal and an automotive terminal that are two separate operations managed by different groups and different contractors. The Mesquite, Arlington, and Houston Westfield automotive terminals serve General Motors, Ford, Nissan, and Chrysler. UP also serves, but does not own or operate, the Gulf States Toyota facility across from the Westfield facility. In San Antonio, UP's Kirby Yard handles General Motors, Ford, and Chrysler and south of San Antonio UP serves the Toyota manufacturing facility.

BNSF Railway (BNSF)

Within the BNSF system (shown in Figure 2-4), Fort Worth lies on a heavily-traveled line connecting coal from Wyoming's Powder River Basin with Central Texas and the Houston area. Also entering Fort Worth is a busy BNSF line originating in the grain-producing Plains states which then continues to Texas Gulf Coast Ports. BNSF primarily serves the north and east portions of Texas and connects them to the more northern Gulf ports, including Houston, Galveston, and Beaumont. BNSF connects these ports to the metropolitan areas of Dallas and Fort Worth, and it is the only Class I railroad serving Lubbock and Amarillo. The BNSF's Transcontinental Line traverses the Texas Panhandle, carrying freight each way from Los Angeles to Chicago.

Figure 2-4: BNSF System Map



Source: 2015 BNSF Railway Company

BNSF currently has five automobile distribution facilities statewide. The Amarillo facility serves Ford, and the Alliance facility near Fort Worth serves Honda, Hyundai, Mitsubishi, Subaru, and Isuzu. The Midlothian facility ships Mazda vehicles, while the Temple facility handles Gulf States Toyota vehicle shipments. Lastly, the Houston (Pearland) facility handles cars manufactured by Isuzu, Mazda, Honda, Mitsubishi, Hyundai, and Nissan, as well as used GM trucks.

Kansas City Southern (KCS)

In the KCS system (shown on Figure 2-5), 929 miles of track are operated in the state (including the Tex Mex, which KCS acquired in 2004), and is limited to other rail connections in Laredo, Corpus Christi, Houston, Dallas/Fort Worth, and Beaumont. In June 2009, KCS added approximately 84.5 miles to its Texas rail network when it opened for operation a restored Southern Pacific Railroad line segment between Victoria and Rosenberg. KCS provides connections between the International Port of Entry (POE) at Laredo to Corpus Christi as well as connecting Victoria to the Houston/Galveston area. An additional KCS rail line connects the Dallas/Fort Worth area to Shreveport, Louisiana.

Figure 2-5: KCS System Map

Source: 2015 Kansas City Southern Rail Railway

Network inventory by railroad is presented in Appendix A.

Class II Railroads

As of 2015, the Association of American Railroads (AAR) classification listing does not include any Class II Regional Railroad in the state of Texas. Two railroads possess characteristics of Class II railroads, although they do not meet the previously mentioned financial criteria: Texas Pacifico Transportation, Ltd. (TXPF), which operates on 391 miles of state-owned track in West Texas (the South Orient Rail Line (SORR)); and the Texas Northeastern Railroad (TNER), which operates on 101 miles of track in Northeast Texas.

Network inventory by railroad is presented in Appendix A.

Class III Railroads

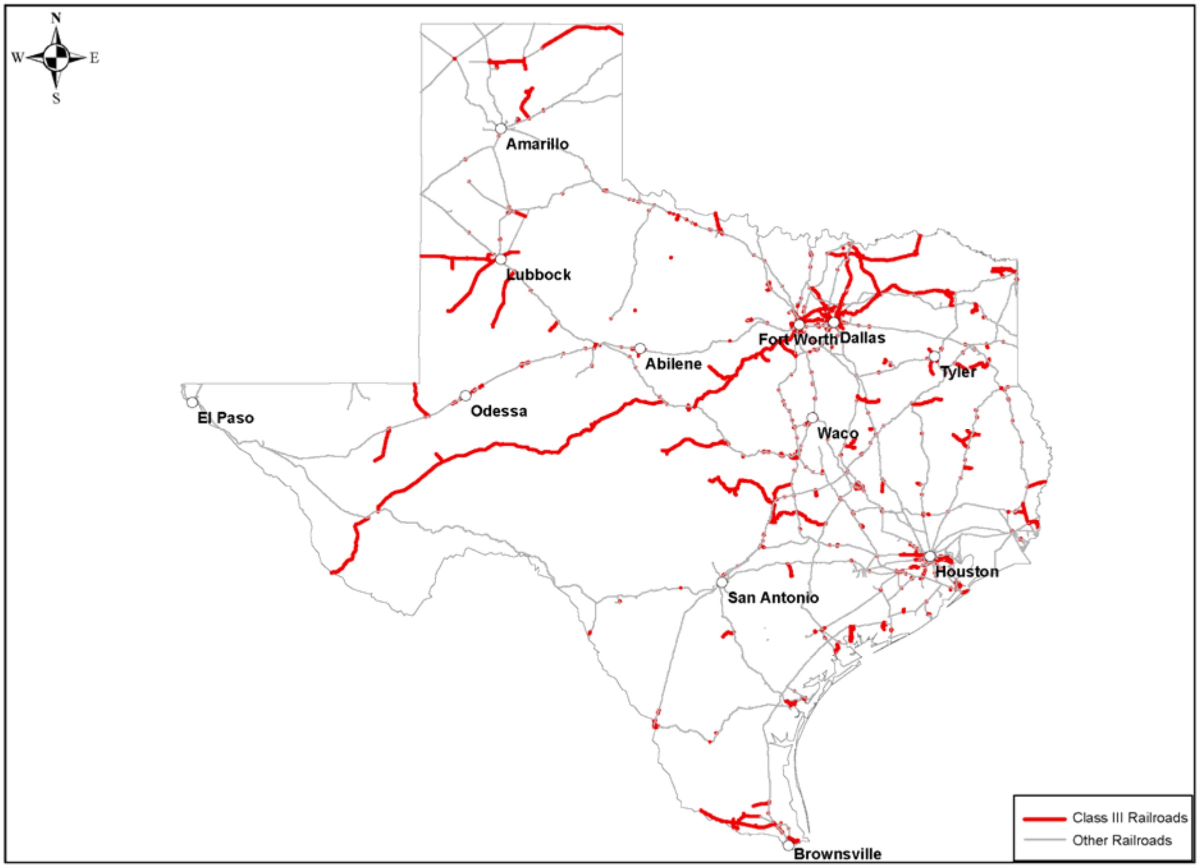
The majority of railroad operators in Texas are classified as Class III railroads, although their 2,550 miles of track, including trackage rights, make up only approximately 17 percent of the state's total trackage in 2018. Often referred to as "short lines," Class III railroads usually engage in specialized services and are typically geographically concentrated. One characteristic of short lines is that they may be privately owned to serve only a specific company or industry. For example, the Angelina & Neches River Railroad was founded by a paper mill and now connects shippers in the Lufkin area to UP rail lines. Short lines are also used to connect a group of local customers to Class I networks. Many short lines came into existence through the purchase of track formerly controlled by Class I railroads. For example, the Central Texas & Colorado River Railway operates on 68 miles of track in Central Texas acquired from the Atchison, Topeka and Santa Fe Railway Company (ATSF) following an abandonment proceeding (the Central Texas & Colorado River Railway acquired this railroad line from Gulf, Colorado and San Saba Railway [GSCR] after GCSR declared bankruptcy in 2012).

Some Texas ports, such as Houston, Corpus Christi, and Orange, are served by dedicated switching railroads (Port Terminal Railroad Association, Corpus Christi Terminal Railroad, and the Orange Port Terminal Railway, respectively) that provide rail services in close proximity to the port areas. Switching railroads, such as the Dallas, Garland & Northeastern (DGNO), operate on Class I lines or on their own track and deliver or pick up goods (e.g., limestone, farm products, plastics, lumber, soybean oil, steel, paper, chemicals, and auto parts) within the region. The DGNO serves as a switching carrier for UP in the Dallas region and interchanges rail cars to provide cross-country rail services to area shippers.

Rail trackage on short line railroads may also be owned by one entity, either public or private, but operated by another through an operational lease. For example, there are large holding companies who own many short line railroads in Texas, such as Genesee & Wyoming, Watco, OmniTRAX, and Iowa Pacific. These holding companies and their respective operations in Texas are described below.

Figure 2-6 identifies the networks of the state's Class III railroads described in this subsection and also identifies other railroads, including state-owned rail lines, that are described later in Section 2.1.1.1 Freight Rail Network.

Figure 2-6: Class III Railroads in Texas



Source: HDR and TxDOT

Each of the railroads identified above are described in this section.

Watco Companies

Watco Companies, LLC, is a Pittsburg, Kansas, based transportation company providing mechanical, transportation, and terminal and port services solutions for railroad customers throughout North America and Australia. Watco is the owner of Watco Transportation Services, LLC, one of the largest short line railroad holding companies in the U.S. with 32 short line railroads operating on more than 5,100 miles of track, as well as 32 industrial contract switching locations.[9] The Terminal and Port Services division currently manages 87 terminals, nine warehouses and two port locations throughout the U.S.

The short line railroads described below are owned by Watco in Texas.

(A) Austin Western Railroad (AWRR)

The Austin Western Railroad (AWRR) operates 181 miles of track from Llano, Texas to Giddings, Texas. The line dates back to 1871 when the Houston and Texas Central Railroad built the Giddings

[9] https://www.watcocompanies.com/about/company/

to Austin line. The AWRR interchanges with the UP at McNeil and Elgin. Nearly 58,000 carloads move annually, shipping commodities such as aggregate, crushed limestone, calcium bicarbonate, lumber, beer, chemicals plastics, and paper. Capital Metropolitan Transportation Authority began commuter service on portions of this line in March of 2010.

(B) Lubbock and Western Railway (LBWR)

Lubbock and Western Railway (LBWR) is a 144-mile railroad in two segments operating from Lubbock to Seagraves and Whiteface, Texas, and from Plainview to Dimmit, Texas carrying frac sand, chemicals, fertilizer, grain, animal feed, and oil.

(C) Pecos Valley Southern Railway (PVS)

This railroad, owned by Watco, has been in continuous operation since 1910 and today owns about 23 miles of track between Saragosa and Pecos, where it has an interchange with UP. PVS's primary sources of traffic are aggregates and ore and recently added service to support the region's booming Permian Shale Oil basin.

(D) San Antonio Central Railway (SAC)

The San Antonio Central Railroad (SAC) began operations September 1, 2012, and it operates within Port San Antonio's East Kelly Railport. Railport customers include warehousing, distribution, transloading, manufacturing, and trucking operations. SAC is adding infrastructure to meet the rapidly growing transportation needs of the energy sector. The Railport is the only site inside San Antonio with available rail-served facilities and land sites with switching service off the BNSF and UP railroad lines. SAC operates the rails at night to avoid interfering with commuter traffic during the day.

(E) Texas & New Mexico Railway (TXN)

Located in the heart of the Permian Basin, the Texas & New Mexico Railway (TXN) operates 34 miles of track in Texas. The TXN interchanges with UP at Monahans, Texas and terminates at Lovington, New Mexico. The railroad primarily handles oilfield commodities such as drilling mud and hydrochloric acid, frac sand, pipe, and petroleum products including crude oil. In addition, TXN also ships iron and steel scrap.

(F) Timber Rock Railroad (TIBR)

The Timber Rock Railroad (TIBR) has been in service since 1998. TIBR once operated 160 miles of trackage between Silsbee and Tenaha with a branch to Deridder, Louisiana. The railroad's network now includes the approximately 40-mile line between Kirbyville, Texas and DeRidder, Louisiana (approximately 17 miles of which is located in Texas). Its traffic largely includes aggregates and forest products, handling more than 26,000 carloads annually.

Ironhorse Resources, Inc.

(A) Gardendale Railroad (GDR)

Gardendale Railroad (GDR) originally began operations in 1990. In 1995, GRD discontinued operations on the line and abandoned 49 miles of the 50-mile branch line. In 2010, GRD welcomed its first business in 15 years. GRD has developed and runs a large rail industrial park comprising of over 250 acres. GRD has significant additional acreage to support continued development and growth. GRD primarily provides logistics services to support drilling activities in the Eagle Ford Shale. GRD now has over 30 miles of track with the ability to serve any industry located with GRD.

(B) Rio Valley Switching Company (RVSC)

The Rio Valley Switching Company (RVSC) serves Harlingen (where it has an interchange with UP), Mission, Edinburg, and Santa Rosa. The Rio Valley operates about 70 miles of track. Its traffic includes oil field services, paper, agricultural products, lumber, bulk plastics, steel, scrap metals, cottonseed, corn sweetener, lime, cement, canned goods, frozen food, and aggregates, as well as providing solutions for sand, drilling fluids, barite, oil, and pipe.

(C) Southern Switching Company (SSC)

This terminal railroad operates just over 8.5 miles of track and serving the Abilene area, where it has a connection with UP. SSC's traffic currently consists of grain, animal feed, fertilizers, petroleum products, oil drilling inputs, construction materials, windmill machinery, scrap, corn sweetener, and lumber.

OmniTRAX, Inc.

OmniTRAX is a private railroad and transportation management company with interests in railroads, terminals, ports, and industrial real estate. OmniTRAX operates a network of 18 regional and short line railroads that cover 12 states in the U.S. and three provinces in Canada. The company's railroads interchange with BNSF, UP, Canadian National (CN), CSX Transportation (CSXT), Norfolk Southern (NS), and transport commodities within the agricultural, aggregate/industrial mineral, energy, food, crude oil, chemical, lumber, metal, petroleum, and plastic industries.

Through its affiliate, Quality Terminal Services, LLC, OmniTRAX also operates and manages terminal and intermodal facilities where services such as railcar switching, container handling, ramp/deramp and carrier management are provided.

(A) Brownsville & Rio Grande International Railroad (BRG)

The BRG operates about 50 miles of railroad serving the Port of Brownsville. It currently has interchanges with three Class I railroads: UP, BNSF, and KCS de Mexico. BRG began operations in 1984 by acquiring former Texas & Pacific (MP) property handling a variety of products such as steel, agricultural products, food products, and general commodities.

(B) Central Texas & Colorado River Railway (CTXR)

The Central Texas & Colorado River Railway, LLC (CTXR) operates freight rail services between Brady and Lometa, Texas on 68 miles of track. The CTXR has a direct Class I interchange in Lometa with the BNSF. CTXR current traffic includes grain, feed, building products, aggregates, and frac sand.

(C) Panhandle Northern Railway (PNR)

This OmniTRAX property operates 31 miles of the former Santa Fe Railroad between Panhandle and Borger. Its traffic currently consists of carbon black, liquid petroleum gas, chemicals, petroleum products, scrap metal, fertilizer, and grain.

Tarantula Corporation

The Fort Worth & Western Railroad operates under its corporate parent company, Tarantula Corporation, based in Fort Worth, Texas.

(A) Fort Worth & Western Railroad (FWWR)

The FWWR began in 1988 with the purchase of 6.25 miles of track from the former Burlington Northern Railroad through the west side of Fort Worth. Since then, FWWR had grown through the purchase and lease of track from Class I carriers, UP and BNSF.

Currently, the FWWR handles over 45,000 cars, operating over 276 miles of track through eight counties in North Texas. FWWR has interchanges with both UP and BNSF in Fort Worth and BNSF in Brownwood, Texas. FWWR interchanges with KCS through trackage rights with BNSF in Fort Worth, and with Texas Pacifico (TXPF) at San Angelo Junction near Coleman.

Genesee & Wyoming (G&W)

G&W owns or leases 120 freight railroads worldwide with 113 short lines with more than 13,000 miles within 41 U.S. states. In Texas, G&W operates four freight railroad switching operations which interchange between the Class I railroads and three terminal railroads operating within an existing port authority.

(A) Corpus Christi Terminal Railroad (CCPN)

In 1997, G&W acquired the Corpus Christi Terminal Railroad (CCPN) and is operating on its 42-mile short line serving the Port of Corpus Christi and interchanging with BNSF, KCS and UP. Commodities transported include aggregates, brick and cement, chemicals, ethanol, food and feed products, machinery, minerals and stone, and petroleum products.

(B) Dallas, Garland & Northeastern Railroad (DGNO)

The DGNO is a complex switching terminal that started operations in 1992 and is made up of a conglomeration of spurs and industrial leads. DGNO operates 163 miles of rail line in the Dallas and North Dallas areas using a combination of owned and leased lines as well as trackage rights. The DGNO provides extensive switching service and line haul extensions between their interchange locations with BNSF, UP, and KCS.

(C) Galveston Railroad (GVSR)

Acquired in 2005, the GVSR is a 39-mile short line freight railroad serving the Galveston Port Authority and interchanging with BNSF and UP.

(D) Kiamichi Railroad (KRR)

The KRR is located in Texas, Oklahoma and Arkansas for a total of 261 miles of track (30 miles in Texas) shipping coal, paper, clay, concrete, lumber, food, and kindred products between five interchange locations. The KRR interchanges with BNSF, KCS, TNER, and UP.

(E) Point Comfort & Northern Railway (PCN)

The PCN was incorporated in 1948 and interchanges with UP while serving the Port of Port Lavaca – Point Comfort. The PCN provides unit train services, interplant switching, car washing, weighing and inspection and traffic coordination. Main commodities on the PCN's 19 miles of track include alumina, aluminum fluoride, fluorspar, and fertilizers.

(F) Rockdale, Sandow & Southern Railroad (RSS)

RSS operates a switching service from a connection with UP at Marjorie to Sandow for a total of about 6 miles. Traffic is mainly minerals, such as alumina, fly ash, frac sand, and slag.

(G) Texas Northeastern Railroad (TNER)

The TNER operates in Texas west of Bonham through Bells to Sherman and east from New Boston to Texarkana. The TNER interchanges with the BNSF, DGNO and UP. Major commodities for the TNER are coal, military equipment, wheat, and polyethylene with their largest customer being the Red River Army Depot located just west of Texarkana.

<u>TNW Corporation</u>

For more than three decades, TNW Corporation (TNW) has been a leader in the short line railroad industry, and is the parent company of three short line railroads in Texas.

(A) Texas Gonzales & Northern Railway (TXGN)

The TXGN began operations in 1992 and operates on former SP trackage between Harwood and Gonzales on a system that is approximately 58 miles in length.

(B) Texas Rock Crusher Railway (TXR)

This short line serves the Brownwood area on over 6 miles of former Santa Fe industrial trackage. TXR began operations in 1998 and also serves the nearby Vulcan limestone quarry.

(C) Texas North Western Railway (TXNW)

This short line dates back to 1982 when it took over trackage originally owned by the Chicago, Rock Island & Pacific (Rock Island) between Etter and Morse Junction, Texas as well as Stinnett, Texas and Hardesty, Oklahoma. TXNW's traffic currently consists of agriculture, chemicals, petroleum products, and coal.

Port Terminal Railroad Association (PTRA)

The Port Terminal Railroad Association (PTRA) is an association of the Port of Houston Authority and the three Class I railroads operating within Texas – UP, BNSF, and KCS. The PTRA infrastructure consists of a total yard capacity of 5,000 railcars, with a daily spot/pull rate of 2,500 industrial cars. The PTRA straddles both sides of the Houston Ship Channel and maintains 154 miles of track with 20 bridges while serving 226 local customers from six serving yards.

1. PTRA North Yard – 6 Receiving/Departure Tracks with a capacity of 415 railcars and 46 classification tracks with a capacity of 1,200 railcars – Direct interchange with BNSF, UP, and KCS.
2. PTRA Storage Yard – 19 classification tracks with a capacity of 800 railcars – Direct interchange with UP.
3. PTRA American Yard – 10 classification tracks with a capacity of 400 railcars - Direct interchange with industrial customers.
4. PTRA Penn City Yard – 3 tracks with a capacity of 120 railcars – Direct interchange with industrial customers.
5. PTRA Manchester Yard – 26 classification tracks with a capacity of 800 railcars – Direct interchange with UP and BNSF.
6. PTRA Pasadena Yard – 15 classification tracks with a capacity of 700 railcars – Direct interchange with UP and BNSF.

Other Class III Railroads

Other Class III railroads operate in Texas that are not associated with larger holding companies and are described as follows:

(A) Alamo Gulf Coast Railroad (AGCR)

This short line is owned by Martin Marietta Materials and consists of a line that is just 7 miles in length near the town of Beckman. AGCR primarily transports aggregates and timber products and began operations in 1996 over former Southern Pacific (SP) property.

(B) Alamo North Texas Railroad (ANTR)

This short line is a switching and terminal railroad, and operates approximately 0 miles of track in Texas. The Alamo Gulf Coast Railroad Company is owned by Martin Marietta Materials Southwest, Inc. (99.5 percent) and other individuals (0.5 percent).

(C) Angelina & Neches River Railroad (ANR)

This historic short line traces its roots back to 1900 where it served the timber industry. ANR currently operates 12 miles of main line trackage and 28 miles total radiating away from Lufkin. This includes the West Lufkin Branch, Clawson Branch, and its main line heading east. ANR's traffic currently includes newsprint, ground-wood paper, lumber, chemicals, scrap metal, sugar, corn syrup, grocery products, clay, aggregates, and industrial products.

(D) Big Spring Rail System (BSR)

BSR maintains and operates 3.3 miles of rail line in Howard County, Texas, over trackage owned by the City of Big Spring, Texas. Big Spring Rail is headquartered in West Chester, Pennsylvania, and is leasing the line from the City. BSR interchanges traffic with UP just west of its Big Spring Yard and extending southward from the UP Toyah Subdivision.

(E) Blacklands Railroad (BLR)

This privately owned short line first began service in 1995 and currently operates 73 miles of former Cotton Belt property between Greenville and Mt. Pleasant. BLR handles a wide range of freight including salt, food products, metals, bricks, paper, chemicals, pipe, building materials, plastics, feed products, fertilizer, and machinery/equipment. The company also offers transload services.

(F) Border Pacific Railroad (BOP)

The Border Pacific began service in 1984 over 32 miles of former Missouri Pacific Railroad (MP) trackage between Mission and Rio Grande City. Its traffic currently includes silica sand, ballast, crushed stone, asphalt, scrap paper, and feed grains.

(G) CMC Railroad (CMC)

CMC is Gulf Inland Logistic Park's direct connection to the BNSF and UP, which serves one of the largest rail car storage facilities for plastic pellets in the world, southwest of Dayton. This switching and terminal railroad transports plastics, steel and pipe, aggregates, minerals, petrochemical, and other general freight commodities. On average over 1,000 rail cars per day pass through Gulf Inland Logistics Park.

(H) Georgetown Railroad (GRR)

The original Georgetown Railroad dates back to 1878, running 10 miles between Georgetown and Round Rock. It was later acquired by the International-Great Northern Railroad, which went on to become part of Missouri Pacific (MP). In 1959, 8 miles of the MP's old Georgetown Branch was sold to a new short line the Georgetown Railroad Company. Today the operation owns about 30 miles of track serving communities such as Kerr, Granger, Belton, and Smith. GRR traffic includes aggregates, ammonium nitrate, lumber, and grain.

(I) Gulf Coast Switching, LLC (GCS)

Gulf Coast Switching Company, LLC provides contract rail switching services and isowned by Anacostia Rail Holdings. On October 1, 2008, the company began switching and track maintenance services for UP at Robinson Yard at Dayton and in October 2018 began switching and track maintenance services for UP at Angleton Yard at Angleton.

(J) Henderson Overton Branch (HOB)

The HOB operates 14 miles from Overton to Henderson. HOB is owned by Blacklands Railroad. HOB serves as the rail carrier for the Rusk County Rural Rail Transportation District, which owns all rights to the corridor. The primary commodities on the line are outbound forest products and inbound drilling commodities.

(K) Hondo Railway (HRR)

This small short line operates about 5 miles of track near San Antonio and has been in service since 2006. HRR's traffic base currently consists of ethanol, food products (sweetener), agricultural products, petroleum, and frac sand. The railroad also offers transload services.

(L) LaSalle Railway (LSRY)

LSRY provides railway and transloading services in La Salle and Webb Counties in Texas. This switching and terminal railroad has direct access connection with UP.

(M) Live Oak Railroad (LOR)

Owned by Howard Energy Partners, Live Oak Railroad is a switching and terminal railroad for Live Oak Railroad Park - a major South Texas industrial logistics railroad hub near Three Rivers capable of handling manifest and unit trains transporting multiple types of cargo, including crude oil, condensate, natural gas liquids, water, pipe, and frac sand.

(N) Moscow, Camden & San Augustine Railroad (MCSA)

The Moscow, Camden & San Augustine Railroad (MCSA) dates back to 1898 to serve lumber interests owned by the W. T. Carter & Brother Lumber Company. MCSA was a common carrier offering both freight and passenger service, eventually operating between Moscow to Camden. Today, MCSA continues to operate this trackage, now owned by Georgia Pacific, and still handles primarily forest products including outbound plywood, lumber, and other freight.

(O) Orange Port Terminal Railway (OPT)

Owned by Lone Star Locomotive Leasing, this terminal railroad operates 1.8 miles of track formerly owned by SP and began service in 1995.

(P) Plainsman Switching Company (PSC)

PSC, a switch carrier, is a short line railroad located in Lubbock, Texas, and interchanges with UP and BNSF in Downtown Lubbock. PSC operates 18 miles of track within the city of Lubbock and serves a variety of customers, shipping and receiving commodities such as grain, chemicals, cotton seed, cotton seed oil, specialty sands, non-perishable food items, and lumber. PSC handles transloading for a variety of commodities including windmill components and also provides short-term warehousing.

(Q) R.J. Corman – Texas Line (RJCD)

Owned by R.J. Corman Railroad Group, RJCD operates on 13.1 miles of yard track and interchanges with UP at Diboll. Traffic transported includes lumber, plastic, frac sand, molasses, and chemicals.

(R) Sabine River & Northern Railroad (SRN)

Temple-Inland Incorporated owns the SRN and operates about 40 miles of track on two lines serving Bessmay, Echo, Buna, and Evadale. The trackage was built in the mid-1960s to serve a linerboard mill. Today, SRN traffic still consists of forest products such as paper and lumber.

(S) San Jacinto Transportation Company (SJTC)

Located in Houston, SJTC operates 6 miles of existing rail throughout the San Jacinto River and Rail Park. SJTC has access to both UP and BNSF. SJTC is wned by SJRE Railroad Series.

(T) South Plains Lamesa Railroad (SLAL)

This small short line operates in the Lubbock area providing mostly switching and terminal services. SLAL has been in operation since 1993 and also offers railcar storage and transload services.

(U) Southwest Gulf Railroad (SGRR)

Incorporated in 2003, SGRR is a subsidiary of Vulcan Materials Company (the largest producer of construction aggregates in the U.S.) and a major producer of other construction materials. In 2008, the U.S. Surface Transportation Board (STB) granted SGRR the authority to build and operate The Medina Line, a 9-mile common carrier railroad current under construction near Dunlay. SGRR has access to both BNSF and UP. Operations are expected to begin in 2019.

(V) Temple & Central Texas Railway (TC)

TC operates over 10 miles of rail line in the Central Pointe Rail Park located in Temple. The City of Temple awarded TC an exclusive long-term license agreement to provide rail switching and other rail-related services to customers at Central Pointe Rail Park. TC interchanges traffic with BNSF at Temple.

(W) Texas Central Business Lines (TCB)

This 5-mile terminal railroad serves the industries of the Midlothian area and connects with both UP and BNSF. TCB's traffic consists of aggregates, metals, automotive products, steel/scrap, and forest products.

(X) Texas City Terminal Railway (TCT)

TCT is a switching and terminal railroad at the Port of Texas City with 32 miles of track. TCT connects with UP and BNSF at Texas City.

(Y) Texas & Northern Railway (TN)

Transtar owns the TN and operates close to 8 miles of railroad near Lone Star. TN currently interchanges with KCS west of Hughes Springs. The railroad began operations in 1948 to serve steel mills and continues to carry steel products today.

(Z) Texas & Eastern Railroad (TSR)

TSR operates freight service from the connection with UP in Palestine, 27 miles to Rusk. Traffic consists of construction aggregates, industrial products, and chemicals.

(AA) Texas & Oklahoma Railroad (TXOR)

The TXOR owns and operates a 17-mile railroad line from Shaufler to Maryneal and crosses approximately 5 miles of BNSF track to interchange at the Sweetwater Yard. TXOR's primary commodities hauled are cement and coal.

(BB) Texas Pacifico Transportation Limited (TXPF)

TXPF operates freight service over 391 miles of state-owned trackage (South Orient Rail Line) in western Texas. The line runs from San Angelo Junction to Alpine Junction. TXPF has trackage rights over UP between Alpine Junction, Texas to Paisano Junction, and operates from Paisano Junction to International Bridge near Presidio, Texas. TXPF interchanges with UP, Ferromex (FXE), BNSF, and FWWR.

(CC) Texas South-Eastern Railroad (TSE)

This operation first began service in 1900 as a division of the Southern Pine Lumber Company hauling logs and related forest products. TSE eventually grew into a 78-mile system reaching such locations as Diboll, Everett, Blix, Lufkin, Vair, and Neches. Operations were reduced over the years and today are limited to terminal/switching services at Diboll. TSE is currently owned by Georgia Pacific Corporation.

(DD) Western Rail Road (WRRC)

As a subsidiary to Cemex US, WRRC operates a 1.9-mile railroad line extending from a connection with UP at Dittlinger to Stonetown. Traffic is crushed rock and other aggregates and cement.

(EE) Wichita, Tillman & Jackson Railway (WTJR)

The Wichita, Tillman & Jackson Railway Company (WTJR) is currently owned by the Rio Grande Pacific Corporation, running on disconnected trackage in Texas (18 miles) and Oklahoma once owned by the Rock Island and UP. WTJR has been in service since 1991. Shipments are primarily grain, chemicals and agricultural products.

Network inventory by railroad is presented in Appendix A.

State-Owned Rail Lines and Other Railroads

This section describes state-owned rail lines and other non-operating rail owners, such as Texas Rural Rail Transportation Districts. Non-operating rail owners own trackage in Texas that is part of the state rail network, but have established agreements with operators to provide rail service. The location of these "Other Railroads" within the Texas rail network was identified previously in Figure 2-6.

State of Texas

The State of Texas, acting by and through the Texas Department of Transportation (TxDOT), owns several rail lines in the state on which railroads operate. Brief descriptions of these railroads are provided below.

(A) South Orient Rail Line (SORR)

The South Orient Rail Line (SORR) is a state-owned line that extends approximately 391 miles from San Angelo Junction (in Coleman County, 5 miles southwest of Coleman) through San Angelo to Presidio at the Texas-Mexico border.[10] It was constructed to interchange with Ferromex at Presidio. The Presidio-Ojinaga International Rail Bridge is not currently operational, but recently began reconstruction. The line interchanges with UP at Alpine and with BNSF and FWWR at San Angelo Junction. Since 2001, Texas Pacifico Transportation Ltd. (TXPF) operates and maintains the SORR under a lease and operating agreement with TxDOT.

(B) Bonham Subdivision

In 2006, TxDOT entered into a lease agreement with Fannin County Rural Rail Transportation District (FRRTD) to operate on the state-owned rail line located in Lamar and Fannin Counties that extends from Mile Post 94.0 to Mile Post 127.5 on the Bonham Subdivision—a total of approximately 33.5 miles.[11] FRRTD is working to identify potential funding sources for rehabilitation of the line and possible operators that it would contract for freight rail service.

(C) Blacklands Railroad

The Northeast Texas Rural Rail Transportation District (NETEX) secured a legislative appropriation rider that granted it funds from state general revenue, through TxDOT, for the purchase and operation of the rail line from a point west of Sulphur Springs at Mile Post 524.0 to a point west of Greenville at Mile Post 555.0.[12] Blacklands Railroad, through an operating lease with NETEX, moves commodities such as grain, plastic, rock, and aluminum.

Texas Rural Rail Transportation Districts

Rural Rail Transportation Districts (RRTDs) in Texas are formed to prevent the loss of rural rail lines that have been abandoned by rail companies, or to maintain the former rail right-of-way for future transportation uses. As of 2019, the number of known RRTDs in the state is 43. Of the many roles that a RRTD performs, one of the most important authorities it possesses is the ability to own

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[10] http://ftp.dot.state.tx.us/pub/txdot-info/rail/south_orient/facts.pdf
[11] http://ftp.dot.state.tx.us/pub/txdot-info/rail/rural/fannin/lease.pdf
[12] http://ftp.dot.state.tx.us/pub/txdot-info/rail/rural/netex/funding.pdf

railroad right-of-way or infrastructure. Many RRTDs have used this authority to purchase railroad right-of-way that is threatened with abandonment or otherwise preserve right-of-way for future use.

Some examples of RRTD ownership or leasing of railroad right-of-way and infrastructure in Texas include:[13]

- The Fannin County RRTD finalized two leases for separate segments of rail line connecting Bonham and Paris totaling approximately 35 miles. The leases were executed through a series of agreements among the RRTD, TxDOT (33.5 miles in 2006), and the Bonham Economic Development Corporation (BEDCO) (1.28 miles in 2012).
- In May 2010, the Rusk County RRTD purchased an approximately 14-mile rail line known as the Henderson-Overton Branch. UP had petitioned to abandon the line before the RRTD purchased the line for $1.026 million. Freight service was restored to the line through a short line operator (Blacklands Railroad) in June 2010.
- The Top of Texas RRTD was formed in 2006 to prevent the abandonment of a railroad line through Hansford, Lipscomb and Ochiltree Counties. The RRTD negotiated a deal to gain fee-simple ownership of the 90-mile right-of-way, while the former railroad owner salvaged the rail materials. The agreement allowed the businesses along the line to retain their leases, and the RRTD collects lease payments as income. The RRTD board is actively marketing the right-of-way for electric transmission lines or other opportunities.

RRTDs are discussed in more detail in Chapter 5.

<u>Greens Port Industrial Park</u>

Watco operates rail service at Greens Port Industrial Park located on 655 acres on the Houston Ship Channel in Harris County, Texas. Greens Port is the largest private multi-tenanted industrial park in the Gulf Coast market. This industrial park offers deep water and barge docks along the Houston Ship Channel. Greens Port provides approximately three million square feet of indoor warehousing that feature large bay widths, numerous cranes ranging from five to 125-ton capacity, the ability to clear heights ranging from 20 to 45 feet, and heavy floor loading capacity. Direct rail service to buildings and storage yards is also available.

<u>Watco Switching Services</u>

Watco Switching Services began providing specialized industrial contract switching services in 1983. Watco currently operates contact switching services at the following locations:

- Alvin, Texas for Solutia
- Deer Park, Texas for R&H
- Galena Park, Texas for Kinder Morgan
- Houston, Texas for Igenia
- Houston, Texas for TPC Petrochem
- Port Neches, Texas for TPC Petrochem

[13] http://ftp.dot.state.tx.us/pub/txdot-info/rail/rural/rrtd-update.pdf

Watco Terminal Services

Watco's Terminal and Port Services (WTPS) is the rail centered transloading division that brings together all aspects of terminal or port operations to better serve the needs of their customers. Watco currently provides terminal services at the following locations:

- Galena Park, Texas
- Houston, Texas for Terminal and Warehouse
- Houston, Texas for Port of Houston – Greenwood
- Houston, Texas for Port of Houston
- Houston, Texas for Watco Texas Terminal

Network inventory by railroad is presented in Appendix A.

Industrial Railroads

Industrial railroads exist in Texas and typically provide intraplant and interplant rail switching service to industrial and manufacturing customers and to coordinate and facilitate carload interchange with operating Class I, II, or III railroads. These small privately owned switching railroads operate over private track on private property, and exist at many grain elevators and ethanol plants in Texas. These operations can be owned and operated by the company they serve or can be operated under a contract agreement with an outside party. The mileage of privately owned industrial track is not included in route-mile calculations of the Texas rail network. Specific industrial railroad applications in Texas are not identified in the 2019 Texas Rail Plan.

2.1.1.2 Passenger Rail Network

This section summarizes the history of passenger rail service in Texas and also provides an overview of the current intercity passenger, commuter rail, light rail, streetcar, and tourist train services provided in Texas. Passenger rail services are divided into six categories in this rail plan and are defined as follows:

- *High-speed rail* is defined as rail operating at speeds of 125 mph or above on non-stop or with limited stops between cities and operating on a grade-separated, dedicated right-of-way.
- *Intercity passenger rail* is defined as rail serving multiple cities on routes with longer distances (typically 100 miles or more) and more frequent stops, and operating on tracks that are part of the existing national railroad network at conventional passenger train speeds.
- *Commuter rail* is defined as rail primarily serving work commuters and local travelers between communities in an urban area or metropolitan region, on routes with frequent stops, and typically operating on tracks that are part of the existing national railroad network.
- *Light rail* is defined as public transportation operating on rail within an urban area. Light rail vehicles are electric rail cars operating in dedicated rights-of-way that are either separated from other traffic or in city streets mixed with general traffic.

- *Trolley and streetcars* are defined as local public transportation using vehicles that run on dedicated tracks to provide short-trip urban circulation. Vehicles range from vintage trolleys to modern multi-section articulated streetcars.
- *Tourism rail* is defined as rail operating generally for entertainment and sightseeing purposes.

The Texas Rail Plan focuses primarily on intercity passenger rail and commuter rail services. However, light rail, streetcar, and trolley systems are also discussed in this chapter to provide a complete description of existing passenger rail services and underscore the value of the connectivity they provide with the other types of passenger services. Tourism rail is also included because some tourist train services, such as the Hill Country Flyer and the Grapevine Vintage Railroad, are affected by freight and non-tourist passenger train operations and may even offer potential as future corridors for non-tourist passenger rail services. Table 2-2 lists the current providers of passenger rail services in Texas by category: Amtrak, commuter agencies, local transit authorities, municipalities, and tourist organizations.

Table 2-2: Passenger Rail Providers and Services in Texas

Passenger Rail Category	Providers	Service Name
High-Speed Rail	No high-speed rail service currently provided	None
Intercity Passenger Rail	Amtrak	Heartland Flyer
		Texas Eagle
		Sunset Limited
Commuter Rail	Dallas Area Rapid Transit and Trinity Metro	Trinity Railway Express
	Denton County Transportation Authority	A-Train
	Capital Metropolitan Transportation Authority	MetroRail
	Trinity Metro	TEXRail
Light Rail	Dallas Area Rapid Transit	DART Rail
	Metropolitan Transit Authority of Harris County (METRO)	METRORail
Trolley and Streetcar	Dallas Area Rapid Transit	Dallas Streetcar
	McKinney Avenue Transit Authority and Dallas Area Rapid Transit	McKinney Avenue Trolley / M-Line
	Sun Metro	El Paso Streetcar

Passenger Rail Category	Providers	Service Name
	Island Transit (City of Galveston)	Galveston Island Trolley (under restoration)
Tourism Rail	The Western Group	Texas State Railroad
	Austin Steam Train Association	Hill Country Flyer
		Bertram Flyer
	Grapevine Vintage Railroad	Cotton Belt Route
		Trinity River One-Hour Train Excursion Rides
		Grapevine One-Hour Train Excursion
	Galveston Railroad Museum	Harborside Express
	Texas Transportation Museum	Longhorn & Western Railroad
	DBR Entertainment, Inc.	Historic Jefferson Railway

The primary sources of data for this chapter are the rail and transit agencies operating services in Texas. As discussed later in subsequent sections, many public entities within Texas have the authority to design, construct, and operate passenger rail in the state. TxDOT's role is to coordinate the efforts of these entities to provide a cohesive passenger rail plan for the state. Figure 2-7 shows an example of passenger rail in operation, as well as the value of connectivity between systems to enable seamless transfers and provide more ways for travelers to reach more destinations.

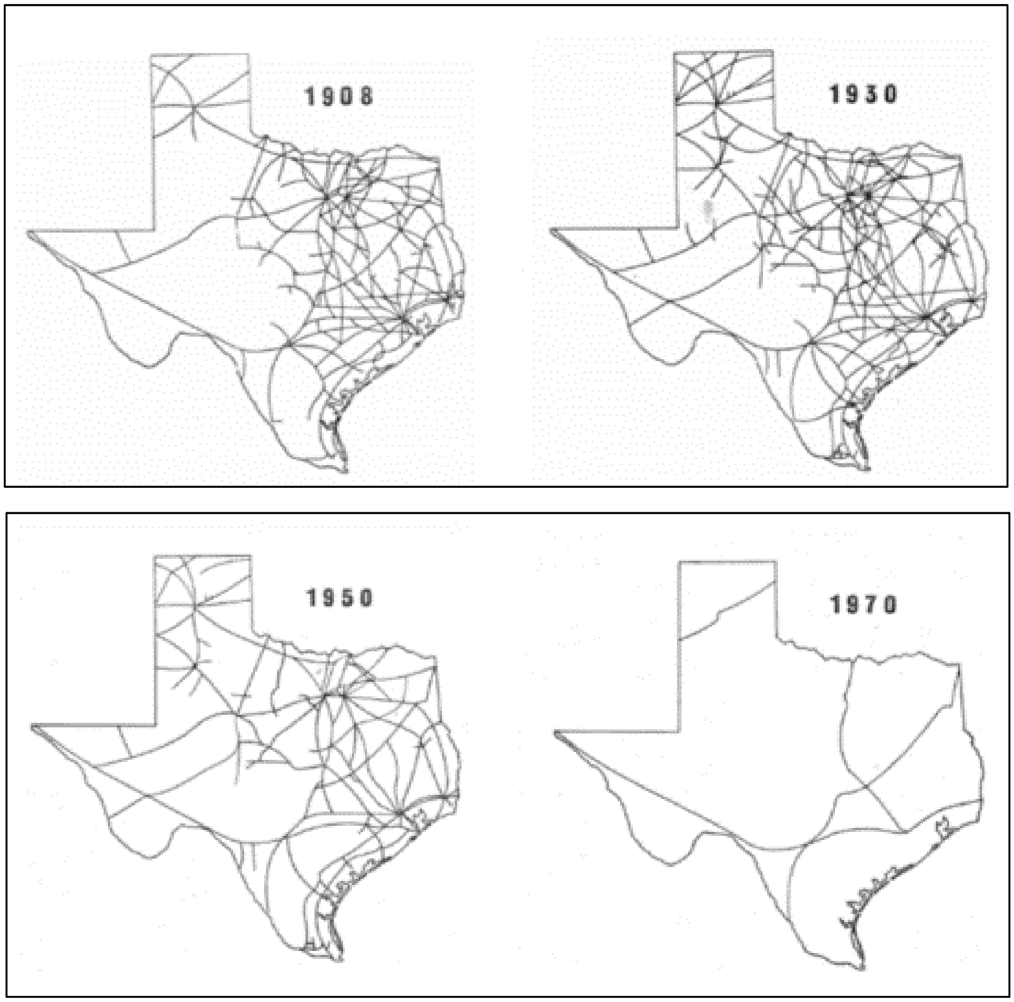
Figure 2-7: DART Light Rail Passengers Transferring to a TRE Commuter Train in Dallas

This chapter describes the existing passenger rail services provided in Texas. Potential future intercity passenger and commuter rail improvements, and new services proposed or in development, are discussed in Chapter 3.

Historical Passenger Rail Perspective

Historically, Texas was served by a network of long-distance, interstate passenger trains linking Texas, the Gulf Coast and Mexico with key Midwest cities and the West Coast. In addition to providing long-distance service, these interstate passenger trains also provided local service between cities in Texas and adjacent states. Only Southern Pacific's Dallas – Houston route operated trainsets specifically oriented for local service. Multiple railroads operated passenger service in the Dallas – Houston and Houston – New Orleans city pairs, and the total number of departures among the different railroads provided a level of frequency that almost reached the level of a "corridor service." In addition to transporting passengers, these long-distance trains also carried mail and express. Rail stations, usually located close to the center of each community, were activity hubs with city development radiating outward. Public investment in roads and the airways system and the resulting shift in travel to other modes of transportation resulted in a loss of passengers and a reduction of the once extensive network. Figure 2-8 illustrates the extent and decline of the passenger rail network in Texas. In an effort to address this decline, Amtrak took over the operation of intercity passenger trains across the United States in May of 1971, consolidating and coordinating the remaining passenger rail services into a more efficient, unified network.

Figure 2-8: Passenger Rail in Texas 1908, 1930, 1950, 1970

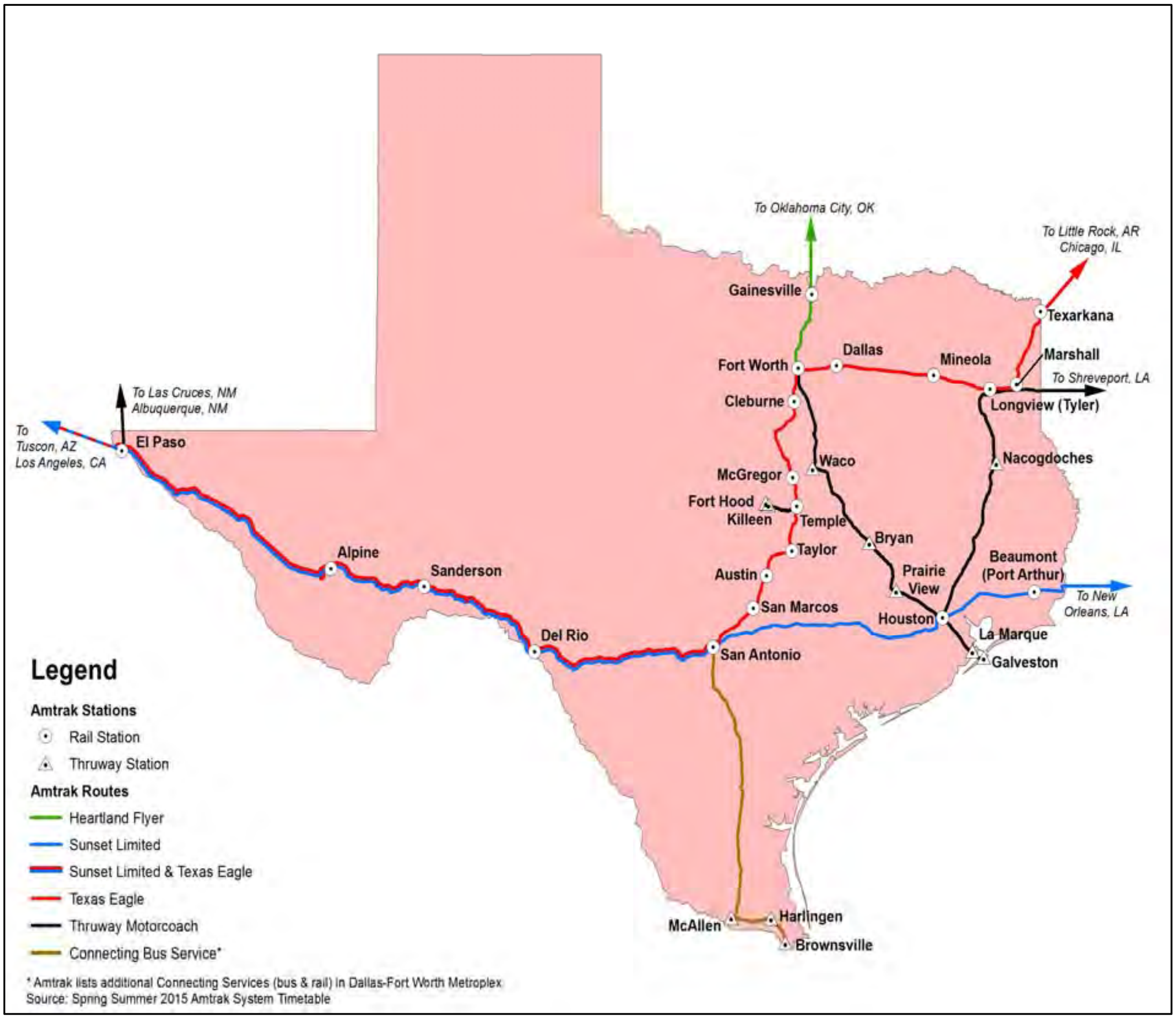


Source: Texas A&M Transportation Institute, The History of Rail Passenger Service in Texas 1820-1970, 1976

Amtrak Long-Distance and Intercity Network

Amtrak, the National Railroad Passenger Corporation, operates all of the current intercity passenger rail service in Texas. With the exception of Eddie Bernice Johnson Union Station in Dallas, the Fort Worth Central Station, and the commuter agency trackage between Fort Worth and Dallas, Amtrak operates entirely over trackage owned and operated by Class I freight railroads. Three different Amtrak trains provide passenger rail service in Texas: the *Heartland Flyer, Texas Eagle*, and *Sunset Limited* (Figure 2-9). The *Sunset Limited* and *Texas Eagle* are cross-country, long-distance trains operated with Superliner (double-deck) coaches, sleeping cars, a dining car, and a Sightseer lounge car. The *Heartland Flyer* is a regional train serving Texas and Oklahoma that operates with Superliner coaches and a Superliner snack coach. By using a combination of freight railroad lines, Amtrak's routes in Texas serve most of the state's major urban areas. However, with the exception of the state-supported *Heartland Flyer,* Amtrak's routes and schedules are focused on serving longer distance passengers and providing the maximum connectivity to the Amtrak network as a whole.

Figure 2-9: Current Texas Amtrak Routes



Source: Texas A&M Transportation Institute

This section provides an overview of the overall Amtrak system in Texas, with information on routes and service, ridership and ticket revenue, stations, boardings and alightings, financial results, and on-time performance. Although structural constraints (access to freight rail lines) and a limited number of available rail cars and locomotives has constrained Amtrak's ability to increase service offerings, its revenue management practices and targeted marketing efforts, along with rising air of the decade. Lower gas prices and weather-related service disruptions in the mid-2010s caused ridership and revenue to remain stagnant or slightly decline, but all three Amtrak trains serving Texas had strong ridership and revenue increases in Fiscal Year (FY) 2017 fares and fluctuating gas prices drove ridership and ticket revenues to record levels in the early part.

Heartland Flyer

The *Heartland Flyer* operates daily between Oklahoma City, Oklahoma and Fort Worth, Texas (206 miles) serving the intermediate stations of Norman, Purcell, Pauls Valley, and Ardmore, Oklahoma. There is one intermediate stop in Texas, at Gainesville. The schedule allows same day trips to Fort Worth, as well as connections to other rail services. Under schedules in effect in 2018, the southbound *Heartland Flyer* leaves Oklahoma City at 8:25 a.m., arriving in Fort Worth at 12:27 p.m. Northbound the train leaves Fort Worth at 5:25 p.m. and arrives in Oklahoma City at 9:27 p.m.

Figure 2-10: Heartland Flyer at Fort Worth Central Station

At the Fort Worth Central Station (formerly named the Fort Worth Intermodal Transportation Center, or Fort Worth ITC), *Heartland Flyer* riders can connect with Amtrak's *Texas Eagle* for travel to Dallas, Texarkana, Austin, San Antonio, and cities along the route in Arkansas, Missouri, Illinois, New Mexico, Arizona and California (Figure 2-10). Passengers at Fort Worth can also connect with Trinity Railway Express commuter trains for travel to Union Station in Dallas as well as cities between Fort Worth and Dallas, and also connect to TEXRail commuter trains to Grapevine and Dallas/Fort Worth (DFW) International Airport. *Heartland Flyer* riders at Fort Worth can also connect to an Amtrak Thruway Bus route serving Waco, Bryan (College Station), Prairie View, and Houston.

Fort Worth Central Station is also a hub for local transit buses operated by Trinity Metro (formerly the Fort Worth Transportation Authority). To increase connectivity, bridge the "last mile" gap, and expand the market Amtrak, TxDOT and Oklahoma Department of Transportation began offering the free carriage of bicycles on the *Heartland Flyer* beginning in 2015. Bicycle carriage has shown to be a very popular traffic generating amenity on other Amtrak routes such as the *Capitol Corridor* in California. Amtrak also added a "Pets on Board" program to the *Heartland Flyer* in 2016, allowing passengers to bring their dogs or cats in an enclosed carrier on board the train with them for a $25 fee. Also in 2016, Amtrak introduced a new Thruway Bus service that connects with the *Heartland Flyer* at Oklahoma City and operates north to Wichita, Kansas (the largest city in Kansas) and Newton, Kansas, where connections can be made with Amtrak's *Southwest Chief* train operating between Chicago and Los Angeles.

The route segments of the *Heartland Flyer* are presented in Table 2-3. The *Heartland Flyer* operates on 206 miles of track owned by BNSF Railway. In an effort to improve the competitive position of the service compared to auto travel and to increase ridership, TxDOT received a $3.8 million grant funded through the American Recovery and Reinvestment Act of 2009 (High-Speed Rail grants) to upgrade the signals along the Texas portion of the route to allow for an increase in speeds to 79 mph. This upgrade reduced the trip time from approximately 4 hours and 15 minutes to 4 hours and 2 minutes for travel from Oklahoma City to Fort Worth, saving approximately 13 minutes.

Table 2-3: Route Segments of the Heartland Flyer

Route Segment	Length (miles)
Oklahoma City – Norman	20 miles
Norman - Purcell	15 miles
Purcell – Pauls Valley	22 miles
Pauls Valley - Ardmore	45 miles
Ardmore - Gainesville	39 miles
Gainesville – Fort Worth	65 miles
Total:	**206 miles (71 miles in Texas)**

The *Heartland Flyer* operates with Amtrak Superliner equipment. These cars are bi-level, with passenger accommodations on two levels. The train carries two full coaches and a coach/café car. A single diesel locomotive provides the motive power for the train. The opposite end of the train will have either a second diesel locomotive or a Non-Powered Control Unit, which is a former locomotive that has retained its train control equipment and cab for train operation but has had its propulsion equipment removed and the space retrofitted to provide storage for baggage and bicycles (although checked baggage is not offered on the *Heartland Flyer*). The capacity of the train is about 210 passengers. In addition to food service and bicycle carriage, the *Heartland Flyer* offers the Trails & Rails program, which is a partnership between Amtrak and the National Park Service. Volunteer docents from the Chickasaw National Recreation Area periodically ride the *Heartland Flyer* describing the geographic, cultural, and historical background of the countryside the train is passing through.

In FY 2017, the *Heartland Flyer* carried 71,340 riders, a 7.9 percent increase compared to the previous year. This ridership increase could be attributed in part to reliability improvements achieved after several years of delays and service cancellations caused by severe seasonal flooding as well as the completion of the Tower 55 Multimodal Improvement Project in Fort Worth. The Tower 55 Project improved safety and congestion at an at-grade rail intersection where five major freight and passenger rail routes converged into two double-track main lines crossing each other. Through a funding partnership, which included a federal TIGER grant, funding from TxDOT and the City of Fort Worth, and major contributions from BNSF and UP, more than $101 million was invested in a combination of at-grade infrastructure improvements, new signaling and train control systems, and the installation of additional mainline trackage through the area. Completed in 2014, the project has improved rail throughput, increased train operating speeds through the interlocking from 10 mph to 30 mph, enhanced public safety, and alleviated train delays that had averaged 30 minutes for passenger and commuter trains in the area and up to 90 minutes for freight trains.

Customer research undertaken by the Texas A&M Transportation Institute in 2010 ("Measuring the Benefits of Intercity Passenger Rail: A Study of the Heartland Flyer") found that passengers are mostly taking leisure trips (75 to 80 percent). A large portion of these trips (about 40 percent) are made to visit family or friends. Traveling to school, vacation, and other recreational trips range from 7 to 18 percent depending on the season. Of the remaining riders about 10 percent are making business or personal business trips. With only one round-trip frequency per day, many passengers (40 to 45 percent) are making trips involving overnight stays. Under the current schedule, any rail passenger making a round trip that begins in Fort Worth or Gainesville will have to stay overnight before boarding the next return train to Texas. Most *Heartland Flyer* riders would have driven if the train was not available and overwhelmingly cited comfort/relaxation, price, and issues with driving (congestion, etc.) as reasons for taking the train. The majority of riders are female (at least 60 percent or more) with most passengers skewing older. More than 50 percent of all travelers are employed, but large segments (24 to 27 percent) are retired.

From 1999 through 2005, the *Heartland Flyer* was managed and funded by the Oklahoma Department of Transportation (ODOT). As a result of changes in funds available, ODOT approached Texas for funding assistance. ODOT's proposal was accepted, and the train is now jointly funded by both TxDOT and ODOT. From 2006 through 2013 Texas' funding contribution ranged from $1.3 million to $2.0 million per year. In FY2014, a change in cost allocation mandated by the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) raised the Texas contribution to $3.07 million. In FY2015 and FY2016, the Texas contribution declined to approximately $2.5 million per year.

<u>Sunset Limited</u>

The *Sunset Limited* operates three days per week in each direction between Los Angeles and New Orleans (1,995 miles), serving major intermediate stations at Maricopa, Arizona (Phoenix), Tucson, Arizona, El Paso, Texas, San Antonio, Texas, and Houston, Texas (937 miles in Texas). At Amtrak's San Antonio station, through cars (one coach and one sleeping car) routed from Chicago on the *Texas Eagle* are switched to the *Sunset Limited* for travel to and from Los Angeles. Under schedules in effect in 2018, the eastbound *Sunset Limited* passes through central and eastern Texas on Tuesday, Friday and Sunday; the westbound train passes through central and eastern Texas on Monday, Wednesday, and Saturday. Eastbound the train leaves Los Angeles at 10:00 p.m. on Sunday, Wednesday, and Friday (day 1), stopping at El Paso at 3:35 p.m. (day 2), leaving San Antonio at 6:25 a.m. (day 3), arriving in Houston at 11:10 a.m. (day 3), and arriving in New Orleans at 9:40 p.m. (day 3). Westbound the train leaves New Orleans at 9:00 a.m. on Monday Wednesday, and Saturday (day 1), leaving Houston at 6:55 p.m. (day 1), arriving at San Antonio at 12:05 a.m. (day 2), stopping at El Paso at 1:22 p.m. (day 2), and arriving in Los Angeles at 5:35 a.m. (day 3). The train also serves four smaller cities in Texas, stopping at Beaumont, Del Rio, Sanderson, and Alpine. The Sunset Limited offers overnight service between Houston and El Paso and daytime/evening service (7- to 12-hour rides) locally within central and eastern Texas. However, the tri-weekly service significantly limits the appeal of the train for short-distance travel within Texas. Short-distance travelers are more likely to take trips when same-day or next-day departures (daily service) are available. Convenient, consistent service is critical to their mode choice.

The route segments for the *Sunset Limited* are presented in Table 2-4. Through Texas, the *Sunset Limited* operates on track owned by UP. The *Sunset Limited* operates with Amtrak Superliner equipment. These cars are bi-level, with passenger accommodations on two levels. The train carries coaches, sleeping cars, a dining car, a Sightseer Lounge, crew dormitory car, and a baggage car, with a total capacity of about 340 passengers (including the through coach and sleeper from Chicago).

Table 2-4: Route Segments of the Sunset Limited

Route Segment	Length (miles)
Los Angeles – Maricopa (Phoenix)	416 miles
Maricopa - Tucson	86 miles
Tucson – El Paso	315 miles
El Paso – San Antonio	605 miles
San Antonio - Houston	210 miles
Houston - New Orleans	363 miles
Total:	**1,995 miles (937 miles in Texas)**

Over the years, one of the *Sunset Limited's* key issues has been poor on-time performance (OTP). In an attempt to address this issue, several hours of travel time were added to the schedule. This did not solve the problem, however, and OTP remained poor. Performance improved after PRIIA was enacted in 2008, which authorized FRA and Amtrak to establish on-time performance requirements. Finally, after negotiations with the UP, the additional schedule time was removed in the spring of 2012. The train returned to its former schedule with more marketable times at key cities and a restored connection at Los Angeles with Amtrak's *Coast Starlight* to Seattle.

Since it first took over U.S. passenger trains in 1971, Amtrak has operated the *Sunset Limited* between New Orleans and Los Angeles, continuing a service first begun by the Southern Pacific Railroad in 1894. Amtrak extended the *Sunset Limited*'s route to Florida in 1993, establishing the first actual coast-to-coast passenger train in the U.S. However, after Hurricane Katrina struck the Gulf Coast in August 2005, severely damaging the host freight railroad line to Florida, Amtrak suspended the train's service east of New Orleans and has not yet reinstated it. In recent years, regional and federal initiatives have been undertaken to study ways to resume passenger rail service east of New Orleans.

<u>Texas Eagle</u>

The *Texas Eagle* operates on a daily schedule between Chicago and San Antonio (1,305 miles), serving major intermediate stations at St. Louis, Little Rock, Dallas, Fort Worth, and Austin (with 531 miles of its route in Texas, more than any other state). Three days per week, eastbound and westbound, through cars (one coach and one sleeper) to and from Los Angeles via the connecting *Sunset Limited* (serving Tucson and El Paso) are switched onto and off the *Texas Eagle* in San Antonio.

Under schedules in effect in 2018, the eastbound *Texas Eagle* leaves San Antonio at 7:00 a.m., stopping in Austin at 9:31 a.m., leaving Fort Worth at 2:20 p.m., Dallas at 3:40 p.m., and arriving in St. Louis at 7:24 a.m. (the next day) and Chicago at 1:52 p.m. The westbound train leaves Chicago at 1:45 p.m., and St. Louis at 7:55 p.m., arriving in Dallas at 11:30 a.m. (the next day), Fort Worth at 1:25 p.m., Austin at 6:30 p.m., and San Antonio at 9:55 p.m. The train also serves the following smaller cities in Texas: Marshall, Longview, Mineola, Cleburne, McGregor, Temple, Taylor, and San Marcos. The *Texas Eagle* offers overnight service between St. Louis and Dallas and daytime/evening service (7- to 12-hour rides) locally within northern and central Texas between San Antonio and Texarkana.

The route segments for the *Texas Eagle* are presented in Table 2-5. Through Texas, the *Texas Eagle* operates on tracks owned by the UP (from San Antonio to Temple, and Dallas to Texarkana), BNSF (Temple to Fort Worth), and Trinity Railway Express (Fort Worth to Dallas). Trinity Railway Express (TRE) is a commuter rail agency jointly owned by Dallas Area Rapid Transit and Trinity Metro. The *Texas Eagle* shifted its route between Fort Worth and Dallas in 2016, relocating away from UP's freight rail tracks and onto TRE's commuter rail line, after completion of a $14.4 million project that added 1.4 miles of double track, a new bridge, and a new crossover on the TRE corridor. This routing change eliminated the *Texas Eagle*'s time-consuming backup move through the Tower 55 at-grade crossing of freight rail lines, improved freight train movements in the region, and increased passenger train reliability. The train has also benefited from reliability improvements generated by the Tower 55 Multimodal Improvement Project.

Table 2-5: Route Segments of the *Texas Eagle*

Route Segment	Length (miles)
Chicago – St. Louis	284 miles
St. Louis – Little Rock	350 miles
Little Rock – Texarkana	140 miles
Texarkana – Dallas	217 miles
Dallas – Fort Worth	31 miles
Fort Worth – San Antonio	283 miles
Total:	**1,305 miles (531 miles in Texas)**

The *Texas Eagle* operates with Amtrak Superliner equipment (Figure 2-11). These cars are bi-level with passenger accommodations on two levels. The train carries coaches, sleeping cars, a dining car, a Sightseer Lounge, crew dormitory car, and a baggage car. The train's capacity is about 290 passengers.

Figure 2-11. Eastbound and Southbound *Texas Eagle* Trains at Fort Worth Central Station

In 1996, Amtrak announced that it would terminate the *Texas Eagle*, which at the time ran three times a week between Chicago and Los Angeles. Efforts by community and passenger stakeholders, aided by TxDOT and the 75th Texas Legislature, facilitated a loan of $75 million that forestalled this proposal. Through this action, *Texas Eagle* service was retained. In addition, to improve the financial performance of the route, train frequency was increased from tri-weekly to daily. Daily service not only improved equipment and crew utilization but also provided travelers with more attractive service options, especially for shorter distance trips between cities in Texas.

Also during the period, the Texas Eagle Marketing and Performance Organization (TEMPO) was founded at the request of the Texas Eagle Mayors' Coalition to establish a mechanism for local input to Amtrak on issues affecting the *Texas Eagle*. Part of TEMPO's mission was to promote and improve passenger rail service along the *Texas Eagle* route, with particular emphasis on Texas and Arkansas, and to increase public awareness of the economic benefits of passenger rail service. One of the major achievements of TEMPO was its participation in the *Texas Eagle* local revenue management project. Beginning in 1999, the project allowed those familiar with local travel trends to adjust fares to maximize ridership and ticket revenue.

Multimodal Connectivity: Amtrak Thruway Bus

Thruway Bus services extend Amtrak's route network with connections between trains and buses facilitated by through ticketing, scheduling, and reservations. Amtrak's Thruway Bus routes in Texas include Houston-Longview, Houston-Galveston, Galveston-Longview, Fort Worth-Houston and Fort Hood-Killeen-Temple (Table 2-6). Amtrak Thruway Bus schedules are coordinated with the Amtrak passenger rail schedules, and the connection is guaranteed so the motorcoach arrives before a train arrives and departs after the train departs. In addition to the services described above, additional Thruway Connections exist that shuttle passengers from the Dallas Greyhound bus station eastward for connections with Amtrak's *City of New Orleans* (a New Orleans-Chicago train) at Jackson, MS, and with Amtrak's *Crescent* (New Orleans-New York) at Meridian, MS. Amtrak also has interline ticketing agreements with several other intercity motorcoach operators wherein Amtrak acts as a sales agent and sells tickets on key motorcoach routes. While those schedules are not coordinated or guaranteed, interline ticketing does offer the traveling public additional convenience, travel options, and increases awareness of non-automobile travel alternatives.

Table 2-6: List of Connecting Thruway Bus Services

Train Routes	Amtrak Stations with Thruway or Intercity Bus Connections	Destinations	Operator
Heartland Flyer, Texas Eagle	Fort Worth	Waco	Greyhound Lines
		Bryan/ College Station	Greyhound Lines
		Prairie View	Greyhound Lines
		Houston	Greyhound Lines
Texas Eagle	Longview	Shreveport, Louisiana	Lone Star Coach
		Nacogdoches	Lone Star Coach
		Houston	Lone Star Coach
		Galveston	Lone Star Coach
	Temple	Fort Hood	Southwestern Coaches
		Killeen	Southwestern Coaches
Sunset Limited	Houston	Galveston	Lone Star Coach
	El Paso: Connecting service available at Greyhound Lines station	Las Cruces, New Mexico	Greyhound Lines
		Albuquerque, New Mexico	Greyhound Lines
	San Antonio: Connecting services for both *Texas Eagle* and *Sunset Limited* routes available at Greyhound Lines station	Harlingen	Valley Transit
		McAllen	Valley Transit
Crescent	Dallas: Connecting service available at Greyhound Lines station	Meridian, Mississippi	Greyhound Lines
City of New Orleans	Dallas: Connecting service available at Greyhound Lines station	Jackson, Mississippi	Greyhound Lines

Source: Amtrak

Additional Connectivity Considerations

While Amtrak's long-distance routes are reviewed individually (and origin-destination ridership data is compiled and reported on a route basis), the Amtrak network is in fact a large matrix of interconnected city pairs. Generally, approximately 30 percent of the riders on each train are connecting to other trains. On short-distance, multiple frequency routes, certain schedules have large numbers of connecting riders. Most passengers are not traveling between major endpoint cities with frequent air service. They are traveling between small and medium size cities, small cities, and large cities, often connecting at major hub cities to other trains. Passengers often are choosing the train because they live in or are traveling to towns without air or motor coach service, or they find that their chosen travel route using the current market-based air and motor coach hub system is expensive or circuitous with long layovers at connecting hub cities.

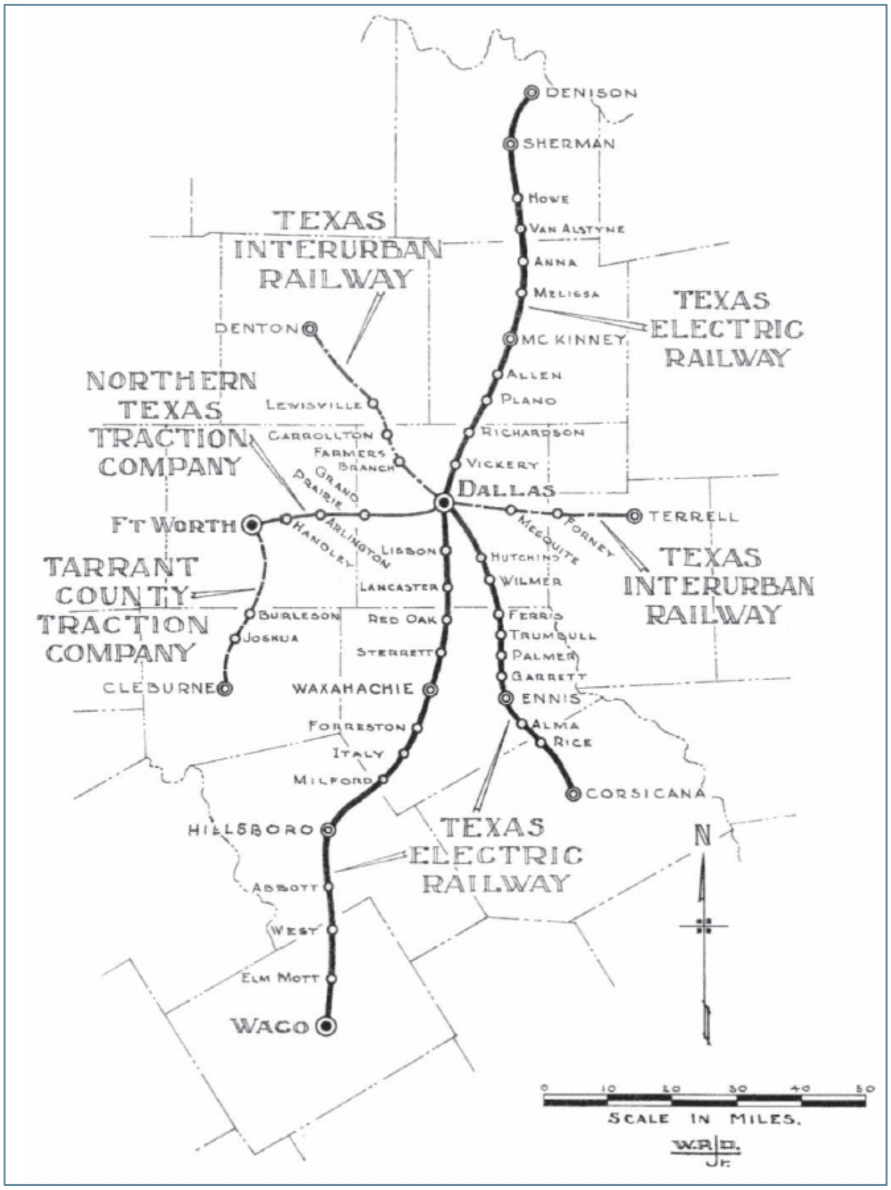
Commuter Rail Network

Commuter rail primarily serves commuters on daily trips between suburban and urban areas and may operate within freight rail corridors. Currently, four commuter rail services operate in Texas:

- Trinity Railway Express between the cities of Dallas and Fort Worth
- A-train between the cities of Carrollton and Denton
- MetroRail Red Line between downtown Austin and the city of Leander
- TEXRail between downtown Fort Worth and DFW Airport

TEXRail is the newest addition to Texas commuter rail operations, opening in January 2019. The other three established agencies also are considering expansion plans. This chapter discusses the existing commuter rail services in Texas. Plans for expanding existing systems or introducing new commuter rail services in the state will be discussed in Chapter 3. Although today's commuter rail systems are a relatively new addition to the overall transportation network in Texas, introduced within the past two decades, the services they provide would have appeared familiar to Texans living a century ago. Figure 2-12 shows the interurban (regional rail) network that existed in the North Central Texas area from 1901 to 1948, a network that could serve as a model for regional mobility as today's systems consider expansion and additional metropolitan regions look for effective, new transportation options.

Figure 2-12: North Texas Interurban Railways 1901–1948



Source: North Central Texas Council of Governments

Similarly, Dallas Area Rapid Transit (DART) has been negotiating right-of-way acquisitions with various freight railroads in the Metroplex for the past 30 years to allow for potential system expansions. The agency has purchased approximately 250 miles of rail lines that have been, or could be in the future, used to expand rail transit or commuter rail operations in the region. In addition to the right-of-way to Denton, now being used by the Denton County Transportation Authority's A-train, there are long-term plans to establish rail right-of-way links with Sherman and Rockwall County. DART has no current plans to extend service to these locations, but maintaining the option to expand the regional commuter rail network will become increasingly important as the Metroplex continues to grow. Through the acquisitions above, DART also controls an easement within an existing freight line for potential commuter service from the DART Westmoreland LRT station to Duncanville. Among DART's right-of-way acquisitions was the 54-mile Cotton Belt line between Fort Worth and Wylie, which the agency purchased in 1991 from the St. Louis Southwestern Railway. TEXRail commuter service began on January 10, 2019 on a portion of the line between Fort Worth and DFW Airport, with plans underway to open the connecting DART Silver Line commuter rail service between the airport and Plano in the next 5 years.

Operation and Establishment of Commuter Rail

The four existing commuter rail services in Texas are operated by local transit authorities, however, other entities may also initiate and operate commuter rail. The state legislature allows for the formation of commuter rail districts, under certain conditions, to facilitate the planning and implementation of rail intended primarily for daily commuting. The 75th Texas Legislature passed the first bill to authorize the formation of an intermunicipal commuter rail district in 1997 (Chapter 173, Transportation Code). In 2007, the 80th Texas Legislature authorized the creation of a commuter rail district in the Lower Rio Grande Valley (H.B. 2510; Chapter 174, Texas Transportation Code). These commuter rail districts are considered public bodies and political subdivisions of the state.

Other commuter rail services are being developed or studied by agencies created under Texas permissive statutes for the establishment of metropolitan transportation authorities and coordinated county transportation districts. In the North Texas region, commuter rail is also often referred to as regional passenger rail. The 79th Texas Legislature in 2005 authorized the creation of a freight rail district in a county with a population of 3.3 million or more (Chapter 171, Transportation Code), and the 81st Texas Legislature in 2009 added that a freight rail district may exercise the powers of an intermunicipal commuter rail district created under Chapter 173, Transportation Code.[14]

As specified in the 1997 bill authorizing an intermunicipal commuter rail district (Chapter 173, Transportation Code), a district may be created to provide commuter rail service between two municipalities if each has a population of more than 450,000 and they are located not farther than 100 miles apart as determined by TxDOT. The district may be created by resolutions stating support for the formation of the district from each municipality or county. The bill set forth the steps for creating a commuter rail district and establishing its board, as well as specifying the powers and duties of the district, and how the district should operate. The district has the power of eminent domain, may issue revenue bonds, and may acquire, construct, develop, own, operate, and maintain the rail facilities. A municipality located within the district that wants to be served by the district is required to pay for construction of a commuter rail station.

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[14] Texas Transportation Code, http://www.statutes.legis.state.tx.us/Docs/TN/htm/TN.171.htm, Accessed June 21, 2012.

The first commuter rail district formed in response to the passage of the bill was the Lone Star Rail District (originally established as the Austin-San Antonio Intermunicipal Commuter Rail District). The district undertook some preliminary engineering and environmental analysis for a commuter rail service between San Antonio and Georgetown called the LSTAR. However, after Union Pacific announced they would no longer participate in the project local political support from l stakeholders dropped and the board of the Capital Area Metropolitan Planning Organization voted in October 2016 to remove from its long-range transportation plan.[15]

In 2007, Harris County, the City of Houston, and Fort Bend County created the Gulf Coast Rail District (GCRD) under authority granted by the State of Texas in Section 171 of the Transportation Code. Chapter 171 authorized freight rail districts; however, Section 171.053 extends the purpose of the chapter to include the powers of an intermunicipal commuter rail district created under Chapter 173, including the powers related to a commuter rail facility and other types of passenger rail services, including intercity rail services.[16] The GCRD is governed by a board of directors consisting of 14 appointees and three ex officio members. The GCRD chairman is jointly appointed by the Harris County Commissioners Court and the mayor of Houston. Other members include the chairman of the Port of Houston Authority and appointments by Harris County, Fort Bend County, Galveston County, Waller County, Montgomery County, the City of Houston, small municipalities in Harris County, and small municipalities in Fort Bend County. The GCRD works with public and private partners to develop and implement a systematic approach for improvement of the regional freight and passenger rail networks for the benefit of the region's residents and economy.[17] The district has been conducting feasibility studies to assess the potential for developing a regional commuter rail system in the Houston region.

In response to the 2007 bill authorizing the formation of a commuter rail district along the Texas-Mexico border, the Hidalgo County Commissioners Court created the Hidalgo Commuter Rail District to provide passenger rail services between Brownsville and the urban areas of McAllen-Pharr-Edinburg. The general provisions for the commuter rail district are similar to the intermunicipal commuter rail districts; however, some notable differences are that the commuter rail district may only be created by resolution from a county commissioner's court rather than a municipality, and the commuter rail district may impose any kind of tax except an ad valorem tax, if approved by the majority of voters in an election on the tax proposition. The district completed a commuter rail feasibility study in 2011, paid for with federal stimulus funds, but efforts since have slowed, and finding funding sources for the project's construction remains a challenge.

The Texas A&M Transportation Institute's 2018 Texas' Most Congested Roadways Study analyzed roadway congestion in Texas.[18] The study found that the top 10 of the 100 most congested roadways in Texas were all located in cities that currently have some form of commuter rail or rail transit: Houston, Austin, Dallas, and Fort Worth. Commuter rail offers an attractive alternate travel option for residents in these urban areas, allowing them to avoid travel delays caused by extreme roadway congestion.

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[15] Statesman: Lone Star Rail officially dead after final CAMPO vote, October 18, 2016
[16] Texas Transportation Code, Title 5, Railroads, Subtitle I, Special Districts, Chapter 171, Freight Rail Districts, http://www.statutes.legis.state.tx.us/Docs/TN/htm/TN.171.htm, Accessed June 23, 2012.
[17] http://www.gcfrd.org/default.htm, Accessed June 24, 2012.
[18] Texas A&M Transportation Institute: Texas' Most Congested Roadways 2018

Trinity Railway Express

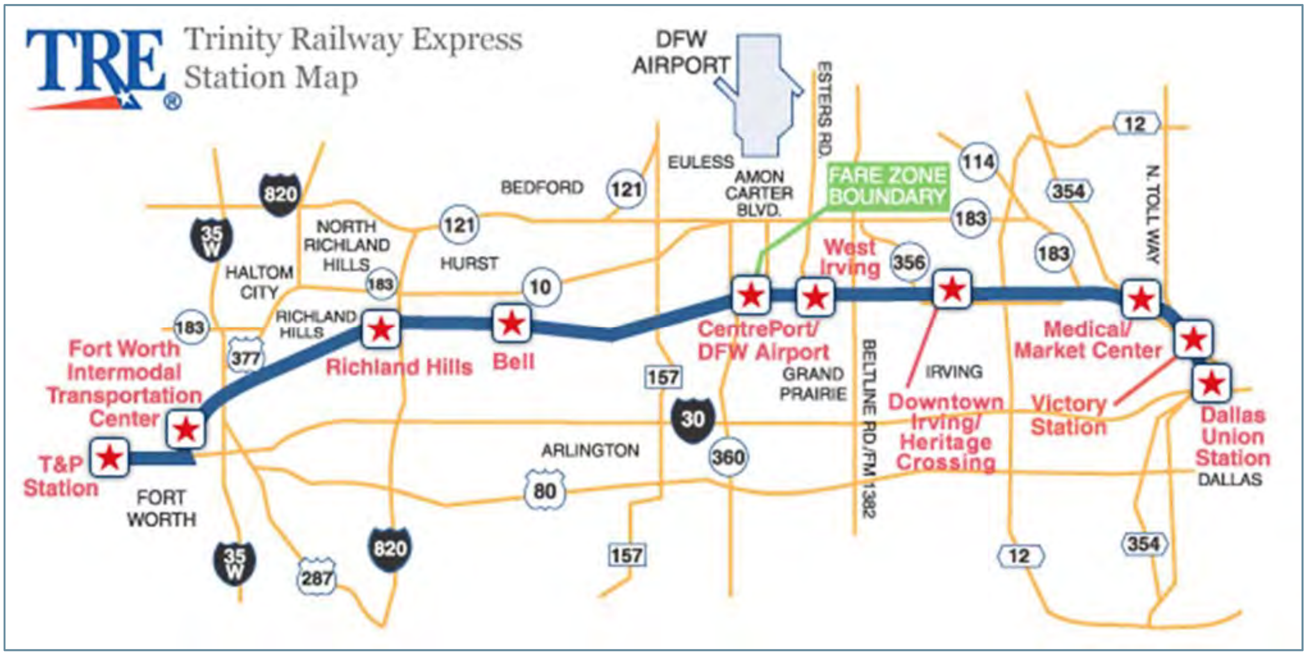
The Trinity Railway Express (TRE) commuter rail operation represents one of the most significant joint services between the two largest metroplex cities since the construction of the Dallas/Fort Worth (DFW) International Airport in the early 1970s. The TRE commuter rail service (**Figure 2-13**) is provided by Dallas Area Rapid Transit (DART) and Trinity Metro (previously known as the Fort Worth Transportation Authority or The T). **Figure 2-14** shows the TRE system. The first phase of the TRE system (10 miles) was opened in December 1996, providing service between Dallas and South Irving. A 17-mile extension to Richland Hills opened in 2000. TRE service was extended 7 additional miles to downtown Fort Worth in 2001, on a route that included a rail tunnel carved through the ground floor of Fort Worth's Alarm Supply Building. Today's TRE system covers 33.8 miles and serves 10 permanent stations.[19] The line is anchored at each end by restored railroad stations: EBJ Union Station in Dallas, built in 1916, and the T&P Station in Fort Worth, an art deco structure opened by the Texas & Pacific Railway in 1931.

Figure 2-13: Trinity Railway Express at EBJ Union Station in Dallas

Source: TxDOT

[19] DART Reference Book (March 2018)

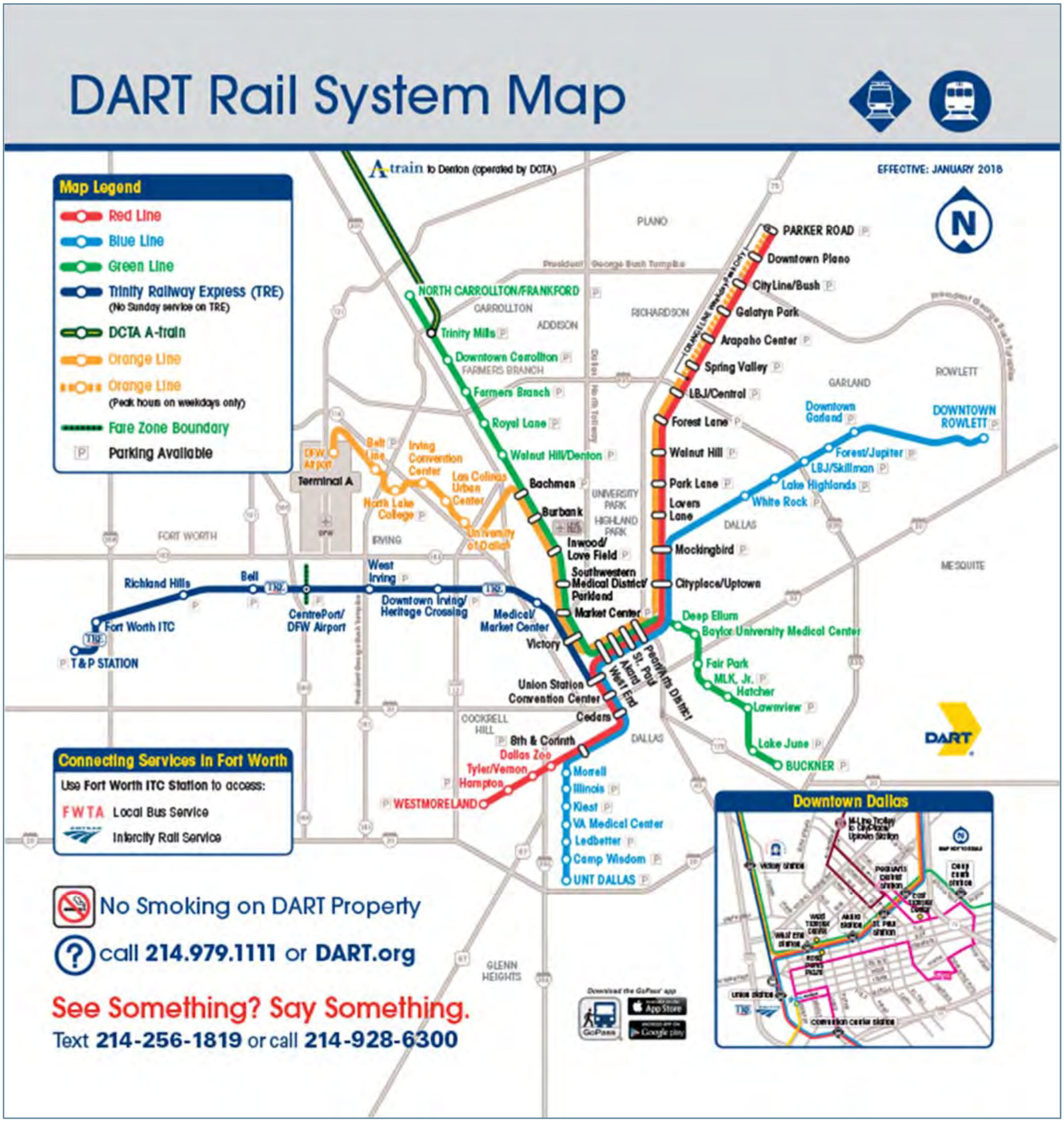
Figure 2-14: Trinity Railway Express Rail Route and Stations



Source: TRE

The Downtown Irving/Heritage Crossing station was formerly known as South Irving prior to July 30, 2012, and the Bell station was previously known as Hurst/Bell. TRE commuters can make connections with Amtrak intercity passenger trains at both Fort Worth Central Station and the Eddie Bernice Johnson Union Station in Dallas. At EBJ Union Station in Dallas, TRE commuters also can make connections to the DART light rail network, shown in Figure 2-15.

Figure 2-15: TRE Connections in Context of Regional Rail System



Source: DART

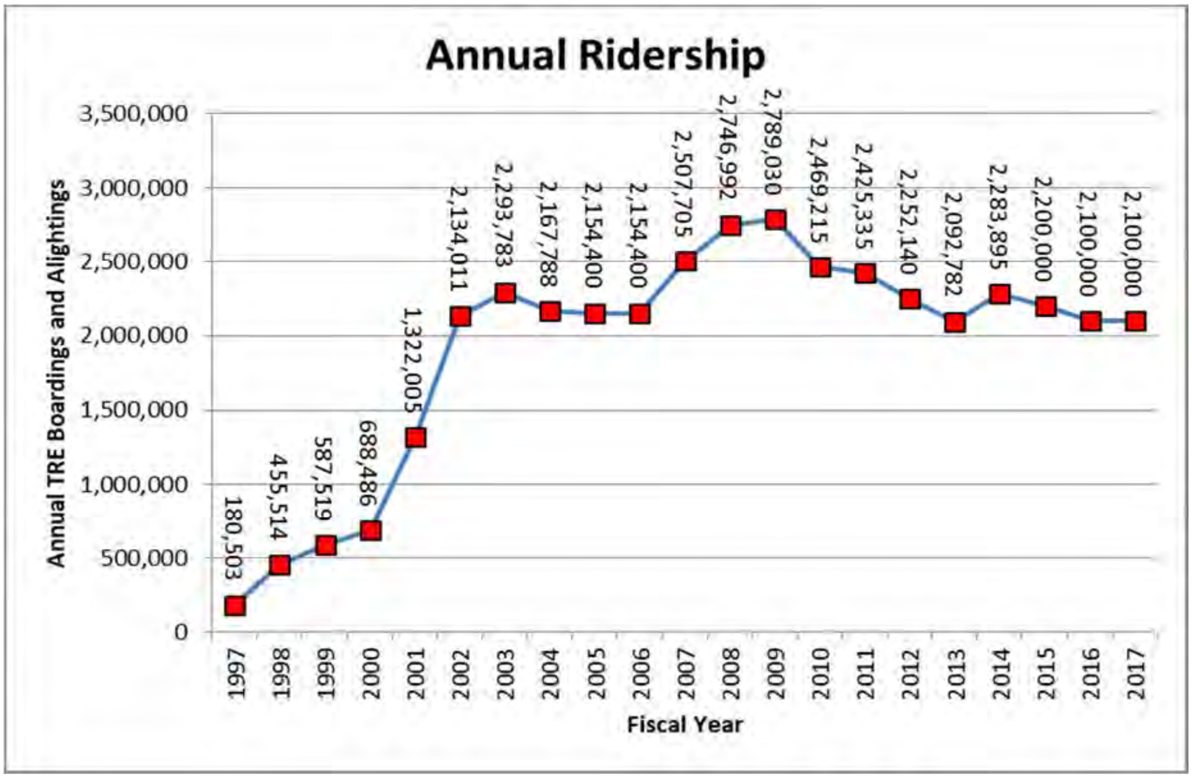
TRE operates Monday to Saturday. Weekday service operates on a 20-30 minute peak and 60-90 minute off-peak schedule.[20] The number of trains increased to provide midday and evening service in December 1997. In December 1998, Saturday service was added. The TRE schedule offers 35 eastbound trains on weekdays throughout the day, 24 of which run from the Fort Worth T&P Station to EBJ Union Station in Dallas; six trains run only from West Irving to Dallas and five trains only run from Fort Worth to CentrePort, seven on Fridays. TRE runs 21 eastbound trains on Saturday, 18 of which operate the full distance from Fort Worth to Dallas. On weekdays, there are 33 westbound trains, 26 of which run the full length from Dallas to Fort Worth, 28 on Fridays. Three westbound trains start at CentrePort to go to Fort Worth, and four trains run from Dallas to West Irving or Centreport, two on Fridays. TRE runs 21 westbound trains on Saturday, 18 of which operate the full distance from Dallas to Fort Worth.[21]

The vehicle fleet consists of nine General Motors-built diesel locomotives (seven F59PH and two F59PHI locomotives), 17 bilevel coaches, and eight bilevel cab cars.[22] A standard two-car train configuration holds 330 passengers, while the standard three-car train configuration has a capacity of 495 passengers. Herzog Transit Services, Inc. operates the TRE trains and maintains the equipment under a contract with DART and Trinity Metro.

Except for a slight decrease in 2004 and 2005, annual ridership on TRE has increased from its inception until 2009, especially after 2001 when TRE was extended to Fort Worth (see Figure 2-16). From FY 2007 to FY 2010, TRE ridership included passengers on the “Big Tex Express,” a weekend shuttle from a remote parking lot to the State Fair of Texas. The end of that service in FY 2011, combined with employment downturns in the Dallas central business district and the Dallas medical district, were the primary causes for a decrease in ridership in FY 2010 and FY 2011. In addition, TRE fares effectively doubled during that time period, which also was a contributing factor in the ridership decline.[23] Since 2011, TRE ridership has stabilized around approximately 2.2 million passengers per year, with an average weekday ridership of 7,400 passengers.

[20] DART Reference Book (March 2018)
[21] TRE: https://www.trinityrailwayexpress.org/wp-content/uploads/2018/09/TREschedule_12Aug18.pdf
[22] DART Reference Book (March 2018); https://en.wikipedia.org/wiki/Trinity_Railway_Express
[23] According to Bill Farquhar, TRE chief operating officer, June 2012.

Figure 2-16: TRE Annual Ridership (FY 1997 to FY 2017)



DART and Trinity Metro jointly own the former Rock Island rail corridor on which TRE operates. The cities of Dallas and Fort Worth jointly purchased the right-of-way in 1983 for $34 million from the Rock Island trustee following the freight railroad's bankruptcy.[24] Since then, the agencies have entered into trackage rights agreements to allow both BNSF and UP to operate freight trains over the TRE line. Since the corridor is part of the national freight railroad network and has shared freight and intercity passenger operations, TRE's commuter rail equipment must meet the FRA's crashworthiness standards. TRE dispatches the rail corridor, directing all passenger and freight movements, and ensures that commuter trains receive priority.

Amtrak's *Texas Eagle* long-distance train began running over the TRE corridor between Dallas and Fort Worth in 2016, shifting away from a former route using UP freight trackage. The reroute occurred after the completion of TRE's Valley View project, which added 1.4 miles of second mainline track between the West Irving and CentrePort stations, connecting two existing double-track sections. The Valley View project also included rebuilding the highway-rail grade crossing at Valley View Lane to accommodate two tracks, with quad gates to establish a quiet zone; converting a crossover to a universal interlocking with No. 20 turnouts; and replacing the single-track Bear Creek Bridge in Irving with a new double-track structure. The $15 million project was funded in part with a $7.2 million Federal Railroad Administration (FRA) grant awarded in 2009 with 50 percent matching local funds, and a $4.3 million grant from the Federal Transit Administration (FTA). With the project's completion, approximately 20 miles of TRE's 35-mile line is double-tracked, improving operational flexibility and increasing on-time performance.

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[24] http://trn.trains.com/railroads/2006/07/trinity-railway-express

The Valley View Project also enabled TRE to complete a series of service improvements that were introduced in October 2016, among them:

- Improving morning and evening weekday rush-hour headways to 30 minutes
- Improving Saturday frequency to hourly service
- Providing hourly service during off-peak weekday hours
- Extending Friday and Saturday evening service an average of 1-2 hours
- Introducing earlier Saturday morning departures, between 5 a.m. and 6 a.m., approximately three hours earlier than previously

According to TRE, these service changes have resulted in an increase in overall weekday ridership, with an approximate 20 percent increase in ridership on Saturdays.[25]

TRE is in the process of installing Positive Train Control (PTC) on is corridor, in accordance with federal law. Costs will be shared by the regional transit agencies with support from the North Central Texas Council of Governments. Congress extended the deadline for PTC to December 31, 2020.

Denton County Transportation Authority A-Train

The Denton County Transportation Authority (DCTA) is a coordinated county transportation authority created by House Bill 3323, under Chapter 460 of the Texas Transportation Code, approved by the 77th Texas Legislature and signed into law by the governor in 2001. On November 5, 2002, the voters in Denton County approved the formation of DCTA. The DCTA Board of Directors represents every geographic area of the county. Three cities additionally approved a 0.5 percent sales tax in an election in September 2003: Denton, Highland Village, and Lewisville. The current A-Train route was approved by the DCTA Board of Directors in May 2005, a draft environmental impact statement was completed in 2007, and a final EIS was completed in 2008. The North Central Texas Regional Toll Revenue Funding Initiative (RTRFI) provided 80 percent of the project funds. The remaining 20 percent of the funding came from DCTA local 0.5 percent sales tax revenues. The Regional Transportation Council approved the RTRFI funding in August 2008.

In summer 2010, DCTA began rehabilitating the A-Train's freight railroad infrastructure to permit passenger service, constructing a 21-mile commuter rail line connecting Denton and Carrollton. The route generally follows the eastern side of Interstate 35 (I-35) East using existing railroad right-of-way. A-Train began service on June 18, 2011 (with revenue service commencing June 20, 2011), serving six stations (see Figure 2-17), including the Trinity Mills terminal transfer station in Carrollton, where passengers can connect to the DART Green Line to downtown Dallas.

[25] https://www.dart.org/about/inmotion/may18/2.asp

Figure 2-17: DCTA A-Train Route Map

Source: DCTA

The system began service with DART-owned, self-propelled Rail Diesel Cars (RDCs), then in June 2012 began phasing in in its own equipment, consisting of 11 new Stadler-built, self-propelled GTW 2/6 articulated Diesel Multiple Unit (DMU) railcars (see **Figure 2-18**). Full integration of the Stadler GTW fleet was accomplished by December 2012, and the last RDC was returned to DART in February 2013. An FRA waiver was requested in 2009 and received June 4, 2012, which allows the Stadler DMU cars to operate in the agency's rail corridor concurrently with traditional FRA-compliant equipment. DCTA partnered with Stadler to make modifications and enhancements to the DMU cars to comply with the required safety guidelines. Modifications included changes to the fuel tank design, window glazing, passenger seats, and operator seat. The cars are ADA compliant, and seat 104 with standing room for 96 in every vehicle.

The A-Train's route was originally part of the Missouri-Kansas-Texas Railroad system, although for a brief period between 1928 and 1932, the Texas Interurban Railway Company also used the line to provide regional passenger service between Dallas and Denton. DCTA currently owns the rail line, and has an agreement to permit freight trains operated by the short line Dallas, Garland & Northeastern to use the line twice per week at night after passenger service has ended.[26]

Figure 2-18: DCTA's A-Train at Trinity Mills Station

Source: DCTA

The A-Train operates Monday through Saturday, excluding major holidays. The A-Train's Monday through Thursday weekday schedule offers 30 northbound trains and 30 southbound trains. The agency also offers an extended Friday evening service consisting of one additional northbound and one additional southbound train in operation past the regular weekday commute times. Midday rail service was introduced on August 20, 2012. On Saturday, A-Train operates nine northbound and nine southbound trains, beginning just before 8 a.m. and running until late night. The last southbound train departs Denton at 11:53 p.m. and the last northbound train departs Carrollton at 11:06 p.m.

As shown in Table 2-7, A-Train ridership is approximately 500,000 passengers per year. The A-Train's average annual on time performance has varied between 98.02 percent and 99.25 percent for FY 2013-2017.

[26] https://www.nbcdfw.com/news/local/Railroad-Crossing-Arms-Remain-Down-Minutes-on-End-With-No-Trains-in-Sight-440855793.html

Table 2-7: DCTA A-Train Annual Ridership FY 2013-2017

Fiscal Year	Passenger Trips
2013	510,653
2014	568,338
2015	555,423
2016	545,250
2017	504,958

Source: DCTA

In June 2016, DCTA signed a new long-term rail operations and maintenance contract with First Transit, Inc.[27] The contract covers a period of 9 years with an additional 5-year option and went into effect October 1, 2016. This is one of the largest contract agreements in the agency's history and the first U.S. contract for First Transit, the U.S. subsidiary of a British railway operating company. Shortline freight railroad holding company Rio Grande Pacific Corp. provides dispatching, maintenance-of-way, and signaling services, and its signal engineering firm (CTC) has been contracted to oversee the operation and maintenance of the A-Train's signaling and positive train control systems.[28] DCTA plans to begin PTC revenue service demonstration no later than December 31, 2018. DCTA has concentrated its focus on the A-Train service between Denton and Carrollton, but is currently studying extensions and a new commuter rail service into Collin County.

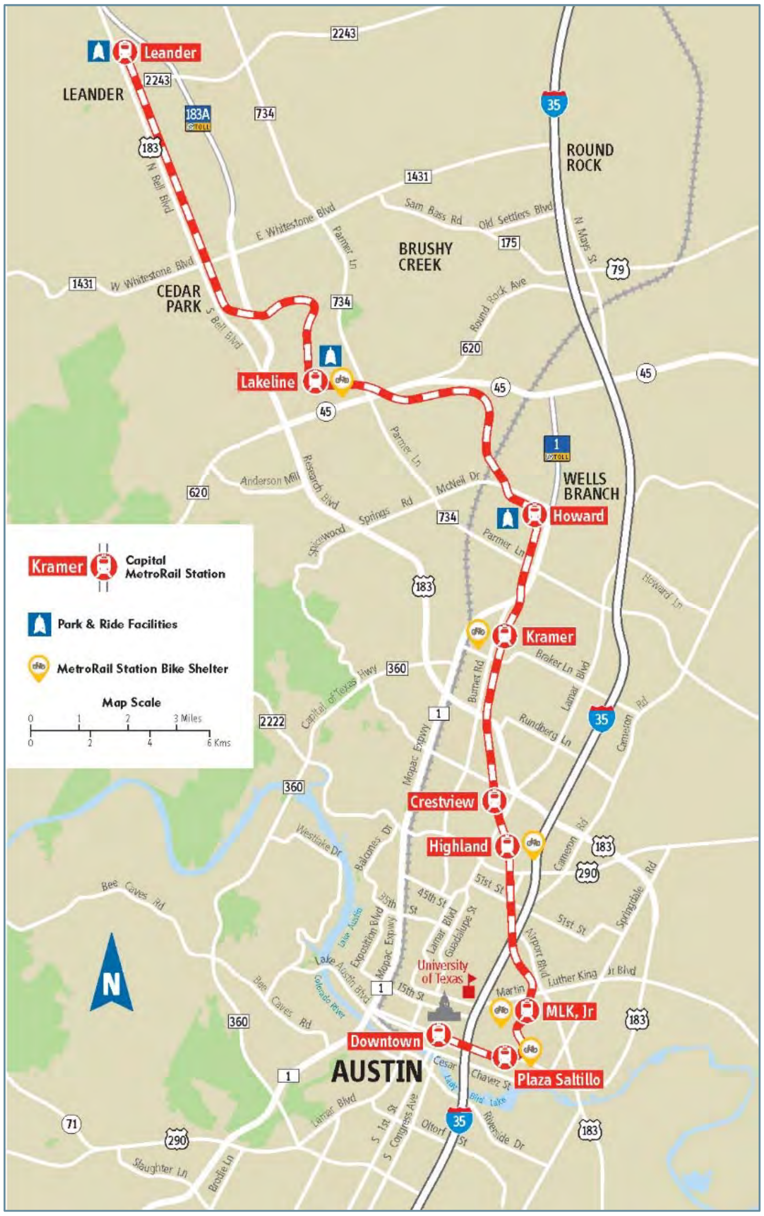
Capital Metropolitan Transportation Authority MetroRail

Austin's Capital Metropolitan Transportation Authority (Capital Metro) was created in accordance with Chapter 451 of the Texas Transportation Code, and established by a voter referendum on Jan. 19, 1985. The agency is funded in part by a 1 percent sales tax levied by its service area members: Austin, Jonestown, Lago Vista, Leander, Manor, Point Venture, San Leanna and portions of Travis County and Williamson County, including the Anderson Mill area.

On March 22, 2010, Capital Metro's 32-mile MetroRail Red Line between downtown Austin and Leander opened to the public. The line, alternatively designated as Route 550, serves nine stations (see Figure 2-19). Approved by the voters in a 2004 referendum, the MetroRail Red Line operates in an existing freight corridor owned by Capital Metro, running from Llano to a connection with UP at Giddings. The portion of the line between Giddings and Austin was built in 1871 by the Houston and Texas Central Railroad, which later built westward, reaching Llano in 1892. The City of Austin purchased the line in 1986. Today, short line freight railroad Austin Western provides freight rail service over the line, at night after MetroRail service ends its daily operation. Although it is a commuter rail service, MetroRail trains partially run on-street in the downtown area. Herzog Transit Services is the contract operator for the service. MetroRail has a fleet of 10 self-propelled, Stadler-built GTW Diesel Multiple Unit railcars. Each train holds 108 seated passengers and an additional 92 standing passengers. Local connecting bus service is available at or near each station.

[27] FirstGroup: https://www.firstgroupplc.com/news-and-media/latest-news/2016/20-07-16.aspx
[28] https://www.progressiverailroading.com/supplier_spotlight/news/DCTA-contracts-with-First-Transit-to-operate-maintain-A-Train--48872

Figure 2-19: Capital Metro's Commuter MetroRail Route and Station Map



Source: Capital Metro

Capital Metro initially operated Red Line service only during the morning and afternoon peak weekday commuter periods, then added all-day weekday service in 2011. In March 2012, the agency began providing service on Friday and Saturday nights until midnight.

For the first week of service, riding the train was free, and daily ridership estimates ranged from a low of 2,353 passenger boardings per day to a high of 2,942. When riding the train was no longer free, ridership declined. Since 2013, ridership has been steadily increasing. Table 2-8 depicts annual ridership for FY 2013 through FY 2017. Ridership tends to peak each year in March when Austin hosts large conventions and a music festival. During those events, monthly ridership reaches over one 100,000 passengers.

Table 2-8: Capital MetroRail Red Line Annual Ridership FY 2013–2017

Fiscal Year	Passenger Trips
2013	766,858
2014	787,071
2015	792,334
2016	807,816
2017	824,703

Source: Capital Metro

TEXRail

TEXRail is a new 27-mile commuter rail line that extends from downtown Fort Worth, across northeast Tarrant County, through North Richland Hills and Grapevine, and into Dallas/Fort Worth International Airport's Terminal B (see **Figure 2-20**). TEXRail service began on January 10, 2019.[29] The line is projected to serve more than 8,000 daily riders at nine stations by the end of its first year of operation. The two TEXRail stations in downtown Fort Worth are shared with TRE commuter trains. By 2035, nearly 14,000 riders are projected to ride the system. The service uses portions of a freight railroad line originally owned by the St. Louis Southwestern Railway (commonly nicknamed the Cotton Belt) that was purchased by DART in 1991 for future rail transit use.[30] The line is also used for freight rail service by short line Fort Worth & Western Railroad (FWWR), as well as tourist train operator Grapevine Vintage Railroad.

Figure 2-20: TEXRail Line in Relation to Other Rail Lines

Source: TEXRail

29 https://ridetrinitymetro.org/texrail/timeline/
30 https://www.dart.org/about/history.asp

The fare for the 52-minute ride is $2.50, or $5 for an all-day pass. Trains will run every 30 minutes during morning and evening peak commuter periods and hourly at other times, The first train is scheduled to leave Fort Worth at 3:30 a.m. and the last train is scheduled to leave the airport at 1 a.m. TEXRail service will be operated with a fleet of eight Stadler-built, self-propelled FLIRT (Fast Light Innovative Regional Train) Diesel Multiple Unit trainsets,[31] Each four-car, articulated trainset has 229 seats and a total capacity of 488 passengers.

The line, known as the Cotton Belt corridor, was identified in September 1997 as a future transportation improvement corridor in Tarrant County, in a Mobility 2020 presentation.[32] The 65-mile corridor extended from Plano past DFW Airport to downtown Fort Worth. In 2005, the North Central Texas Council of Governments (NCTCOG) produced a comprehensive Regional Rail Corridor Study in partnership with DART, Trinity Metro (then known as Fort Worth Transportation Authority, or FWTA), and DCTA. The study's goal was to provide data and recommendations to decision makers on the best way to implement expanded passenger rail and other transit services in 11 corridors around the Dallas/Fort Worth region. The FWTA Board of Directors in August 2013 approved construction of the first phase of the Cotton Belt corridor's development, the TEXRail system, which uses 27 miles of the western segment of the Cotton Belt corridor between downtown Fort Worth and DFW Airport. TEXRail construction began after the August 2016 groundbreaking. Operational tests have been running since March 2018. Startup costs for the system are projected to be approximately $1.034 billion,[33] with local sources providing more than half the funding, supplemented by $499.39 million in Section 5309 New Starts federal funds.[34]

In the future, TEXRail will connect with another commuter rail service currently under development by DART that will use 26 miles of the eastern segment of the Cotton Belt corridor between DFW Airport Terminal B and Shiloh Road in Plano. In 2019, DART announced it would operate the future commuter rail service as the Silver Line. Like TEXRail, DART's planned Silver Line commuter service will use Diesel Multiple Unit trainsets. At the time of this writing, service is projected to begin in 2022. See Chapter 3 for more information about the DART Silver Line service on the Cotton Belt Corridor.

Light Rail Services

Light rail transit (LRT) services in Texas are provided in Dallas by Dallas Area Rapid Transit (DART), and in Houston by the Metropolitan Transit Authority of Harris County (METRO). Each transit agency is directly responsible for the operation of the service.

Dallas Area Rapid Transit (DART)

Current Service

DART initiated light rail transit operations on June 14, 1996, with the opening of an 11-mile segment of the 20-mile Starter System. In FY 2017, DART operated over a system of 93 miles with 64 stations. Ridership has reached approximately 30 million passenger trips per year.[35]

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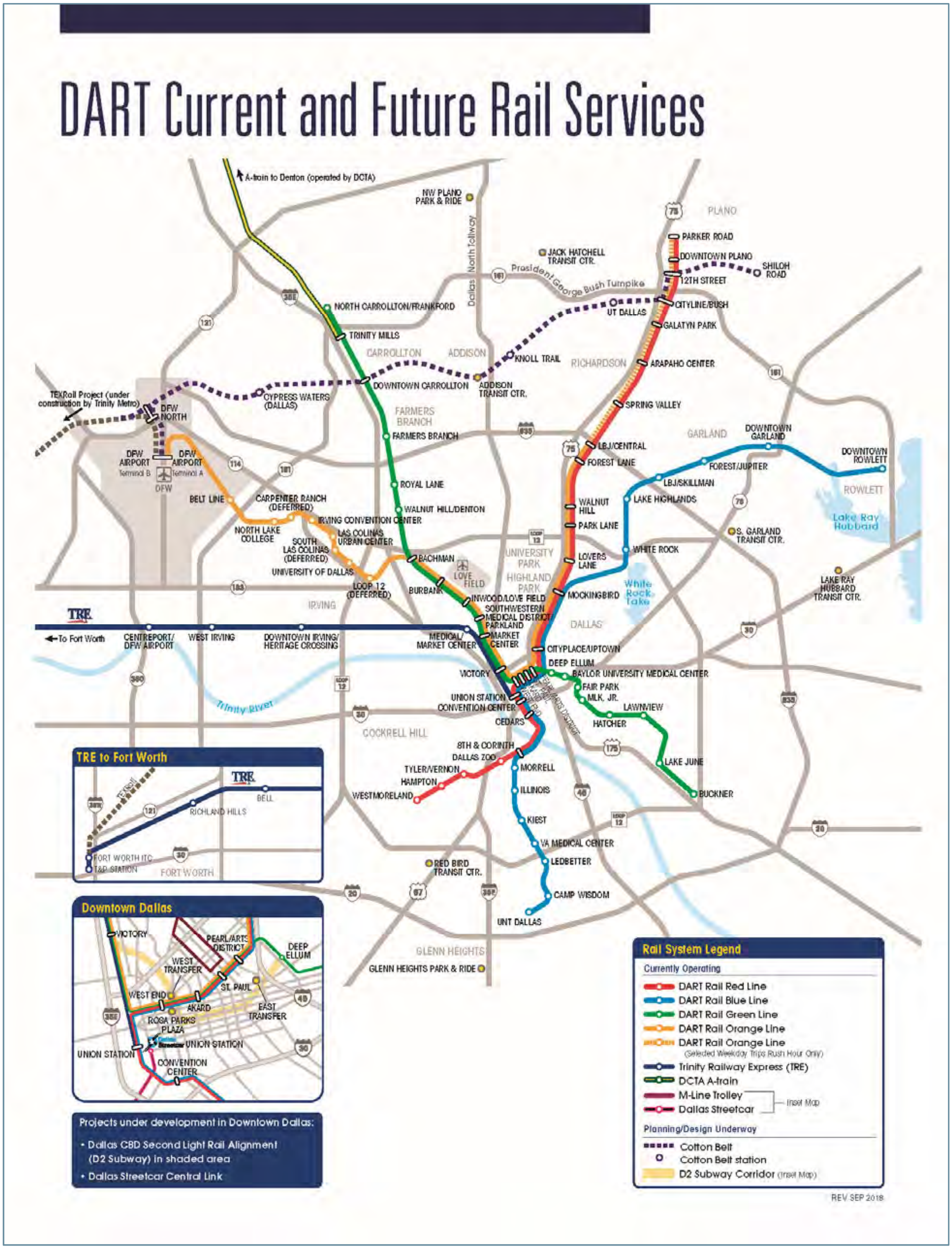
[31] Fast Light Innovative Regional Train Diesel Multiple Units
[32] Trinity Metro: https://ridetrinitymetro.org/texrail/timeline/
[33] http://www.metro-magazine.com/rail/article/728418/fort-worth-flirts-with-new-train-tech-for-airport-link
[34] https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/TX_Ft_Worth_TEX_Rail_Profile-FINAL.pdf
[35] DART Reference Book, March 2018

DART's LRT system is comprised of four routes known as the Red, Blue, Green, and Orange Lines, which together form the longest light rail system in the country. The Red Line follows the North Central Expressway from Plano to downtown Dallas, then west to West Oak Cliff. The Blue Line heads west and south from the cities of Rowlett and Garland to downtown Dallas, then continues south to serve the University of North Texas at Dallas (UNT Dallas) in South Oak Cliff. The Green Line links North Carrollton/Frankford with Buckner in South Dallas. The V-shaped Orange Line provides service between Plano and the Dallas/Fort Worth (DFW) Airport Station by way of downtown Dallas during peak hours weekdays, with service provided between LBJ/Central and DFW Airport Station through downtown at all other times. Hours of operation are approximately 5 a.m. to midnight.

Figure 2-21 provides a map of the DART light rail system, as well as connecting services such as the Trinity Railway Express (TRE) and Denton County Transportation Authority's A-Train commuter rail lines. DART's LRT system operates in a right-of-way separated from freight traffic, with short sections running in city streets.

Figure 2-21: DART Current and Future Rail Services (September 2018)



Source: DART

Table 2-9 provides a history of the DART LRT development.

Table 2-9: History of DART LRT Development

Service Initiation Date	Service Description
June 14, 1996	DART Rail opens with 11.2 miles of service: Red Line service from Pearl to Westmoreland Stations Blue Line Service from Pearl to Illinois Stations
January 1997	DART extends 6 miles northward parallel to North Central Expressway (Pearl to Park Lane Stations; includes a 3.5-mile subway from downtown Dallas to the new Mockingbird Station
May 31, 1997	DART completes the 20-mile Starter System with the opening of the 3-mile extension of the Blue Line south from Illinois Station to Ledbetter Station
December 18, 2000	Cityplace Station, the Southwest's first subway station, opened 120-feet underneath North Central Expressway
September 24, 2001	White Rock Station opens, 3 miles northeast of Mockingbird Station
May 6, 2002	LBJ/Skillman Station opens, 3.5 miles north of White Rock Station
July 1, 2002	7 new stations (Park Lane, Walnut Hill, Forest Lane, LBJ/Central, Spring Valley, Arapaho Center, and Galatyn Park) open, extending the Red Line more than 9 miles
November 18, 2002	2 new stations (Forest/Jupiter and Downtown Garland) extend the Blue Line more than 4 miles
December 9, 2002	3 stations (Bush Turnpike, Downtown Plano, and Parker Road) open, bringing the system to a total of 44 miles and 34 stations
November 2004	Special event service becomes available to Victory Station at American Airlines Center (AAC)
September 14, 2009	3 miles and 4 stations (Deep Ellum, Baylor University Medical Center, Fair Park, and MLK Jr. in South Dallas) of the Green Line go into service, as well as daily service to Victory Station
December 6, 2010	The 28-mile, 20-station $1.8 billion Green Line is completed when it opens 24 miles and 15 stations; also going into service is the Lake Highlands Station, DART's first infill station on the Blue Line. [In June 2011, the Denton County Transportation Authority's A-Train commuter rail service allows passengers to transfer to the Green Line at the Trinity Mills Station in Carrollton].
July 30, 2012	A 5.4 mile segment of the Orange Line initiates service at 3 stations (University of Dallas, Las Colinas Urban Center, and Irving Convention Center)
December 3, 2012	A 3.9 mile addition to the Orange Line opens, including 2 stations (North Lake College and Belt Line)
December 3, 2012	A 4.5 mile addition to the Blue Line is completed from Garland to Rowlett, including 1 station in downtown Rowlett
August 18, 2014	A 4.7-mile addition to the Orange Line extending service to Terminal A at Dallas-Fort Worth International Airport opens.
September 2015	The Dallas City Council and DART Board of Directors approved a proposed preferred alignment for the second downtown Dallas light rail alignment
October 24, 2016	A 2.6-mile extension of the Blue Line south from Ledbetter Station to the UNT-Dallas Campus opens, including two new stations and rehabilitation and improvements to the existing Ledbetter Station to accommodate the extension.
September 2017	DART Board of Directors approved the D2 Subway Commerce/Victory/Swiss alignment as the Locally Preferred Alternative (LPA) at their September 26, 2017 meeting. (The Dallas City Council had previously approved the LPA on September 13, 2017.) Also on September 26, the DART Board approved a budget and 20-year financial plan for the Cotton Belt and D2 projects.

DART operates a fleet of 163 Kinkisharyo articulated Super Light Rail Vehicles (SLRV), with seating for 94 passengers. The 3-car "Super" vehicles were placed in service between 2008 and 2010, and were developed by inserting a low-floor center section at the articulation point of the original 2-car vehicles. The expansion added capacity and also provided level boarding, enabling passengers with disabilities, strollers, and bicycles to step or roll directly onto the trains at designated low-floor sections without using mechanical lifts.

The LRT system operates with a 15-minute peak headway. Midday and evening headways are at 20 or 30-minute levels.[36] DART light rail ridership has been on a generally upward trend through 2013 and is currently steady. Table 2-10 shows the annual ridership during the last five fiscal years.

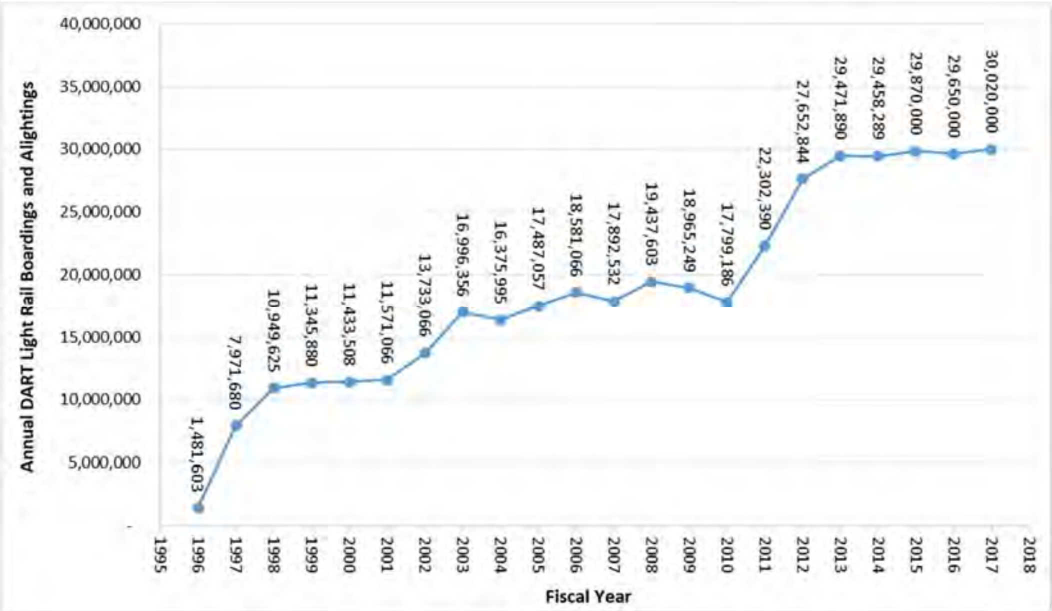
Table 2-10: DART Light Rail Annual Ridership, FY 2013-2017.[37]

Ridership	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Annual Total	29,471,890	29,458,289	29,870,000	29,650,000	30,020,000
Weekday Average	96,272	96,380	98,600	96,300	97,200
Saturday Average	55,796	57,056			
Sunday Average	36,267	36,755			
Weekend Average			94,400	93,100	96,500

Source: DART Reference Book (March 2018)

Figure 2-22 shows annual DART light rail ridership since the inception of service in 1996.

Figure 2-22: DART LRT Total Annual Ridership



Source: National Transit Data (FY 1996-2010), DART (FY 2011–2017)

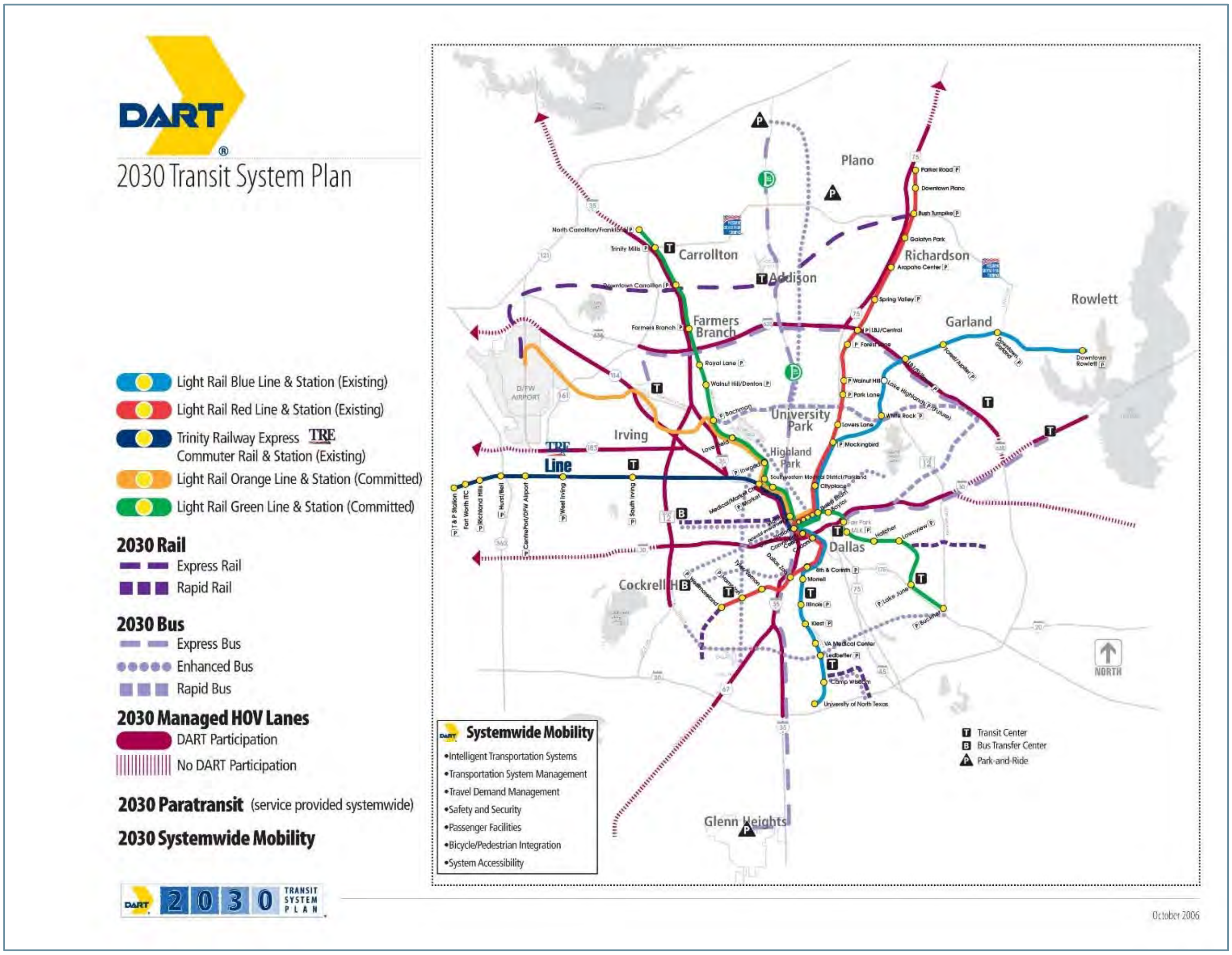
[36] DART Reference Book, March 2018
[37] Reporting procedures changed after 2014 for weekend counts and number rounding.

Planned Improvements

On October 24, 2006, the DART Board of Directors unanimously approved the 2030 Transit System Plan. The 2030 Transit System Plan includes recommendations for DART's core services (bus, light rail, and commuter rail) and includes a discussion of issues such as land use and economic development, system accessibility, bicycle and pedestrian integration, and policies relative to DART's role in regional transit initiatives. The 2030 Transit System Plan is shown in **Figure 2-23.**

When the plan was adopted, it was envisioned that the recommended projects would be implemented by the year 2030. After the economic downturn of 2008-2009, most of the projects were deferred owing to funding constraints, and now have post-2030 completion dates. The deferred projects, as well as potential new initiatives, programs, and services are being evaluated in the 2040 Transit System Plan.

Figure 2-23: DART 2030 Transit System Plan Rail Element



Source: DART 2030 Transit System Plan

Two major DART LRT improvement projects currently underway are shown in Table 2-11.

Table 2-11: DART Light Rail Projects under Development

Expected Date of Service Initiation	Service Description
2021	Red and Blue Line Platform Extensions
2024	D2 Subway Second CBD Alignment

The Red and Blue Line Platform Extension project will modify 28 stations on the Red and Blue lines to accommodate 3-car trains. (All DART light rail stations built since 2004 have platforms that can accommodate 3-car trains.) Final Design is currently underway. Funding sources include $60 million from TxDOT, and $58.8 million from the FTA through the Core Capacity program. Construction is anticipated to be completed in 2021.

The D2 Subway project will create a second light rail line through downtown Dallas on a grade-separated below-ground alignment. The D2 Subway Locally Preferred Alternative extends from Victory Park to Deep Ellum, primarily below Commerce Street through the heart of downtown Dallas. The existing downtown light rail line is the at-grade Bryan-Pacific Transit Mall. The D2 Subway will help to ensure the sustainability of the DART system by providing needed capacity and improving system reliability and passenger service through downtown Dallas. The project's first phase is underway, a two-year Project Development process that includes the preparation of Preliminary Engineering and a Supplemental Draft Environmental Impact Statement.

DART is in the planning stages for two new infill stations along the Orange Line in Irving at Loop 12 and Carpenter Ranch. The stations will be funded by external contributions and will provide access to major land use developments in the area. The Carpenter Ranch Station is anticipated to be in place by 2020. DART is also supporting the City of Dallas as it advances the Dallas Streetcar Central Link to connect the Union Station/Convention Center area to the McKinney Avenue Trolley in uptown near Klyde Warren Park.

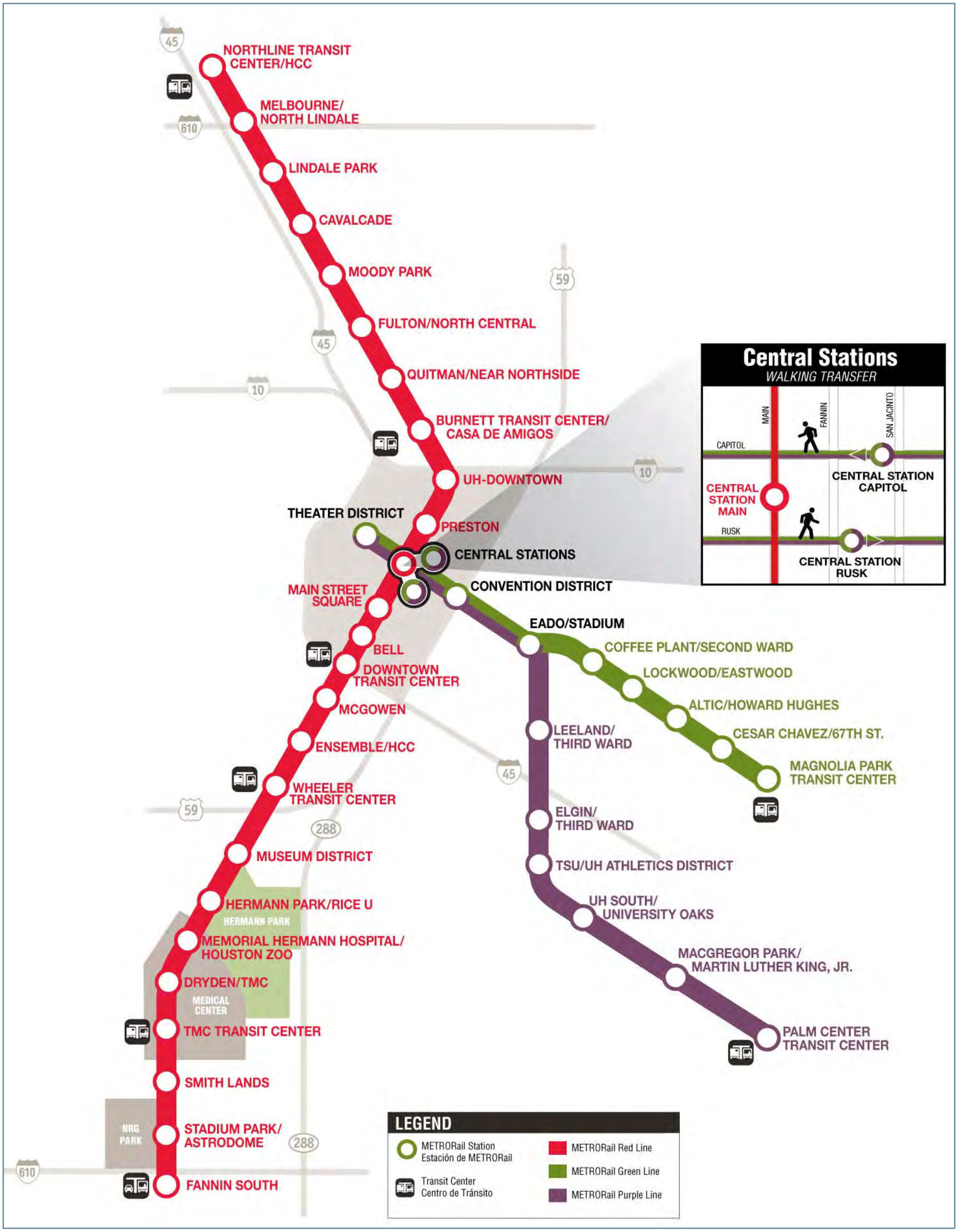
<u>Metropolitan Transit Authority of Harris County (METRORail)</u>

Current Service

The Metropolitan Transit Authority of Harris County (METRO) operates three light rail lines on a 22.5-mile system with 76 light rail vehicles.[38] Siemens-built S70 light rail vehicles run on the original Red Line only while newer vehicles built by CAF USA run throughout the entire METRORail system. Figure 2-24 shows the METRORail system's route map.

[38] METRO: https://www.ridemetro.org/Pages/AboutMETRO.aspx

Figure 2-24: Houston METRORail Route Map



Source: METRO

The original 7.5 mile Red Line opened in January 2004 and provides service from the University of Houston-Downtown campus, through downtown, Midtown, the Museum District, the Texas Medical Center (TMC), and Reliant Park. In December of 2013, the Red Line was extended 5.3 miles northward from the University of Houston—Downtown Campus to the Northline Commons Mall. Today's 12.6-mile Red Line has 25 stations and carries 55,000 passengers daily, making it one of the nation's most traveled lines, based on boardings per track mile.[39]

The Purple Line (6.7 miles) and the Green Line (3.2 miles) opened in May 2015. The Green Line runs from downtown Houston's Theatre District Station eastward along Harrisburg Boulevard to the Magnolia Park Transit Center and has nine stations. The Purple Line runs from the Theatre District Station south and southeast past Texas Southern University and the University of Houston to the Palm Center Transit Center and has 10 stations. The Purple and Green Lines share a track segment that includes four stops between the Theatre District Station in downtown and the Dynamo Stadium in east Downtown. To improve safety, and reliability, and increase speeds, the lines are built in semi-exclusive or limited access diamond lanes along most of the in-street route and have priority signalization at intersections. There are eight transit centers located along the METRORail system.

As detailed in **Table 2-12**, systemwide METRORail ridership for an average weekday, Saturday, and Sunday, increased significantly when the Green and Purple Lines were opened and has stabilized in more recent years.[40]

Table 2-12: Average Weekday, Saturday, and Sunday Ridership, 2014-2018

Averages	September 2014	September 2015	September 2016	September 2017	September 2018
Weekday	48,866	64,219	61,217	65,139	65,671
Saturday	20,226	31,713	30,002	32,866	30,678
Sunday	15,652	26,419	21,717	25,754	23,804

Source: METRO

Planned Improvements

In November 2003, the residents of the METRO service area voted to implement the METRO Solutions Transit System Plan, a multimodal system that called for transit improvements throughout the region, including a 65-mile light rail system comprised of five lines with 54 stations[41] (see **Figure 2-25**).

[39] METRO: https://www.ridemetro.org/Pages/Rail.aspx/posted/2491/RedLine.aspx
[40] METRO: https://www.ridemetro.org/Pages/RidershipReport.aspx. Compared for averages in Septembers.
[41] METRO: http://www.metronext.org/about/solutions.aspx

Figure 2-25: Original METRORail Expansion Plan

Source: METRO

Funding for the remainder of the voter-approved light rail extensions has been stagnant, including the two most prominent expansions, the Gold and Blue Lines. METRO is implementing the Uptown or Gold Line in collaboration with the Uptown Houston District and TxDOT as a bus rapid transit (BRT) line instead of light rail from Northwest Transit Center to a new transit center near South Rice Avenue and Westpark Drive.[42] The 11.3-mile University or Blue Line and all other line extensions, including connections to William P. Hobby Airport and Bush Intercontinental Airport remain on hold.

Any plans to add additional rail lines or extensions are dependent on funding. METRO's current ability to leverage local share funding is restricted by a commitment of sales tax revenues to the General Mobility Program. This program provides 25 percent of all METRO sales tax revenue from a 1 cent local sales tax to fund general mobility projects for Harris County, the City of Houston, and the 14 smaller cities that are part of the METRO service area. On November 6, 2012 the voters approved an extension of the General Mobility Program from 2014 through 2025.[43]

[42] METRO: https://www.ridemetro.org/Pages/UptownBRT.aspx
[43] METRO: https://www.ridemetro.org/Pages/2012GMReferendum.aspx

Trolley and Streetcar Services

Trolleys and streetcars provide short-trip urban circulation. Three cities in Texas currently operate streetcars or trolleys, with a fourth projected to reintroduce service by the end of the decade. A streetcar or trolley typically refers to a single-unit electric vehicle that operates over fixed rails. The track can be located in an active roadway shared with automobile traffic or along a separate right-of-way. A trolley vehicle is typically a vintage rail car or historic replica. The Galveston Island Trolley in Galveston and the McKinney Avenue Trolley in Dallas are two examples. A streetcar is another term that can be used interchangeably to describe the same vehicle. However, the term streetcar has been used more often in the last decade to refer to a modern multi-section articulated vehicle. Dallas and El Paso both operate modern streetcars.

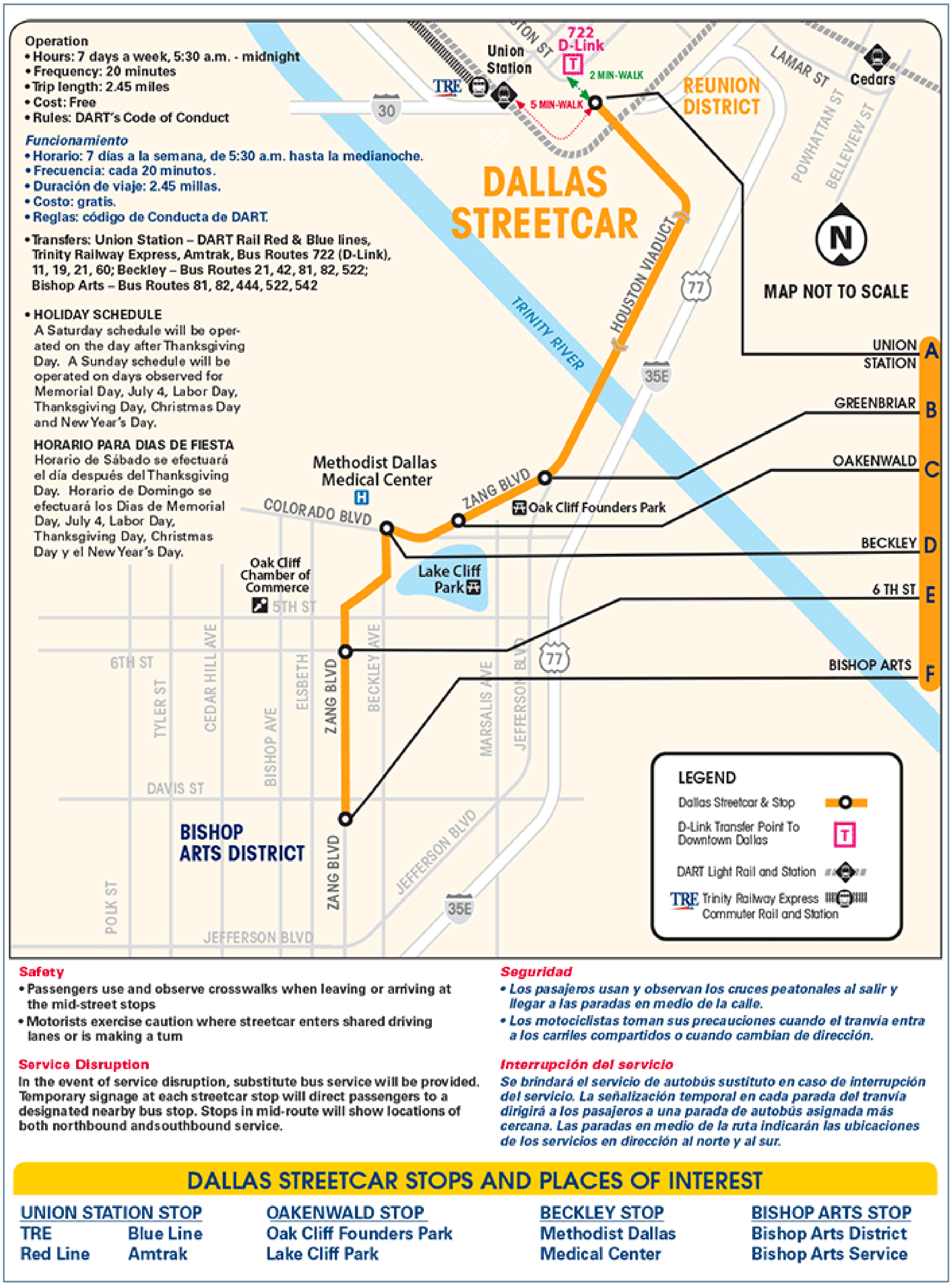
Dallas Streetcar

The Dallas Streetcar is a 2.45-mile modern streetcar line with six stations located between Union Station and the Bishops Arts District, with a dedicated lane over the Houston Street Viaduct. The system is owned by the City of Dallas but operated and maintained by DART. The system uses a fleet of four dual-mode vehicles from Brookville Equipment Corporation, capable of operating with or without overhead electrified wire, and features level boarding and a seating capacity of 34 passengers. The streetcars use a battery energy storage system to power the car's four traction motors when operating without overhead wire. Approximately 1 mile of the line's track requires battery power, allowing the vehicles to cross the Houston Street Viaduct over the Trinity River without use of an overhead catenary system.

The streetcar system offers a fare-free service that begins at 5:30 a.m. and ends at midnight, Trains operate every 20 minutes. The Union Station stop enables streetcar riders to make connections with DART light rail trains, Trinity Railway Express commuter trains, and Amtrak intercity passenger trains. The initial 1.6 mile mostly single-track line from Union Station to Beckley opened in April 2015. In August 2016, the 0.75-mile dual-track extension opened accessing the Bishop Arts District.[44] Figure 2-26 shows a map of the current system.

[44] DART: Reference Book (March 2018)

Figure 2-26: Dallas Streetcar Route Map



Source: DART

McKinney Avenue Trolley or M-Line

The McKinney Avenue Transportation Authority (MATA) operates fare-free, air-conditioned, restored vintage trolleys every day of the year in Dallas' Uptown Neighborhood (see Figure 2-27). The service began in July 1989 as a tourist attraction but is now integrated with the other transit services offered by DART and referred to as the "M-Line."

Figure 2-27: McKinney Avenue Trolley Route Map

Source: MATA

The system has been expanded several times since its opening. In May 2002, an extension at the north end established a new transfer point between the M-Line trolley and DART light rail at the Cityplace/Uptown Station. That same year, fare-free service was introduced. In 2015, the 0.65-mile Olive Street extension opened at the south end, creating a reverse loop, expanding the service farther into downtown Dallas, and establishing a connection to DART's St. Paul light rail station. The current round-trip route is 5.2 miles.

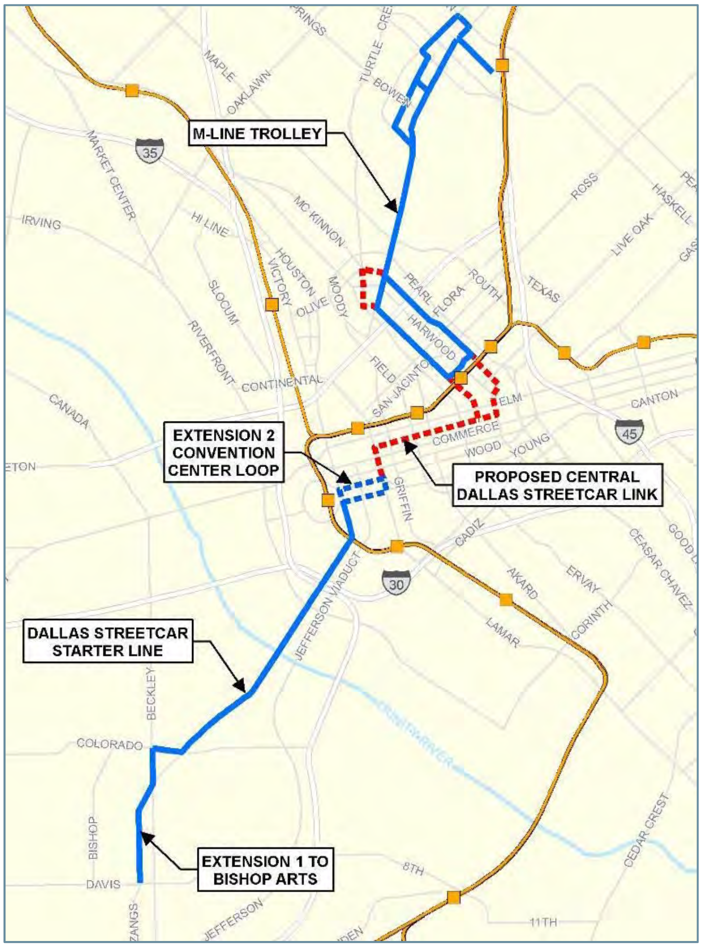
Future Dallas Streetcar Links

Two additional projects underway will eventually link the historic McKinney Avenue Trolley with the modern Dallas Streetcar system. The Convention Center Loop will extend the Dallas Streetcar north of Union Station to the Kay Bailey Hutchison Convention Center. The $92 million Dallas Streetcar Central Link will construct a streetcar extension north of the Convention Center to connect with the McKinley Avenue Trolley at Federal Street.

Convention Center Loop. This planned extension of the Dallas Streetcar in downtown Dallas proposes constructing a single-track loop along Young, Lamar, Wood, and Houston Streets. The Loop is currently under design and would include two new streetcar stops: Convention Center Hotel on Young/Lamar, and Wood/Market Streets. The City of Dallas is exploring an early implementation of the segment from Houston to Lamar to serve the Omni Hotel. The remainder of the Loop could be integrated into the Central Link project design.

Dallas Streetcar Central Link. This project will extend the Dallas Streetcar from the Union Station area to the historic M-Line (see Figure 2-28). DART and the City completed a supplemental Alternatives Analysis (AA) in 2017. The City of Dallas selected an Elm-Commerce couplet as the preferred route in September 2017, but directed staff to continue to consider Main and Young Streets as options. DART will request entry into Project Development on behalf of the City of Dallas in 2018, likely under the FTA Small Starts program. The DART FY 2018 Financial Plan assumes up to $40M in FTA grant funding.

Figure 2-28: Dallas Streetcar Lines and Extensions



Source: City of Dallas, Dallas Streetcar Central Link Locally Preferred Alternative Selection, August 28, 2017
http://dallascityhall.com/government/Council%20Meeting%20Documents/msis_2_dallas-streetcar-central-link-locally-preferred-alternative-selection_briefing_082817.pdf

<u>El Paso Streetcar</u>

The El Paso streetcar system links the International Bridges, downtown retail areas, convention center, ballpark, Cincinnati Entertainment District, and the University of Texas at El Paso. The system consists of approximately 4.8 miles of track, 27 streetcar stops, related street improvements, traction power system, and a vehicle maintenance and storage facility near the existing Sun Metro Downtown Transfer Center (see **Figure 2-29**).

The Camino Real Regional Mobility Authority (CRRMA) was tasked with constructing the system, as well as overseeing the remanufacturing of six of the City's available streetcars. These cars are the same Presidents' Conference Committee (PCC) streetcars that had operated in the area until 1974.

In 2010, TxDOT sponsored an El Paso Rail Transit Study in conjunction with the City of El Paso. The purpose of the study was to provide an engineering feasibility analysis for up to four possible routes and order-of-magnitude costs, as well as a market, benefit, and constraint analysis for a rail transit system in downtown El Paso. The vintage-replica type of streetcars (trolleys) seemed to be most compatible with the project concept. Four cars were determined to be needed to provide 10- to 15-

minute headway plus two spare vehicles. In May 2012, the City of El Paso authorized $1.3 million for preliminary engineering and an environmental assessment. On June 26, 2014, the Texas Transportation Commission announced that the City of El Paso would receive $97 million to fund the construction phase of the El Paso Streetcar Project. Work began on the streetcar project in late 2015, including restoration of the PCCs by Brookville Equipment Corporation. Pre-revenue service commenced on October 9, 2018, and the streetcar opened for service on November 9, 2018. The City's Mass Transit Department, Sun Metro, will operate and maintain the streetcars and associated facilities.

Figure 2-29: El Paso Streetcar Route Map

Source: CRMMA

Galveston Island Trolley

The Galveston Island Trolley is a heritage streetcar owned by the City of Galveston. The modern vehicles look like vintage electric trolleys (see Figure 2-30), but the four rail cars are diesel-electric powered. Therefore, there are no overhead wires in Galveston. Without overhead catenary, there is technically no trolley wheel to make the connection for electricity, but the transit service retains its vintage designation anyway.

Figure 2-30: Galveston Island Trolley Vehicle

Source: Jon Bell, July 2002

The first urban rail public transit system in Galveston began operation in 1867. Mules pulled the original vehicles until electric trolleys were introduced in 1891. The trolleys remained in service until May 1938. The new era Galveston Island Trolley opened in 1988. The rail line was originally 4.8 miles long and operated in a loop from the historic Strand District in downtown Galveston to the Seawall. The City expanded the downtown loop in 1995 and extended the rail line from downtown to the University of Texas Medical Branch (UTMB) in 2005. As of 2008, the total trolley network length was 6.7 miles (see Figure 2-31).

The municipal transit system, Island Transit, operated the trolley; however, the City suspended trolley operation in September 2008 owing to heavy damage to the track bed and rail cars from Hurricane Ike. The FTA and Federal Emergency Management Agency (FEMA) agreed to provide financial support to assist in restoring the tracks and trolley service.[45] In January 2017, a contract was approved to restore three of the trolleys at a cost of $3.8 million. At that time, the trolleys were expected to be ready to return to service in 2018, but the predicted date was later postponed to 2019.[46]

[45] Section 5309 New Starts Funding (2008).
[46] Galveston County Daily News, September 16, 2018: Under repair in Iowa, trolleys could roll again in 2019.

Figure 2-31: Original Galveston Island Rail Trolley Route Map

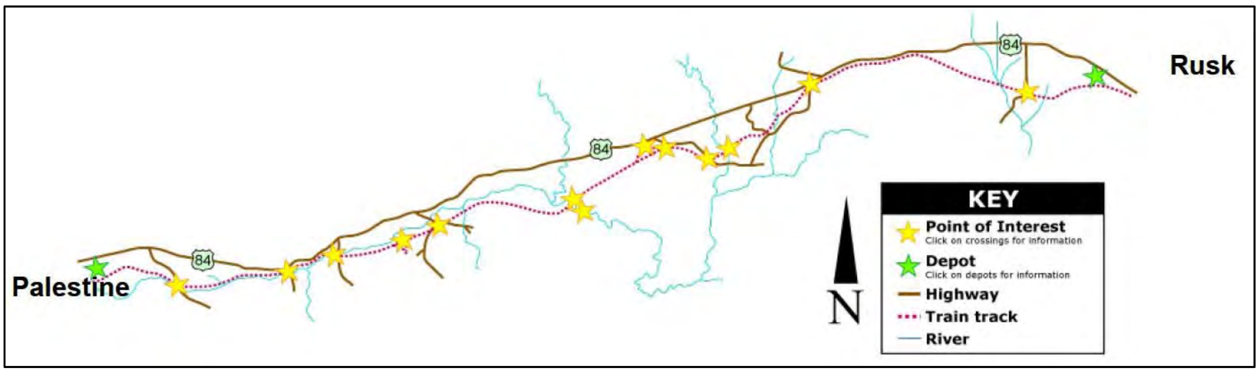
Source: Island Transit

Tourist Trains

Texas State Railroad

The Texas State Railroad has been in operation as a steam locomotive hauled tourist passenger train since 1976. Known as "the Official State Railroad of Texas," the railroad consists of 25 miles of historic, dedicated track parallel to Highway 84. The line runs through the Piney Woods between the two East Texas towns of Palestine and Rusk (see **Figure 2-32**). Construction and ownership of the rail line was authorized by the Texas state government and began in 1881, initially to haul iron ore to a state penitentiary at Rusk, with a connection to the national rail network at Palestine established in 1909. Today, the railroad provides round-trip passenger excursions from both ends of the line, on trains pulled either by diesel or steam locomotives (currently the only standard-gauge steam locomotives operating in Texas). A one-way trip lasts about 90 minutes, after which passengers have the opportunity to disembark and explore at the other end of the line before reboarding for the return trip. Additional passenger service is operated for special events throughout the year.[47]

Figure 2-32: Map of Texas State Railroad Route



Source: Texas State Railroad

Although the State of Texas still owns the rail line, management of the Texas State Railroad has changed from the Texas Parks and Wildlife Department (in 1972) to the Texas State Railroad Authority Board in 2007, which then contracted with private companies for day-to-day operations and management. The current operator, the Western Group, has held the contract since 2017.[48] Ridership on the line has been growing throughout the decade, from 60,294 in calendar year 2011, to 81,000 patrons in 2016.[49]

The railroad's roster of equipment includes two in-service Baldwin steam locomotives built in 1917 and vintage diesel locomotives built in the 1950s. For more information, visit www.texasstaterailroad.net.

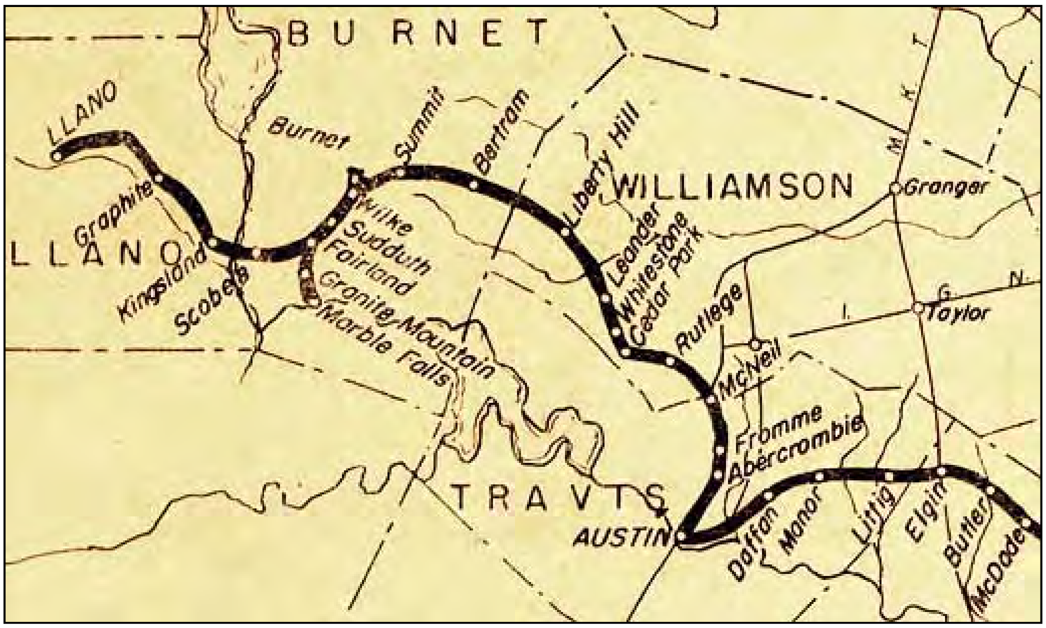
Austin Steam Train Association

The Austin Steam Train Association operates tourist trains called the Hill Country Flyer and the Bertram Flyer over a historically significant rail line, portions of which are also used for freight

[47] https://texasstaterailroad.net/train-schedule/
[48] Trains Magazine: http://trn.trains.com/news/news-wire/2017/03/31-texas-state
[49] HeritageRail Alliance: https://www.atrrm.org/2018/03/heritage-rail-ridership-attendance/

operation by the Austin Western Railroad as well as commuter rail operations by Capital Metro's MetroRail Red Line. All three operators use a rail line between Austin and Giddings, originally built in 1871, which were the first railroad tracks into Austin. The tracks were extended west to Burnet in 1882, to Granite Mountain in 1885 (where the pink granite from the area was shipped to Austin via railroad to build the Texas Capitol building), and then finally to Llano in 1892. A historic map of the line is shown in Figure 2-33. The City of Austin purchased the 163-mile Giddings-to-Llano line in 1986. It is now owned by Capital Metropolitan Transportation Authority. Austin Western Railroad provides freight rail service on the Giddings-Llano segment of the line. Since the beginning of Capital Metro's commuter rail operations between Austin and Leander, freight service operates at night.

Figure 2-33: Portion of 1956 Timetable Map of Giddings-Llano



Source: Austin Steam Train Association

Passenger rail excursions are currently provided by diesel locomotives while the association's steam locomotive (a 2-8-2 built by Alco for Southern Pacific in 1916) undergoes a long-term restoration. Two regularly scheduled excursion trips are provided from the association's base of operations in Cedar Park: the Hill Country Flyer to Burnet (a 66-mile round trip) and the Bertram Flyer to Bertram (a 44-mile round trip). Typically once a year, the association also operates a round-trip excursion from Cedar Park to downtown Austin called the Capital City Express. The ASTA operates on weekends only, year-round. For more information, visit www.austinsteamtrain.org.

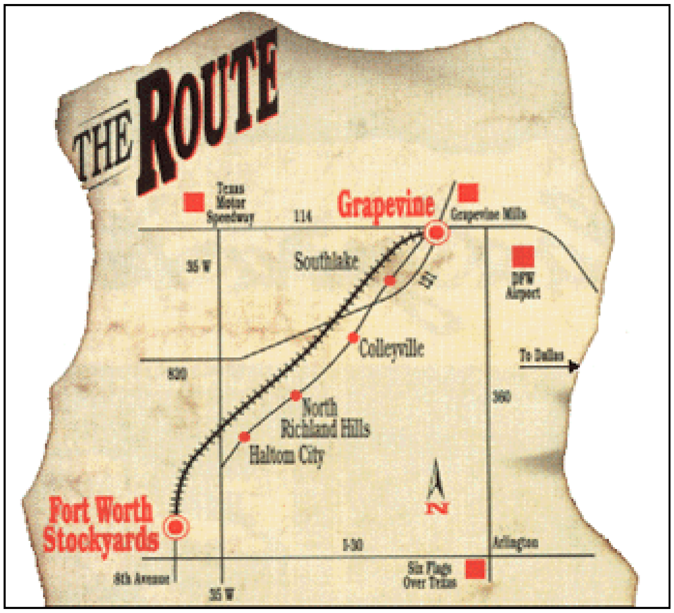
Galveston Railroad Museum

Among the Galveston Railroad Museum's attractions is the Harborside Express, which runs Saturdays only on 1 mile of museum track. The museum also arranges longer excursions about once a year on average to farther-away locations as part of a charity event. The 2018 special event train ran from Galveston to the BNSF Railway yard in South Houston and back. For more information, visit www.galvestonrrmuseum.com.

Grapevine Vintage Railroad

The Grapevine Vintage Railroad provides tourist rides between Grapevine, Texas and the Fort Worth Stockyards on a 21-mile stretch of tracks formerly owned by St. Louis Southwestern Railway, also known as the "Cotton Belt" (see **Figure 2-34**). The Fort Worth & Western Railroad company (FWWR) started the tourist rail service in 1996 as the Tarantula Train. The City of Grapevine subsequently took over the service and renamed it in December 2000. The train operates on track shared with freight trains and is owned by DART. Ridership was 120,000 in 2016.[50]

Figure 2-34: Grapevine Vintage Railroad Route Map



Source: Grapevine Vintage Railroad

The Grapevine Vintage Railroad runs three regularly scheduled excursion trains throughout the year. The Cotton Belt Route makes a 90-minute trip from the Grapevine Depot on Main Street to the historic Fort Worth Stockyards, with a return departure from Fort Worth scheduled shortly after the afternoon cattle drive. Departure is 1:00 p.m. The train arrives at the Stockyards at approximately 2:30 p.m. The return trip to Grapevine leaves at 4:15 p.m. and returns to Grapevine at approximately 5:30 p.m. to 6:00 p.m. Trinity River One-Hour Train Excursion Rides in Fort Worth make a one-hour "mini excursion" following both channels of the Trinity River and passing through Trinity Park while travelers partake in an oral history of Fort Worth. It departs at approximately 2:45 p.m. and returns at approximately 3:45 p.m. The Grapevine One-Hour Train Excursion makes a one-hour round trip traveling west from the Grapevine Depot toward Colleyville before reversing back to town. It departs on Saturday only from the Grapevine Depot at 10 a.m. and returns to the Grapevine Depot at 11 a.m. The railroad also runs special event trains throughout the year, including holiday trains between Thanksgiving and Christmas, as well as jazz wine trains, and also hosts a Thomas the Tank Engine-themed annual Day Out with Thomas.

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[50] Heritage Rail Alliance: https://www.atrrm.org/2018/03/heritage-rail-ridership-attendance/

The railroad operates Friday, Saturday and Sunday between Memorial Day weekend and mid-August as well as most major holidays. Train excursions take place Saturday and Sunday from Mid-February until Memorial Day weekend and mid-August until the weekend before Thanksgiving. The railroad does not offer regular train service in January and February to accommodate annual maintenance. All excursions are currently hauled by a 1953 GP7 diesel locomotive, while the railroad's 1896-built steam locomotive is overhauled, a project scheduled for completion by the end of 2018.

Longhorn & Western Railroad

The Texas Transportation Museum in San Antonio offers train rides on a dedicated track built by the museum in 1991. The railroad has 3,700 total feet of track, which includes the 1,765-foot single-track main line that begins near the Longhorn Siding on the Union Pacific's mainline.[51] Trains operate on Saturday and Sunday, with additional trips on Friday during the summer. The Longhorn & Western Railroad operates on a closed track and does not share its track with freight or other passenger trains. Visitors can ride the full sized diesel-powered train every hour on the half hour beginning at 10:30 a.m. on both Saturday and Sunday each week. For more information, visit www.txtransportationmuseum.org.

Historic Jefferson Railway

Located in Jefferson and operated by a private hospitality company, the Historic Jefferson Railway offers 45-minute rides on open car coach seats pulled by a 20th-century reproduction of an 1870s steam locomotive along 3 miles of narrow gauge (3-foot) track near the Big Cypress River. The City of Jefferson originally built the railway and began operations in 1986 to promote tourism. The train operates each Saturday with departures at 12:30 and 2:30 p.m. Additional special event trains operate throughout the year. For more information, visit www.jeffersonrailway.com.

2.1.1.3 Railroad Abandonments and Railbanked Lines

This section summarizes a general background of rail line abandonments in Texas and the identification of actual rail service discontinuances and abandonments in the state over the last decade. Railroad abandonment occurs when a rail line is no longer used for rail service. Abandonment and discontinuance of common carrier rail service on a given rail line is allowed by federal law. A railroad may abandon a rail line with the permission of the Surface Transportation Board (STB) as generally described in this section.

TxDOT is responsible for administering lease and operating agreements on state-owned facilities and operating agreements on state-supported passenger routes. TxDOT also manages state and federally funded construction project contracts on both state- and private-owned rail facilities such as the South Orient. The Agency also participates in the STB abandonment process when required, and monitors potential rail line abandonments and coordinates the state's involvement in and response to abandonment filings.

The following events had a profound and lasting effect on the Texas railroad network, and launched an extended period of railroad consolidation, divesture, and abandonment in Texas, starting in the 1960s:

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[51] Texas Transportation Museum: https://txtransportationmuseum.org/collection-the-railroad.php

- The merger of the Texas and Pacific into the Missouri Pacific in 1976
- The Staggers Act (1980) was passed allowing for the deregulation of the rail industry, which sped up consolidation, divesture, and abandonments of railroads across the U.S. and Texas
- The merger of the St. Louis-San Francisco Railway Company (Frisco) into the Burlington Northern in 1980
- In 1980, the bankruptcy and retrenchment of the Chicago, Rock Island, and Pacific Railroad (CRI&P) from Texas entirely
- Union Pacific Corporation acquired the Missouri Pacific in 1982, and the operations of the Missouri Pacific and the Union Pacific Railroad were subsequently consolidated
- In 1988, UP merged with the Missouri-Kansas-Texas (or Katy)
- In 1995, the Burlington Northern and Santa Fe merged to form the Burlington Northern and Santa Fe Railroad (today's BNSF)
- In 1996, the Union Pacific Railroad merged with Southern Pacific (SP)

Several hundred miles of railroad lines in Texas owned historically by Class I railroads were abandoned or sold or leased to regional and short line railroads between 1980 and 2010. None of the abandoned rail lines were acquired by TxDOT.

The National Trails Act allows for reserving railroad right-of-way through the interim use of the railroad corridor as a trail. Interim trail use can be utilized when it is determined that the railroad right-of-way may be needed in the future for railroad use. Public agencies may also request that the rail corridor be made available for "public use" if it has determined that the right-of-way is suitable for highway or mass transit usage, conservation, energy production or transmission, or recreation. Rail banking is a process established under federal law that allows public entities to preserve established railroad rights-of-way for future reactivation of rail service, to protect rail transportation corridors, and to provide for recreational uses such as hiking and bicycling. Many abandoned or rail banked lines have been repurposed for interim recreational trail use in Texas; principal rail trails in Texas will be identified later in this section.

Rail Abandonments and Discontinuances Since 2007

49 U.S.C. §10903 governs the filing and procedure for common carrier application to abandon or discontinue rail operations over any part of its railroad lines as detailed in 49 CFR Part 1152. Abandonment or discontinuation requires a STB finding "that the present or future public convenience and necessity require or permit the abandonment or discontinuance." 49 CFR 1152.50 provides for exemption from the requirements for abandonment and discontinuance when the STB has found approval is unnecessary to carry out rail transportation policy of 49 U.S.C. § 10101, and the actions are of limited scope not requiring shippers be protected from abuse of market power.[52]

The principal requirements for an exempted abandonment is that the railroad certify that no local traffic has moved over the line for 2 years, that any overhead traffic can be routed over other lines, and that no formal complaint is filed by a rail service user. Table 2-13 identifies Texas railroad

[52] The Surface Transportation Board assumed responsibility for abandonments from the Interstate Commerce Commission in 1995. Dockets dated 1996 or later are available at http://stb.gov

discontinuances and abandonments approved by the STB since 2007, as well as such cases that are still pending, as of October 2018.

Table 2-13: Discontinuances/Abandonments in Texas Since 2007

Open/ Closed	Railroad	Line Segment & Application Counties	Miles in Texas	Date of Final Decision or Action	Initial Effective Date	Acquired for Rail Use	Acquired for Rail Banking/ Trails Use	Comments
Closed	UP	Kerrville Subdivision MP 253.26 to MP 253.0; Bexar County	2.74	04-04-2007	05-29-2007	No	No	AB-33-236X
Closed	UP	Tyler Industrial Lead (MP 0.25 to MP 7.50); Smith County	7.25	05-05-2008	06-10-2006	No	No	AB-33-223X
Closed	UP	Huntsville Industrial Lead (MP 5.00 to MP 6.67); Walker County	1.67	01-02-2009	01-11-2009	No	No	AB-33-246X
Closed	UP	Sinton Industrial Lead (MP 122.82 to MP 121.30); Patricio County	1.52	02-07-2009	02-15-2009	No	No	AB-33-244X
Closed	UP	Port Arthur Industrial Lead (MP 2.00 to MP 3.21); Jefferson County	1.21	02-07-2009	02-15-2009	No	No	AB-33-245X
Closed	UP	Trinity Industrial Lead (MP 0.0 to MP 4.1); Dallas County	4.1	02-24-2009	11-23-2007	Yes	No	AB-33-256X
Closed	UP	Henderson Ind. Lead (MP 0.59 to MP 16.28); Rusk County	15.69	09-11-2009	9-11-2009	No	No	AB-33-275-X
Closed	UP	North Fort Worth Branch (MP 633.02 to MP 634.25)	1.23	04-29-11		Yes	No	AB-33-280-X; acquired by Tarrant Regional Water District 04-29-2011
Closed	RRROW	Cotton Belt (MP 592.43 to MP 597.77); Collin and Dallas counties	5.34	01-22-2010	01-27-2010	No	Yes	AB-1050X
Closed	Rusk Co. Rural Rail Dist.	Henderson - Overton Branch Spur	0.9	04/03/2013	04/01/2013	No	No	AB-1103-0-X
Closed	UP	Texas Central Lead (MP 2.31 to MP 4.76); McLennan County	2.45	02-17-2016	02-03-2016	No	Yes	AB-33-318X

Source: U.S. Surface Transportation Board Office of Environmental Analysis, Abandoned and Railbanked Rail Lines GIS Web Application

Railbanked Lines and Interim Trail Use

Recognizing that abandoned rail lines are typically lost for future transportation uses, rail right-of-way has been proactively railbanked in Texas. When a line is railbanked, the purchaser must maintain ownership of the corridor for future rail use. Some of these segments may potentially hold strategic value as future transportation corridors in the state. TxDOT reviews all potential rail abandonments in the state for suitability as recreational corridors under the Federal Rails to Trails legislation, though TxDOT does not always have a way to intercede.

Over 23,000 miles of open rails-to-trails corridors exist nationwide, with approximately 301 miles in Texas.[53] Several abandoned rail line segments have been converted to rail trails for interim recreational use in the state since the 1980s. The state has 180 multi-use rail trails of varying lengths; some of the principal rail trails in Texas include the following facilities:[54]

- Caprock Canyons State Park Trailway (64.2 miles; ballast surface)
- Fort Worth Branch – Trinity River Trails (47.9 miles; asphalt, concrete, and gravel surfaces)
- Saldo Creek Greenway (22.7 miles; asphalt and concrete surfaces)
- Lake Mineral Wells State Trailway (20 miles; asphalt and crushed stone surfaces)
- Leon Creek Greenway (18 miles; asphalt and concrete surfaces)
- Campion Trail (16.9 miles; concrete surface)
- Cotton Belt Trail (11.2 miles; concrete trail)
- Chisholm Trail (9.3 miles; concrete trail)

2.1.1.4 Strategic Rail Corridor Network Facilities

The Strategic Rail Corridor Network (STRACNET) is a program under the U.S. Department of Defense's Railroad and Highways for National Defense program and is designated to ensure the nation's rail and highway infrastructure can support defense emergencies. STRACNET consists of 36,000 miles of rail lines that are important for national defense and provide service to 126 defense installations.[55,56] The program works to integrate defense rail needs into civil sector planning affecting the nation's railroad system. Below are military installations and other locations within Texas requiring rail service with the corresponding railheads or city location:

- Fort Bliss - El Paso, Texas
- Fort Hood - Killeen, Texas
- Port of Beaumont - Beaumont, Texas
- Port of Corpus Christi - Corpus Christi, Texas
- Port of Port Arthur - Port Arthur, Texas
- Red River Army Depot - Texarkana, Texas

As a practical matter for rail network planning, location of a STRACNET rail line requires that rail lines maintain clearances of at least 16 feet 11 inches (16'-11") vertically and 12 feet (12'-0") horizontally. High-level platforms in passenger stations are the only type of new construction that is likely to interfere with the U.S. Department of Defense profile, since STRACNET width requirements exceed the width of most passenger coaches, raised passenger station platforms on STRACNET rail lines must be constructed in such a way that they do not interfere with STRACNET lines. Wide-load trains must be able to route around obstructions (such as on another track), raised station platforms

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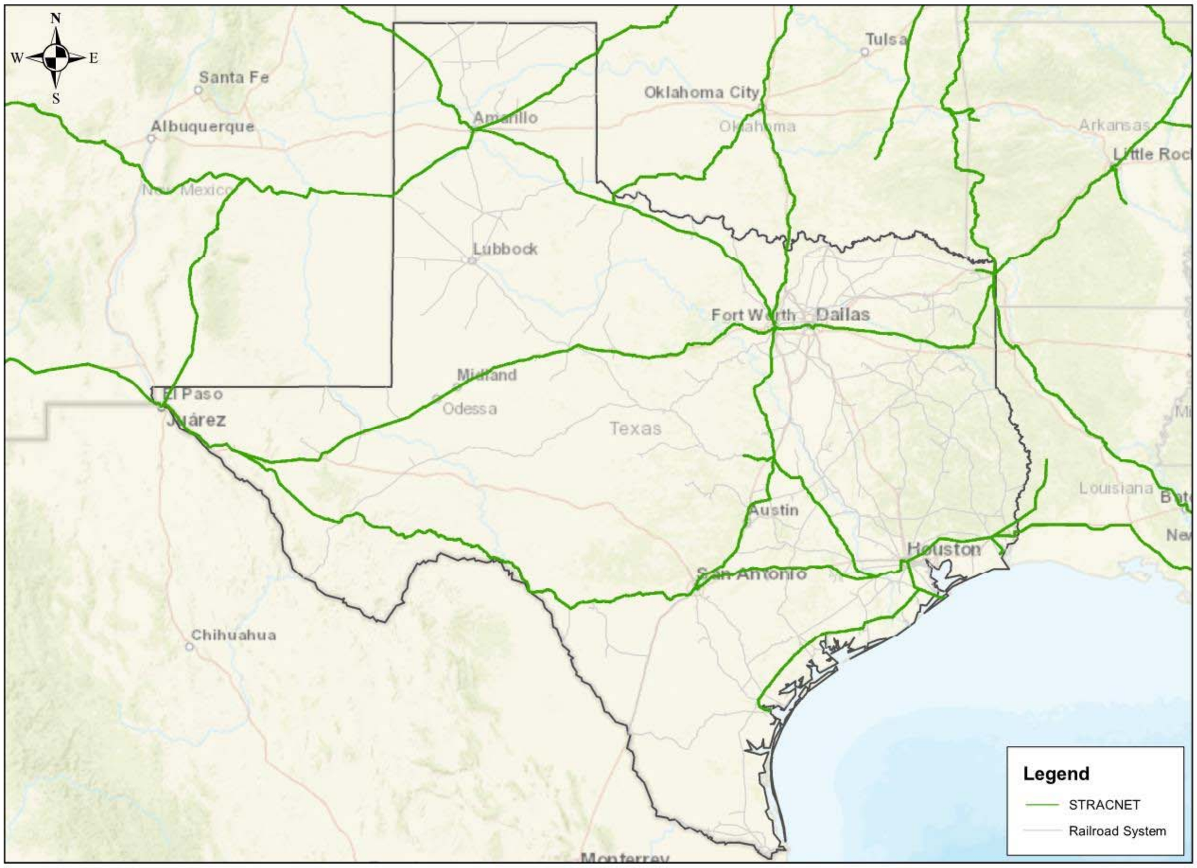
[53] https://www.railstotrails.org/our-work/united-states/texas/#state
[54] https://www.traillink.com/trailsearch/?state=tx
[55] U.S. Army, *Railroads for National Defense*, https://www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/Pages/RailroadsNationalDefense.aspx
[56] U.S. Army, *Strategic Rail Corridor Network (STRACNET) and Defense Connector Lines*, https://www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/RND%20Publications/STRACNET%202018_Reduced.pdf

must be constructed so that the edges can be flipped up in case of national emergency, or trains should be able to shift away from station platforms (such as through gauntlet tracks).[57] Figure 2-35 shows STRACNET lines in Texas. A more detailed map of STRACNET Lines in Texas is found in Appendix B.

Figure 2-35: STRACNET Lines in Texas



Source: Federal Railroad Administration and Google Earth

[57] U.S. Army, *Strategic Rail Corridor Network (STRACNET) and Defense Connector Lines*, https://www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/RND%20Publications/STRACNET%202018_Reduced.pdf

2.1.2 Major Freight and Passenger Terminals

2.1.2.1 Freight Rail Yards and Facilities

Operating freight railroads in Texas have multiple facilities to support railroad operations and maintenance and interface with freight shippers and receivers within the state. Major freight rail yards, terminals, and facilities in Texas are identified and described in Appendix A. The following freight rail facilities presently exist in Texas:

- Switching yards and terminal
- Intermodal container transfer facility
- Transload facilities
- Freight car repair facilities
- Locomotive repair and servicing facilities
- Border crossings

2.1.2.2 Passenger Rail Terminals and Stations

In addition to serving as gateways to the trains, rail stations are also gateways to and from the cities served by these trains. Rail stations are a focus for activity and foster economic development, commercial endeavors, tourism, cultural activities, civic pride and historic preservation in their cities.

Major Terminals

Major terminals where connections between passenger and commuter rail services can be made include:

- Fort Worth: Fort Worth Central Station serves both Amtrak's *Heartland Flyer* and *Texas Eagle*, as well as Trinity Railway Express commuter trains to Dallas and the new TEXRail commuter trains to DFW Airport.
- Dallas: Eddie Bernice Johnson Union Station serves Amtrak's *Texas Eagle*, as well as Trinity Railway Express commuter trains to Fort Worth and DART light rail Red Line and Blue Line trains. A connection to the Dallas Streetcar is also available one block from the station.

Stations

Texas has 19 active Amtrak stations, 10 exclusively serving the *Texas Eagle,* 2 exclusively serving the *Sunset Limited,* and 1 exclusively serving the *Heartland Flyer*. In addition to these exclusive service routes, 5 other stations serve both the *Sunset Limited* and the *Texas Eagle*, while Fort Worth Central Station serves both the *Heartland Flyer* and the *Texas Eagle*.

With two daily trains and connections between the *Heartland Flyer* and the *Texas Eagle,* Fort Worth Central Station serves the greatest number of riders (approximately 114,000 yearly), followed by San Antonio (approximately 57,000 yearly). Several Texas stations have been restored or newly constructed in the past decade. In FY 2017, almost 394,000 riders boarded or disembarked from Amtrak trains in Texas, an 8.8 percent increase from the previous fiscal year.

Seven of the stations, Austin, Dallas, El Paso, Fort Worth, Houston, Longview and San Antonio, are full-service stations with ticket agents and checked baggage service. Four of these stations, Austin, Dallas, Fort Worth and San Antonio also have Quik-Trak kiosks for the delivery of boarding passes associated with transportation paid through Amtrak's on-line booking system. Two stations, Marshall and Temple, have staffed ticket offices but do not offer checked baggage. The station at Mineola is unstaffed but has a Quik-Trak kiosk. The other eight stations are unstaffed. Unstaffed stations are facilities with platforms and structures (generally former stations) with enclosed waiting rooms. There are no station employees, although the facilities may be hosted by part-time or volunteer caretakers that open and close station structures at train time and offer limited assistance to passengers. No ticketing facilities are available, and passengers generally purchase their transportation through Amtrak's on-line booking system and print their boarding passes at home. One station in Texas, Sanderson, is a flag stop. A flag stop is a stop where the train will stop if there is a passenger with a reservation to board or detrain at the station.

The platforms, waiting rooms and facilities (rest rooms, etc.) of 11 of Texas's stations, Austin, Dallas, El Paso, Fort Worth, Gainesville, Longview, Marshall, McGregor, Mineola, San Antonio and San Marcos, are fully wheelchair accessible. Seven of the remaining stations are partially accessible, meaning that while platforms are accessible there are some facilities/pathways that preclude the station from being considered fully accessible—usable by the disabled without any kind of assistance. As a flag stop, Sanderson has no facilities and disabled passengers will most likely need assistance to use the stop. Alpine, Houston, Longview, McGregor and Mineola have restrooms but they cannot be accessed by wheelchair bound passengers. All other stations with restrooms are accessible. Nine stations, Austin, Beaumont, Dallas, El Paso, Houston, Longview, Marshall, McGregor San Antonio and Temple, have spaces set aside as accessible parking. Several stations have vending machines for the convenience of passengers.

Intercity Stations and Intercity/Commuter Rail Union Stations

Amtrak does not own any passenger rail stations in Texas; stations are usually owned by the cities or by the freight rail operator. Some stations are used by more than one route, such as the *Heartland Flyer* and the *Texas Eagle* use of the Fort Worth station, and in some cases such as Fort Worth Central Station, the facility is shared with local commuter services as well.

Table 2-14 in Section 2.1.2.2 Passenger Rail Terminals and Stations, lists all the stations used by Amtrak, their ownership, services, and whether the station is an intermodal terminal. The total number of available short-term and long-term parking spaces available at each station listed by Amtrak is also provided. The number does not include private parking facilities near each station unless otherwise noted. A summary of Amtrak stations follows:

Alpine, Texas (ALP) | *Texas Eagle* and *Sunset Limited* Routes

The station serving Alpine, "Gateway to Big Bend National Park," was constructed in 1946. It has a waiting area, a train platform and a limited amount of parking located on-site. The station is unstaffed and is served by 6 trains per week (3 each direction).

Figure 2-36: Alpine, Texas Station

Austin, Texas (AUS) | *Texas Eagle* Route

Austin is served by a brick station building built in 1947 for the Missouri Pacific Railroad with a waiting area, train platform, ticket office, and a limited amount of on-site parking. It is served by 2 trains daily (1 each direction). The station is located within close proximity (1 mile) to the Capital Metro's light rail system, specifically the MetroRail Red Line.

Figure 2-37: Austin, Texas Station

Beaumont, Texas (BMT) | *Sunset Limited* Route

Beaumont is served by a new station building completed in 2012 with covered benches adjacent to the train platform. The access road, sidewalks and parking area were also replaced. The City of Beaumont acquired connecting property for a police substation that includes public restrooms for Amtrak passengers. Beaumont is unstaffed and is served by 6 trains per week (3 each direction).

Figure 2-38: Beaumont, Texas Station

Cleburne, Texas (CBR) | *Texas Eagle* Route

The Cleburne Intermodal Transportation Depot was completed in 1999 and serves as a local bus station as well as an Amtrak station. A waiting area, restrooms, and limited parking facilities are available on-site. Additionally, it serves as a dispatching station for CLETRAN (Cleburne's local transit system). Cleburne is unstaffed and is served by 2 trains daily (1 each direction).

Figure 2-39: Cleburne, Texas Station

Dallas, Texas (DAL) | *Texas Eagle* Route

The Beaux-Arts Eddie Bernice Johnson Union Station in Dallas was built in 1916 and serves as a station for Trinity Railway Express (TRE), Dallas Area Rapid Transit light rail and local bus service in addition to Amtrak service. The waiting area features public restrooms and a ticket counter. Limited short-term parking and ample hourly and contract parking are also located on site. It is served by 2 Amtrak trains daily (1 each direction) and 47 TRE commuter trains (Monday-Friday) and 22 commuter trains on Saturday. TRE does not operate on Sunday.

Figure 2-40: Dallas, Texas Station

Photo Credit: Ron Reiring

Del Rio, Texas (DRT) | *Texas Eagle* and *Sunset Limited* Routes

Del Rio is served by an intermodal station that offers local bus service in addition to Amtrak service. The waiting area is equipped with public restrooms during station hours; however, station hours do not coincide with early morning train arrivals and departures, and limited short-term parking is available on-site, with long-term street parking available off-site. Del Rio is unstaffed and is served by 6 trains per week (3 each direction).

Figure 2-41: Del Rio, Texas Station

El Paso, Texas (ELP) | *Texas Eagle* and *Sunset Limited* Routes

The neoclassical El Paso Union Depot, designed by famed architect and city planner Daniel Burnham was completed in 1906. A waiting area is located inside with public restrooms and a ticket counter. Limited street parking is located off-site, and no parking is available on-site. Future plans call for transitioning the station into an intermodal terminal. The depot is served by 6 trains per week (3 each direction). The station is located within close proximity (1 mile) to Capital Metro's light rail system, specifically the MetroRail Red Line.

Figure 2-42: El Paso, Texas Station

Fort Worth, Texas (FTW) | *Texas Eagle* and *Heartland Flyer* Routes

The Fort Worth Central Station, built in 2002 as the Fort Worth Intermodal Transportation Center, serves as a local transportation hub for Amtrak, Trinity Railway Express, intercity motor coach service, local transit bus service (The T). Rental car and taxi services, as well as bike share are available. The waiting area is equipped with public restrooms during station hours and a ticket counter. Limited short-term parking is available on-site. Paid parking is available adjacent to the station complex off-site. Fort Worth Central Station is served by 4 Amtrak trains daily (1 frequency each direction on two routes, the *Heartland Flyer* and *Texas Eagle*) and 41 TRE commuter trains (Monday-Friday) with 22 TRE commuter trains on Saturday. TRE does not operate on Sunday.

Figure 2-43: Fort Worth, Texas Station

Gainesville, Texas (GNS) | *Heartland Flyer* Route

The Gainesville depot was completed in 1902 for the Gulf Coast & Santa Fe Railroad. Restored in 2001, it contains a waiting room restrooms, a limited amount of parking on-site, as well as a railroad museum in an area separate from the Amtrak facilities and office space upstairs. Gainesville is unstaffed and served by 2 trains daily (1 each direction).

Figure 2-44: Gainesville, Texas Station

Houston, Texas (HOU) | *Sunset Limited* Route

The current Amtrak station is the fourth Houston passenger depot, constructed by the Southern Pacific (now UP) in 1960. The station provides a ticket office, waiting area, restrooms, and a limited amount of parking located on-site. Plans to move the Amtrak station to the proposed Burnett Plaza intermodal facility were not implemented for financial reasons. The station is served by 6 trains weekly (1 each direction 3 times per week). The Amtrak station is located within close proximity (less than 1 mile) to Houston METRO's light rail system, specifically both the Green Line and Purple Line, which terminate closest to the Amtrak station at the downtown Theater District station.

Figure 2-45: Houston, Texas Station

Longview, Texas (LVW) | *Texas Eagle* Route

The original Longview depot was completed in 1940 and provides a ticket office, waiting area, restrooms, and a limited amount of parking located on-site. The depot underwent a $2.8 million major renovation of the main building and re-opened in May 2014. Amtrak services were moved back into the original waiting space and ticket office, sharing the facility with Longview Transit and Greyhound. The rest of the building is used for city offices and meeting space. It is served by 2 trains daily (1 each direction).

Figure 2-46: Longview, Texas Station

Marshall, Texas (MHL) | *Texas Eagle* Route

The Marshall Station was built in 1912 by the Texas & Pacific Railway and provides a ticket office, a waiting area, restrooms and a limited amount of parking located on-site. In addition, it has a museum on its second and third floors. The station was restored in 1999. It is served by 2 trains daily (1 each direction).

Figure 2-47: Marshall, Texas Station

Photo Credit: Ron Reiring

McGregor, Texas (MCG) | *Texas Eagle* Route

The McGregor depot, built in 1904, includes a waiting area, restrooms, ticket counter, and a limited amount of parking located on-site. McGregor is served by 2 trains daily (1 each direction).

Figure 2-48: McGregor, Texas Station

Mineola, Texas (MHL) | *Texas Eagle* Route

The Mineola station was built in 1951 and underwent a thorough renovation that was completed in 2006. It provides a waiting area, restrooms, a limited amount of parking located on-site, as well as a railroad museum that shares the facility's space. Mineola is unstaffed and is served by 2 trains daily (1 each direction).

Figure 2-49: Mineola, Texas Station

San Antonio, Texas (SAS) | *Sunset Limited* and *Texas Eagle* Routes

Figure 2-50: San Antonio, Texas Station

Amtrak has been operating in its current facility in San Antonio since 1998. The facility provides a ticket office, waiting area, restrooms, and a bike share station adjacent to the building. No parking is available at this location. The facility is served by 2 trains daily (1 each direction for the *Texas Eagle* route) as well as 6 additional trains per week (1 each direction, 3 times per week for the *Sunset Limited* route).

San Marcos, Texas (SMC) | *Texas Eagle* Route

Figure 2-51: San Marcos, Texas Station

The San Marcos Intermodal Station, in operation since 2001, serves Amtrak, Greyhound, taxi, and interurban coach passengers. It provides a waiting area, restrooms, and a limited amount of parking on-site. San Marcos is unstaffed and is served by 2 trains daily (1 each direction).

Sanderson, Texas (SND) | *Sunset Limited* and *Texas Eagle* Routes

Figure 2-52: Sanderson, Texas Station

Sanderson is a flag stop, which means that the *Sunset Limited/Texas Eagle* only pauses to pick up or discharge riders if they have made a reservation; otherwise, the train continues through town. Until recently, a depot stood on-site, however, it was demolished, and all that remains is the small Union Pacific storage building and Amtrak informational sign. The station is unstaffed and is served by 6 trains per week (3 each direction).

Taylor, Texas (TAY) | *Texas Eagle* Route

Figure 2-53: Taylor, Texas Station

Only a platform exists at Taylor for Amtrak service, which shares a site with a Union Pacific office building. A small shelter with picnic tables is adjacent to the building and train platform. Taylor is unstaffed and is served by 2 trains daily (1 each direction).

Temple, Texas (DRT) | *Texas Eagle* Route

Amtrak service in Temple is located in the former Atchison, Topeka, and Santa Fe station, built in 1911. The waiting area is equipped with public restrooms during station hours, a ticket office, and ample parking available on-site. The station was restored in 1999. It is served by 2 trains daily (1 each direction).

Figure 2-54: Temple, Texas Station

ADA Compliance

Amtrak's *A Report on Accessibility and Compliance with the Americans with Disabilities Act of 1990*, produced in 2009, noted that 18 in-service Texas stations were required to be ADA (Americans for Disability Act) compliant. The only exception was Sanderson, a low volume station that at the time was designated as a flag stop, which exempted it from the ADA requirements. Among the 18 stations, Amtrak had full or partial ADA compliance responsibility at 13 of them (the exceptions being Dallas, El Paso, Fort Worth, San Antonio, and San Marcos.)

All 18 applicable stations were assessed for the existing levels of ADA compliance of their station structures, platforms, and pathways. The assessment ratings outlined in the 2009 report noted were: Generally Compliant, for stations scoring above 80 percent on their compliance score; Partially Compliant, for stations scoring between 20 percent and 79 percent; and Minimally Compliant, for stations scoring lower than 20 percent. Three of the Texas stations, Dallas, Longview, and San Antonio, were rated as Partially Compliant in 2009. Alpine, McGregor, and Taylor were rated as Minimally Compliant for all features. The remaining stations had a mix of compliant, partially compliant, and minimally compliant ratings for their various features (station structures, platforms, and pathways). The same report identified preliminary cost estimates for improvements to station features to ensure ADA compliance and achieve a state of good repair. For the Texas stations the total estimated cost of these improvements was approximately $22 million. It should be noted that this assessment was made before the completion of projects to renovate or construct new station features at Beaumont, Gainesville, Fort Worth, Longview, Mineola, and San Marcos. In 2016, Amtrak changed the designation at the Sanderson station from a flag stop to a permanent stop on the *Sunset Limited* route, thus making the station subject to ADA requirements.

Under ADA legislation, Amtrak was required to complete accessibility improvements by 2015 at all stations for which it has legal ADA responsibility. That work is still ongoing. Since 2009, Amtrak and its host freight railroads have been working to develop strategies and plans to meet FRA's requirements to accommodate passengers with disabilities, while simultaneously also improving opportunities to establish level boarding by raising platform surfaces to heights at or closer to the height of the train car floor. This is a complex task, integrating railroad clearance requirements, freight traffic volumes, and the mix of passenger cars with different floor heights (Superliner, single-level, and commuter) that may operate on the same line. Since freight train operations on shared track cannot be impacted, many platform at stations in Texas cannot be raised to the full height of the train car floor. Instead, Amtrak may place portable wheelchair lifts to provide entry to the train for disabled passengers. Given the engineering and funding needed to address the level boarding issue, Amtrak and the FRA are making improvements using the following priorities:

1. Platform state-of-good repair needs;
2. Stations with known train access deficiencies, where wheeled mobility passengers cannot buy a ticket or access a train;
3. Stations with known deficiencies in information display systems; and
4. Stations where entrances and exits or amenities like restrooms are currently not accessible.

As of 2018, all of the passenger rail stations in Texas have accessible waiting areas, except for Del Rio, McGregor, Taylor, and Sanderson, according to the website Great American Stations, but only nine stations have wheelchair lifts available.[58] For the 384 passenger rail stations across the United States where Amtrak has sole or shared ADA responsibility, Amtrak is taking steps to complete the required accessibility improvements. At facilities for which Amtrak is not responsible, it has or will notify the responsible parties (in many cases, it is a municipality) of compliance requirements. Amtrak's FY 2017 budget also included funding to update the Passenger Information Display Systems (PIDS) at the Houston station to establish an integrated audio-visual messaging system to broadcast train service and general announcements.

Texas Passenger Rail Station Characteristics

The matrix in Table 2-14 summarizes the existing intercity stations and intercity/commuter rail union stations in Texas and specific information about each of the stations.

[58] http://www.greatamericanstations.com/station-listing/

Table 2-14: Detailed Amtrak Station Information

	Alpine	Austin	Beaumont	Cleburne	Dallas
Owner	UP	UP	City of Beaumont/UP	City of Cleburne/BNSF Railway	City of Dallas/UP
Address	102 West Holland Avenue, Alpine, TX 79830	250 North Lamar Boulevard, Austin, TX 78703	2255 West Cedar Street, Beaumont, TX 77704	206 North Border Street, Cleburne, TX 76031	400 South Houston Street, Dallas, TX 75202
Route	*Texas Eagle and Sunset Limited*	*Texas Eagle*	*Sunset Limited*	*Texas Eagle*	*Texas Eagle*
Platform					
Type	Single	Single	Single	Single	Double (x3)
Length (approx)	470 feet	850 feet	550 feet	30 to 100 feet	460 feet
Construction	Concrete	Asphalt/Concrete	Concrete	Brick Pavers	Concrete / Brick Pavers
Shelter	None	None	Fully Covered	Covered Benches	Covered Benches
Lighting	Fully Lit	Fully Lit	Fully Lit	Unlit	Fully Lit
Amenities	Benches	None	Benches	Benches	Benches
Passenger Safety	Tactile Warning Surface Strip (includes yellow safety line)	Yellow Safety Line	Tactile Warning Surface Strip (includes yellow safety line)	None/chain link fence	Tactile Warning Surface Strip (includes yellow safety line)
ADA	Fully Accessible	Fully Accessible	Fully Accessible	Fully Accessible	Fully Accessible
Depot					
Hours	9:00 a.m. – 9:00 p.m.	7:00 a.m. – 8:00 p.m.	N/A	M-F: 7:00 a.m. – 5:00 p.m.	9:00 a.m. – 4:30 p.m.
Seating Capacity	18	60	25	66	114
Restrooms	Yes	Yes	Yes	Yes	Yes
Vending	No	Yes	No	Yes	Yes
ATM	No	No	No	No	No
Ticket Counter	No	Yes	No	No	Yes
Quik-Trak	No	No	No	No	No
Telephones	Payphone	Payphone	No	No	Payphone
Shared Uses	UP Office/Greyhound Bus Station	None	Restrooms in Police Station	Local Bus, CLETRAN dispatch center	Light Rail, Commuter Rail, Local Bus, Major Intermodal Transportation Center
Parking					
Short Term (ST)	37	50	10	14	20
Long Term (LT)	ST=LT	ST=LT	ST=LT	ST=LT	84 (pay lot)
ADA Facilities	2 reserved spaces	2 reserved spaces	2 reserved spaces	2 reserved spaces	4 reserved spaces

Table 2-14 Continued: Detailed Amtrak Station Information

	Del Rio	El Paso	Fort Worth	Gainesville	Houston
Owner	City of Del Rio/UP	City of El Paso	Fort Worth Transportation Authority	City of Gainesville/ BNSF Railway	UP
Address	100 North Main Street, Del Rio, TX 78840	700 West San Francisco Avenue, El Paso, TX 79901	1001 Jones Street, Fort Worth, TX 76102	605 East California Street, Gainesville, TX 76240	902 Washington Avenue, Houston, TX 77002
Route	*Texas Eagle* and *Sunset Limited*	*Texas Eagle* and *Sunset Limited*	*Texas Eagle* and *Heartland Flyer*	*Heartland Flyer*	*Sunset Limited*
Platform					
Type	Single	Single	Double	Single	Double
Length (approx)	440 feet	1100 feet	700 feet	200 feet	1000 feet
Construction	Concrete	Asphalt	Concrete/Brick Pavers	Asphalt/Brick Pavers	Concrete
Shelter	None	None	Fully Covered	Partial Awning	Fully Covered
Lighting	Fully Lit	Fully Lit	Fully Lit	Fully Lit	Fully Lit
Amenities	Benches	None	Benches	Benches	None
Passenger Safety	Tactile Warning Surface Strip (includes yellow safety line)	Yellow Safety Line/Chain Link Fence	Tactile Warning Surface Strip (includes yellow safety line)	Yellow Safety Line	Yellow Safety Line
ADA	Fully Accessible	Fully Accessible	Fully Accessible	Fully Accessible	Fully Accessible
Depot					
Hours	N/A	9:15 a.m. – 4:30 p.m.	8:00 a.m. – 6:00 p.m.	11:15 a.m. – 6:45 p.m.	10:00 a.m. – 7:30 p.m.
Seating Capacity	0	52	85	14	100
Restrooms	No	Yes	Yes	Yes	Yes
Vending	No	Yes	Yes	No	Yes
ATM	No	Yes	Yes	No	No
Ticket Counter	No	Yes	Yes	No	Yes
Quik-Trak	No	No	No	No	No
Telephones	Payphone	No	Payphone	Payphone	No
Shared Uses	Intermodal Station (bus/coach)	None/Thruway Bus Connection	Major Intermodal Transportation Center	Museum and City Offices	None/Thruway Bus Connection
Parking					
Short Term (ST)	24	5	15	14	25
Long Term (LT)	ST=LT	0	None	ST=LT	ST=LT
ADA Facilities	3 reserved spaces	3 reserved spaces	2 reserved spaces	3 reserved spaces	2 reserved spaces

Table 2-14 Continued: Detailed Amtrak Station Information

	Longview	Marshall	McGregor	Mineola	San Antonio
Owner	City of Longview / UP	UP	BNSF Railway	City of Mineola / UP	VIA Metropolitan Transit
Address	905 Pacific Avenue, Longview, TX 75602	800 North Washington Street, Suite 2, Marshall, TX 75670	1 Amtrak Boulevard, McGregor, TX 76657	115 East Front Street, Mineola, TX 75773	350 Hoefgen Street, San Antonio, TX 78205
Route	*Texas Eagle*	*Texas Eagle*	*Texas Eagle*	*Texas Eagle*	*Texas Eagle* and *Sunset Limited*
Platform					
Type	Single	Single	Single	Single	Single
Length (approx)	720 feet	300 feet	350 feet	265 feet	550 feet
Construction	Asphalt/Concrete	Concrete	Brick Pavers	Concrete	Brick Pavers
Shelter	-	-	Partial Awning	Partial Awning	Fully Covered
Lighting	Fully Lit	Fully Lit	Fully Lit	Fully Lit	Fully Lit
Amenities	-	-	Benches	Benches	None
Passenger Safety	Tactile Paver	Yellow Safety Line	None	Yellow Safety line, Tactile Paver	Yellow Safety Line
ADA	Fully Accessible	Fully Accessible	Fully Accessible	Fully Accessible	Fully Accessible
Depot					
Hours	7:00 a.m. – 8:00 p.m.	7:00 a.m. – 10:00 a.m., 5:30 p.m. – 8:30 p.m.	Caretaker opens/ closes waiting room as needed (10:45 a.m. – 1:00 p.m., 3:00 – 5:00 p.m.)	9:00 a.m. – 6:00 p.m.	1:00 a.m. – 7:00 a.m., 9:15 p.m. – 11:59 p.m.
Seating Capacity	14	26	20	48	33
Restrooms	Yes	Yes	Yes	Yes	Yes
Vending	Yes	Yes (gift shop)	No	No	Yes
ATM	No	No	No	No	No
Ticket Counter	No	Yes	No	No	Yes
Quik-Trak	No	Yes	No	No	Yes
Telephones	No	No	Payphone	Payphone	Payphone
Shared Uses	Intermodal Transportation Center/TEMPO and UP offices	Museum	None	Museum	None (adjacent to bike share station)
Parking					
Short Term (ST)	17	48	15	25	0
Long Term (LT)	ST=LT	ST=LT	ST=LT	ST=LT	0
ADA Facilities	2 reserved spaces	4 reserved spaces	2 reserved spaces	2 reserved spaces	1 reserved space

Table 2-14 Continued: Detailed Amtrak Station Information

	San Marcos	Sanderson	Taylor	Temple
Owner	Capital Area Rural Transportation System	UP	UP	City of Temple / BNSF
Address	338 South Guadalupe Street, San Marcos, TX 78666	201 West Downie Street, Sanderson, TX 79848	118 East First Street, Taylor, TX 76574	315 West Avenue B, Temple, TX 76501
Route	*Texas Eagle*	*Texas Eagle* and *Sunset Limited*	*Texas Eagle*	*Texas Eagle*
Platform				
Type	Single	Single	Single	Single
Length (approx)	300 feet	180 feet	200 feet	830 feet
Construction	Concrete	Asphalt	Asphalt	Brick Pavers
Shelter	Fully Covered	None	Fully Covered	None
Lighting	Fully Lit	None	Fully Lit	Fully Lit
Amenities	Benches	None	Benches, Tables	None
Passenger Safety	Tactile Paver Strip	None	None	Yellow Safety Line / Chain Link Fence
ADA	Fully Accessible	None	Fully Accessible	Fully Accessible
Depot				
Hours	M-F: 7:00 a.m. – 9:00 p.m.; Sa: 7:00 a.m. – 12:00 p.m., 2:00 – 9:00 p.m.; Su: 8:00 a.m. – 12:00p.m., 2:00 – 7:00 p.m.	N/A	N/A	M-F: 9:30 a.m. – 6:00 p.m.
Seating Capacity	41	0	20	37
Restrooms	Yes	No	No	Yes
Vending	Yes	No	No	Yes
ATM	No	No	No	No
Ticket Counter	No	No	No	Yes
Quik-Trak	No	No	No	No
Telephones	Payphone	Payphone	Payphone	Payphone
Shared Uses	Greyhound, taxi, Interurban Coach	None	UP Yard Office	Museum/Offices
Parking				
Short Term (ST)	5	0	23	50
Long Term (LT)	ST=LT	0	ST=LT	30
ADA Facilities	4 reserved spaces	None	2 reserved spaces	2 reserved spaces

2.1.3 Passenger Rail Service Objectives

TxDOT continues to jointly fund the *Heartland Flyer,* which is one of Amtrak's state-supported intercity passenger trains, with Oklahoma. Both states provide annual contributions to fund the operation of the Fort Worth-Oklahoma City service, as required under PRIIA for passenger trains on routes of 750 miles or less. All other passenger services currently operating in Texas are long-distance trains operated by Amtrak, or commuter services operated by local transit agencies, on rail lines owned either by freight railroads or transit agencies. As such TxDOT's ability to directly impact specific passenger rail service levels, train frequencies, or train schedules is limited. Overall, however, TxDOT is committed to implementing rail-related state policies, and supports the development of modal transportation options.

2.1.4 Performance Review of Texas' Intercity Passenger and Commuter Rail Operations

This section provides an overview of the metrics associated with intercity passenger and commuter rail operations in Texas. Where available, this section describes the ridership, operating, and financial results for these services. For Amtrak services, which are interstate in nature, data for ridership, financial performance, on-time performance, and customer satisfaction of its trains are compiled and reported on a route-level basis.

2.1.4.1 Amtrak Long Distance and Intercity Performance Evaluation

This section provides an overview of the metrics associated with Amtrak's intercity passenger rail operations in Texas.

Ridership and Utilization

Table 2-15 provides an overview of ridership for Amtrak routes serving Texas from FY 2013 through FY 2017.

Table 2-15: Amtrak Riders on Routes Serving Texas FY 2013–2017

Route	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Heartland Flyer	81,226	77,861	69,006	66,105	71,340
Year Over Year Change	-7.8%	-4.1%	-11.4%	-4.2%	7.9%
Texas Eagle	340,081	313,338	317,282	306,321	345,679
Year Over Year Change	0.6%	-7.9%	1.3%	-3.5%	12.8%
Sunset Limited	102,924	105,041	100,713	98,079	98,649
Year Over Year Change	1.7%	2.1%	-4.1%	-2.6%	0.6%

Source: Amtrak Market Research and Analysis Department.

Rising air fares, gasoline price increases, and targeted pricing enabled Amtrak ridership to grow steadily on the *Texas Eagle* and *Sunset Limited* routes during the early part of this period. Between FY 2013 and FY 2014, the *Texas Eagle* experienced a softening in ridership owing to track construction, which resulted in periodic rerouting of the train in Illinois and the loss of local Illinois ridership. Several service truncations resulted from Tower 55 construction track outages in Fort Worth.

During the same period (FY 2013/2014), the *Heartland Flyer* was ridership was significantly impacted by a decline in on-time performance. In FY 2015, lower gasoline prices, a series of train cancellations, and the severe weather and flooding in late spring and early summer negatively impacted ridership for the *Heartland Flyer*.

Aided by a strong improvement in on-time performance 2009 through 2013, the *Sunset Limited* rebuilt ridership, but more recently has seen declines. The completion of the Tower 55 Project in 2016 enabled both the *Heartland Flyer* and *Texas Eagle* to improve performance. All three Amtrak passenger trains serving Texas saw ridership increases in FY 2017. The *Texas Eagle* had the largest ridership percentage increase of any Amtrak long distance train in FY 2017 (the growth of Amtrak's entire long distance service in FY 2017 was 0.9 percent and systemwide ridership grew 1.5 percent). The *Heartland Flyer* also outpaced Amtrak's total systemwide ridership percentage growth in FY 2017 as well as the 2.1 percentage growth of all state-supported services.

Passenger-miles per train-mile is a measure of utilization derived by dividing service passenger-miles (moving one passenger one mile is one passenger-mile) by route train-miles (moving a train one mile is a train-mile). Table 2-16 presents a two-year rolling average of passenger-miles per train-mile for each Amtrak train serving Texas. This measure had declined for all three trains, but stabilized in the most recent reporting period.

Table 2-16: Passenger-Miles per Train-Mile across Rolling Two-Year Periods, FY 2013–2017

Route	FY 2013-2014	FY 2014-2015	FY 2015-2016	FY 2016-2017
Heartland Flyer	93	87	80	79
Year over Year Change	-6.0%	-6.5%	-8.0%	-1.3%
Texas Eagle	190	179	171	170
Year over Year Change	-2.0%	-5.8%	-4.5%	-0.6%
Sunset Limited	139	134	127	126
Year over Year Change	1.5%	-3.6%	5.2%	-0.8%

Source: FRA Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations, 2014-2017.

Boardings and alightings at the 19 Amtrak stations in Texas from 2011 to 2016 appear in Table 2-17. The results are identified by service. The daily *Texas Eagle* serves the greatest number of stations in Texas. Served by two popular daily trains and a station offering intercity, commuter rail and transit connection, Fort Worth has the highest ridership in Texas (103,874 in FY 2016). San Antonio, another station with two frequencies, is the next highest with 52,960 riders (FY 2016). Dallas has the third highest ridership at 42,118 (FY 2016).

Table 2-17: Amtrak Riders in Texas, FY 2012—2016

	Station	FY2012	FY2013	FY2014	FY2015	FY2016
Heartland Flyer	*Fort Worth*	74,883	69,517	66,389	58,946	56,642
	Year over Year Change	5.7%	-7.2%	-4.5%	-11.2%	-3.9%
	Gainesville	8,055	6,476	7,178	7,132	6,337
	Year over Year Change	-0.5%	-19.6%	10.8%	-0.6%	-11.1%
Texas Eagle	*Marshall*	10,025	10,555	10,184	9,390	8,005
	Year over Year Change	11.1%	5.3%	-3.5%	-7.8%	-14.7%
	Longview	49,126	41,305	38,365	32,278	29,448
	Year over Year Change	38.5%	-15.9%	-7.1%	-15.9%	-8.8%
	Mineola	6,965	7,213	6,776	6,423	6,110
	Year over Year Change	-2.8%	3.6%	-6.1%	-5.2%	-4.9%
	Dallas	55,764	56,564	50,180	45,132	42,118
	Year over Year Change	2.3%	1.4%	-11.3%	-10.1%	-6.7%
	Fort Worth	66,813	59,872	62,339	50,561	46,832
	Year over Year Change	15.1%	-10.4$	4.1%	-18.9%	-7.4%
	Cleburne	4,536	4,143	3,322	3,612	3,830
	Year over Year Change	26.4%	-8.7%	-19.8%	8.7%	6.0%
	McGregor	4,988	5,209	4,328	4,834	5,194
	Year over Year Change	7.4%	4.4%	-16.9%	11.7%	7.4%
	Temple	17,856	17,690	15,390	16,023	15,535
	Year over Year Change	8.4%	-0.9%	-13.0%	4.1%	-3.0%
	Taylor	4,979	5,425	4,797	4,798	5,437
	Year over Year Change	4.8%	9.0%	-11.6%	0.0%	13.3%
	Austin	41,638	38,929	32,951	33,195	31,088
	Year over Year Change	6.3%	-6.5%	-15.4%	0.7%	-6.3%
	San Marcos	7,294	7,995	6,830	7,568	6,799
	Year over Year Change	11.3%	9.6%	-14.6%	10.8%	-10.2%
	San Antonio	46,749	45,791	37,990	35,074	33,221
	Year over Year Change	5.6%	-2.0%	-17.0%	-7.7%	-5.3%
Sunset Limited	*El Paso*	12,329	13,093	13,272	13,915	14,584
	Year over Year Change	7.5%	6.2%	1.4%	4.8%	4.8%
	Alpine	4,416	4,921	4,756	4,969	4,943
	Year over Year Change	2.2%	11.4%	-3.4%	4.5%	-0.5%
	Sanderson	255	261	238	316	184
	Year over Year Change	-25.9%	2.4%	-8.8%	32.8%	-41.8%
	Del Rio	2,175	2,443	2,385	1,960	1,939
	Year over Year Change	-3.0%	12.3%	-2.4%	-17.8%	-1.1%
	San Antonio	23,412	22,477	24,012	20,293	19,739
	Year over Year Change	2.2%	-4.0%	6.8%	-15.5%	-2.7%
	Houston	20,327	21,617	20,603	20,620	19,767
	Year over Year Change	3.5%	6.3%	-4.7%	0.1%	-4.1%
	Beaumont	2,724	3,458	3,412	3,265	3,344
	Year over Year Change	13.5%	26.9%	-1.3%	-4.3%	2.4%

Source: Amtrak Market Research and Analysis Department

Financial Performance

Amtrak ticket revenue by service appears in Table 2-18, and fully allocated costs in Table 2-19. Similar to ridership, service issues negatively impacted the *Heartland Flyer* in (FY 2013/2014) and the *Texas Eagle* in (FY 2014), but revenue stabilized or grew for all three trains in FY 2017. It should be noted that revenue management strategies can be undertaken to maintain ticket revenues despite losses in ridership.

Table 2-18: Amtrak Ticket Revenue for Routes Serving Texas, FY 2013–2017 ($ thousands)

Route	FY2013	FY2014	FY2015	FY2016	FY2017
Heartland Flyer	$2,023	$1,967	$1,797	$1,828	$1,818
Year over Year Change	-3.0%	-2.8%	-8.6%	1.8%	-0.6%
Texas Eagle	$27,650	$24,833	$24,404	$22,323	$23,690
Year over Year Change	5.1%	-10.2%	-1.7%	-8.5%	6.1%
Sunset Limited	$11,138	$12,598	$11,639	$10,769	$10,748
Year over Year Change	-0.4%	2.6%	-7.6%	-7.5%	-0.2%

Source: Amtrak Market Research and Analysis Department

Table 2-19: Amtrak Fully Allocated Costs for Routes Serving Texas, FY 2013–2017 (millions)

Route	FY2013	FY2014	FY2015	FY2016	FY2017
Heartland Flyer	$8.3	$9.1	$7.5	$7.4	$7.5
Year over Year Change	-7.8%	9.6%	-17.6%	-1.3%	1.4%
Texas Eagle	$60.4	$58.0	$58.9	$58.3	$59.3
Year over Year Change	-1.9%	-4.0%	1.6%	-1.0%	1.7%
Sunset Limited	$53.2	$50.2	$46.3	$46.5	$47.2
Year over Year Change	-1.3%	-5.6%	-7.8%	-0.4%	1.5%

Notes:
Excludes Depreciation, Interest, and Other Post-Employment Benefits.
Fully Allocated Costs include allocations of substantial Common and Joint Costs that would continue to be incurred by Amtrak if a particular route was discontinued. These continuing costs would be allocated to other routes if that route were discontinued. In FY 2017, Amtrak replaced it reporting of Fully Allocated Costs with a new measurement entitled "Adjusted Operating Earnings," which is defined as GAAP Net Loss excluding certain non-cash items (such as depreciation) and GAAP income statement items reported with capital or debt results or other grants (such as interest expense).
Source: Amtrak Monthly Performance Report

The revenue/cost ratio by route is shown in Table 2-20. Total revenue includes ticket revenue and revenues from meals, other operating sources, and state payments. The revenue/cost ratio is total revenue divided by fully allocated costs. This generates a metric of how much of a route's costs are covered by revenues.

Table 2-20: Revenue/Cost Ratio for Routes Serving Texas, FY 2013–2017

Route	FY2013	FY2014	FY2015	FY2016	FY2017
Heartland Flyer	61.5%	80.3%	88.0%	97.3%	89%
Year over Year Change (percentage points)	1.5	18.8	7.7	9.3	-8.3
Texas Eagle	49.7%	47.3%	47.0%	43.6%	46%
Year over Year Change	3.4	-2.4	-0.3	-3.4	2.4
Sunset Limited	25.9%	28.3%	28.9%	26.9%	26%
Year over Year Change	1.7	2.4	0.6	-2.0	-0.9

Note: The Revenue/Cost Ratio is Total Revenue divided by Fully Allocated Costs (not including Depreciation, Interest or Other Post-Employment Benefits).
Source: Amtrak Monthly Performance Report

Note that total revenues for the *Heartland Flyer* include state payments. This is the reason that the revenue/cost ratio exceeds that of the long-distance trains serving Texas. In FY 2017, the states of Texas and Oklahoma together paid $4,617,000 to underwrite the *Heartland Flyer*'s operation. If only ticket revenue is measured, the revenue/cost ratio for the Heartland Flyer would be about 28 percent (FY 2017).

The large improvement in the *Heartland Flyer's* revenue/cost ratio in FY 2014 was the result of changes in cost methodology. Effective with FY 2014 (October 2013), the Passenger Rail Investment and Improvement Act (PRIIA) mandated that states pick up more of the costs for operating passenger rail routes of less than 750 miles. Amtrak and its state partners established a consistent cost-sharing methodology across all routes of less than 750 miles to ensure a fair and equitable treatment of all states. Under Section 209, Amtrak adopted a cost-sharing methodology and protocol, the Amtrak Performance Tracking (APT) system in October 2010 to determine and allocate costs for state-supported Amtrak routes. This methodology and protocol was mutually agreed upon by all affected states, except Indiana, and approved by the Surface Transportation Board (STB) in March 2012, with an effective date in April 2012. The result of this new methodology was that states became responsible for funding additional costs associated with operating their state sponsored rail service. As a result of increased state payments, the revenue/cost ratio of the route (as measured by Amtrak) improved. One result of the heightened financial involvement in funding state-sponsored trains is that each participating state will have more influence with Amtrak on the planning and operations of the corresponding service plan.

Finally, as noted earlier, connections are very important. In FY 2013 *Heartland Flyer* riders making connections to/from the *Texas Eagle* at Fort Worth generated about 23 percent of the ticket revenues ($455,000) on the Heartland Flyer. This revenue would be lost (and state payments increased) if the *Texas Eagle* were discontinued.

At 46 percent, the revenue/cost ratio of the *Texas Eagle* is about the same as the rest of Amtrak's long-distance services, which in FY 2017 averaged 52 percent. Connections are also very important for the *Texas Eagle*. Through service and the connection between the *Texas Eagle* and the *Sunset Limited* at San Antonio generated $5.6 million in ticket revenue on the *Texas Eagle* in FY 2013. That is almost 20 percent of the total ticket revenue on the route. Without the *Sunset Limited* connection, the revenue/cost ratio of the *Texas Eagle* would fall from near 50 percent to about 37 percent.

The *Sunset Limited* has one of the lowest revenue/cost ratios in the Amtrak System. There are two major reasons for this performance: its tri-weekly operation (three days per week in each direction) and poor on-time performace. Tri-weekly operation impacts the ability of the service to attract travelers, particularly those making short-distance trips of only a few days. Short-distance riders may find there is no train scheduled on the days they wish to travel. Amtrak's other tri-weekly long-distance train, the *Cardinal*, had a revenue/cost ratio of 35 percent in FY 2017, the second-lowest after the *Sunset Limited* that fiscal year, whereas Amtrak's daily long-distance trains had revenue/cost ratios between 45 percent and 95 percent.The second factor is an almost two-decade trend of dismal on-time performance (as low as 4 percent) and trains that are hours late. This substantially eroded the customer base for the train. The *Sunset Limited's* fluctuations in revenue in the last 5 years can be linked strongly with changes in on-time performance. Service suspensions resulting from major storms and flooding in Texas and along the Gulf Coast contributed to ridership declines in FY 2016 and FY 2017. Finally, by convention, all of the ticket revenues of the through cars between the *Texas Eagle* and the *Sunset Limited* accrue to the *Texas Eagle* route. The cost of hauling the cars and serving the passengers from San Antonio to Los Angeles accrues to the *Sunset Limited* route. Following this convention avoids the purely arbitrary allocation of ticket revenue and costs between the two routes.

Table 2-21 lists Amtrak's expenditures on goods and services in Texas, including expenditures on salaries, as well as the number of Amtrak employees residing in Texas from FY 2013 through FY 2017.

Table 2-21: Amtrak Expenditures of Goods and Services in Texas, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Good and Services	$24,363,783	$25,768,411	$35,573,998	$75,200,203	$48,708,250
Employee Wages	$14,860,485	$15,475,777	$16,465,891	$16,207,374	$15,060,997
Amtrak Texas Employees	195	193	194	192	188

Source: Amtrak Texas Fact Sheets, 2013-2017

On-Time Performance and Customer Satisfaction

Amtrak defines On-time Performance (OTP) as the total number of trains arriving on time at a station divided by the total number of trains operated on that route. A train is considered on time if it arrives at the final destination within an allowed number of minutes, or tolerance, of its scheduled arrival time. Trains are allowed a certain tolerance based on how far they travel.

OTP Annual Trend

The endpoint on-time performance of the three Amtrak services in Texas since 2013 is shown in Table 2-22. Endpoint on-time performance measures how often a train arrived at its final destination on schedule or within a prescribed widow of allowable lateness depending on passenger train type and length of route.

Table 2-22: Endpoint On-Time Performance, Routes Serving Texas, FY 2013–2017

Route	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Heartland Flyer	52.1%	48.8%	53.9%	71.8%	78.1%
Year over Year Change (percentage points)	-7.0	-3.3	5.1	17.9	6.3
Texas Eagle	76.8%	46.8%	36.7%	50.8%	60.7%
Year over Year Change	-11.0	-30.0	-10.1	14.1	9.9
Sunset Limited	77.2%	62.0%	58.8%	72.3%	68.3%
Year over Year Change	10.0	-15.2	-3.2	13.5	-4.0

Source: Amtrak Monthly Performance Report

The All-Stations on-time performance of the three Amtrak services in Texas since 2014 is shown in Table 2-23. All-Stations on-time performance measures how often a train arrived at each station along its route within 15 minutes of its scheduled arrival.

Table 2-23: All-Stations On-Time Performance, Routes Serving Texas, FY 2014–2017

Route	FY 2014	FY 2015	FY 2016	FY 2017
Heartland Flyer	71.6%	70.00%	82.6 %	84.9%
Year over Year Change (precentage points)	-1.7	-1.6	12.6	4.3
Texas Eagle	33.3%	27.3%	41.4%	47.5%
Year over Year Change	-17.4	-6.0	14.1	6.1
Sunset Limited	49.6%	46.1%	51.5%	35.5%
Year over Year Change	-7.8	-3.5	5.4	-16.0

Source: Amtrak Monthly Performance Report

After reaching acceptable or near acceptable levels in FY 2010, on-time performance deteriorated in the mid-2010s, possibly a result of growing freight traffic with the end of the recession and the impacts of track work and severe weather. In FY 2016, all three trains experienced significant improvements in reliability, a trend that continued in 2017 for the *Heartland Flyer* and the *Texas Eagle*. The *Heartland Flyer* reached its highest on-time performance in FY 2017 of any year in the past 5 years. Consistent and high on-time performance makes the rail service more attractive to riders, especially those traveling shorter distances.

Cause of OTP Delays

Causes for Amtrak train delays can be attributed to several reasons including the host railroad, Amtrak itself, or other delays such as grade-crossing collisions. Delays can be grouped into broad categories that represent the key reasons for these delays. These categories are:

- *Train interference delays* are related to other train movements in the area. These can be freight trains as well as other Amtrak trains.

- *Passenger Operating Delays* are related to equipment turning and servicing, engine failures, passenger train holds for connecting trains and buses, crewing, and detours.
- *Slow Orders* are delays from reduced speeds to allow safe operation due to track or signal problems.
- *Freight railroad operational delays* are all other freight railroad delays and those related to the railroad infrastructure and/or maintenance work being done on the tracks or signaling systems.
- *All other delays* could include delays caused by the weather and non-railroad third-party factors such as customs and immigration, a bridge opening for waterway traffic, police activity, grade-crossing accidents or loss of power due to a utility company failure.

For contractual purposes, these broad delay categories are further divided and assigned to particular responsible parties. These are listed in Table 2-24.

Table 2-24: Amtrak Delay Categories

Type of Delay	Delay Code	Delay Description
1. Amtrak Responsibility		
Passenger Related	HLD	All delays related to passengers, checked baggage, large groups, etc.
Hold for Connection	CON	Holding for connections from other trains or buses
Total Other		All other delays: delays/miscellaneous; crew & system; locomotive failure; car failure; initial terminal delay; servicing; passenger-related accessibility; late train make-up; injury delay; mail/baggage work
2. Host Railroad Responsibility		
Freight Train Interference	FTI	Delays from freight trains
Slow Order Delays	DSR	Temporary slow orders, except heat and cold orders
Routing	RTE	Routing/dispatching delays including diversions, late track bulletins, etc.
Signal Delays	DCS	Signal failure or other signal delays, wayside defect detector false alarms, defective road crossing protection, efficiency tests, drawbridge stuck open
Maintenance of Way	DMW	Maintenance of way delays including holds for track repairs or maintenance of way foreman to clear
Total Other		All other delays: passenger train interference, detours, debris
3. Other Minutes of Delay: Third-Party Responsibility		
Weather-Related	WTR	All severe weather delays, landslides or washouts, earthquake, heat or cold orders
Total Other		All other delays: police-related, trespassers, unused recovery time

Source: Amtrak Government Affairs

Table 2-25 provides detailed information on specific delays for the *Heartland Flyer* by responsible party for selected months between 2013 and 2018. Shown by month are the percentage of delays by responsible party and the minutes of delay for each delay category. The monthly pattern is quite consistent with Amtrak issues generating about 16 percent of the delays, the freight railroads about 80 percent of the delays, and all other factors generating about 4 to 5 percent of the delays. This pattern has also been quite consistent year-to-year. Please note that complete information for FY 2018 is not available at this time.

Table 2-25: *Heartland Flyer* Delays by Responsible Party, 2013–2018

	Oct. 2013	Sept. 2014	Sept. 2016	Sept. 2017	Aug. 2018
Total Minutes	2,953	2,703	3,585	1,989	4,539
Percent of Delay - Amtrak	15%	21%	28%	18%	15%
Percent of Delay - Freight	83%	76%	62%	80%	85%
Percent of Delay - Other	2%	3%	10%	2%	0%
Amtrak Delays	439	573	1,013	358	674
Passenger Holds	100	116	66	193	173
Engine Failures	19	0	21	0	114
Crew-Related	131	150	63	61	231
All Other	189	307	863	104	156
Host Railroad Delays	2,447	2,052	2,237	1,584	3,827
Freight Train Interference	944	421	139	401	797
Slow Orders	1,262	1,457	12	944	2,708
Passenger Train Interference	0	0	16	0	0
All Other	241	174	2,070	239	322
Other Minutes of Delay	67	78	335	47	0

Source: Amtrak

Between October 2013 and August 2018, Amtrak delays were responsible for 15 to 28 percent of all delay minutes for passenger holds, engine failures, crew-related issues, and other issues. BNSF delays could be attributed to 62 to 85 percent of total delay minutes for freight train interference, slow orders, passenger train interference, and other issues. Other minutes of delay averaged 0 to 10 percent of all delay minutes per month.

Table 2-26 provides detailed information on specific delays for the *Texas Eagle* and *Sunset Limited* by responsible party for the month of September 2016. Amtrak changed its reporting methods in 2017, so more recent data at this level of detail is not available. The table identifies the percentage of delays by responsible party and the minutes of delay for each delay category. The pattern among the long-distance trains is quite consistent, with Amtrak issues generating about 18 percent of the delays, the freight railroads about 61 percent of the delays and all other factors generating about 21 percent of the delays. Amtrak All Other Delays represents the majority of the delay minutes in the Amtrak category. This pattern of delays by responsible party has also been quite consistent over the years.

Table 2-26: *Texas Eagle* and *Sunset Limited* Delays by Responsible Party, September 2016

	Texas Eagle	*Sunset Limited*
Total Minutes	20,257	10,619
Percent of Delay - Amtrak	18%	18%
Percent of Delay - Freight	62%	60%
Percent of Delay - Other	20%	22%
Amtrak Delays	3,705	1,910
Passenger Holds	1,310	450
Engine Failures	510	72
Crew-Related	409	138
All Other	1,467	1,250
Host Railroad Delays	12,536	6,368
Freight Train Interference	4,674	2,927
Slow Orders	2,713	1,378
Passenger Train Interference	1,100	265
All Other	4,049	1,798
Other Minutes of Delay	4,016	2,341

Source: Amtrak Monthly Performance Report

Customer Satisfaction Indicator

The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) required the development of metrics and minimum standards for measuring the performance and service quality of intercity passenger trains. Service quality is measured through Amtrak's Customer Satisfaction Indicator (CSI) customer survey process. CSI Scores measure the satisfaction by passengers, on an 11-point scale, of a particular aspect of their trip. For example, a CSI score of 80 means 80 percent of respondents rated the aspect of their trip in the top three boxes of the 11 steps of the scale.

There six broad customer satisfaction categories are measured as part of the CSI survey. These categories are:

1. *Overall Service* is the measure for the respondents rating for their overall trip experience.
2. *Amtrak Personnel* is the measure for the respondents rating Amtrak reservations personnel, station personnel, train crew and on-board service crew.
3. *Information Given* is the measure for the respondents rating all information they received pertaining to their trip.
4. *On-Board Comfort* is the measure for the respondents rating seat or sleeping compartment comfort, air temperature and ride quality.
5. *On-Board Cleanliness* is the measure for the respondents rating the cleanliness of the train and on-board restrooms.

6. *On-Board Food Service* is the measure for the respondents rating the quality of the food and snacks purchased on-board the train.

Table 2-27 shows the Customer Satisfaction Indicator (CSI) scores for the three Texas services for the fourth quarter of FY 2017. With the exception of On-Board Comfort and On-Board Food Service, the *Heartland Flyer* exceeded the 2010 standards. The *Texas Eagle* and *Sunset Limited* met the customer satisfaction goal for Amtrak Personnel but fell short in the other categories, especially for on-board comfort and food service.

Table 2-27: Customer Satisfaction Index Scores for Amtrak Trains Serving Texas, Fourth Quarter 2017

Service Metric	2010 Standard	Routes		
		Heartland Flyer	*Texas Eagle*	*Sunset Limited*
Overall Service	82	90	75	78
Amtrak Personnel	80	91	80	84
Information Given	80	85	72	71
On-Board Comfort	80	79	63	67
On-Board Cleanliness	80	89	80	79
On-Board Food Service	80	75	64	72

Red: CSI Scores below standard.
Source: FRA Quarterly Report on the Performance and Service Quality of Intercity Passenger Train Operations, Fourth Quarter 2017.

Recent Improvements at Amtrak Stations

Amtrak continues to make improvements to its intercity passenger rail stations in Texas. Detailed information on Amtrak passenger stations was presented in Section 2.1.2.2. Significant improvements in recent years have been made at stations in Beaumont and Longview.

Amtrak opened a brand-new station facility at Beaumont in 2012 featuring an ADA compliant platform, a passenger shelter, and new parking lots and access roads. The station serves the *Sunset Limited*.

The City of Longview completed a restoration of its historic former Missouri Pacific station, built in 1940. The city acquired the station building from UP and undertook a $2.8 million renovation that included restoring the waiting room and ticket office for use by Amtrak and rail passengers.

2.1.4.2 Commuter Rail Performance Evaluation

This section provides an overview of the performance metrics associated with commuter rail operations in Texas. It presents available information on ridership, operating performance, and financial performance results for existing commuter rail operations in Dallas, Austin, and Denton County. Performance information is not yet available for TEXRail.

Trinity Railway Express

Table 2-28 presents Trinity Railway Express (TRE) ridership and train operations data for FY 2013 through FY 2017. Ridership has remained fairly constant over the past 5 years.

Table 2-28: TRE Ridership and Operations Data, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Annual Ridership	2.1 million	2.3 million	2.2 million	2.1 million	2.1 million
Average Weekday Ridership	7,550	8,210	7,800	7,400	7,400
Annual Revenue Train-Miles	1,144,466	1,152,028	1,153,406	1,164,706	1,630,259
Annual Passenger-Miles	40,170,300	43,549,045	41,614,453	40,270,227	41,313,641

Source: DART Reference Books, 2018-2016

Table 2-29 presents TRE's average weekday ridership by station, for FY 2013 through FY 2017. Three stations have more than 1,000 riders per day: the two downtown Dallas stations and the transfer station with a DFW Airport van connection.

Table 2-29: TRE Average Weekday Ridership by Station, FY 2013–2017

Station	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Fort Worth T&P Station	590	640	620	600	590
Fort Worth Central Station	840	860	790	750	760
Richland Hills	600	650	610	600	570
Hurst/Bell	490	500	480	440	440
CentrePort/DFW	990	1,170	1,090	1,040	1,040
West Irving	300	300	300	290	290
South Irving	530	580	530	500	590
Medical Market Center	720	740	700	610	570
Dallas Victory Station	1,040	1,260	1,300	1,300	1.200
Dallas EBJ Union Station	1,450	1,510	1,380	1,310	1,360
Total Daily	**7,550**	**8,210**	**7,800**	**7,440**	**7,410**

Source: DART Reference Books, 2016, 2018

Table 2-30 presents Trinity Railway Express financial performance data for FY 2013 through FY 2017. Average subsidy per passenger has increased from 2013 to 2017, and the farebox recovery ratio has declined over the same period.

Table 2-30: TRE Financial Performance Data, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Farebox Recovery Ratio	36.4%	37.2%	34.5%	n/a	21.4%
Subsidy per Passenger	$5.93	$5.96	$6.09	n/a	$10.63

Source: DART Reference Books, 2018-2016

Table 2-31 presents TRE's annual on-time performance for FY 2013 through FY 2017. On-time performance consistently remains in the high 90s.

Table 2-31: TRE On-Time Performance, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
On-Time Performance	98.7%	98.9%	98.3%	98.3%	98.5%

Source: DART Reference Books, 2016, 2018

Table 2-32 presents the results of Trinity Railway Express customer satisfaction measurements for years 2013 through 2017, as measured in complains per 100,000 passengers. Overall satisfaction improved from 2013 through 2015, though complaint averages have increased in more recent years.

Table 2-32: TRE Customer Satisfaction: Complaints per 100,000 Passengers, 2013–2017

Year	2013	2014	2015	2016	2017
TRE Complaints per 100K Passengers	4.8	3.8	2.7	3.1	4.4

Source: DART Reference Books, 2016, 2018

Denton County A-Train

Table 2-33 presents DCTA A-Train ridership and train operations data for FY 2013 through FY 2017. Ridership and passenger-miles grew from 2013 through 2015, then declined in more recent years.

Table 2-33: DCTA A-Train Ridership and Operations Data, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Annual Ridership	510,653	568,338	555,423	545,250	504,958
Weekday Revenue Trains Operated	54*	58*	60*	60*	60*
Annual Train-Miles	312,318	327,017	340,700	349,480	355,114
Annual Passenger-Miles	624,636	652,177	680,022	673,572	559,536

*Two additional late-evening trains operate on Friday only.

Source: DCTA

Table 2-34 presents A-Train's annual boardings and alightings by station, for FY 2013 through FY 2017. Total boardings grew from 2013 through 2015. More recently, noticeable declines occurred at the Denton and Carrollton and Old Town stations, while boardings at other intermediate stations have experienced less of a variance.

Table 2-34: DCTA A-Train Average Annual Boardings and Alightings by Station, FY 2013–2017

Boardings	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Downtown Denton Transit Center	138,462	149,387	149,054	142,564	131,668
MedPark Station	50,133	55,335	53,383	54,916	52,039
Highland Village/Lewisville Lake	39,844	43,328	40,225	37,121	34,428
Old Town	38,632	43,879	46,894	46,512	38,428
Hebron	39,753	44,361	43,564	44,322	42,262
Trinity Mills Carrollton	203,829	232,048	222,303	219,815	206,133
Alightings	**Fall 2013**	**Fall 2014**	**Fall 2015**	**Fall 2016**	**Fall 2017**
Downtown Denton Transit Center	130,709	141,953	138,320	135,959	119,112
MedPark Station	48,858	56,868	55,226	53,335	53,678
Highland Village/Lewisville Lake	39,325	44,001	41,644	37,328	35,837
Old Town	39,462	46,023	50,169	46,912	41,231
Hebron	43,235	50,105	48,543	48,710	47,756
Trinity Mills Carrollton	209,064	229,388	221,521	223,006	207,344

Source: DCTA

Table 2-35 presents DCTA's A-Train financial data for FY 2013 through FY 2017. Ridership growth between 2013 and 2014 improved farebox recovery, although a service increase in 2015 offset revenue from ridership gains that year. More recent declines in ridership are reflected in the increase in operating subsidy per rider in 2016 and 2017.

Table 2-35: DCTA A-Train Financial Data, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Farebox Recovery Ratio	6.53%	6,87%	6.15%	6.17%	5.36%
Operating Subsidy per Rider	$20.45	$19.82	$22.16	$21.51	$24.89

Source: DCTA

Table 2-36 presents DCTA A-Train's annual on-time performance for FY 2013 through FY 2017. On-time performance consistently remains in the high 90s and has not dipped below 98 percent in any of the past five fiscal years.

Table 2-36: DCTA A-Train Annual On-Time Performance, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
On-Time Performance	99.25%	98.83%	99.03%	98.90%	98.02%

Source: DCTA

Table 2-37 presents the results of DCTA's customer satisfaction surveys for years 2008 through 2017. Survey results were aggregates of the performance of all DCTA services, including the A-Train. Results below are the percentage of respondents who rated the service a 4 (excellent) or a 5 (very good). A-Train and DCTA employees consistently get high marks from customers.

Table 2-37: DCTA Customer Satisfaction Survey Results, 2008–2017

Year	2008	2011	2013	2014	2017
Reliability	70%	74%	90%	83%	83%
Affordability	65%	70%	72%	71%	86%
Comfort	82%	81%	93%	89%	85%
Staff/Employee Service	90%	89%	94%	92%	91%
Convenience/Service Hours	n/a	58%	69%	66%	80%
Safety	n/a	n/a	95%	93%	93%
Likely to Recommend DCTA				73%	82%

Source: DCTA

Austin Capital Metro

Table 2-38 presents MetroRail Red Line ridership and train operations data for FY 2013 through FY 2017. Ridership has grown each year in the past 5 years. Weekday train frequencies also have increased.

Table 2-38: Capital MetroRail Red Line Ridership and Operations Data, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Annual Ridership	766,858	787,071	792,334	807,816	824,703
Weekday Trains Operated	125	126	126	126	128
Annual Train-Miles	326,796	328,132	333,164	341,975	337,781
Annual Passenger-Miles	12,202,429	12,376,641	12,829,597	13,265,836	13,034,963
Average Passenger Trip Miles	15.9	15.7	16.2	16.4	15.8

Source: Capital Metro

Table 2-39 presents MetroRail Red Line's average daily boardings by station, in each direction, for the second half of years 2013 through 2017. Total boardings have grown from 2013, with mild fluctuations in more recent years.

Table 2-39: Capital MetroRail Red Line Average Daily Boardings, Fall 2013–2017

Southbound	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017
Leander	220	254	215	234	209
Lakeline	465	502	489	483	466
Howard	342	354	362	362	334
Kramer	177	184	162	195	173
Crestview	78	88	77	75	82
Highland	44	60	49	58	58
M L King Jr	45	58	46	56	62
Plaza Saltillo	19	20	24	24	23
Austin Downtown	0	0	0	0	0
Northbound	**Fall 2013**	**Fall 2014**	**Fall 2015**	**Fall 2016**	**Fall 2017**
Austin Downtown	738	839	850	922	872
Plaza Saltillo	75	71	69	65	88
M L King Jr	235	214	180	183	168
Highland	96	111	91	105	100
Crestview	56	57	61	62	64
Kramer	76	85	62	72	70
Howard	43	46	37	36	44
Lakeline	13	15	15	8	15
Leander	0	0	0	0	0
Total Daily	**2,723**	**2,958**	**2,791**	**2,939**	**2,837**

Source: Capital Metro

Table 2-40 presents MetroRail Red Line financial data for FY 2013 through FY 2017. Ridership has grown each year in the past 5 years. Despite overall ridership increases, annual revenue from fares has declined in the past 5 years. Average operating subsidy per rider increased from 2013 through 2016, then fell in 2017, as a result of lower operating expenses.

Table 2-40: Capital MetroRail Red Line Financial Data, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Fare Revenue	$3,358,278	$3,136,133	$2,487,225	$2,135,825	$1,974,227
Operating Expenses	$13,712,449	$15,810,047	$14,795,764	$23,076,368	$21,750,211
Farebox Recovery Ratio	24%	20%	17%	9%	9%
State Operating Assistance	$0	$0	$0	$0	$0
Operating Subsidy per Rider	$12.40	$16.60	$14.77	$25.97	$23.98

Source: Capital Metro

Table 2-41 presents MetroRail Red Line's average annual on-time performance for FY 2013 through FY 2017. On-time performance consistently remains in the high 90s. MetroRail has a performance goal of operating 96.04 percent on time, which the service has exceeded in each of the past five fiscal years.

Table 2-41: Capital MetroRail Red Line Annual On-Time Performance, FY 2013–2017

Year	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
On-Time Performance	97.61%	96.07%	98.09%	96.36%	97.38%

Source: Capital Metro

Table 2-42 presents the results of MetroRail Red Line customer satisfaction surveys for years 2013 through 2018. Overall satisfaction results are the percentage of respondents who rated the service a 4 (Satisfied) or a 5 (Very Satisfied). Additional rating categories also measure the percentage of respondents who rated the service a 4 or 5, the top two most favorable categories. The majority of respondents indicated they would continue to use MetroRail.

Table 2-42: Capital MetroRail Red Line Customer Satisfaction Survey Results, 2013-2018

Year	2013	2015	2018
Overall Satisfaction	88%	85%	80%
Likelihood to Recommend MetroRail	93%	89%	90%
Likelihood to Continue Using MetroRail	96%	95%	96%

Source: Capital Metro

2.1.5 Public Financing for Rail Projects and Services

Texas, like many states, has a constitutional limitation that prohibits most direct state transportation fund expenditures from being used for rail projects. TxDOT's financial strategy to support freight and passenger rail projects recognizes the restricted role the state could play in improving rail transportation options and emphasizes the need for careful planning, accessing federal funds, and reliance on public-private partnerships. TxDOT relies on intermittent budget appropriations and revenue initiatives such as carload taxes on its state-owned South Orient Rail Line to develop rail improvement projects, often with several federal, state and local partners.

The following is a summary of current and prospective rail capital and operating funding sources available to the public sector for providing and improving rail operations in the state.

2.1.5.1 State Sponsored Rail Investment Programs

The following state programs have funded or have the potential to fund eligible rail improvements.

<u>TxDOT Highway-Railroad Grade Crossing Safety Program</u>

The Texas Transportation Commission approves annual amount of Section 130 funds as part of their approval of the Unified Transportation Program (UTP). Funding is then obligated with the Federal

Highway Administration (FHWA) for preliminary engineering and again for construction. TxDOT generally obligates Section 130 funds to conduct preliminary engineering and study the state's highest risk highway-rail crossings for safety improvements. Section 130 funding is also used to construct safety improvements or close existing highway-railroad grade crossings. Grade crossing closures can be done with federal funds that reimburse the local public road agency as part of the crossing closure and consolidation. The Section 130 Railway-Highway Crossings Program is further described under Section 2.1.5.2 Federal Rail-Related Programs and Funding.

To supplement the federally funded highway-railroad grade crossing safety program, TxDOT maintains funding program for two types of grade crossing improvements. The At-Grade Crossing Replanking Program provides approximately $3.5 million annually to maintain and improve grade crossing surfaces. The Railroad Signal Maintenance Program provides approximately $1.1 million annually for railroad signal maintenance payments to railroads.

Rail Relocation and Improvement Fund

The purpose of this fund, created through a constitutional amendment in 2005, is to relocate and improve public or private rail facilities with the intention of improving freight mobility and relieving traffic congestion. To-date, no dedicated revenue source or budget appropriations have been made available to implement projects.

Texas State Infrastructure Bank

The Texas State Infrastructure Bank is a low-cost tool for local governments to finance local transportation projects at competitive interest rates. Projects must be consistent with transportation plans developed by local metropolitan planning organizations (MPOs). TxDOT manages the State Infrastructure Bank program as a revolving loan fund.

Texas Emissions Reduction Program

This program is available for projects that reduce air pollution and engine idling through congestion relief at rail intersections in non- or near non-attainment areas and locomotive emissions remediation. The program has been utilized to retrofit locomotives in the Corpus Christi and Houston areas.

Texas Economic Development Bank

The Economic Development Bank provides incentives to business wishing to relocate or expand in Texas, as well as assist local communities in accessing capital for economic development. Funds can be utilized for rural rail development projects.

Transportation Reinvestment Zones

This funding mechanism is designed to allow the development and financing of transportation projects by incrementally increasing property tax revenue collected inside the designated zone. This mechanism has allowed metropolitan areas operating rail facilities to diversify funding options.

Railroad Grade Crossing and Replanking Program

Replacement of rough railroad crossing surfaces on the state highway system (approximately 50 installations per year statewide). Project selection based on conditions of the riding surface (highway, railroad, and drainage) and benefit to cost per vehicle using the crossing. Per the 2019 Unified Transportation Program, the Railroad Grade Crossing and Replanking Program was allocated $3.5 million for FY 2019 through FY 2028.[59]

Railroad Signal Maintenance Program

Financial contributions to each railroad company based on number of state highway system crossings and type of automatic devices present at each crossing. Per the 2019 Unified Transportation Program, the Railroad Signal Maintenance Program was allocated $1.1 million for FY 2019 through FY 2028.[60]

2.1.5.2 Federal Rail-Related Programs and Funding

Rail, unlike other transportation modes, does not have a dedicated federal funding source. Thus, any federal funding programs that are rail oriented are discretionary and awarded on a competitive, nationwide basis. No state is guaranteed to receive federal rail funding. Freight rail infrastructure and operations are funded almost entirely by the private sector. Rail maintenance, replacement, and expansion of track, structures and equipment by Class I railroads (those with annual operating revenues of over $250 million) is almost totally funded by income from operations by these companies. Smaller short line and regional railroads tend to be the major recipients of state and local funding, which is often provided through general fund expenditures. The National Railroad Passenger Corporation (Amtrak) is the primary provider of passenger rail services in the nation. Amtrak does not earn enough in passenger revenues to cover operating expense and must rely on federal grants and other federal expenditures. It operates almost entirely on tracks that are owned by private freight railroads with the exception of some portions of its Northeast Corridor.

The primary federal grant and loan programs that are currently available for railroad infrastructure projects are presented in the following sections.

Railway-Highway Crossings Program

The Railway-Highway Crossings (Section 130) Program provides funds for the elimination of hazards at railway-highway crossings. A highway-railroad grade crossing is an intersection where a roadway crosses railroad tracks at the same level. Railroad companies generally own and maintain railroad tracks, but several agencies may have jurisdiction at the point at which these tracks cross a publicly funded roadway, and improvements at these crossings may be funded by this program. Funds are appropriated from the Highway Trust Fund and are apportioned to States by formula. Projects must have the objective of enhancing safety and can include separation or protection of grades at crossings, reconstruction of grade crossing structures, signing, pavement markings, active warning devices and relocation of rail lines or highways to eliminate grade crossings. The 2015 Fixing America's Surface Transportation Act (FAST Act) continues the annual set-aside for railway-highway crossing improvements under 23 USC 130(e). The funds are set-aside from the Highway Safety Improvement Program (HSIP) apportionment. The FAST Act increased the set-aside amount for each fiscal year. In addition, the Consolidated Appropriations Act of 2016 (Public Law 114-113) provided a one-time increase for FY 2016.

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[59] http://ftp.dot.state.tx.us/pub/txdot-info/tpp/utp/2019/utp-2019.pdf
[60] http://ftp.dot.state.tx.us/pub/txdot-info/tpp/utp/2019/utp-2019.pdf

Consolidated Rail Infrastructure and Safety Improvements Program (CRISI)

The CRISI grant program funds projects that improve the safety, efficiency, and reliability of passenger and freight rail. This program was authorized in Section 11301 of the FAST Act, Public Law 114-94 (2015); 49 U.S.C. § 24407. Funding under this program was made available by the Consolidated Appropriations Act, 2017. Projects eligible for funding under this grant program include:

- Deployment of railroad safety technology (PTC/rail integrity inspection systems)
- Capital projects
- Highway-rail grade crossing improvement projects
- Rail line relocation and improvement projects
- Regional rail and corridor service development plans and environmental analyses
- Any project necessary to enhance multimodal connections or facilitate service integration between rail service and other modes
- The development and implementation of a safety program or institute

PTC Systems Grants under the Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program (FY 2018)

These grants will fund the deployment of PTC system technology for intercity passenger rail transportation, freight rail transportation, and/or commuter rail passenger transportation. Projects eligible for funding under this NOFO that deploy PTC systems technology for intercity passenger rail transportation, freight rail transportation, and/or commuter rail passenger transportation include:

- Back office systems
- Wayside, communications, and onboard hardware equipment
- Software
- Equipment installation
- Spectrum
- Any component, testing, and training for the implementation of PTC systems
- Interoperability

Eligible grant recipients are states, group of states, interstate compact, public agency (or publicly chartered authority established by one or more states), political subdivision of a state, Amtrak or another rail carrier that provides intercity rail passenger transportation, Class II railroad or Class III railroad, any rail carrier or rail equipment manufacturer in partnership with at least one of the entities previously mentioned, Transportation Research Board together with any entity with which it contracts in the development of rail-related research (including cooperative research programs), University transportation center engaged in rail-related research, or non-profit labor organization representing a class or craft of employees of rail carriers or rail carrier contractors.

In August 2018, the FRA awarded over $200 million in PTC grants. Texas received three grant awards, which are summarized below.

- **Capital Metro PTC Interoperability and Testing Project** (Up to $5,650,000)
    - **Recipient:** Capital Metropolitan Transportation Authority (Cap Metro)
    - **Description:** Will include the remaining integration testing of PTC components, preparation of the PTC safety plan, contract engineering and oversight, systems testing, and training for Capital Metro's installation of Enhanced Automatic Train Control on its Red Line in the cities of Austin, Cedar Park, Leander, and surrounding Texas communities.
- **DART/Trinity Metro Regional PTC Deployment Project** (Up to $9,516,358)
    - **Recipient:** Dallas Area Rapid Transit (DART)
    - **Description:** Will support implementing a PTC back office system, I-ETMS systems integration and testing with multiple freight and passenger railroads, interoperability testing, and training for the Trinity Railway Express and TEXRail commuter railroads in the Dallas-Fort Worth urban area.
- **PTC Enhancements - Denton County Transportation Authority A-Train Commuter Rail** (Up to $4,000,000)
    - **Recipient:** Denton County Transportation Authority (DCTA)
    - **Description:** Will implement five cut sections to include PTC programming changes, insulated joints, track monitoring equipment, testing and communications, deploying dispatch software/hardware integration with the Enhanced Automatic Train Control temporary speed restrictions server, support training, and testing along a 21-mile commuter rail line in Denton County, Texas.

Restoration and Enhancement Grants Program

This grant program will fund operating assistance grants for initiating, restoring, or enhancing intercity rail passenger transportation. This program was authorized in Section 11303 of the FAST Act, Public Law 114-94 (2015); 49 U.S.C. § 24408. Funding under this program was made available by the Consolidated Appropriations Act, 2017. Projects eligible for funding under this grant program must be for operating assistance to initiate, restore, or enhance intercity rail passenger transportation. Examples of such expenses may include: staffing costs for train engineers, conductors, on-board service crew; diesel fuel or electricity costs associated with train propulsion power; station costs such as ticket sales, customer information and train dispatching services, station building utility and maintenance costs; lease payments on rolling stock; routine planned maintenance costs of equipment and train cleaning; host railroad costs; train yard operation costs; general and administrative costs; and management, marketing, sales and reservations costs.

The Nationally Significant Freight and Highway Projects (INFRA) Grants Program

The INFRA grant program, formerly referred to as the Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grants program. provides Federal financial assistance to highway and freight projects of national or regional significance. This grant program focuses on competition on transportation infrastructure projects that support four key objectives:

- Supporting economic vitality at the national and regional level;

- Leveraging Federal funding to attract other, non-Federal sources of infrastructure investment, as well as accounting for the life-cycle costs of the project;
- Using innovative approaches to improve safety and expedite project delivery; and
- Holding grant recipients accountable for their performance and achieving specific, measurable outcomes identified by grant applicants.

INFRA grants may be used for the construction, reconstruction, rehabilitation, acquisition of property (including land related to the project and improvements to the land), environmental mitigation, construction contingencies, equipment acquisition, and operational improvements directly related to system performance. Statutorily, INFRA grants may also fund development phase activities, including planning, feasibility analysis, revenue forecasting, environmental review, preliminary engineering, design, and other preconstruction activities, provided the project meets statutory requirements. Public-private partnership assessments for projects in the development phase are also eligible costs.

Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants Program

BUILD Transportation grants replace the pre-existing Transportation Investment Generating Economic Recovery (TIGER) grant program. BUILD Transportation grants are for investments in surface transportation infrastructure and are to be awarded on a competitive basis for projects that will have a significant local or regional impact. BUILD funding can support roads, bridges, transit, rail, ports or intermodal transportation. Projects for BUILD will be evaluated based on merit criteria that include safety, economic competitiveness, quality of life, environmental protection, state of good repair, innovation, partnership, and additional non-Federal revenue for future transportation infrastructure investments.

Rail Line Relocation Program

This program provided grants to be awarded for construction projects that improve the route or structure of a rail line for either the purpose of mitigating the adverse effects of rail traffic on safety, motor vehicle traffic flow, community quality of life, or economic development or for the lateral or vertical relocation of any portion of the rail line. Funding for this program was last appropriated in FY 2011.

Texas localities have received the following grants in recent years through this program:

- A grant of $475,000 for East Belt Railroad Grade Crossing Safety Improvements in Houston
- Two grants of $1.0 million each for rehabilitation of the South Orient Rail Line
- A grant of $299,423 to rehabilitate an industrial spur track in the city of Big Spring

Rail Rehabilitation and Improvement Financing (RRIF)

This program provides loans and credit assistance to both public and private sponsors of rail and intermodal projects. Eligible projects include acquisition, development, improvement, or rehabilitation of intermodal or rail equipment and facilities. Direct loans can fund up to 100 percent of a capital project with repayment terms of up to 25 years and interest rates equal to the cost of borrowing to the government. Eligible borrowers include railroads, state and local governments, government sponsored authorities, corporations, and joint ventures that include at least one railroad.

The Tex-Mex Railroad (now KCS) received a $50 million loan in 2005. The railroad used proceeds from the 25-year loan to upgrade 146 miles of track and two yards between Laredo and Corpus Christi, Texas, rehabilitate 26 bridges, construct two sidings, extend one siding, and replace 75,000 ties. It also used proceeds to refinance debt incurred from prior infrastructure improvement projects.

Federal Transit Administration Capital Investment Grant Program

This program is the primary financial resource for supporting transit capital projects that are locally planned, implemented, and operated. The majority of the projects are fixed-guideway transit projects, meaning they use or occupy a separate right-of-way such as rails, catenaries, or exclusive bus lanes. This includes rapid rail, light rail, streetcar, commuter rail, and bus rapid transit (BRT).

Positive Train Control Grant Program FY 2017

The FY 2017 Positive Train Control (PTC) Grant Program will fund the installation of PTC systems required under 49 U.S.C. 20157 that include, but are not limited to, back office systems; wayside, communications, and onboard hardware equipment; and spectrum acquisition. Under this grant program, the intended outcomes and benefits of the funded projects are accelerated implementation, increased interoperability, and improved reliability of PTC systems. The FRA and the FTA jointly administer this program.

Projects eligible for funding must assist in financing the installation of PTC systems required under 49 U.S.C. 20157, such as:

- Public transit agencies operating commuter railroads, and
- State and local governments
- Eligible grant recipients are public transit agencies operating commuter railroads, as well as state and local governments.

Federal Surface Transportation Programs with Selected Rail Applications

In addition to the above programs, several additional programs, although primarily intended for highway use, are eligible for rail projects at the discretion of states and with the approval of the administering federal agency. These programs include the following programs.

National Highway System Program

This program can be utilized to improve designated highway intermodal connectors between the National Highway System (NHS) and intermodal facilities, such as truck-rail transfer facilities. The federal share of NHS funding is 80 percent.

Congestion Mitigation and Air Quality Improvement Program

This program funds transportation projects and programs that improve air quality by reducing transportation-related emissions in non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter. Examples of Congestion Mitigation and Air Quality (CMAQ)-funded rail projects include the construction of intermodal facilities, rail track rehabilitation, diesel engine retrofits, and idle-reduction projects in rail yards, and new rail sidings.

CMAQ funds are disbursed to and within a state based on levels of pollution within an area, with the state or the region using the funds to implement projects that reduce congestion or improve air quality. Projects must be included in MPO transportation plans and transportation improvement programs (TIPs) or the current state transportation improvement program (STIP) in areas without an MPO. The federal matching share for these funds is 80 percent.

Surface Transportation Program

The Surface Transportation Program is a general grant program available for improvements on any Federal-Aid highway, bridge, or transit capital project. Eligible rail improvements include lengthening or increasing vertical clearance of bridges, crossing eliminations, and improving intermodal connectors. Project funding decisions are made by states with approval from the FHWA. The federal share for these funds is 80 percent.

Projects of National and Regional Significance

This program can fund highway, bridge, transit, and freight rail projects. Program funding ($500 million) is focused on very large projects such as multi-state corridor projects which would likely not be undertaken with individual state formula funds.

Transportation Infrastructure Finance and Innovation Act (TIFIA)

This program provides credit assistance to large-scale projects (over $50 million or one-third of a state's annual federal-aid funds) of regional or national significance that might otherwise be delayed or not constructed because of risk, complexity, or cost. A wide variety of intermodal and rail infrastructure projects are eligible and can include equipment, facilities, track, bridges, yards, buildings, and shops. Eligible recipients for TIFIA funds include state and local governments, transit agencies, railroad companies, special authorities or districts, and private entities. The interest rate for TIFIA loans is the U.S. Treasury rate, and the debt must be repaid within 35 years.

DART received a $120 million TIFIA loan in 2012 for its Dallas Area Rapid Transit Orange Line Extension commuter rail project.

Transportation Alternatives Program

This program, which replaced the SAFETEA-LU Transportation Enhancement Program, offers funding opportunities to expand transportation choices and enhance the transportation experience through 12 eligible activities related to surface transportation. Rail related eligible activities include the rehabilitation of historic transportation buildings or facilities, the preservation of abandoned rail corridors, and the establishment of transportation museums. The federal share of project costs is 80 percent.

Other Federal Programs Available for Rail-Related Funding

In addition to transportation programs available under the Transportation Authorization bill, other programs are administered by federal agencies for which rail-related capital projects are eligible. These programs include:

U.S. Department of Commerce Economic Development Administration

The U.S. Department of Commerce provides Economic Development Administration (EDA) grants for projects in economically distressed industrial sites that promote job creation. Eligible projects must be located within EDA-designated redevelopment areas or economic development centers. Eligible rail projects include railroad spurs and sidings. EDA also provides disaster recovery grants. Grant assistance is available for up to 50 percent of the project, although EDA could provide up to 80 percent for projects in severely depressed areas.

U.S. Department of Agriculture Programs

The U.S. Department of Agriculture (USDA) Community Facility Program and Rural Development Program provide grant or loan funding mechanisms to fund construction, enlargement, extension, or improvement of community facilities providing essential services in rural areas and towns. Grant assistance is available for up to 75 percent of the project cost. Eligible rail-related community facilities include transportation infrastructure for industrial parks and municipal docks.

U.S. Environmental Protection Agency Programs

The U.S. Environmental Protection Agency (EPA) provides funds for Brownfield site cleanup and redevelopment (requires a 20 percent match in funding by the state). These sites may be suitable for rail yards or other rail-related uses.

The 45G Short Line Railroad Tax Credit

Originally enacted in 2004, the Railroad Track Maintenance Tax Credit, also known as the Section 45G Tax Credit, was a federal income tax credit for track maintenance performed by short lines and regional railroads (Class II and III railroads) in the U.S. Tax Code Section 45G leveraged private sector investment in rail infrastructure by providing a tax credit of 50 cents for every dollar spent on qualified track maintenance expenditures or other qualifying railroad infrastructure projects. The credit was capped based on a mileage-based formula; the maximum amount allowable was $3,500 per mile of track.

The credit created a strong incentive for short line and regional railroads to invest private sector dollars on freight railroad track rehabilitation. Legislation extended Section 45G for tax years 2015 and 2016.

Per Section 45G, qualifying railroad structures improvements include: grading; other right-of-way expenditures; tunnels and subways; bridges, trestles, and culverts; elevated structures; ties; rails and other track material; ballast; fences, snow sheds, and signs; signals and interlockers; public improvements and construction. Qualified railroad track maintenance expenditures are expenditures for maintaining the aforementioned qualifying railroad structures owned by short line and regional railroads.

This credit expired in December 2016; however, the BRACE Act will amend Section 45G by removing this sunset provision. In the 114th Congress, the BRACE Act was co-sponsored by over 226 representatives and 54 senators but did not pass. The bill was reintroduced in January 2017 by the 115th Congress and was referred to the Committee on Ways and Means for further discussion.

2.1.6 Ongoing Projects for Safety and Security Improvements

Rail safety is an important issue for both railroads and state departments of transportation. Rail safety affects the well-being of railway workers and the public. It also has a major impact on the efficiency of railroad operations. Increased attention has also focused on the safe movement of hazardous materials by rail, especially the movement of crude oil. Rail security has seen increased attention due to the potential for disruption of the transportation system or acts, which could place large numbers of citizens at risk. This section describes rail safety and security efforts in Texas.

2.1.6.1 Rail Safety and Security Programs in Texas

Rail safety requirements are provided through a combination of federal and state laws. Most safety-related rules and regulations fall under the jurisdiction of the FRA, as outlined in the Rail Safety Act of 1970 and other legislation, such as the most recent Rail Safety Improvement Act of 2008. FRA's rail safety regulations can generally be found in Title 49 Code of Federal Regulations Parts 100-299.

The state's rules on rail safety were previously under the jurisdiction of the Texas Railroad Commission, but were transferred to the TxDOT in 2005 by the 79th Texas Legislature.

Texas has adopted federal safety standards relating to railroad track, equipment, operating practices, signals, and train control by reference. In addition to federal regulations, state regulations prescribe standards for the horizontal and vertical clearance of structures over and alongside railway tracks, sight distances at non-signalized grade crossings, and exemptions for certain rail-related structures. Monthly reports of excess hours of service required by federal regulations must also be submitted to TxDOT. Railroads must indicate points of contact for rail operations within the state and provide upon request copies of the railroad's operating rules, timetables, and special instructions; any amendments to a railroad's operational tests and inspections; and copies of programs for employee instruction. Regulations also require railroads to file and maintain a map, list, or chart that indicates the location of wayside detectors in Texas. Railroads are required to report to TxDOT, by telephone or fax, any accidents or incidents that meet certain criteria, such as an incident or occurrence involving railroad on-track equipment that results in the death of any railroad passenger or railroad employee.

TxDOT rail safety investigators conduct safety inspections of railroad infrastructure, facilities, and equipment. Texas participates in the FRA's Rail State Safety Participation Program under 49 CFR Part 212 which allows states to enter into an agreement with FRA for the delegation of specified authority. This includes investigative and surveillance authority regarding all or any part of Federal railroad safety laws.

TxDOT has inspectors in each safety discipline: track, which also includes bridges; motive power and equipment; operating practices; signal and train controls; and hazardous materials. Inspections are conducted in cooperation with FRA. Inspectors are assigned to specific regions across the state to achieve comprehensive inspection coverage, quicker accident and complaint response time, and greater operational efficiency. Specific territorial boundaries are established so state and federal inspectors do not conduct overlapping inspections.

TxDOT rail safety investigators are always on-call to respond to rail emergencies including crossing accidents, derailments, and hazardous material releases. TxDOT prioritizes inspection activities based on risk assessment and analysis of historical data. The goal of this proactive approach is to reduce rail incidents and accidents and to focus inspection efforts at high-risk locations.

The FTA created the State Safety Oversight (SSO) Program to improve rail transit safety and security. The oversight agency (TxDOT) is required to prepare a program standard, which is a written document developed by the oversight agency that describes the policies, objectives, responsibilities, and procedures used to provide Rail Transit Agencies' safety and security oversight. The Rail Fixed-Guideway Systems (RFGS) affected by this program include any light, heavy, or rapid rail system, monorail, inclined plane, funicular, trolley, or automated guideway operating within the state's jurisdiction that:

- is not regulated by the FRA;
- is included in FTA's calculation of fixed-guideway route miles or receives funding under FTA's formula program for urbanized areas (49 U.S.C. 5336); or
- has submitted documentation to FTA indicating its intent to be included in FTA's calculation of fixed-guideway route miles to receive funding under FTA's formula program for urbanized areas (49 U.S.C. 5336).

Detailed information about the program can be found in the August 2018 *State Safety and Security Oversight Program Standard*.[61]

Over the past decade, there has been a general downward trend for rail-related incidents, injuries and deaths despite the substantial growth in population, registered vehicles, mile traveled and rail traffic. TxDOT continues to strive to further improve upon this trend by focusing its safety miles program on core essential principles: educate, enforce, evaluate, and engineer.

Operation Lifesaver, established in 1972, is a non-profit educational organization for highway-rail crossing safety and rail trespass prevention. Texas has an active chapter of Operation Lifesaver. This organization promotes safety through education of both drivers and pedestrians to make safe decisions at crossings and around tracks, promoting enforcement of traffic laws related to crossing signals and trespass, and by encouraging continued engineering research and innovation to improve the safety of railroad crossings. TxDOT, in coordination with Texas Operation Lifesaver, provides rail safety presentations at schools, employers, and communities throughout the state. TxDOT and the Texas A&M Transportation Institute (TTI) have a liaison that works with the statewide Operation Lifesaver coordinator.

Also assisting in rail safety and security in Texas is the TTI Rail Research department, which focuses on rail research and safety within the state. Not only does TTI Rail Research host a bi-annual National Highway-Rail Grade Crossing Safety Training Conference, it also has active researchers exploring these areas within freight and passenger rail:[62]

- Technical and Planning Policy

[61] http://ftp.dot.state.tx.us/pub/txdot-info/ptn/rail_grant.pdf
[62] https://groups.tti.tamu.edu/rail/research-areas/

- Freight and Passenger Rail
- Interaction of Rail with Other Freight Modes
- Rail-Highway Interaction
- Evaluation of Innovative Technologies
- Rail Safety Research
- High-Speed Rail
- Movement of Hazardous Materials

Various aspects of rail transportation can raise concerns regarding safety and security. The safety of rail employees and rail contractors is reliant on the condition of rail equipment and safe operating practices. The safety of the public can be affected by train accidents and incidents due to derailments, especially if hazardous materials are involved, at highway-rail at-grade crossings, and injuries which may occur while traveling by rail or on railroad property. Rail security has seen increased attention due to the potential for disruption of the transportation system or having large numbers of citizens at risk due to terrorism. The goal of Texas' rail safety programs is to address these issues as they arise through continued coordination with the state's rail operators, safety-related infrastructure improvements, and monitoring the rail network through safety inspections to identify existing and potential problems. TxDOT also coordinates with other federal and state agencies regarding transportation security and emergency response.

2.1.6.2 Texas Rail Accident Statistics

The following is a statistical review of rail safety in Texas over the past decade. It addresses the rail accident and incident trends and provides details as to the type of rail accidents, those affected, and causes. Table 2-43 shows statistics for the total number of rail accidents and incidents in Texas over the past 10 calendar years. These totals include Train Accidents, Highway-Rail Incidents, and Other Incidents. These categories will be defined and discussed in detail below.

Table 2-43: Total Accidents and Incidents in Texas (2008-2017)

Rail Injury Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	960	780	831	810	801	785	885	809	768	769
Deaths	53	56	55	52	67	52	64	56	66	54
Injuries	557	487	519	471	456	453	497	450	395	401

Source: FRA Office of Safety Analysis

The trend in total rail accidents and incidents in Texas has decreased slightly over the past decade. The first half of the decade saw an average of 836.4 total incidents, 56.6 fatalities, and 498.0 injuries, while the most recent 5-year period saw averages of 801.4 total incidents, 56.4 fatalities, and 477.2 injuries.

The following sections discuss the various types of Texas rail accidents and incidents in more detail.

Train Accidents in Texas

Train accidents include train derailments, collisions, and other events involving on-track rail equipment that result in fatalities, injuries, or monetary damage above a threshold set by FRA.[63] Train accident statistics in Texas over the past decade are provided in **Table 2-44**.

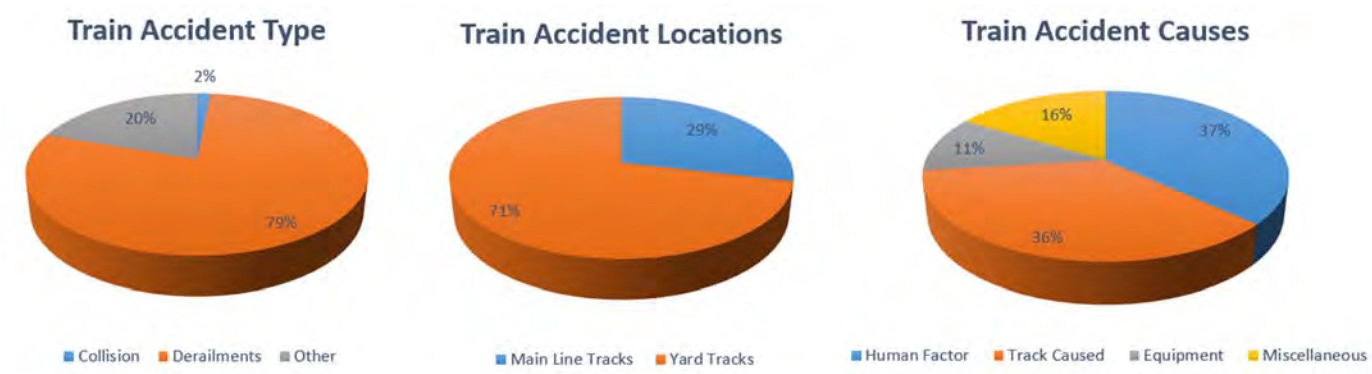
Table 2-44: Total Accidents and Incidents in Texas (2008-2017)

Train Accidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	267	198	212	213	229	201	194	248	201	192
Deaths				1					4	
Injuries	6	5	5	8	7	10	9	16	2	9

Source: FRA Office of Safety Analysis

Figure 2-55 provides more detailed information regarding the type, location, and causes of the train accidents over the past decade.

Figure 2-55: Train Accident Type/Locations/Causes in Texas (2008-2017)



In the above illustration, rail derailments are shown to have been the dominant type of rail accidents in the state over of the past 10 years. Also, most rail accidents occurred on yard tracks as opposed to main line tracks. Lastly, track defects and human error were the leading causes of train accidents over the past decade, while equipment defects and miscellaneous causes comprised lesser shares of rail accidents in the state.

Other Rail Incidents

Other rail incidents include events other than train accidents or crossing incidents that caused a death or injury to any person. Most fatalities in this category are due to rail trespassers. Other events which generally lead to injuries in this category include such railroad-related activities as getting on or off equipment, doing maintenance work, throwing switches, setting handbrakes on railcars, falling,

[63] For 2018, the monetary threshold is $10,700. The threshold is adjusted yearly to ensure the threshold accurately reflects cost increases that have occurred within the railroad industry. https://safetydata.fra.dot.gov/OfficeofSafety/ProcessFile.aspx?doc=Monetary%20Threshold%20Notice.pdf

and so on. Rail passenger-related casualties can include boarding or alighting from standing trains or platforms. Statistics for this category of rail incidents are shown in Table 2-45.

Table 2-45: Total Accidents and Incidents in Texas (2008-2017)

Other Rail Incidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	465	403	406	393	343	358	402	337	335	344
Deaths	36	33	31	36	33	32	45	37	39	40
Injuries	454	402	407	380	324	348	377	334	310	315

Source: FRA Office of Safety Analysis

In recent years the trend has shown a decrease in the number of total incidents and injuries for this category of rail incidents.

2.1.6.3 Highway-Rail At-Grade Crossing Safety in Texas

Crossing Protection in Texas

According to FRA's inventory of at-grade crossings, there are a total of 9,197 public at-grade highway-rail crossings in Texas (out of 14,090 public and private crossings total in the state). In addition, there are also 2,440 crossings that are grade separated (with the railroad being located over or underneath the opposing roadway). Public at-grade crossings in the state have various levels of grade crossing warning devices. Table 2-46 shows the type of warning equipment and the number of crossings equipped with each. The warning devices are shown in a decreasing order of warning effectiveness.

Table 2-46: Types of Warning Devices at Texas Public At-Grade Crossings

Warning Device Type	Quiet Zone	Gates	Four Quad Gates	Flashing Lights	Bells	Special Warning	Stop Signs (Passive)	Cross Bucks (Passive)	Other	None	Total
Number of Crossings	613	5,578	108	532	63	7	332	2,471	4	102	9,197

Source: FRA Office of Safety Analysis

These figures show that about 68 percent of all public at-grade crossings in the state have active warning devices such as gates, flashing lights, and bells or special warning arrangements (e.g., flagmen), while about 32 percent of crossings have passive warning devices (e.g., cross bucks and / or stop signs) or no warning systems. Many of the crossings with passive warning systems have low volumes of roadway traffic and are rural in nature.

In addition to public at-grade crossings, there are 4,866 private at-grade crossings in the state. Private crossings are outside the jurisdiction of TxDOT.

Strategies to improve highway-rail grade crossing safety have included modifications by TxDOT to existing crossings and the implementation of additional safety measures by state and municipal authorities. Some of these strategies include:

- Crossing Surfaces: TxDOT's safety enhancement program includes funding for replanking the crossing area over ties to eliminate humped crossing surfaces and improving crossing approaches to provide a smooth flow of vehicles over the track.
- Highway Median Barriers: To prevent drivers from attempting to drive around warning gates TxDOT may consider the construction of highway median barriers at grade crossings, which generally requires highway widening as a proposed method of addressing this problem.
- Grade Crossing Consolidation: Under TxDOT's safety enhancement program, traffic patterns are reviewed to determine which grade crossings can be closed while minimizing inconvenience to local communities. Crossing consolidation and closure may encounter resistance from local communities due to the inconvenience caused by traffic rerouting.
- Grade Crossing Signal Upgrades: TxDOT upgrades grade crossing signalization as part of the safety enhancement program. This includes the installation of flashing lights or gates at crossings equipped solely with crossbucks, as well as the installation of gates at crossings only equipped with flashing lights.
- Installation of Reflector Systems: Texas regulations authorize the upgrade of existing passive warning systems to high intensity reflectorized systems of crossbucks and track signs. These systems are for use at all grade crossing locations that do not have train-activated warning devices and consist of reflectorized material placed on both sides of the crossbuck support pole.

At-Grade Crossing Incidents in Texas

Table 2-47 shows the number of highway-rail grade crossing incidents, fatalities, and injuries that have occurred at all Texas at-grade crossings over the past decade.

Table 2-47: Highway-Rail Incidents in Texas (2008-2017)

Highway-Rail Incidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	228	179	213	204	229	226	289	224	232	233
Deaths	*17*	*23*	*24*	*15*	*34*	*20*	*19*	*19*	*23*	*14*
Injuries	*97*	*80*	*107*	*83*	*125*	*95*	*111*	*100*	*83*	*77*
Incidents at Private Crossings	40	28	29	35	46	44	52	40	45	38
Incidents at Public Crossings	188	151	184	169	183	182	237	184	187	195
Incidents at Public Crossings, Percent of Total	82%	84%	86%	83%	80%	81%	82%	82%	81%	84%

Source: FRA Office of Safety Analysis

Following a decrease in highway-rail incidents in the initial part of the past decade (low in 2009), the number of incidents has slowly increased again. This increase is likely due to increased growth in population, vehicular traffic, and rail traffic throughout the state, resulting in an increase of potential accident interfaces at at-grade crossing locations. The 5-year averages from the first half of the past decade to the second half of the past decade are nearly identical, with an average of 210 total incidents, 23 fatalities, and 98 injuries.

Texas Highway-Rail Grade Crossing Safety Action Plan

A collision between a motor vehicle and a train is generally considered 20 times more likely to result in a fatality than other highway collisions.[64] Grade crossing safety is therefore one of the primary missions of TxDOT, and the agency continually works to reduce the number of occurrences and severity of crashes at highway-railroad grade crossings in the state. Improvements in grade crossing safety for motorists, pedestrians, railroad employees, and others is a key initiative for TxDOT, as well as railroads and other highway jurisdictions that operate within the state. In 2011, and at the request of the FRA, TxDOT developed a *Texas Highway-Rail Grade Crossing Safety Action Plan*, to 1) identify specific solutions for improving safety at crossings, including highway-rail grade crossing closures or grade separations; 2) focus on crossings that have experienced multiple accidents or are at high risk for such accidents; and 3) cover a 5-year time period.[65] Specifically, the Texas Highway-Rail Grade Crossing Safety Action Plan was designed to improve grade crossing safety within the state of Texas.

2.1.6.4 Hazardous Materials Incidents in Texas

Hazardous Materials Safety Programs

The FRA and the Pipeline and Hazardous Materials Safety Administration (PHMSA) regulate the transport of hazardous materials (colloquially known as “hazmat”). The FRA Office of Safety Assurance and Compliance is granted authority by the U.S. Secretary of Transportation to administer a safety regulatory program that focuses on the transport of hazardous materials. This program is administered through the FRA’s Hazardous Materials Division and includes programs such as the Hazardous Materials Incident Reduction Program and the Spent Nuclear Fuel and High-Level Nuclear Waste Program. Congress also enacted the Implementing Recommendations of the 9/11 Commission Act of 2007, which required USDOT to adopt rules regarding routing of hazmat shipments through urban areas. The FRA and the Pipeline and Hazardous Materials Safety Administration adopted these rules in November 2008. Rules establish guidelines for railroads to use in studying hazmat shipping patterns, assessing alternate routes that minimize risk, and establishing procedures for reviewing routing decisions. These routing decisions are shared with state and local governments through intelligence fusion centers at the state level that work with the U.S. Department of Homeland Security.

At the state level, TxDOT’s Rail Safety Program is tasked with collecting information on the transport of hazardous materials by rail in the state and uses this information to optimize the allocation of inspection resources. As with railroad operational safety issues (e.g., track, signal and train control, motive power and equipment, and operating practices), state and FRA safety inspectors monitor

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[64] Note that some federal and state agencies and past research have referred to accidents between trains and motor vehicles at highway-rail grade crossings as collisions or crashes. Both terms are therefore used interchangeably throughout this report, based on varying usage of terminology by these parties.

[65] ftp://ftp.dot.state.tx.us/pub/txdot-info/rail/crossings/action_plan.pdf

regulatory compliance with respect to transport of hazardous materials by conducting on-site investigations.

Hazardous Materials Safety Programs are generally composed of four main components:

- Inspection of railroad and shipping facilities and inspection of employee training records, security procedures, and quality assurance programs to ensure safety standards are met;
- Technical assistance, education, and outreach activities to shippers/consignees, rail carriers, emergency responders, and the general public are carried out by the FRA, PHMSA, railroads, Texas Department of Public Safety, the Texas Division of Emergency Management (a division of the Texas Department of Public Safety), TxDOT, and TRANSCAER (a training and outreach organization supported by the railroad and chemical industries);
- Inspection and transport of nuclear materials (the TxDOT/Texas Department of State Health Services permits certain nuclear materials shipped by rail); and,
- Planning, preparation, and recovery plans, exercises, and training in the event of an incident. Hazardous materials are just one hazard encompassed in "all hazards" planning (Section 2.1.6.6 describing security includes more details on Texas's emergency management organization).

Outside of public emergency response to a hazardous materials rail incident, the larger Class I railroads have additional resources and personnel that can be rapidly dispatched to the scene of an incident to advise and supplement the local response.

Recent Industry Shifts Related to the Shipping of Hazardous Materials. Due the increase in the movement of crude oil by rail in recent years, government agencies in the U.S. and Canada have adopted additional safety standards and issued new regulations for crude oil railcars. For instance, the USDOT issued an emergency order in May 2014 that requires railroad operators to notify local emergency responders whenever oil shipments travel through their states. USDOT and the Association of American Railroads (AAR) also agreed on several safety enhancements to further reduce the risk from transporting the growing level of crude oil in the U.S. These enhancements will focus on increased track inspections, enhanced braking systems, increased use of rail traffic routing, lower speeds depending on location and cargo, increased community relations, increased trackside safety technology, increased emergency response training and tuition assistance and additional emergency response capability planning.

Rail Accidents Involving Hazardous Materials in Texas

Table 2-48 shows the history of accidents involving rail cars carrying hazardous materials in Texas over the past decade.

Table 2-48: Rail Accidents Involving Hazardous Materials in Texas (2008-2017)

Rail Incidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cars Carrying Hazmat	1,324	1,098	1,397	1,362	1,245	1,205	726	921	497	758
Hazmat Cars Damaged or Derailed	92	107	125	88	129	123	97	90	70	97
Cars Releasing Hazmat	0	6	4	3	2	0	1	1	1	5

Source: FRA Office of Safety Analysis

Rail accidents involving hazardous materials in Texas have not generally followed the overall trend of decreases in rail-related accidents and incidents. In recent years the number of cars carrying hazardous materials involved in rail accidents and the average number of hazardous material cars damaged or derailed in accidents have decreased slightly in the most recent 5-year period. The number of cars releasing hazardous materials involved in rail accidents has also decreased in the most recent 5-year period.

2.1.6.5 Positive Train Control

Positive Train Control (PTC) refers to technologies designed to automatically stop or slow a train before certain accidents can occur. PTC is designed to prevent collisions between trains, derailments caused by excessive speed, trains operating beyond their limits of authority, incursions by trains on tracks under repair, and by trains moving over switches left in the wrong position. PTC systems are designed to determine the location and speed of trains, warn train operators of potential problems, and take action if operators do not respond to a warning. The Rail Safety Improvement Act of 2008 required railroads to place PTC systems in service by December 31, 2015, under the following circumstances:

- On all rail main lines over which regularly-scheduled commuter or intercity passenger trains operate; and
- On all Class I railroad main lines with over 5 million gross ton-miles per mile annually over which any amount of toxic/poison-by-inhalation hazardous materials is handled.

Figure 2-56 illustrates the industry's overall status nationwide in implementation PTC in 2018, as well as the mandated milestones.

Figure 2-56: Class I Railroad PTC Status, 2018

The mandate for PTC excludes all Class II (regional) and III (short line) railroads regardless of tonnage or number of toxic/poison cars handled as long as no passenger trains travel over the lines.

Under these conditions, all rail operators over the Amtrak corridors within Texas, as well as any Class I Railroad main line routes, would likely need to be equipped with positive train control for operation over the lines. Class I railroads are currently developing PTC systems for their networks, which would include implementation of the technology on principal lines in Texas.

Congress has considered several bills that would extend the 2015 deadline of the Rail Safety Improvement Act. In October 2015, Congress passed H.R. 38 19 – Surface Transportation Extension Act of 2015, providing an extension of the original PTC deadline. Under the new law, U.S. freight railroads will have until December 31, 2018, to install PTC hardware, and until December 31, 2020 to fully implement PTC on their networks.[66]

2.1.6.6 Rail Security

In response to the increased focus on the security of the transportation system, new federal and state agencies have been established to oversee and help ensure the security of transportation modes. The following addresses specific rail security issues and Texas' involvement in rail security procedures.

Rail security is primarily a federal matter, led by the U.S. Department of Homeland Security through USDOT's Transportation Security Administration (TSA) in cooperation with FRA. While the FRA and TSA have regulatory authority over railroad security implementation plans, day-to-day actions to keep the railroad industry safe are the responsibility of Railroad Police Officers.

The primary agencies responsible for security related to transportation modes in Texas are the U.S. Department of Homeland Security, Texas Department of Public Safety, the Texas Division of Emergency Management (a division of the Texas Department of Public Safety), Texas Fusion Center, State Emergency Response Commission/Emergency Management Council of Texas (SERC), and county emergency management coordinators. These agencies, in coordination with federal and state transportation agencies, have addressed transportation security largely through identifying critical infrastructure assets, developing protection strategies for these assets, and developing emergency management plans.

Final federal rules for rail security, published in November 2008, established requirements for protecting security sensitive information, identifying rail security coordinators at railroads and other hazardous materials shippers and receivers, reporting security incidents, and authorizing inspections of rail network facilities by USDOT's TSA personnel. These rail security coordinators are required to coordinate security practices with appropriate law enforcement and emergency response agencies. TSA is also responsible for coordinating security on passenger rail, commuter rail, and rail transit systems.

The primary state agency responsible for security related to transportation modes in Texas is the Texas Department of Public Safety. The Department of Public Safety addresses rail system security through the following means:

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[66] Association of American Railroads - Positive Train Control: https://www.aar.org/policy/positive-train-control

- Training and deploying manpower and assets for high risk areas;
- Developing and testing new security technologies;
- Performing security assessments of systems across the country; and,
- Providing funding to state and local partners.

The Texas Department of Public Safety's Division of Emergency Management serves as the state agency responsible for oversight and coordination of emergency response planning among local emergency planning commissions generally established at the county level in Texas.

The Texas Fusion Center is part of the Department of Emergency Management at the Texas Department of Public Safety. The Fusion Center is a state-of-the art facility housing federal, state, regional and local law enforcement agencies at Texas Department of Public Safety Headquarters. The Fusion Center's Watch Center is a "24/7" unit that works with federal, state, regional, and local law enforcement and serves as the state repository for homeland security information and incident reporting. It provides real-time intelligence support to law enforcement and public safety authorities and consolidates information and data from all jurisdictions and disciplines. TxDOT participates through interagency Homeland Security committees.

The Texas State Emergency Management Council, which is composed of 32 state agencies, the American Red Cross, and the Salvation Army, is established by state law to advise and assist the Governor in all matters relating to disaster mitigation, emergency preparedness, disaster response, and recovery – including issues related to railroad security. During major emergencies, Council representatives convene at the State Operations Center (located at the Texas Department of Public Safety Headquarters in Austin, Texas) to provide advice on and assistance with response operations and coordinate the activation and deployment of state resources to respond to the emergency. Generally, state resources are deployed to assist local governments that have requested assistance because their own resources are inadequate to deal with an emergency. The Council is organized by emergency support function -- groupings of agencies that have legal responsibility, expertise, or resources needed for a specific emergency response function.

State and local governments work with railroads to prepare for possible hazmat releases through the federal Emergency Planning and Community Right to Know Act of 1986, administered through the EPA. The entities are backed up by county emergency management coordinators and agencies to facilitate the local government and volunteer response to and recovery from a disaster, whether man-made or natural.

Larger Class I railroads in Texas also have additional resources and personnel that respond to a security threat or incident, including railroad police officers.

In addition, the AAR, working with the U.S. Department of Homeland Security and other federal agencies, has organized the Rail Security Task Force. This task force developed a comprehensive risk analysis and security plan for the rail system that includes:

- A database of critical railroad assets;
- Assessments of railroad vulnerabilities;
- Analysis of the terrorism threat; and,

- Calculation of risks and identification of countermeasures.

The railroad sector maintains communications with the U.S. Department of Defense, U.S. Department of Homeland Security, USDOT, the Federal Bureau of Investigation (FBI), and state and local law enforcement agencies on all aspects of rail security.

2.1.7 Economic Impact of Rail Industry in Texas

Rail economic impacts to Texas are estimated using the IMPLAN (IMpact analysis for PLANning) economic impact modeling tool with input data and assumptions from freight movement data (derived from the Surface Transportation Board (STB) Waybill Sample data of shipments originating in Texas described in Section 2.2.2), values of commodity shipments (extracts from Freight Analysis Framework (FAF) database for rail shipments originating in Texas and converted to dollars per ton), passenger rail operations, and visitor expenditures. IMPLAN forecasts the effects of a given industry or economic activity on the state economy in its direct form and including multiplier effects with indirect and induced impacts.[67]

Impacts of the rail industry in Texas stem from firms providing freight and passenger transport services, as well as industries using rail freight services to transport goods (i.e., shippers of goods or commodities), and industries relying on expenditures from visitors who are coming to Texas by rail. The latter two categories of industries (referred to here as "transportation users") are included in a broad definition of the rail-related industry as their economic activities are facilitated by the availability of rail transportation. The economic impact of this broadly defined rail-related industry provides a comprehensive perspective on the extent of rail transportation importance in the entire economy.

Impacts are calculated and presented by activity source (service provision and rail users), type of impact (direct and total (sum of direct, indirect, and induced)), and measure of activity (employment, income, value added, output, and tax revenue) for year 2016. The results are shown in Table 2-49. The key highlights from the table include the following:

- Employment – Economic impacts of rail amounts to 17,862 jobs of employees directly employed in the provision of rail transport services (both passenger and freight). When multiplier effects are included, the impact of rail transportation services is estimated at 58,809 jobs which represent 0.4 percent of the 16.6 million statewide employment. When transportation users are included as well, the total impacts of broadly defined industry amount to 688,211 jobs which represent 4.1 percent of statewide employment.
- Employment Income – In terms of employment income, the impact amounts to nearly $2.3 billion earned by employees directly employed in the provision of rail transportation, and $4.6 billion with multiplier effects accounting for 0.6 percent of state employment income. When transportation users are included as well, the total impacts of broadly defined industry amount to $49.8 billion earned by all affected employees representing 6 percent of Texas's total labor income.

[67] Direct impacts refer to the immediate effects (employment, income, etc.) of an activity in the industry being evaluated. Indirect impacts refer to "spin-off" effects related to purchases of production inputs throughout the supply chain. Induced impacts refer to economic activity generated through re-spending of wages and salaries of employees affected directly and indirectly. Appendix C provides a detailed description of the methodology and impacts estimated.

- **Value Added** – Together with multiplier effects, the value added generated by rail transportation services amounts to $7.6 billion, or 0.5 percent of the state's Gross State Product (GSP). When transportation users are included as well, the total impacts of broadly defined industry amount to $92.1 billion, representing 5.6 percent of the state's GSP.
- **Output** – In terms of total business output or revenue, transport service providers generated a total impact of $14 billion, or 0.5 percent of state economy. When transportation users are included as well, the total impacts of broadly defined industry amount to $196.8 billion, representing 6.6 percent of Texas's total output.
- **Tax Revenue** – Federal, state and local tax revenues generated by rail service providers amounted to $1.5 billion. More broadly, rail-related industries generated $18.2 billion in state, local, and federal tax revenues.

Table 2-49: Rail Economic Impacts in Texas

Impact Metric	Transportation Services			Transportation Users			Total Services		
	Total	Freight	Passenger	Total	Freight	Passenger	Total	Freight	Passenger
Employment, Jobs									
Direct	17,862	17,674	188	221,168	221,156	11.5	239,030	238,830	199.5
Total	58,809	58,190	619	629,402	629,385	17	688,211	687,575	636
Employment Income, $ Millions									
Direct	$2,276.6	$2,252.7	$24.0	$20,528.9	$20,528.6	$0.3	$22,805.6	$22,781.3	$24.3
Total	$4,639.3	$4,590.5	$48.8	$45,158.7	$45,158.2	$0.6	$49,798.1	$49,748.7	$49.4
Value Added, $ Millions									
Direct	$3,678.8	$3,640.0	$38.7	$42,361.9	$42,361.3	$0.6	$46,040.6	$46,001.3	$39.3
Total	$7,612.5	$7,532.3	$80.1	$84,460.4	$84,459.3	$1.1	$92,072.8	$91,991.6	$81.2
Output, $ Millions									
Direct	$6,855.5	$6,783.3	$72.2	$104,733.6	$104,732.6	$1.0	$111,589.1	$111,515.9	$73.2
Total	$14,043.2	$13,895.4	$147.8	$182,767.1	$182,765.3	$1.8	$196,810.3	$196,660.6	$149.6
Tax Revenues, $ Millions									
State and Local	$442.4	$437.8	$4.7	$5,765.4	$5,765.3	$0.1	$6,207.8	$6,203.0	$4.8
Federal	$1,077.0	$1,065.7	$11.3	$10,923.4	$10,923.3	$0.1	$12,000.5	$11,989.0	$11.5
Total	$1,519.5	$1,503.5	$16.0	$16,688.8	$16,688.6	$0.3	$18,208.3	$18,192.0	$16.3

The full description of the methodology and detailed economic impacts can be found in Appendix C of this 2019 Texas Rail Plan.

2.2 TRENDS AND FORECASTS

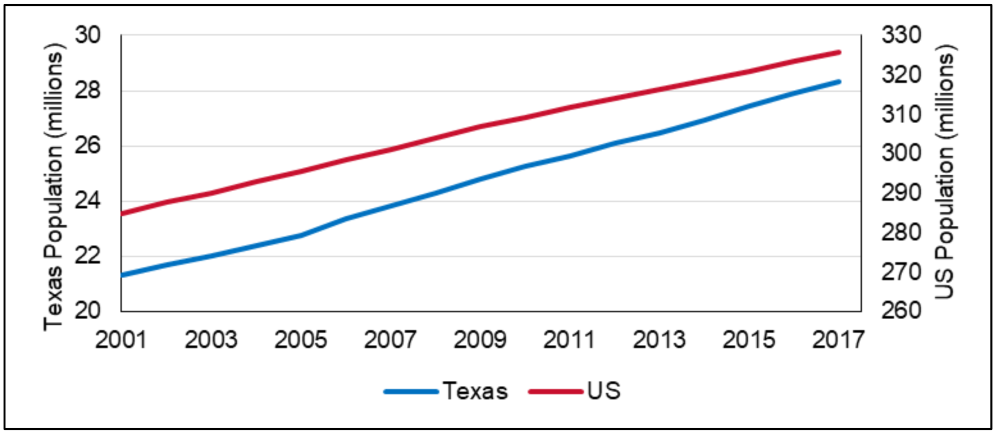
The purpose of this section is to describe trends that will influence the future rail needs for the state of Texas. Factors that affect both passenger and freight rail include demographic and economic growth, and changes to freight and passenger transportation. The following discussions provide a base for determining future rail service needs in Texas.

2.2.1 Demographics and Economic Growth Factors

2.2.1.1 Population

Figure 2-57 presents the population trends of Texas compared to the national trends over time. Based on the 2017 population estimates, Texas (28.3 million) has the second largest population next to California (39.5 million). From 2001 to 2017, the population of Texas increased by 32.8 percent, which translates to an average annual population growth rate of 1.79 percent. Comparatively, the overall national population only saw a 14.3 percent increase in the same period, translating to an average annual population growth rate of 0.84 percent.[68]

Figure 2-57: Population Trends

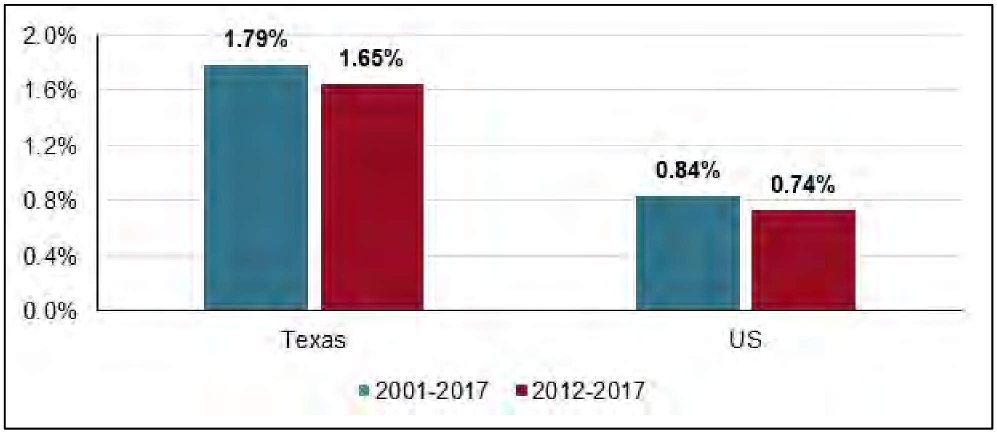


Source: Bureau of Economic Analysis, Regional Economic Accounts, SA1 Personal income and Employment by Major Component

As mentioned, the average annual population growth rate in Texas is substantially greater than that of the national average annual population growth rate between 2001 and 2017. This relationship remains true even when looking at the most recent years of data, specifically from 2012 to 2017. From 2012 to 2017, Texas experienced an annual average population growth rate of 1.65 percent, while at the national level, the average annual population growth rate was only 0.74 percent. These results can be seen in Figure 2-58.

[68] Based on data from the Bureau of Economic Analysis, SA1 Personal Income and Employment by Major Component.

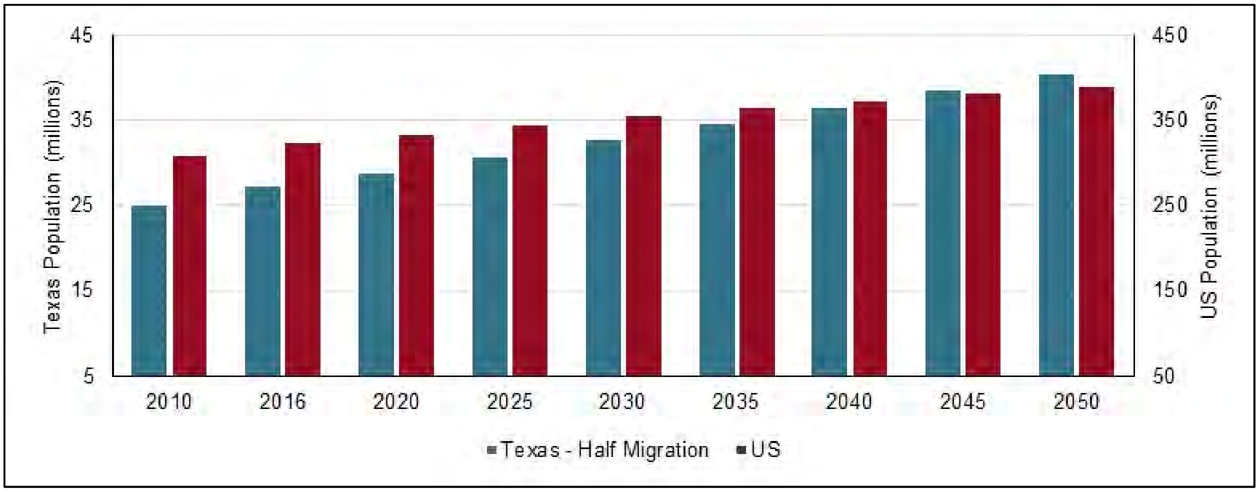
Figure 2-58: Average Annual Population Growth Rate



Source: Bureau of Economic Analysis, Regional Economic Accounts, SA1 Personal income and Employment by Major Component

National population projections and the population projections for Texas were obtained from the U.S. Census Bureau and the Texas Demographics Center, respectively. The Census Bureau presents U.S. population forecasts through 2060 in 5-year increments, while the projections from the Texas Demographics Center presents annual population forecasts from 2010 to 2050 under three different growth scenarios. The growth scenarios vary based on different migration level assumptions using the migration data from 2000 to 2010. These growth scenarios are presented as Zero Migration (base case), Half Migration, and Full Migration. From 2016 to 2050, the national population is forecasted to increase by 20.4 percent, translating into an average annual population growth rate of 0.55 percent. In the same period, the population in Texas is projected to grow at least 18.2 percent (in the base case) but could experience a population increase of 48.3 percent under the Half Migration scenario (and even more under the Full Migration scenario). These population increases would translate to an average population growth rate of 0.49 percent and 1.17 percent, respectively. Figure 2-59 presents the future population estimates for both Texas, under the Half-Migration scenario, and the U.S.

Figure 2-59: Texas and U.S. Future Population Projections



Source: Texas Demographics Center's 2014 Population Projections and U.S. Census Bureau's Population Projections.

The U.S. Census Bureau's 2016 Demographic and Housing Estimates indicate that the median age for Texas was 34.2 years, which is much lower than the national median age of 37.7 years. The estimates also indicated that individuals aged 25 to 54 were the largest segment of Texas' population, representing over 40 percent of the Texas population or 11,029,826 persons. The same age group were also the largest segment of the national population with a similar share of 40 percent of the overall population or 127,406,773 persons.

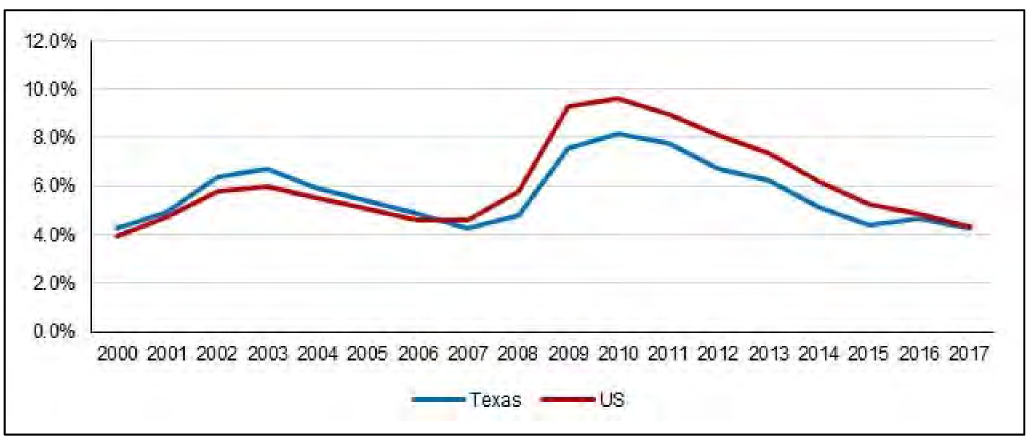
Based on the American Community Survey, only 82.3 percent of those aged 25 and older in Texas have graduated from high school, which is notably less than the national average of 87.0 percent. This relationship persists when comparing those who have received a bachelor's degree or higher for the same age group. Specifically, in Texas 28.1 percent of those aged 25 and older received a bachelor's degree or higher, compared to the national average of 30.3 percent.

2.2.1.2 Employment

Based on data from Bureau of Economic Analysis, total employment in Texas in 2017 amounted to 16.96 million. The latest Local Area Unemployment Statistics from the Bureau of Labor Statistics indicate that by the end of 2017, the unemployment rate in Texas was approximately 4 percent which was similar to the national unemployment rate of 4.1 percent.

As seen in Figure 2-60, the unemployment rate in Texas generally follows that of the national unemployment rate. Between 2000 and 2006 the unemployment rate was slightly above the national average, and after 2006 it has been below. Recently, the Texas unemployment rate and the national unemployment rate have converged. Historically, the average annual unemployment rate in Texas was as high as 8.1 percent around the time of the 2008-2009 recession.

Figure 2-60: Unemployment Rate



Source: Bureau of Labor Statistics.

In 2017, Texas had a GDP of $1,696 billion based on the data from the Bureau of Economic Analysis. From 2007 to 2017, Texas' GDP grew by 43.8 percent, reflecting an average annual growth rate of 3.7 percent. In the last 5 years, total GDP growth amounted to 10.4 percent translating to an average annual growth rate of 2.5 percent.

The following five industries generated over 64 percent of the state's GDP:

- Finance, Insurance, and Real Estate: $264 billion (15.6 percent);
- Trade: $233 billion (13.7 percent);
- Manufacturing: $226 billion (13.3 percent);
- Professional, Management, and Admin Services: $189 billion (11.2 percent); and
- Government: $180 billion (10.6 percent).

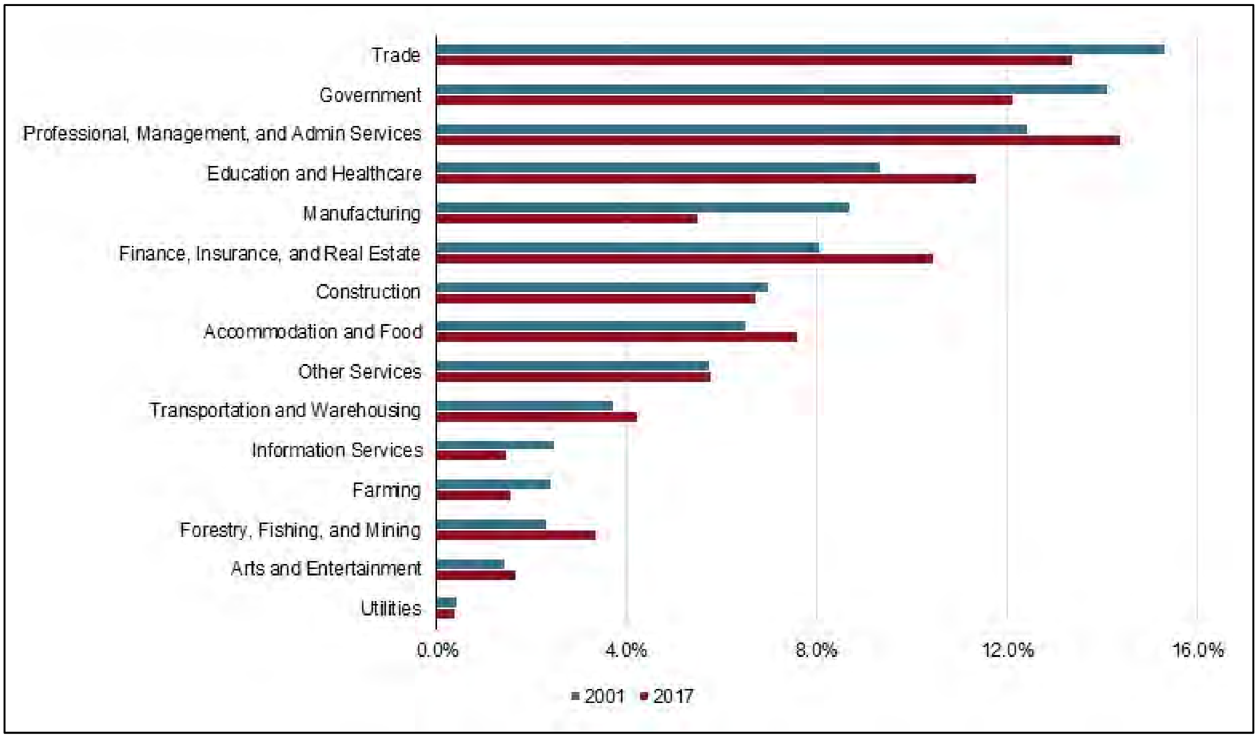
Figure 2-61 presents the employment shares by industry in Texas for 2001 and 2017. From the graph, it is evident that the top three industries in 2001 also remain the top three industries in 2017 with slight change in order. These industries include Trade (15.3 percent of employment in 2001 and 13.4 percent in 2017), Government Services (14.1 percent and 12.1 percent, respectively), and Professional Management and Admin Services (12.4 percent and 14.4 percent, respectively). However, the combined share of employment of these three industries decreased from 41.9 percent in 2001 to 39.9 percent in 2017. Other industries that experienced a reduction in employment shares between 2001 and 2017 include the following:

- Manufacturing: from 8.7 percent to 5.5 percent;
- Information Services: from 2.5 percent to 1.5 percent; and
- Farming: from 2.4 percent to 1.6 percent.

Industries for which employment shares increased include the following:

- Education and Healthcare: from 12.4 percent to 14.4 percent;
- Accommodation and Food Services: from 6.5 percent to 7.6 percent, and
- Forestry, Fishing, and Mining: from 2.3 percent to 3.3 percent.

Figure 2-61: Employment Share by Industry in Texas



Source: Data from the Bureau of Economic Analysis. SA25N Total Full-Time and Part-Time Employment by NAICS Industry.

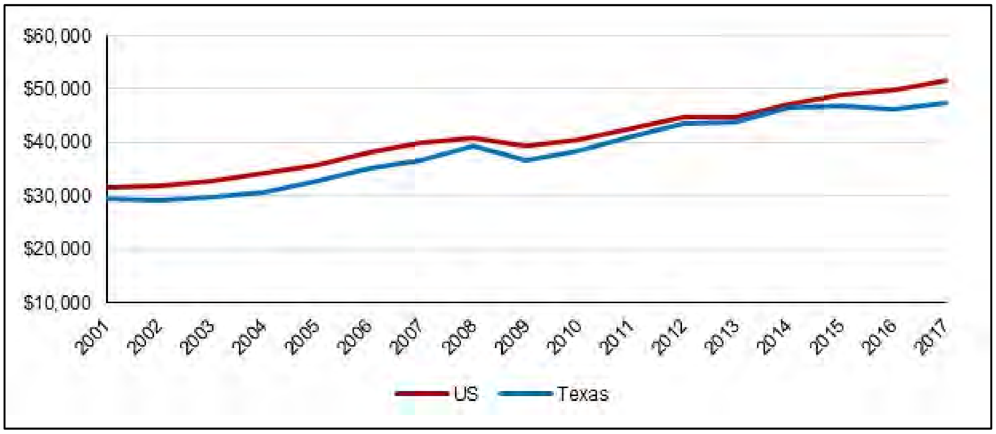
2.2.1.3 Personal Income

Figure 2-62 presents the trends in personal income per capita in Texas and nationwide from 2001 to 2017.[69] This figure demonstrates that generally the national average personal income per capita and the Texas state average followed a similar trend. Texas' personal income per capita has been generally lower than the national average. The gap between the two was rather small but widened after 2014 after several years of apparent convergence. Most notably, in 2014 the national average income per capita amounted to $47,025 and the Texas average income per capita amounted to $46,404 – a difference of $604. In 2017, the national income per capita amounted to $51,640 while the Texas average was $47,362 – a difference of $4,278.

Overall, between 2001 and 2017, the average annual growth rate for the state personal income per capita amounted to 3.04 percent and the national average rate of growth amounted to 3.12 percent.

[69] Income levels presented are in nominal terms or are not adjusted for inflation.

Figure 2-62: Personal Income per Capita



Source: Data from the Bureau of Economic Analysis. SA1 Personal Income Summary: Personal Income, Population, Per Capita Personal Income.

2.2.1.4 Industrial Outlook by Sector

Based on employment forecast data from the Texas Workforce Commission, total employment in Texas is forecasted to increase by 14.6 percent over the years 2016-2026, or by 1.6 percent annually on average. Accommodation and Food Services is forecasted to be the fastest growing sector with an average annual rate of growth of 2.3 percent followed by Education and Healthcare and Construction expected to grow at an average annual rate of 2.0 percent and 1.8 percent, respectively. On the other hand, Utilities, Farming, Manufacturing, and Government Services are all forecasted to grow at an average annual rate of less than 1 percent (specifically at 0.8 percent, 0.7 percent, 0.8 percent, and 0.9 percent, respectively).[70]

2.2.2 Freight Demand and Growth

2.2.2.1 Introduction and Approach

During 2016, rail movements in Texas by direction (outbound, inbound, intrastate, and through), tons, and carload units were derived from the 2016 Surface Transportation Board (STB) Waybill Sample data. The following sections summarize rail movements by direction and the top commodities involved in each. Supplemental graphics are shown for ease of identifying key commodity movements. Appendix D provides more detailed commodity movement statistics.

STB Waybill data classifies commodities using a system of Standard Transportation Commodity Codes (STCC). The commodity detail is captured by a 7-digit code. The first two digits represent a broad product category or class with some common characteristics. This 2-digit aggregation is used in the analysis presented here. Table 2-50 provides a list of the 2-digit STCC product categories based on this aggregation. The commodity analysis presented here typically focuses on up to five top commodities transported. The category of "other" commodities represents the remaining commodities.

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[70] Based on data from the Texas Workforce Commissions, Employment Projections – Industry Projections: Long-Term 2016-2026. Data obtained from: https://tracer2.com/?PAGEID=67&SUBID=114

Table 2-50: Standard Transportation Commodity Codes (STCC)

Code	Commodity Group Name	Code	Commodity Group Name
1	Farm Products	31	Leather Products
9	Fresh Fish	32	Stone, Clay & Glass Products
10	Metallic Ores	33	Primary Metal Products
11	Coal	34	Fabricated Metal Products
13	Crude Oil	35	Machinery
14	Non-Metallic Minerals	36	Electrical Equipment
19	Ordnance	37	Transportation Equipment
20	Food Products	38	Optical Instruments
21	Tobacco Products	39	Misc. Manuf. Products
22	Textiles	40	Waste & Scrap Materials
23	Apparel	41	Misc. Freight Shipments
24	Lumber & Wood Products	42	Empty Containers
25	Furniture & Fixtures	43	Mail, Express and Other Contract Traffic
26	Pulp & Paper Products	44	Freight Forwarder
27	Printed Matter	45	Shipper Association or Similar Traffic
28	Chemicals	46	Misc. Mixed Shipments
29	Petroleum & Coal Products	47	Small Packaged Freight
30	Rubber & Plastics	48	Hazardous Waste

2.2.2.2 Current Freight Rail

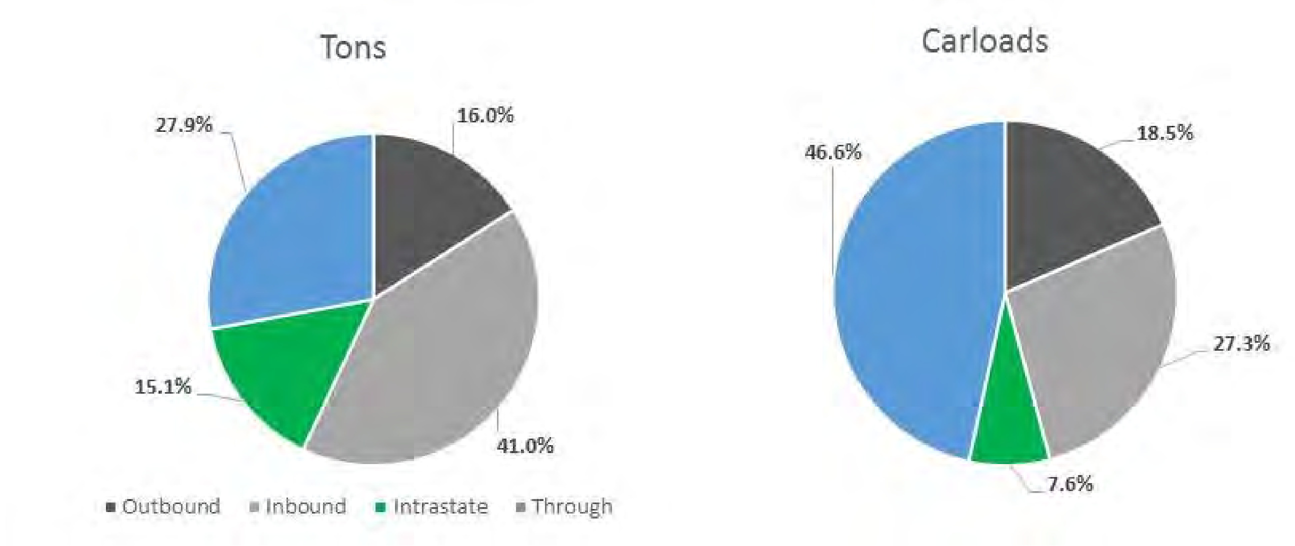
As shown in **Table 2-51**, 2016 Texas rail movements totaled over 400 million tons carried via 9.9 million carload units. Of all rail movements, inbound movements (with a Texas destination but originating outside the state) accounted for 41 percent of all directions by tonnage and 27.3 percent of all carload units (**Table 2-51** and **Figure 2-63**). The second largest category of movements were through movements accounting for 27.9 percent of total tonnage. At the same time, through movements were the largest category of movements in terms of carloads accounting for over 46 percent of all carload units. Outbound movements (originating in Texas and going to a destination outside the state) accounted for 16 percent of tonnage and 18.5 percent of carloads. Intrastate movements (originating in Texas and going to a Texas destination) accounted for 15.1 percent of tonnage and 7.6 percent of carloads.

Table 2-51: Rail Movements by Direction, 2016

Direction	Tons (Millions)		Carloads		Tons/Carload Utilization
	Amount	Percent	Amount	Percent	
Outbound	64.0	16.0%	1,838,699	18.5%	34.8
Inbound	164.4	41.0%	2,716,042	27.3%	60.5
Intrastate	60.7	15.1%	751,785	7.6%	80.7
Through	111.7	27.9%	4,632,922	46.6%	24.1
Total	**400.8**	**100%**	**9,939,448**	**100%**	40.3

Source: HDR; based on the 2016 STB Waybill Sample data

Figure 2-63: Rail Movements Share by Direction, 2016



Source: HDR; based on the 2016 STB Waybill Sample data

Major Commodity Movements

The top 5 commodities by tonnage and carload units include the following (Figure 2-64):

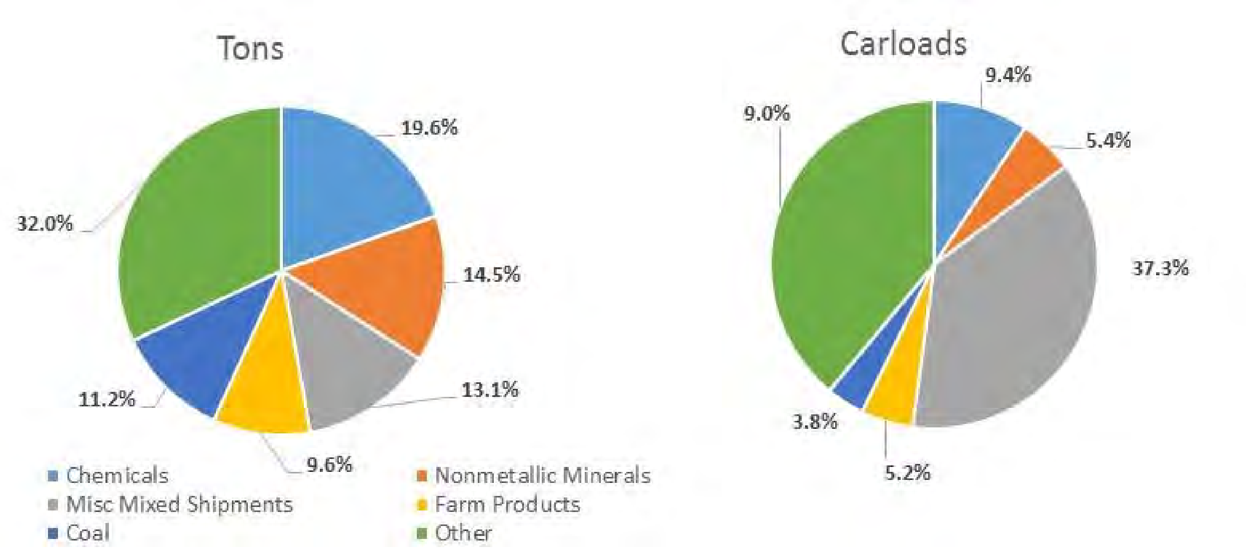
By Tonnage:

1. Chemicals (78.5 million tons, 19.6 percent of rail total)
2. Non-metallic Minerals (58 million tons, 14.5 percent of rail total)
3. Miscellaneous Mixed Shipments (52.6 million tons, 13.2 percent of rail total)
4. Coal (45 million tons, 11.3 percent of rail total)
5. Farm Products (38.4 million tons, 9.6 percent of rail total)

By Carload Units:

1. Miscellaneous Mixed Shipments (3.7 million carloads, 37.6 percent of rail total)
2. Chemicals (0.93 million carloads, 9.5 percent of rail total)
3. Non-metallic minerals (541 thousand carloads, 5.5 percent of rail total)
4. Farm Products (512 thousand carloads, 5.2 percent of rail total)
5. Coal (374 thousand carloads, 3.8 percent of rail total)

Figure 2-64: Rail Movements Top Commodities by Tonnage and Carload, 2016



Source: HDR; based on the 2016 STB Waybill Sample data

Rail Outbound

Outbound movements in 2016 amounted to 64 million tons (16 percent of total) and 1.8 million carloads (18.5 percent of total). Appendix D provides detailed tables for Texas rail outbound movements. The shipments of top 5 commodities include (Figure 2-65):

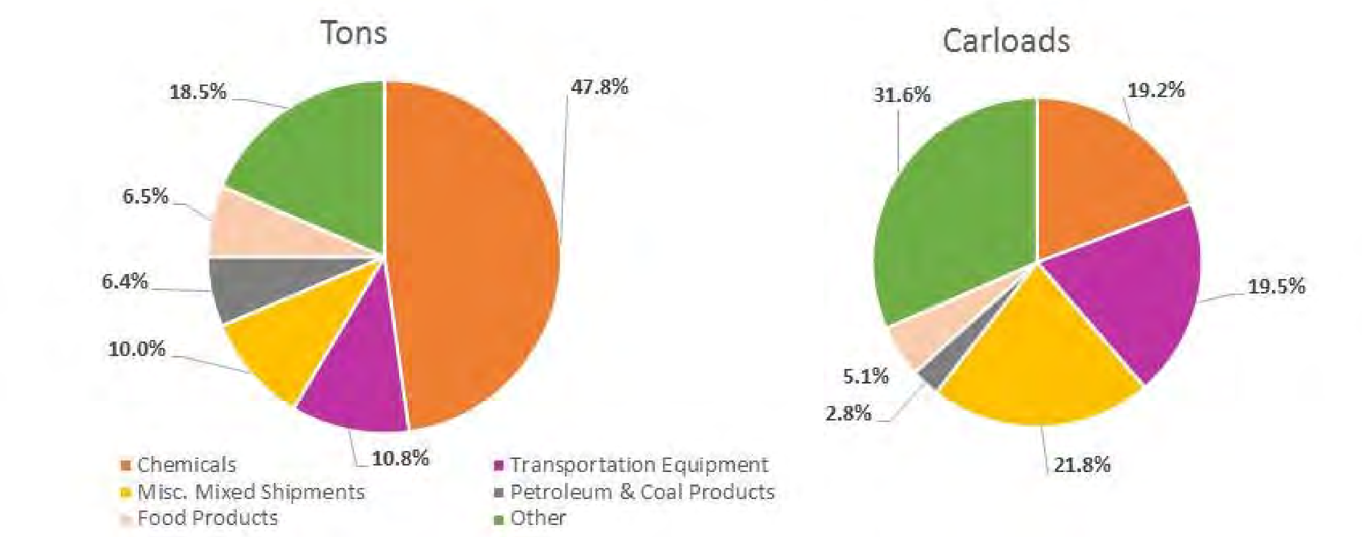
By Tonnage:

1. Chemicals (30.5 million tons, 47.8 percent of outbound rail total)
2. Transportation Equipment (6.9 million tons, 10.8 percent of outbound rail total)
3. Miscellaneous Mixed Shipments (6.4 million tons, 10 percent of outbound rail total)
4. Food Products (4.2 million tons, 6.5 percent of outbound rail total)
5. Petroleum and Coal Products (4.1 million tons, 6.4 percent of outbound rail total)

By Carload Units:

1. Miscellaneous Mixed Shipments (400 thousand carloads, 21.8 percent of outbound rail total)
2. Transportation Equipment (357 thousand carloads, 19.5 percent of outbound rail total)
3. Chemicals (353 thousand carloads, 19.2 percent outbound rail total)
4. Food Products (94 thousand carloads, 5.1 percent of outbound rail total)
5. Petroleum and Coal Products (52 thousand carloads, 2.8 percent of outbound rail total)

Figure 2-65: Rail Outbound Top Commodities by Tonnage and Carload, 2016



Source: HDR; based on the 2016 STB Waybill Sample data

Outbound Tonnage Origins

Five Texas counties accounted for over 50 percent of 2016 rail movements to out-of-state destinations. These counties included the following: Harris County (17.2 million tons, or 26.8 percent of outbound rail total), Tarrant County (5 million tons, 7.7 percent of outbound rail total), Maverick County (4.6 million tons, 7.1 percent of outbound rail total), Brazoria County (3.7 million tons, 5.7 percent of outbound rail total), and Webb County (3.7 million tons, 5.8 percent of outbound rail total). The top commodities shipped from these counties include chemicals, transportation equipment, food products, and miscellaneous mixed shipments. Appendix D provides detailed tables of outbound shipments by commodity for top counties.

Outbound Tonnage Destinations

Three destination states accounted for nearly 60 percent of rail movements originating in Texas in 2016. These states included the following: Illinois (15.3 million tons, 23.9 percent of outbound rail total), California (13.1 million tons, 20.5 percent of outbound rail total), and Louisiana (9.6 million tons, 15 percent of outbound rail total). The top commodities shipped to these states include chemicals, transportation equipment, food products, and miscellaneous mixed shipments.

Rail Inbound

Inbound movements in 2016 amounted to 164.4 million tons (41.0 percent of total) and 2.7 million carloads (27.3 percent of total). The shipments of top 5 commodities are characterized below and in Figure 2-66.

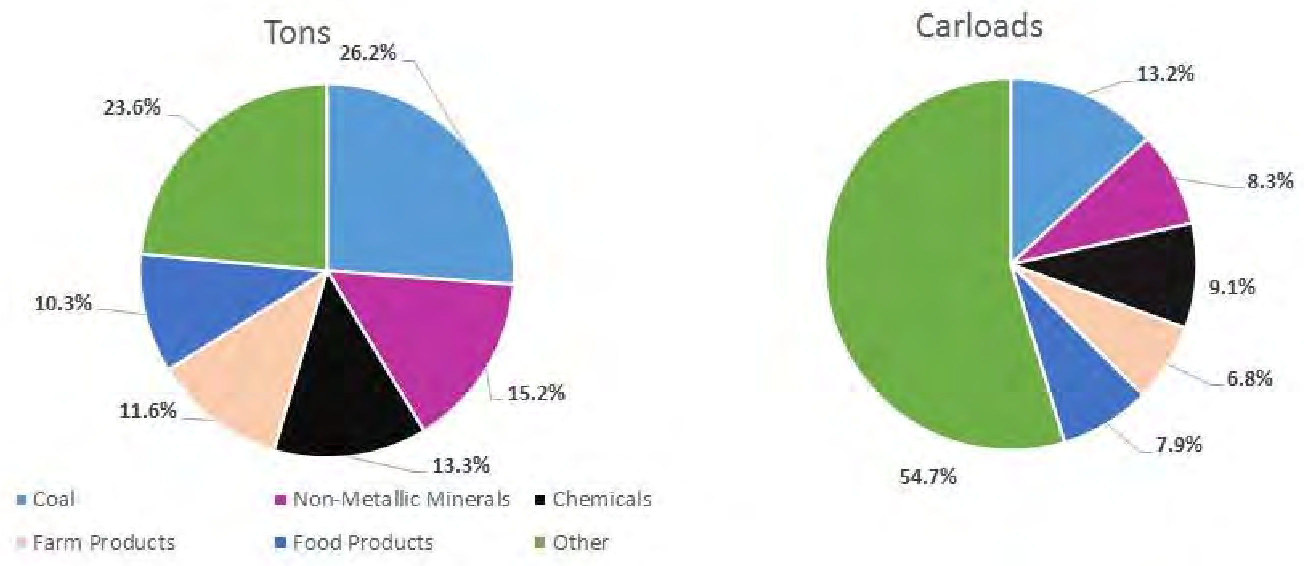
By Tonnage:

1. Coal (43 million tons, 26.2 percent of inbound rail total)
2. Non-Metallic Minerals (24.9 million tons, 15.2 percent of inbound rail total)
3. Chemicals (21.8 million tons, 13.3 percent of inbound rail total)
4. Farm Products (19 million tons, 11.6 percent of inbound rail total)
5. Food Products (16.9 million tons, 10.3 percent of inbound rail total)

By Carload Units:

1. Coal (357 thousand carloads, 13.2 percent of inbound rail total)
2. Chemicals (248 thousand carloads, 9.1 percent of inbound rail total)
3. Non-Metallic Minerals (224 thousand carloads, 8.3 percent of inbound rail total)
4. Food Products (215 thousand carloads, 7.9 percent of inbound rail total)
5. Farm Products (185 thousand carloads, 6.8 percent of inbound rail total)

Figure 2-66: Rail Inbound Top Commodities by Tonnage and Carload, 2016



Source: Prepared by HDR, based on the 2016 STB Waybill Sample data

Inbound Tonnage Origin

Four states accounted for nearly 50 percent of 2016 rail movements to Texas destinations. These states included the following: Wyoming (48.5 million tons, 29.5 percent of inbound rail total), Illinois (12.9 million tons, 7.9 percent of inbound rail total), California (10.3 million tons, 6.3 percent of inbound rail total), and Kansas (9.9 million tons, 6.0 percent of inbound rail total). The top commodities shipped from these states include coal, chemicals, non-metallic minerals, food products, and miscellaneous mixed shipments.

Inbound Tonnage Destination

Four Texas destination counties accounted for over 30 percent of inbound rail movements in 2016. These counties included the following: Harris (20.8 million tons, 12.7 percent of inbound total), Dallas (12.1 million tons, 7.2 percent of inbound total), Tarrant (9.5 million tons, 5.7 percent of inbound total), and Bexar (8.9 million tons, 5.5 percent of inbound total). The top commodities shipped to these counties include farm products, chemicals, petroleum and coal products, and miscellaneous mixed shipments.

Rail Intrastate

2016 Texas intrastate movements accounted for 15.1 percent (60.7 million tons) and 7.6 percent (749,385 carloads) of total tonnage and carloads, respectively. The top 5 commodities by tonnage and carloads include the following (Figure 2-67):

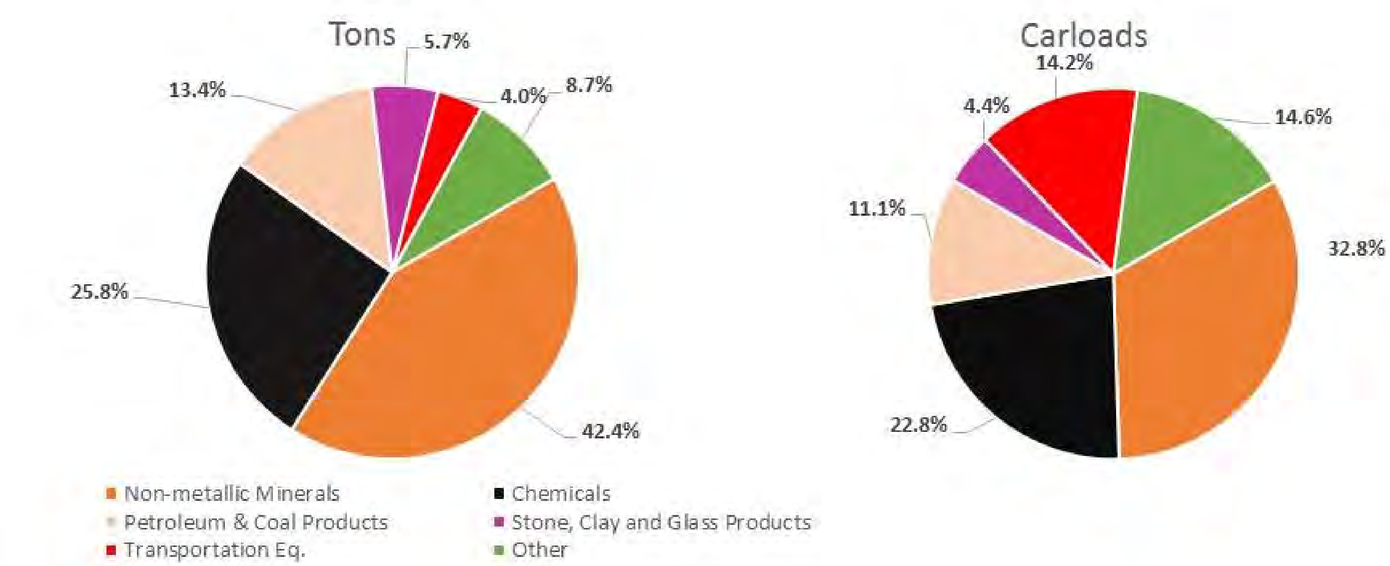
By Tonnage:

1. Non-Metallic Minerals (25.7 million tons, 42.4 percent of intrastate total)
2. Chemicals (15.7 million tons, 25.8 percent of intrastate total)
3. Petroleum or Coal Products (8.1 million tons, 13.4 percent of intrastate total)
4. Stone, Clay and Glass Products (3.5 million tons, 5.7 percent of intrastate total)
5. Transportation Equipment (2.4 million tons, 4.0 percent of intrastate total)

By Carload Units:

1. Non-Metallic Minerals (246,792 carloads, 32.8 percent of intrastate total)
2. Chemicals (171,679 carloads, 22.8 percent of intrastate total)
3. Transportation Equipment (106,954 carloads, 14.2 percent of intrastate total)
4. Petroleum or Coal Products (83,246 carloads, 11.1 percent of intrastate total)
5. Stone, Clay and Glass Products (33,343 carloads, 4.4 percent of intrastate total)

Figure 2-67: Rail Intrastate Top Commodities by Tonnage and Carload, 2016



Source: HDR; based on the 2016 STB Waybill Sample data

Rail Through

Rail movements passing through Texas accounted for 27.9 percent (111.7 million tons) and 46.6 percent (4.6 million carloads) of total tonnage and carloads respectively. The top 5 commodities by tonnage and carload unit include the following (**Figure 2-68**):

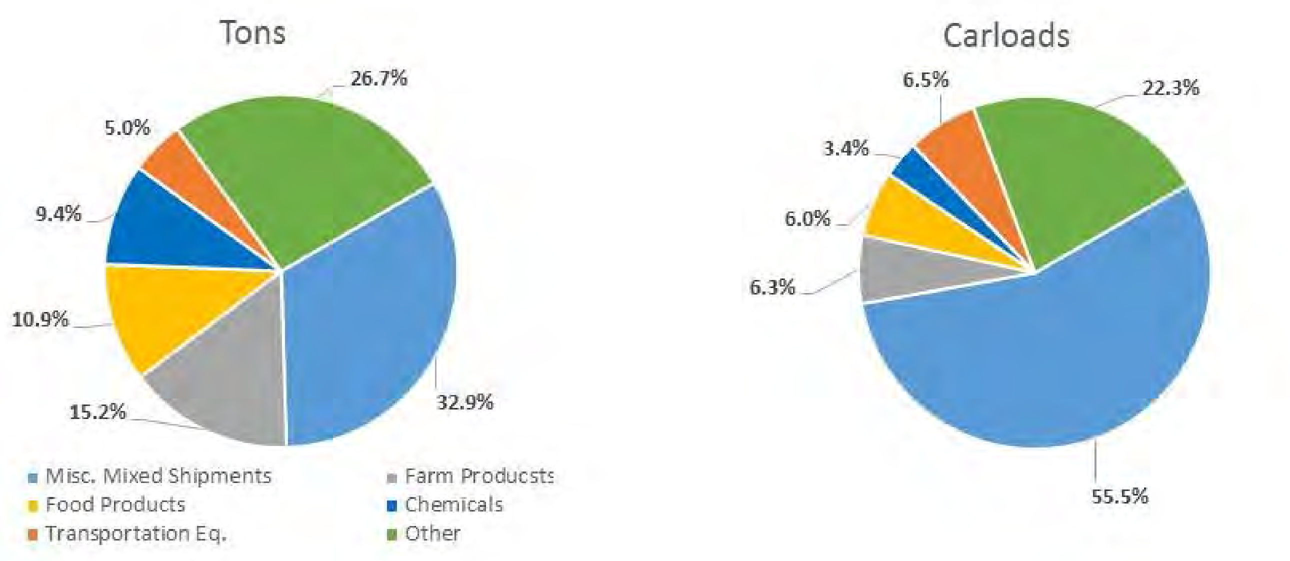
By Tonnage:

1. Miscellaneous Mixed Shipments (36.7 million tons, 32.9 percent of through total)
2. Farm Products (17.0 million tons, 15.2 percent of through total)
3. Food Products (12.1 million tons, 10.9 percent of through total)
4. Chemicals (10.5 million tons, 9.4 percent of through total)
5. Transportation Equipment (5.6 million tons, 5.0 percent of through total)

By Carload Units:

1. Miscellaneous Mixed Shipments (2.6 million carloads, 55.5 percent of through total)
2. Transportation Equipment (299,560 carloads, 6.5 percent of through total)
3. Farm Products (290,202 carloads, 6.3 percent of through total)
4. Food Products (278,570 carloads, 6.0 percent of through total)
5. Chemicals (157,596 carloads, 3.4 percent of through total)

Figure 2-68: Rail Through Top Commodities by Tonnage and Carload, 2016



Source: HDR; based on the 2016 STB Waybill Sample data

2.2.2.3 Freight Forecasts

To assess potential future freight rail tonnage growth, forecasts were derived from the Freight Analysis Framework (FAF) database, transportation data on commodity shipments produced through a partnership between Bureau of Transportation Statistics (BTS) and Federal Highway Administration (FHWA)[71]. FAF data provides a suitable means by which to assess future growth in tonnage, despite being less comprehensive than STB Waybill Sample data. Due to FAF data being presented in Standard Classification of Transported Goods (SCTG) commodity terms, as opposed to Standard Transportation Commodity Code (STCC) terms used by the STB, the two databases are not directly comparable in terms of commodity classifications. The two databases also differ somewhat in the annual estimates of shipments that they provide. Nevertheless, the database is suitable for inferring future forecasted commodity growth patterns. To make the estimates as comparable to the STB Waybill analysis as possible, 2016 was selected as the base year of forecasts.

Table 2-52 summarizes rail movements for 2016 and 2040 and the implied rates of growth. Detailed tables by commodity for all FAF directional movements (outbound, inbound, and intrastate) are available in Appendix D. As Table 2-52 shows, over the period 2016 to 2040 total rail shipments to, from, and across Texas are forecasted to increase by over 10 percent, or at an average annual rate of 0.4 percent.

The growth patterns differ by the direction of movements. Inbound and intrastate movements are forecasted to decline by a total of 3.1 percent and 8.8 percent, respectively (or at an average annual

[71] For brief descriptions and a link to data extraction tool refer to https://ops.fhwa.dot.gov/FREIGHT/freight_analysis/faf/index.htm (accessed December 2018). It is noted that the FAF data is based on a different methodology than the STB data. Therefore, there may be some differences in the estimates of freight shipments coming from the two databases. FAF data is used here only for the purpose of presentation of freight volume forecasts.

rate of 0.1 percent and 0.4 percent, respectively). On the other hand, outbound movements are expected to almost double, or increase at an average annual rate of 2.9 percent.

Table 2-52: FAF Growth Rates, 2016-2040

Direction	2016		2040		CAGR	Total Growth
	Amount (million tons)	Percent	Amount (million tons)	Percent		
Outbound	61.0	16.0%	119.9	28.4%	2.9%	96.5%
Inbound	179.2	47.1%	173.7	41.2%	-0.1%	-3.1%
Intrastate	140.6	36.9%	128.2	30.4%	-0.4%	-8.8%
Total	**380.8**	**100%**	**421.8**	**100%**	0.4%	10.8%

Source: FHWA FAF v4 (accessed December 2018). Note that FAF does not capture interstate (through) movements

Industrial Outlook by Sector

The FAF data reveals that rates of growth differ significantly by commodity. To provide an illustration of the differences and infer emerging trends, Table 2-53 shows total shipments and rates of growth for the 10 largest commodities (in terms of tonnage of shipments) and 10 smallest. The following table, Table 2-54, shows the commodities that are forecasted to have the highest rate of growth.

Table 2-53 shows that the largest commodities are expected to experience significant decline over the years 2016-2040. In particular, shipments of crude oil are expected to decline by nearly 88 percent (or by 8.4 percent annually) and shipments of coal are expected to decline by 32.3 percent (or 1.6 percent annually). Cereal grains are also expected to decline by 10.3 percent (or 0.4 percent annually). On the other hand, shipments of plastics and basic chemicals are expected to increase by 117 percent and 87.6 percent, respectively. Many smaller volume commodities are also expected to experience a healthy growth of 2 percent or more annually. These include live animals (11.7 percent annually, although from a very low base), furniture (6.2 percent), logs (6.1 percent), precision instruments (4.8 percent), building stone (4.4 percent), and meat/seafood (4.0 percent).

Table 2-53: FHWA FAF Rail Tonnage by Industrial Sector, Selected Commodities, 2016 and 2040

Commodity Name Category	Tons in 2016 (Thousand)	Tons in 2040 (Thousand)	Total Growth	Average Annual Rate of Growth
LARGEST COMMODITIES				
Crude oil	75,493.7	9,113.5	-87.9%	-8.4%
Cereal grains	53,597.6	48,103.0	-10.3%	-0.4%
Coal	45,274.8	30,642.2	-32.3%	-1.6%
Plastics/rubber	41,408.6	89,863.3	117.0%	3.3%
Basic chemicals	35,127.1	65,888.6	87.6%	2.7%
Coal-n.e.c.	25,872.1	25,021.8	-3.3%	-0.1%
Gravel	14,692.1	18,758.2	27.7%	1.0%
Nonmetal min. prods.	12,878.0	15,001.9	16.5%	0.6%
Other foodstuffs	7,720.2	12,659.3	64.0%	2.1%
Animal feed	7,609.7	11,585.2	52.2%	1.8%
SMALLEST COMMODITIES				

Commodity Name Category	Tons in 2016 (Thousand)	Tons in 2040 (Thousand)	Total Growth	Average Annual Rate of Growth
Mixed freight	103.0	164.0	59.2%	2.0%
Furniture	89.8	378.6	321.6%	6.2%
Textiles/leather	83.0	157.3	89.6%	2.7%
Precision instruments	52.0	159.3	206.2%	4.8%
Meat/seafood	44.7	114.5	156.0%	4.0%
Pharmaceuticals	36.7	25.9	-29.3%	-1.4%
Logs	28.9	119.1	312.8%	6.1%
Building stone	4.9	13.9	181.7%	4.4%
Tobacco prods.	0.5	0.6	20.9%	0.8%
Live animals/fish	0.0	0.7	1325.5%	11.7%
Total	**380,828**	**421,779**	**10.8%**	**0.4%**

Source: HDR; based on FHWA FAF v4 (accessed December 2018)

Table 2-54 shows 15 commodities with the highest rates of growth. Many of these commodities overlap with those presented in **Table 2-53**. In addition, **Table 2-54** demonstrates a high rate of growth for metallic ores, non-metallic minerals, and building stones.

Table 2-54: FHWA FAF Rail Tonnage by Industrial Sector, Commodities with Highest Rate of Growth, 2016 and 2040

Commodity Name Category	Tons in 2016 (Thousand)	Tons in 2040 (Thousand)	Total Growth	Average Annual Rate of Growth
Live animals/fish	0.0	0.7	1325.5%	11.7%
Metallic ores	492.4	2,237.0	354.3%	6.5%
Furniture	89.8	378.6	321.6%	6.2%
Logs	28.9	119.1	312.8%	6.1%
Alcoholic beverages	3,360.7	12,222.3	263.7%	5.5%
Precision instruments	52.0	159.3	206.2%	4.8%
Building stone	4.9	13.9	181.7%	4.4%
Non-metallic minerals	1,299.7	3,556.8	173.7%	4.3%
Misc. mfg. prods.	126.5	333.4	163.5%	4.1%
Meat/seafood	44.7	114.5	156.0%	4.0%
Machinery	1,439.3	3,396.7	136.0%	3.6%
Plastics/rubber	41,408.6	89,863.3	117.0%	3.3%
Gasoline	2,451.5	5,174.1	111.1%	3.2%
Chemical prods.	1,694.3	3,523.6	108.0%	3.1%
Textiles/leather	83.0	157.3	89.6%	2.7%
Basic chemicals	35,127.1	65,888.6	87.6%	2.7%

Source: HDR; based on FHWA FAF v4 (accessed December 2018)

2.2.2.4 Conclusions

Texas freight movements include outbound, inbound, intrastate, and interstate (through) across a wide range of commodities, destinations, and measures such as tonnage and carloads. A condensed summary of the analysis is provided below:

- Total Movements – A total of over 400 million tons within 9.9 million carloads were moved throughout Texas in 2016, with a tons/carload utilization of 40.3.
- Outbound – Accounted for 16.0 percent (64.0 million tons) and 18.5 percent (1.8 million carloads) of all tonnage and carloads in 2016, respectively. Chemicals comprised the largest share of outbound movements with 47.8 percent of tonnage and 19.2 percent of carloads.
- Inbound – Inbound movements amounted to 164.4 million tons (41.0 percent of total tonnage) and 2.7 million carloads (27.3 percent of total carloads) in 2016. Coal was the largest single commodity moved, accounting for 26.2% of all inbound movements (and 43 million tons).
- Intrastate – Intrastate amounted to 60.7 million tons (15.1 percent of total tonnage) and 751,785 carloads (7.6 percent of total carloads). Non-Metallic Minerals are the dominant commodity moved with 25.7 million tons (42.4 percent of total tonnage) and 246,792 carloads (32.8 percent of total carloads).
- Through – Accounted for nearly half all Texas rail movements in terms of carloads. In 2016, through movements accounted for 111.7 million tons (27.9 percent of total tonnage) and 4.6 million carloads (46.6 percent of total carloads).
- Forecasted Movements - Texas rail movements – outbound, inbound, and intrastate tonnage – are forecasted to grow 96.5 percent (2.9 percent average annual rate), -3.1 percent (-0.1 percent average annual rate), and -8.8 percent (-0.4 percent average annual rate), respectively, over the years 2016 to 2040. The most notable observation is the decrease in inbound and intrastate movements, largely offset by outbound increases. At the commodity level, notable observations include reduction in shipments of crude oil and coal and an increase in shipments of many manufactured goods, in particular chemicals and plastics.

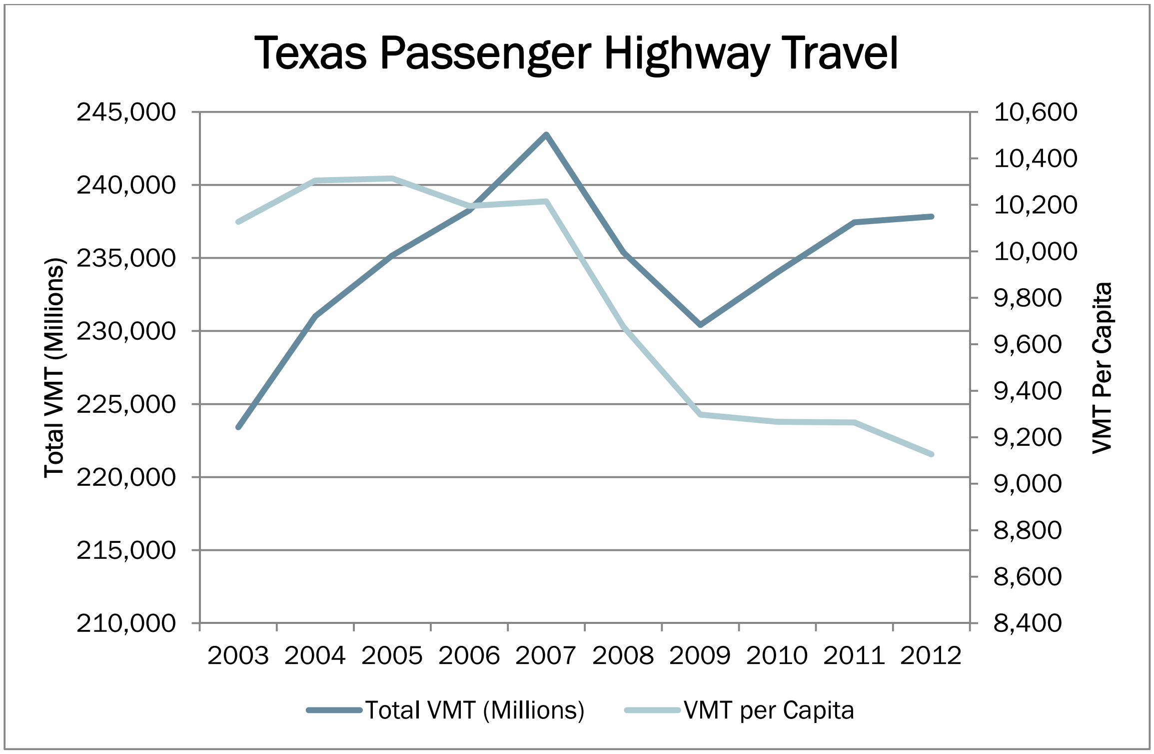
2.2.3 Passenger Travel Demand and Growth

2.2.3.1 Travel Demand – Highways

Figure 2-69 shows the trends in highway passenger travel in Texas over the period 2003 to 2012. In 2012, Texas passenger highway vehicle-miles traveled (VMT) amounted to 237,836 million miles and the VMT per capita to 9,127.[72] Total VMT were growing in the early 2000s and reached a peak of 243,443 in 2007. After the economic recession, total VMT fell to 230,411 million miles in 2009 (or by 5.4 percent compared to 2007). Total VMTs have been increasing since then but did not fully recover to the pre-recession level. On the other hand, VMT per capita were increasing between 2003 and 2005 and declining for the rest of the years shown in the figure.[73] Specifically, VMT per capita fell from a peak of 10,134 in 2005 to 9,127 in 2012 (or by 11.5 percent).

[72] Bureau of Transportation Statistics, State Transportation Statistics, and Table 5-3 Highway Vehicle-Miles Traveled (VMT).
[73] Bureau of Transportation Statistics, State Transportation Statistics, and Table 5-3 Highway Vehicle-Miles Traveled (VMT).

Figure 2-69: Texas Passenger Highway Vehicle-Miles Traveled



Source: Bureau of Transportation Statistics, State Transportation Statistics, and Table 5-3 Highway Vehicle-Miles Traveled (VMT).

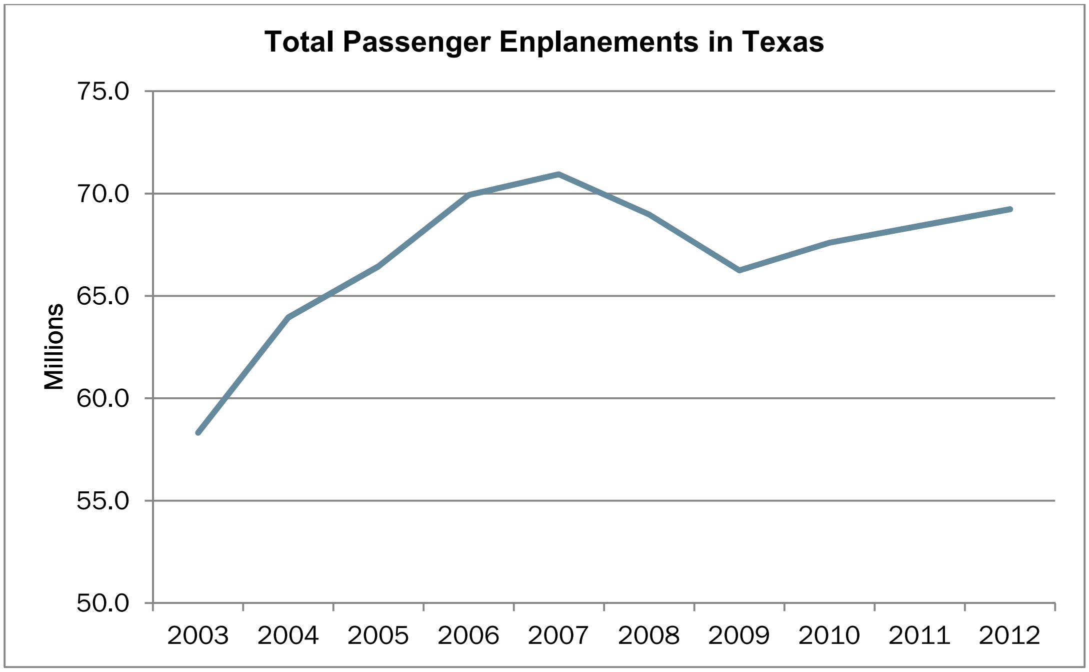
2.2.3.2 Travel Demand – Air Travel

Figure 2-70 shows the number of total enplanements in Texas over the years 2003 to 2012. Enplanements were increasing in the early 2000s reaching 70.9 million in 2007. Enplanements decreased during the recent economic crisis to 66.2 million in 2009 (or by 6.6 percent compared to 2007).[74] Since the economic recession, the number of enplaned passengers has been on the rise but has not fully recovered the pre-recession level.[75] In 2012, total number of enplaned passengers amounted to 69.2 million.

[74] Bureau of Transportation Statistics, State Transportation Statistics, Table 1-12 Airports Enplanements by State and Air Carrier category.

[75] Calculated based on Bureau of Transportation Statistics, State Transportation Statistics, Table 1-12 Airports Enplanements by State and Air Carrier category.

Figure 2-70: Total Passenger Enplanements in Texas



Sources: Bureau of Transportation Statistics, State Transportation Statistics, Table 1-12 Airports Enplanements by State and Air Carrier category.

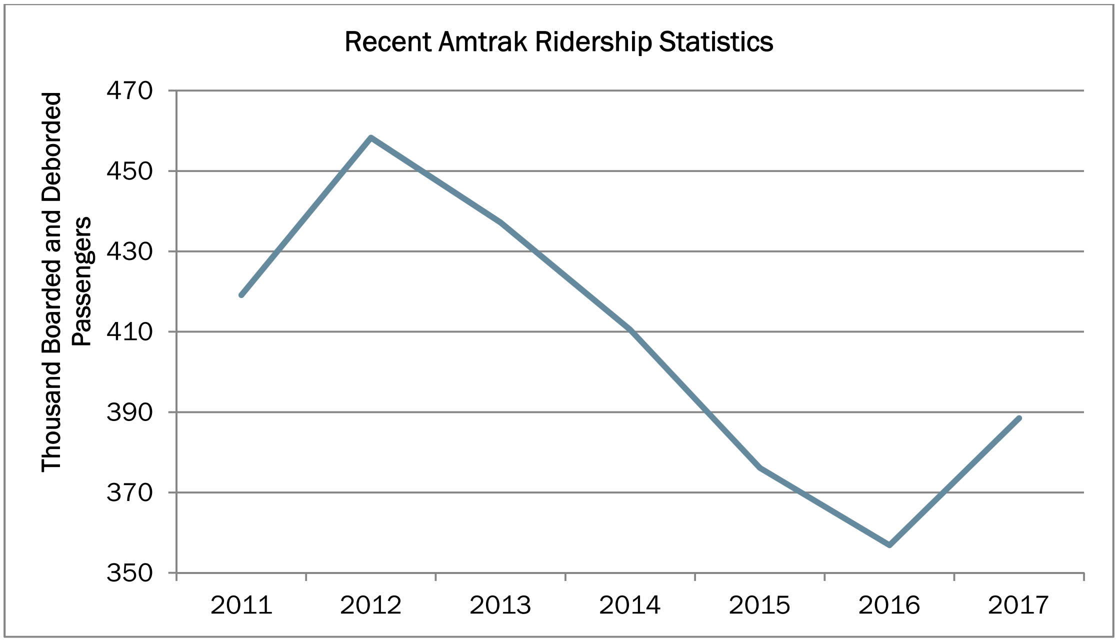
2.2.3.3 Travel Demand – Intercity Rail

In Texas, Amtrak operates one state-supported train, the ***Heartland Flyer*** (daily Fort Worth-Gainesville-Oklahoma City) and two National Network trains:

- The ***Sunset Limited*** (tri-weekly Orlando-New Orleans-Los Angeles via Houston, San Antonio, and El Paso), and
- The ***Texas Eagle*** (daily Chicago-Dallas-San Antonio with tri-weekly through car service via the *Sunset Limited* to Los Angeles).

Figure 2-71 shows the recent trends in ridership. The figure shows that in 2017 ridership amounted to over 388 thousand boardings and detrainings. This represents an increase of 8.9 percent compared to 2016. However, it is still substantially below most recent peak in 2012 when ridership recorded 458,300 boardings and detrainings. Over the years 2013-2016, ridership was declining continuously compared to the year before.

Figure 2-71: Amtrak Train Ridership in Texas

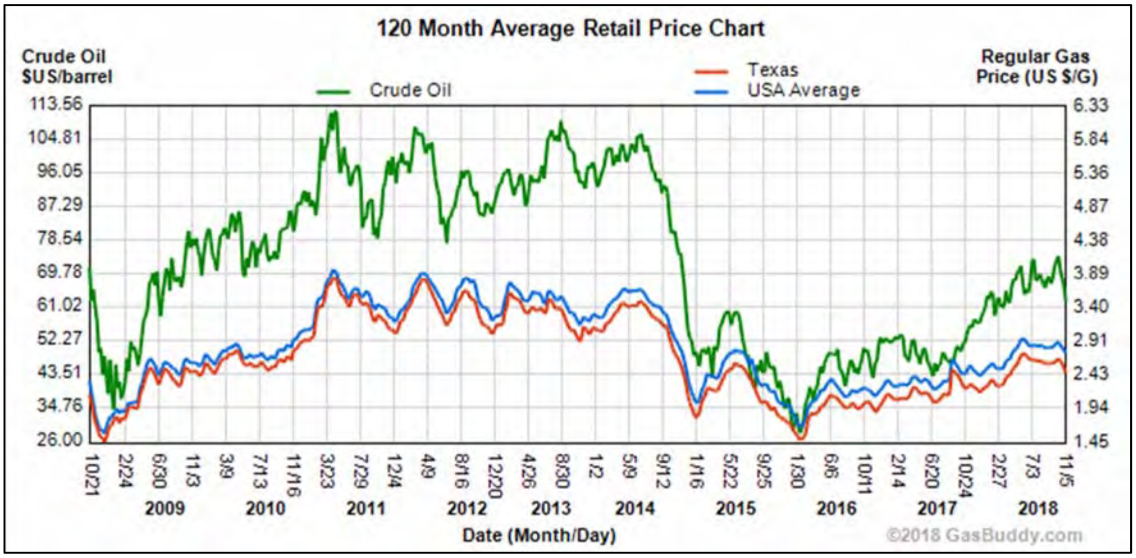


Source: Rail Passengers Association

2.2.4 Fuel Cost Trends

Trends in fuel costs (crude oil and regular gasoline) over the last 10 years are shown in Figure 2-72. The average retail gas price trends in the state of Texas and the U.S. track closely to each other.

Figure 2-72: Fuel Price Trends from 2008 to 2018 in Texas



Source: GasBuddy.com

Ultra-low diesel fuel costs over the past 10 years for the Gulf Coast have also not varied substantially from the nationwide average, according to the U.S. Energy Information Administration (EIA). See Figure 2-73.

The average price of diesel fuel in 2008 in the Gulf was $2.48, climbing to $3.88 per gallon in 2012. Diesel prices bottomed out at $2.18 per gallon in 2016 and since then have started to climb due to increased demand for diesel. In 2018, diesel costs are at $3.11 per gallon in the Gulf Cost Petroleum Administration for Defense Districts (PADD). Costs are expected to continue increasing due to new sulfur requirements for marine fuels (sulfur content will drop from 3.5 percent to 0.5 percent) that will come in effect by 2020, thus increasing demand of ultra-low sulfur diesel fuels.

Figure 2-73: No 2 Diesel Ultra Low Sulfur (0-15 ppm) Retail Prices, Annual, U.S. and Gulf Coast

Source: U.S. Energy Information Administration

2.2.5 Rail Congestion Trends

Rail congestion can potentially typically occur at rail terminals, junctions, or areas where there is a high variability of railroad operations occurring (e.g., passenger rail interfaces, changes in train consists, operating speeds, power requirements, etc.). Congestion can also occur when the estimated train volumes per day exceeds the maximum trains per day that can be safely and consistently accommodated on the line (practical capacity). Seasonal surges in freight demand and disruptions from incidents and maintenance activities add to congestion as volumes increase on railroad lines.

A planning level evaluation to assess existing rail capacity and any potential level of congestion of rail lines in Texas was not conducted during the development of the Texas Rail Plan. Projects that address existing bottlenecks and rail capacity issues as identified through coordination with the state's railroads and railroad stakeholders, passenger rail agencies, and TxDOT are described in Chapters 4 and 5 of the 2019 Texas Rail Plan.

2.2.6 Highway and Airport Trends

2.2.6.1 Highway Congestion

Texas has more than 80,000 centerline miles of roadways. In 2012, there were 167,002 million vehicle miles traveled (VMT) in urban areas and 70,834 million VMT in rural areas throughout the state – roughly two and three times the national averages, respectively.[76] To put in perspective to other states, Texas had over 4.5 billion vehicle-miles traveled on its roads in August of this year. The next highest VMT in the United States was California with 2.8 billion.[77]

As the population in Texas continues to grow, so does the number of vehicle miles traveled or VMT and with little added lane miles to travel on, this results in additional congestion. By 2040, the annual number of vehicle miles traveled is expected to increase by 60 percent over that traveled in 2010.[78] In Texas 87 percent of population lives in counties along or east of I-35. Projections for 2050 show over 100 percent growth in the four largest metropolitan areas over the population in 2018.

Table 2-55: Lane-Miles and Vehicle Miles Traveled Changes from 2011 to 2017

Type of Roadway	2011 Lane-Miles	2017 Lane-Miles	% Change	2011 VMT (in 1000s)	2017 VMT (in 1000s)	% Change
Interstate Highways	15,266	16,604	8.8%	152,696	190,149	24.5%
US Highways	36,218	35,245	-2.7%	115,610	106,861	-7.6%
State Highways, Spurs, Loops, Business Routes	42,608	42,966	0.8%	114,308	129,139	13.0%
Farm or Ranch to Market Roads and Spurs	84,820	84,870	0.1%	68,862	77,198	12.1%
Park and Recreation Roads	674	689	2.2%	556	541	-2.7%
Frontage Roads	15,222	15,826	4.0%	27,750	35,919	29.4%
Total	194,808	196,201	0.7%	479,782	539,806	12.5%

As shown in **Table 2-55**, between 2011 and 2017 there have been very few changes in the number of lane miles in the state. The number of vehicle miles traveled, however, has increased by an overall 12.5 percent. The largest amount of change has been on the Interstate Highways and their frontage

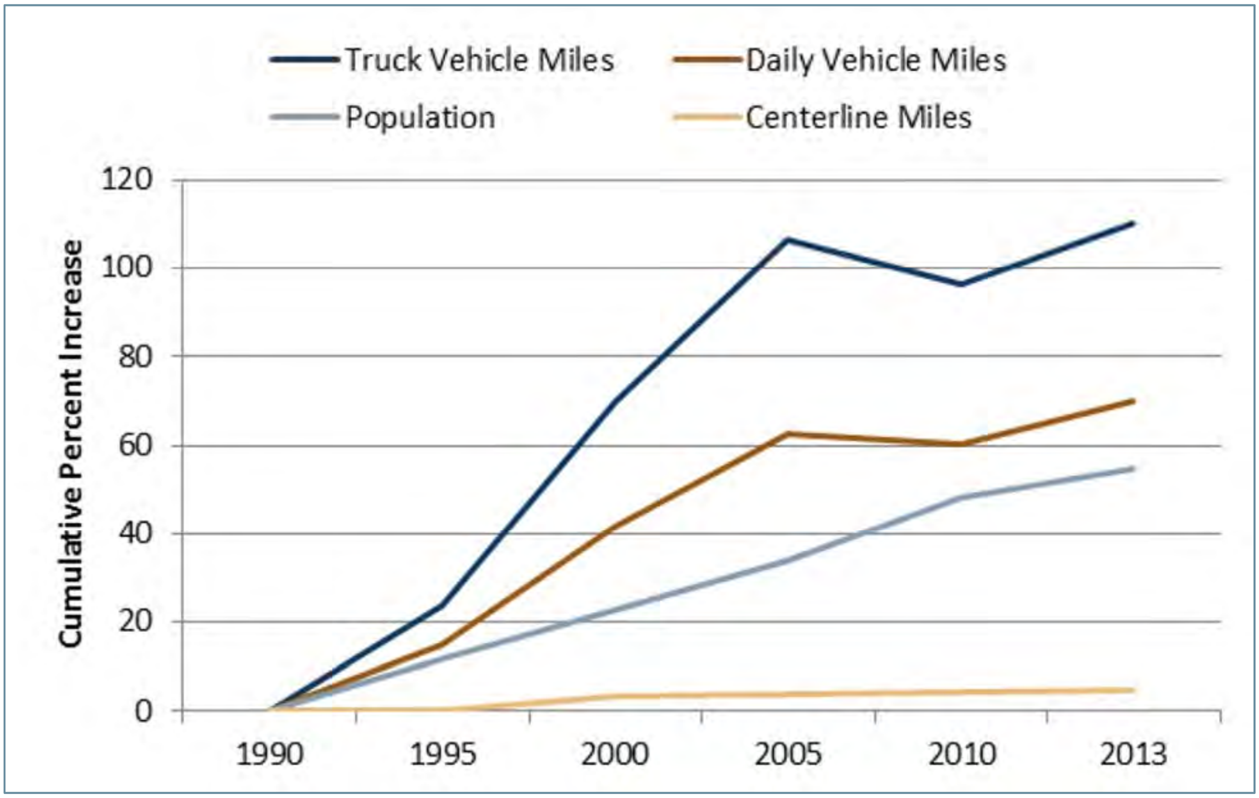
[76] Texas Transportation Plan 2040, Chapter 4, http://ftp.dot.state.tx.us/pub/txdot-info/tpp/2040/plan/chapter-4.pdf
[77] Federal Highway Administration, Traffic Volume Trends, August 2018 report, https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm
[78] Texas Transportation Plan 2040, Chapter 4, http://ftp.dot.state.tx.us/pub/txdot-info/tpp/2040/plan/chapter-4.pdf

roads. As shown in Table 2-56, interstate highways also carry the most overall VMT of all types of roadway types with 35.2 percent. Followed by state highways, spurs, loops and business routes. When VMT increases but the miles of roadways do not, the result is congestion.

Table 2-56: 2017 Lane-Miles and Vehicle Miles Traveled by Roadway Type

Roadway Type	Lane-Miles	% of Total Miles	VMT (in 1000s)	% of Total VMT
Interstate Highways	16,604	8.5%	190,149	35.2%
US Highways	35,245	18.0%	106,861	19.8%
State Highways, Spurs, Loops, Business Routes	42,966	21.9%	129,139	23.9%
Farm or Ranch to Market Roads and Spurs	84,870	43.3%	77,198	14.3%
Park and Recreation Roads	689	0.4%	541	0.1%
Frontage Roads	15,826	8.1%	35,919	6.7%
Total	196,201	100.0%	539,806	100.0%

Figure 2-74: Highway System and Growth Trends



Source: Texas Transportation Plan 2040 Executive Summary

One of many challenges continues to be the increasing disparity between demand and available capacity. Since 1990, the state's population has increased by 55 percent. During the same period, daily vehicle miles traveled have increased 70 percent and daily truck miles traveled have increased

110 percent on TxDOT-maintained roadways, while roadway centerline miles have increased at a disproportionate rate of 7 percent (**Figure 2-74**).[79]

The Texas Clear Lanes program was started in 2015 to provide congestion relief. In December 2017, the Governor insisted on a focus of new funding on the 100 Top Congested Roadways. Ninety-two of the most congested roadways are in the metropolitan areas of Austin, Dallas/Fort Worth, Houston, San Antonio. Statewide the total congestion relates to 201 million delay hours, costing $3.97 billion (TTI). The most congested roadways tend to be congested not only in peak periods but also in the off-peak. Texas is continuing to allocate new funding towards addressing the most congested roadways, having already allocated $1.3 billion.[80]

2.2.6.2 Airport Congestion

According to the FAA's data showing enplanements of every American commercial airport, Fort Worth and Dallas have the 4th and 31st ranked airports by enplanements (**Table 2-57**). Houston has the 15th and 35th ranked, Austin has the 34th, and San Antonio has the 44th. From 2016 to 2017, Austin-Bergstrom International Airport saw an explosive 11.77 percent increase in enplanements. Houston's George Bush International is the only major Texas airport that saw a decrease in enplanements from 2016 to 2017, however Houston's other major airport, William P. Hobby, saw a 4.84 percent increase. In total, Houston's enplanements saw a decrease of only 0.01 percent or about 200,000 enplanements a year. Dallas and Fort Worth both saw increases in enplanements last year.

Table 2-57: Total Enplanements of Texas' Commercial Airports, 2016-2017

US Rank	City	Airport Name	2017 Enplanements	2016 Enplanements	% Change
4	Fort Worth	Dallas-Fort Worth International	31,816,933	31,283,579	1.70%
15	Houston	George Bush Intercontinental/Houston	19,603,731	20,062,072	-2.28%
31	Dallas	Dallas Love Field	7,593,361	7,554,596	0.51%
34	Austin	Austin-Bergstrom International	6,813,171	6,095,545	11.77%
35	Houston	William P Hobby	6,538,976	6,285,181	4.04%
44	San Antonio	San Antonio International	4,382,127	4,179,994	4.84%
77	El Paso	El Paso International	1,450,115	1,414,376	2.53%
		All Other TX Commercial Airports	3,012,219	3,007,630	0.15%
		Total	**81,210,633**	**79,882,973**	**1.66%**

Source: https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

[79] Texas Transportation Plan 2040, Executive Summary, adopted Feb. 26, 2015, https://www.txdot.gov/inside-txdot/division/transportation-planning/statewide-plan/plan.html
[80] Texas Clear Lanes and Congestion Relief Task Force Committee Activity Progress Report 2018, http://ftp.dot.state.tx.us/pub/txdot/commission/2018/0926/2-presentation.pdf

Though passenger growth did increase throughout the State, it was not nearly as large as the increase in cargo weight landing at our commercial airports. The biggest percentage increases, according to FAA data, came from Laredo International at a 30 percent increase in 2017 compared to 2016 (**Table 2-58**). Austin-Bergstrom saw a 13 percent increase while San Antonio, DFW, and Houston all saw increases of more than 6 percent.

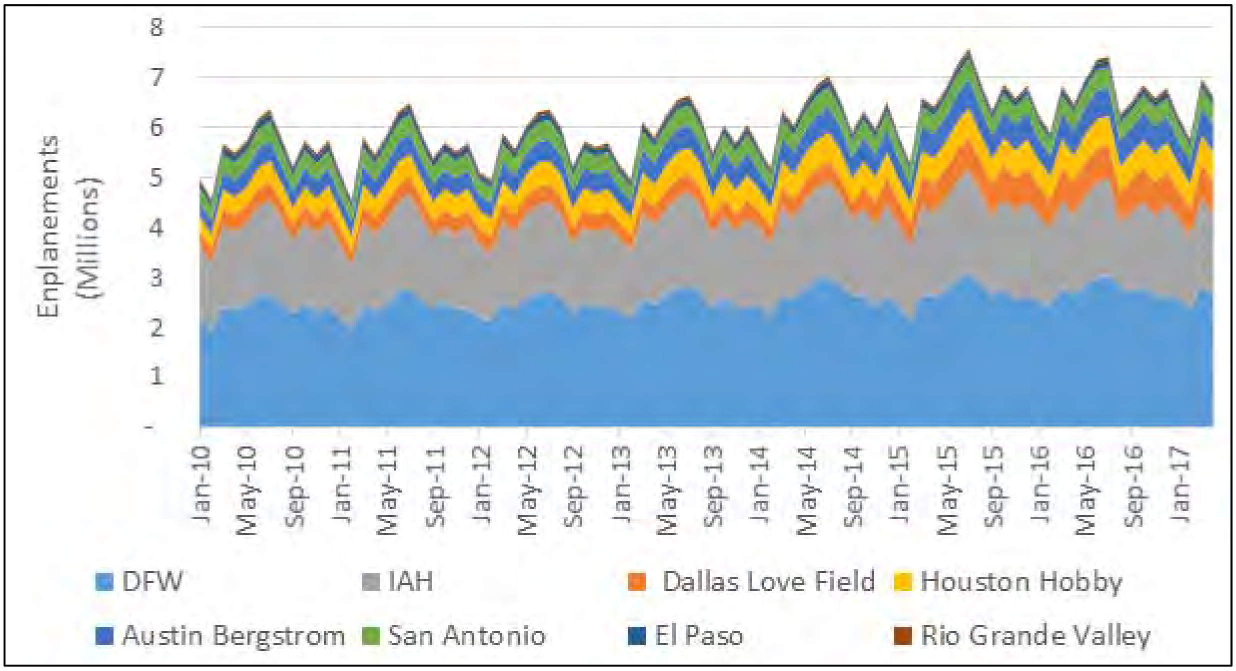
Table 2-58: Total Cargo Weight Landed of Texas' Commercial Airports, 2016-2017

US Rank	City	Airport Name	2017 Landed Weight (tons)	2016 Landed Weight (tons)	% Change
9	Fort Worth	Dallas-Fort Worth International	2,077,681	1,929,970	7.65%
19	Houston	George Bush Intercontinental/Houston	877,535	818,153	7.26%
31	Fort Worth	Fort Worth Alliance	452,437	448,704	0.83%
33	San Antonio	San Antonio International	422,384	395,995	6.66%
42	Laredo	Laredo International	293,759	225,218	30.43%
46	Austin	Austin-Bergstrom International	273,867	241,877	13.23%
47	El Paso	El Paso International	262,551	255,232	2.87%
65	Lubbock	Lubbock Preston Smith International	181,872	175,874	3.41%
77	Harlingen	Valley International	150,130	131,678	14.01%
92	San Antonio	Kelly Field	108,870	0	N/A
128	Brownsville	Brownsville/South Padre Island International	11,553	8,114	42.39%
		Total	**5,112,639**	**4,630,816**	**10.40%**

Source: https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/media/cy17-cargo-airports.pdf

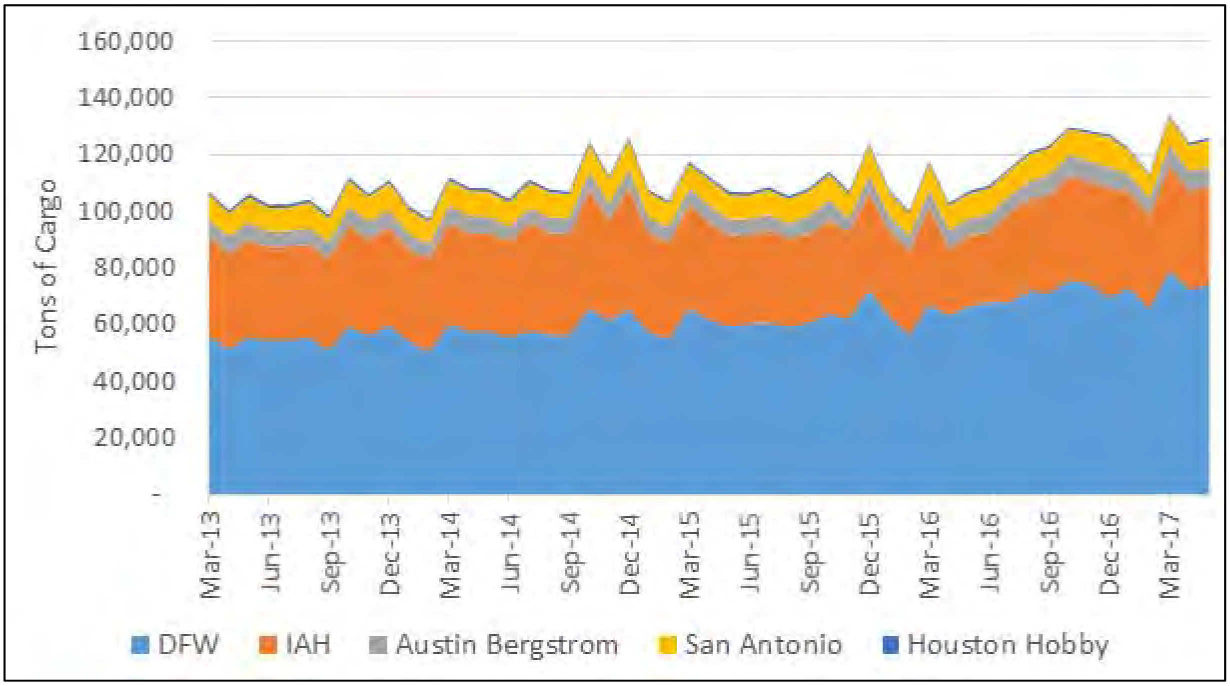
For longer term trends of enplanements and cargo at Texas Airports, TTI released enplanement data from January 2010 to January 2017 (**Figure 2-75**) and cargo data from March 2013 to March 2017 (**Figure 2-76**).

Figure 2-75: Texas Major Airports Monthly Enplanements



Source: https://policy.tti.tamu.edu/finance/texas-transportation-economic-indicators/#7

Figure 2-76: Texas Major Airports Monthly Cargo



Source: https://policy.tti.tamu.edu/finance/texas-transportation-economic-indicators/#7

According to the Bureau of Economic Analysis, Austin-Round Rock led the nation in 2017 for real GDP growth of major metro areas at 6.9 percent. Dallas and San Antonio also had considerable growth with 3.9 and 4.6 percent, respectively. Houston was stagnant at 0 percent.[81] Economic growth contributes to the growth of commercial airport activity in Texas and, if the economic trends continue in Texas' major metropolitan areas, further increases in enplanements and cargo tonnage landed at our airports can be expected.

To accommodate the forecasted traffic from the major Texas roads our major airports have plans in place to expand their capacity. Austin-Bergstrom International Airport (ABIA) Master plan includes a $6.4 Billion investment over the next 20 years to double the number of gates, parking spaces, and add a baggage claim.[82] DFW has recently completed its planned $1.9 billion project to upgrade the efficiency and amenities of its terminals to accommodate and encourage growth of the airport.[83] In 2018, DFW received a letter of intent from the FAA committing $180 million to upgrade its taxiway systems to increase efficiency and safety of DFW's runways.[84] In Houston, George Bush Intercontinental Airport's Master Plan includes Mid-Term plans for the addition of a new runway, added parking capacity, additional access roadways, and an Inter-terminal plane.[85] Dallas Love Field's master plan includes the addition of a new access roadway to increase traffic capacity of the airport.[86] San Antonio International Airport has a master plan with objectives including terminal renovation, an additional terminal, land acquisition, runway expansion, and new parking and car rental facilities.[87]

2.2.7 Land Use Trends

The total land area of Texas is 268,484 square miles, is divided into 254 counties, and is home to over 28 million people. The population is concentrated in the metropolitan areas of Dallas-Fort Worth, Houston, Austin, San Antonio, El Paso, the Rio Grande Valley, Corpus Christi, and Lubbock. Over 86 percent of population lives in the top 25 populated counties.

The majority of the state is made up of 142 million acres of rural lands, which is about 84 percent of the land and is home to just 12 percent of the population. Texas has the most ranches of any state at 248,000 spanning most of the rural lands. These rural lands lead the nation in cattle, cotton, hay, sheep, and goat production.[88]

With population ever increasing, the land is being converted from rural to developed. Figure 2-77 depicts the rate of conversion from farm to developed land.[89]

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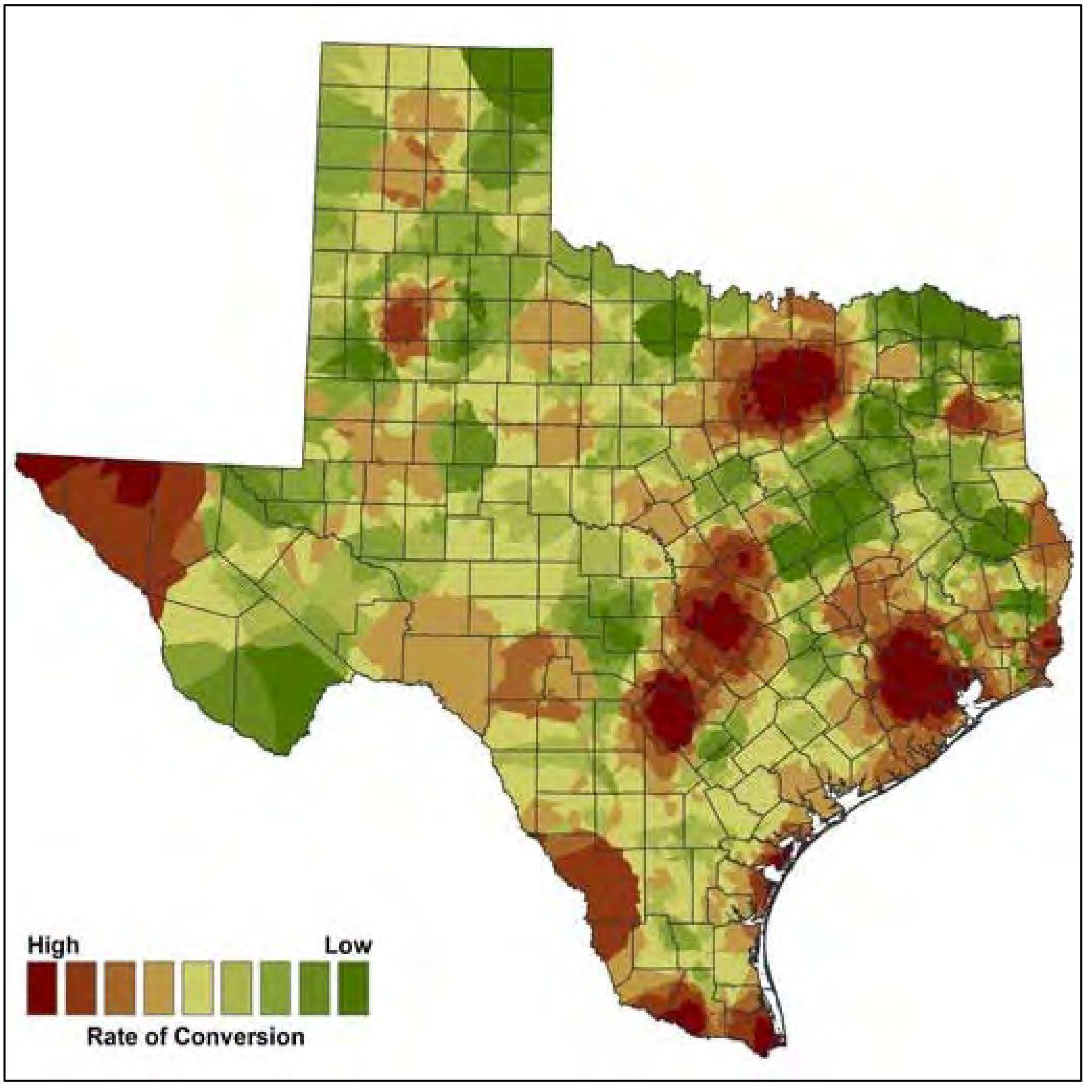
[81] https://www.bea.gov/data/gdp/gdp-metropolitan-area
[82] http://www.abiamasterplan.com/theplan/
[83] http://dfwairport.mediaroom.com/DFW-International-Airport-Launches-First-Major-Construction-Phase-of-1-9-Billion-Terminal-Renewal-and-Improvement-Program
[84] http://dfwairport.mediaroom.com/2018-07-27-DFW-Airport-Receives-DOT-Commitment-for-180-Million
[85] https://d14ik00wldmhq.cloudfront.net/media/filer_public/2c/b8/2cb8598e-28cd-4eda-9875-b955d2177b7f/iah_master_plan_technical_report__chapter_1_150508.pdf
[86] https://dallascityhall.com/government/Council%20Meeting%20Documents/msis_3_dallas-love-field-master-plan-update_combined_081318.pdf
[87] https://www.airport-technology.com/projects/sanantonio/
[88] https://www.texasagriculture.gov/About/TexasAgStats.aspx
[89] Texaslandtrends.org

Figure 2-77: Rate of Conversion from Farm to Developed Land in Texas



2.3 RAIL SERVICE NEEDS AND OPPORTUNITIES

2.3.1 Freight Rail Needs and Opportunities

2.3.1.1 Rail Corridor Development

As owners and operators of large rail transportation networks, BNSF, KCS, and UP manage their businesses across state lines, with each of the railroads facing off for market position within many of the Midwest and Western U.S. states. The railroad networks that connect key regional markets are considered rail freight corridors, with the majority of freight rail corridors spanning multiple states. Texas is located in the Sunbelt and is bounded by the Gulf of Mexico. The state has close proximity to other major rail hubs in neighboring states – including Little Rock, Arkansas; Oklahoma City, Oklahoma; New Orleans, Louisiana; and Memphis, Tennessee– means that many of the rail corridors in the regional and national rail network either connect to or pass through Texas.

Class I freight railroads typically provide the capital necessary for their own network corridor infrastructure improvements. Yet in recent years, some Class I railroads have made corridor improvement investments that have involved public financial assistance, typically justified on the basis of the public benefits from reducing truck traffic and truck emissions on parallel portions of highway network. A primary interest of the state of Texas is in the impacts on the connecting short line railroads, enhanced access to the state's rail network, and potential connections to river ports and border crossings.

The remainder of this section discusses Class I freight railroad corridors in Texas and elsewhere in the Southern U.S. that affect Texas in some way. While the focus is on freight rail corridors, some or portions of these routes may have potential to expand existing or add new passenger rail service in coordination with the ongoing operations of the freight railroads in Texas.

2.3.1.2 Freight Railroad Corridors of Commerce

BNSF Corridors of Commerce

BNSF has designated Corridors of Commerce within its network of routes in the U.S. and Canada to create jobs; deliver rail transportation, safety, and environmental benefits; and promote U.S. economic growth and competitiveness.

Two of the three BNSF Corridors of Commerce intersect with Texas – the MidCon Corridor and the Transcon Corridor.

BNSF MidCon Corridor

The BNSF MidCon Corridor extends from Canada and Duluth, Minnesota, through the U.S. Heartland to southern ports in Texas and to connections with other railroads at the U.S.-Mexico border. The MidCon Corridor is a primary conduit for the U.S. energy supply, include coal movements to utilities for power generation and unrefined petroleum products from the Bakken in North Dakota and refined petroleum products from the U.S. South. The MidCon also handles substantial volumes of agricultural products for export. In 2009, BNSF transported 192 million tons of freight, removing 7.6 million trucks from U.S. highways. BNSF has invested over $220 million in the MidCon Corridor to increase capacity by double tracking key segments, siding extensions, and yard improvements. BNSF has spent over $1.4 billion in the last decade to maintain its infrastructure and to ensure the safe movement of goods.

The MidCon Corridor is identified in Figure 2-78 and connects with BNSF's other two Corridors of Commerce as identified below:

- Great Northern Corridor between Chicago, Illinois and Seattle, Washington/Portland, Oregon – at Fargo, North Dakota
- Transcon Corridor between Chicago, Illinois/St. Louis, Missouri/Atlanta, Georgia/Fort Worth, Texas and Los Angeles/San Diego/Oakland, California – at Kansas City, Missouri, and Ellinor, Kansas.

Figure 2-78: BNSF MidCon Corridor

Source: BNSF

BNSF TransCon Corridor

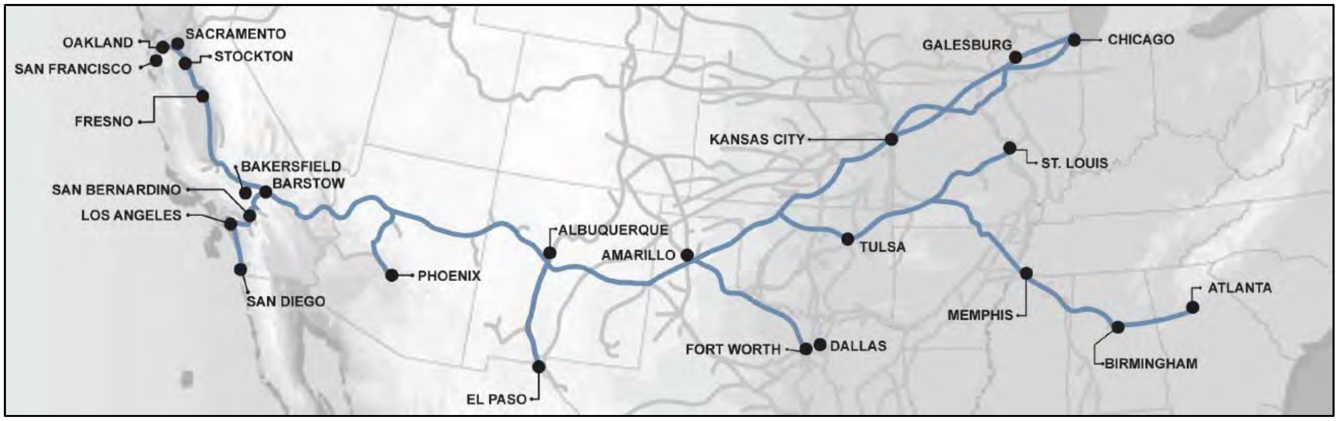
The BNSF TransCon Corridor extends from Chicago, Illinois; St. Louis, Missouri; and Atlanta, Georgia, through the U.S. Heartland and U.S. South to West Coast ports and major metropolitan areas in the U.S. Southwest and West including Fort Worth and El Paso, Texas; Albuquerque, New Mexico; Phoenix, Arizona; San Diego, Los Angeles, Stockton, Sacramento, and Oakland, California. Of the over 4,647 miles comprising the TransCon Corridor reaching 13 U.S. states, including railroad lines into Texas.[90] The principal TransCon Corridor terminal located in Texas is at Fort Worth, Amarillo, and El Paso.

The TransCon Corridor is a major import and export gateway for U.S. businesses and consumers and is a primary conduit for high volumes of consumer goods. The TransCon also handles substantial volumes of agricultural products and other bulk products. BNSF has invested over $1.8 billion in the TransCon Corridor in the last decade to ensure the safe movement of goods, increase capacity by double and triple tracking key segments; expanding and rebuilding an intermodal facility at Memphis, Tennessee; and undertaking several maintenance projects.[91]

The TransCon Corridor is identified in Figure 2-79 and connects with BNSF's other two Corridors of Commerce as identified below:

- MidCon Corridor identified earlier in this section – at Kansas City, Missouri, and Ellinor, Kansas.
- Great Northern Corridor between Chicago, Illinois and Seattle, Washington/Portland, Oregon – at Chicago, Illinois

Figure 2-79: BNSF TransCon Corridor



Source: BNSF

Union Pacific Corridors

Union Pacific Railroad (UP) has multiple main lines that traverse Texas in a north-south and east-west orientation. These are not organized into corridors for marketing purposes, but the system map (Figure 2-80) shows how UP fit into the Texas rail network.

Through mergers of the Missouri Pacific (MP or MoPac), Missouri-Kansas-Texas (MKT or Katy), and the Southern Pacific (SP), UP has gained access to much of Texas. The UP Texas rail network radiates from key hubs in Dallas/Fort Worth, San Antonio, and Houston, with reaches to New Orleans, California, St. Louis, Kansas City, and Mexico. The railroad traverses through most major Texas cities, and is the only railroad serving all six major Mexico gateways four of which are in Texas

[90] BNSF TransCon Corridor Fact Sheet, 2015
[91] BNSF TransCon Corridor Fact Sheet, 2015

– Laredo, El Paso, Brownsville, and Eagle Pass. International trade represents a large part of UP's carload business. Approximately 5 percent of the total carloads moved by UP in 2017 were exports to Mexico and 6 percent of total carloads in 2017 were imports from Mexico.[92] Approximately 92 percent of the UP carloads moved to and from Mexico in 2017 occurred at the four Texas rail gateways.[93]

Figure 2-80: Union Pacific Railroad Network - Texas

Source: Union Pacific Railroad

Kansas City Southern Corridors

Kansas City Southern (KCS) operations in Texas are primarily overhead shipments of intermodal, coal, and feed products traveling between the Kansas City Area and East Coast and destinations in Texas and Mexico. The principle north/south main line for KCS bifurcates Arkansas and Louisiana from Kansas City and enters into Texas just west of Shreveport, Louisiana (see Figure 2-81). The Meridian Speedway is jointly owned line by Norfolk Southern Railway and KCS (320 miles in length) that offers streamlined rail service from the Dallas, Texas market to the Northeast. This line begins in Meridian, Mississippi and terminates in Shreveport.

[92] Union Pacific Railroad, 2017 Investor Fact Book, https://www.up.com/cs/groups/public/@uprr/@investor/documents/investordocuments/up_pdf_2017_investor_fact_book.pdf
[93] Union Pacific Railroad, 2017 Investor Fact Book, https://www.up.com/cs/groups/public/@uprr/@investor/documents/investordocuments/up_pdf_2017_investor_fact_book.pdf

Another principle rail line on KCS diverges off the north/south main line and enters Texas just west of Lake Charles, Louisiana, near Beaumont, Texas. This line follows the Gulf Coast, with areas of service operating on UP main track, and terminates in Laredo. A KCS company, Kansas City Southern de Mexico, provides rail service within Mexico and connects the KCS railroad in in Laredo to Brownsville, Texas, as well.

Figure 2-81: Kansas City Southern Network - Texas

Source: Kansas City Southern

2.3.1.3 Driving Factors in Rail Corridor Development

Many external factors are generally affecting the demand for use of rail corridors as well as influencing Class I railroads' business and network investment strategies. Some of the key factors influencing rail corridor development generally are identified in this section.

Expansion of the Panama Canal

The Panama Canal was opened in 1914 as a major international trade artery that cuts through the Isthmus of Panama and connects Pacific Ocean and Atlantic Ocean trade routes. In 2016, the Panama Canal Authority officially opened a larger, third set of locks on the canal. This project significantly increased the throughput capacity of the canal and allows for much larger vessels to transit the locks, potentially providing savings from greater economies of scale for shippers on Panama Canal trade routes. The canal capacity for container vessels, previously limited to 4,500 Twenty-foot Equivalent Units (TEU) ships, are increasing to container vessels of 12,500 TEU capacity. The greater capacity of the locks will permit larger dry bulk and tanker vessels to also use the canal. This expansion project creates an opportunity for the ports in the eastern and southern U.S. to capture additional ocean trade with Asia and West Coast of South American countries – traffic that, until now, has bypassed Atlantic ports and traveled instead to ports on the West Coast before traveling to or from the eastern and southern U.S. by rail or truck. Additional international trade could be carried to and from Atlantic ports by rail, if port market shares increase. International trade commodities traveling cross-country by rail through Texas to or from Atlantic and Pacific Coast ports may see a decrease in share.

Increases in Domestic Intermodal Transportation

The Class I railroads are increasingly focused on growing their intermodal container business and facilities. The intermodal business has been part of the railroads' services since the 1960s, and it grew substantially between 1980 and 2000. Intermodal transportation may include a truck trailer on a flat car (TOFC) or a shipping container stacked one or two high on specialized container well railcars or other flatcars (COFC). COFC was first initiated to serve international ocean container traffic at container ports, but within the last decade, railroads have grown their domestic intermodal container businesses nationwide. The railroads have accomplished this generally by offering speed and pricing of service and intermodal container yards located where they are useful to truckers, thus replacing the need for truck drivers to drive long-haul distances far from home and to better address the present and surging shortage of truck drivers in the U.S. The domestic intermodal service uses larger size containers than used in ocean shipping, matched instead to standard highway trailer sizes that are 53 feet long and taller and wider than a standard 40-foot long international ocean container.

Major intermodal rail facilities are located in Amarillo, El Paso, Dallas, Fort Worth, Houston, and Laredo with additional facilities located in smaller areas such as Donna, Rosenberg, and Wylie. In total, Texas is home to approximately 20 intermodal rail facilities, concentrated mostly in the eastern portion of the state. BNSF and UP also operate intermodal facilities at the Port of Houston, which is the number two seaport by volume (tonnage) in the U.S.[94] The state's two intermodal logistics facilities, Alliance and Port San Antonio, have direct access to BNSF and UP. Intermodal facilities for KCS are located primarily in the Dallas/Fort Worth area and Laredo.

The need for intermodal facilities within Texas was identified in the *2040 Texas Transportation Plan*. The state and stakeholders will need to support multimodal and intermodal planning, project development, and investments in the future.[95] Partnerships with railroads, specifically the short line railroads in which the state is already in partnership will be critical to the success of any plan.

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[94] American Association of Port Authorities, *2017 U.S. Waterborne Foreign Trade*, http://aapa.files.cms-plus.com/Statistics/U.S.%20WATERBORNE%20FOREIGN%20TRADE%202017%20BY%20U.S.%20CUSTOMS%20DISTRICT.xlsx
[95] TxDOT, *2040 Texas Transportation Plan - Chapter 3, http://ftp.dot.state.tx.us/pub/txdot-info/tpp/2040/plan/chapter-3.pdf*

Changes in Energy Production: Oil, Gas, and Coal

Texas leads the nation in energy production, primarily from crude oil and natural gas, providing more than one-fifth of U.S. domestically-produced energy.[96] Crude oil and natural gas resources are present across the entire state of Texas. In 2016, Texas was the leading oil- and natural gas-producing state, producing more than one-third of the nation's crude oil and one-quarter of U.S. marketed natural gas production.[97] Coal is found in bands that cut across the eastern Texas coastal plain and in other coal-producing areas in the north-central and southwestern parts of the state. With the abundance of this resource, Texas is ranked as the seventh-largest coal producer and the largest lignite coal producer in the nation.[98]

Within the last decade, there has been significant growth in U.S. domestic production of oil and gas through the application of hydraulic fracking and directional drilling – of which Texas has directly benefitted from. Texas had the largest increase of any state in crude oil output in 2015, when annual production reached almost 1.26 billion barrels.[99] The state's 30 petroleum refineries can process almost 5.7 million barrels of crude oil per day, as well.[100] Rail has played a significant part in supplying drilling equipment and materials, such as frac sand and tubular steel to these operations. Texas has oil and gas fields and oil refineries affected by the growth of fracking. Frac sand and drilling supplies shipped by rail are also transported through Texas, both to sites within the state and in neighboring states, e.g., Oklahoma, Louisiana, and so on. Rail service has also made production possible in areas without or with inadequate pipeline capacity and allows for flexibility in delivery. Since 2010, this sustained increase (and sometimes surges) to traffic may have impacts that are significant to the national and Texas railroad networks.

Combined with the cost of complying with emissions regulations, coal-fired electric generating plants are increasingly becoming uncompetitive with natural gas fired plants. Retirements of coal-fired plants nationwide are increasing and accelerating – a trend which has implications for coal transport by rail and would be traditionally significant for Texas, as large volumes of coal produced within Texas travels over the state’s rail network enroute to markets in the U.S. South or terminates in Texas itself. Less direct effects on the Texan economy and rail network may be relatively greater manufacturing and related shipping activity, as lower electricity prices may make Texas even more competitive as a manufacturing location, including products for export.

2.3.1.4 Other Needs and Opportunities for Texas’ Freight Railroads

This section identifies and describes generally some needs and opportunities for freight railroads located in Texas. Proposed freight rail improvements and potential investments aimed at targeting freight rail needs and opportunities and a recommended approach for finding potential solutions is discussed in Chapters 4 and 5 of the Texas Rail Plan.

Upgrades to Accommodate Heavier Railcars

Railroads in Texas have made considerable progress in the last two decades to upgrade track and bridges to accommodate heavier railcars with maximum allowable gross weights of 286,000 pounds

[96] U.S. Energy Information Administration, *Texas – State Energy Profile Analysis*, https://www.eia.gov/state/analysis.php?sid=TX
[97] U.S. Energy Information Administration, *Texas – State Energy Profile Overview*, https://www.eia.gov/state/?sid=TX
[98] U.S. Energy Information Administration, *Texas – State Energy Profile Analysis*, https://www.eia.gov/state/analysis.php?sid=TX
[99] U.S. Energy Information Administration, *Texas – State Energy Profile Analysis*, https://www.eia.gov/state/analysis.php?sid=TX
[100] U.S. Energy Information Administration, *Texas – State Energy Profile Analysis*, https://www.eia.gov/state/analysis.php?sid=TX

(lbs.). Railcars with a maximum gross weight of 286,000 lbs. are becoming an industry standard for railroad transportation. During the coordination for the Texas Rail Plan, some of the Class III railroads in Texas identified the need to upgrade track and bridges to increase capacity and, in some instances, also to accommodate 286,000 lb. railcar loadings on some or all segments of their rail networks. The ability to handle maximum carloads of 286,000 lbs. is of importance to 1) railroads to increase operational efficiencies, and 2) to railroad shippers to maintain local rail access and the ability to compete in the marketplace. Railroad shippers on short lines that can only accommodate railcars with a maximum allowable gross weight of 263,000 lbs. or 268,000 lbs. must compete with firms served by Class I railroads whose lines have the capacity for 286,000 lb. cars. These "heavy" railroad-served shippers can load more cargo per car and thus realize a transportation cost savings relative to short line railroad shippers whose serving railroad cannot handle the heavier car weights.

Some segments of the Class I and networks in Texas with lighter traffic densities are also unable to accommodate 286,000 lb. cars at present.

Enhanced Railroad Access

One potential solution for shippers in Texas to remain competitive in the regional, domestic, and global marketplaces and to spur economic development, employment, and income in the state, is enhanced access to the Texas railroad network. Enhanced railroad access could be provided, for example, through the rehabilitation of existing railroad branch lines; development of improved or new industrial spurs; and optimization of existing access to transload facilities in Texas and construction of additional transload facilities and intermodal facilities to meet demand for multimodal transportation and to address numerous transportation challenges.

Reduction of Network Challenges

Network challenges exist throughout the railroad network in Texas, which limits railroad operating capacity, efficiency, velocity, and safety, in addition to overall freight mobility. Typical network challenges in the state include insufficient capacity on main tracks and in terminals and rail yards to accommodate present and future train volumes, interchange of traffic between railroads, and provision of rail switching; operating delays at railroad junctions and at movable bridge spans over principal navigable waterways; bridges that limit vertical and horizontal clearances and restrict the types of rail car equipment that can be accommodated; and potential effects on infrastructure and service for rail lines located in a major floodplain. Table 2-59 presents Texas rail network challenges and identifies which Texas Freight Mobility Plan goal the project is most suited to, such as safety, economic competitiveness, asset preservation and utilization, mobility and reliability, multimodal connectivity, stewardship, customer service, and sustainable funding.[101] Additional network challenges identified by the state's Class III railroads during the 2018 railroad coordination conducted for the Texas Rail Plan are identified in Appendix A of this chapter.

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[101] TxDOT, *2017 Texas Freight Mobility Plan*, http://ftp.dot.state.tx.us/pub/txdot/move-texas-freight/studies/freight-mobility/2017/plan.pdf

Table 2-59: Texas Rail Network Challenges Inventory, 2018

Railroad/ Sponsor	Location	Project Name	Description	Freight Mobility Category
SORR	Presidio Bridge	N/A	Reconstruction of international rail bridge (privately funded)	Asset Preservation/ Economic Competitiveness
SORR	Presidio County	N/A	Rehabilitation of the South Orient (FASTLANE Grant)	Asset Preservation
SORR	Upton County Line RRMP 843.6 to Crockett County Line RRMP 847.3	N/A	Rehabilitation of South Orient RR To 25 mph Track Speeds	Asset Preservation
SORR	Reagan County Line to Crane County Line	N/A	Infrastructure Rehab to Replace Jointed Rail, Replace Ties, Ballast, Reconstruct Grade	Asset Preservation
SORR	Irion County	N/A	Infrastructure Rehab to Replace Jointed Rail, Replace Ties	Asset Preservation
SORR	Irion County	N/A	Infrastructure Rehab to Replace Rail, Replace Ties, Ballast	Asset Preservation
SORR	Crane County Line to Pecos County Line RRMP 847.4	N/A	Rehabilitation of South Orient RR to FRA Class 2 Track Speeds	Asset Preservation
BNSF	Amarillo	Farmers Avenue Grade Separation	BNSF Hereford Subdivision, MP 558.36. Road crosses four tracks. (DOT # 014695D)	Safety/Mobility and Reliability
BNSF, UP	Baytown	FM 565 Grade Separation	Grade separation to support industrial growth in Chambers County	Safety/Mobility and Reliability
UP	Baytown	1405 Grade Separation	Grade separation to support industrial growth in Chambers County	Safety/Mobility and Reliability
BNSF, KCS, UP	Beaumont	Neches River Rail Crossing	Construction of a second bridge for a rail crossing of the Neches River at Beaumont: The existing single track lift bridge is a significant capacity constraint on a major intercontinental rail line between Los Angeles and New Orleans. More than 30 trains per day cross the existing bridge at reduced speeds and are often delayed by trains entering/leaving the Port of Beaumont, which is adjacent to the existing lift bridge, and by watercraft moving along the Neches, requiring the bridge to lift.	Mobility and Reliability
UP	Corpus Christi	Sinton Grade Crossing Relief	Create northbound wye connection toward Houston from Gregory. This is to support the Port of Corpus Christi's expansion out of LaQuinta	Mobility and Reliability/ Multimodal Connectivity/ Economic Competitiveness
BNSF	Booth	Royal Lakes Blvd Grade Separation	BNSF Galveston Subdivision, MP 55.87. Road crosses main and siding track and experiences regular switching operations to serve Houston Power & Light Plant (DOT # 022673Y)	Safety/Mobility and Reliability
BNSF, UP	Houston	Griggs & Long Grade Separation	BNSF Mykawa Subdivision, MP 19.35. Grade separate crossings at Griggs and Long. (DOT # 023214G, 023215N); UP Crossings (DOT#s 755628E, 755627X)	Safety/Mobility and Reliability

Railroad/ Sponsor	Location	Project Name	Description	Freight Mobility Category
BNSF, UP	Houston	US-90 Grade Separation at Dayton Yard	Construct grade separation at US-90 and relocate rail connection at north end of Dayton /Robinson Yard	Safety/Mobility and Reliability
BNSF, UP	Houston	West Belt Grade Separation (Phase 2)	Construct grade separation at Lyons Avenue DOT 287994N and close 3 at-grade crossings on West Street DOT 758284D, 748688W	Safety/Mobility and Reliability
BNSF, KCS, UP, PTRA	Houston	Second Main Line Construction (Houston)	Construction of a second main line in Houston from the GH&H Junction to Strang on the Port Terminal Railway Association track: This would eliminate more than 2.5 hours of train delay daily, which is caused by this single track constraint that connects to double track in both directions. Supports port and chemical industry expansion.	Mobility and Reliability
BNSF, KCS, UP	Houston	Houston Sub Second Main Line Construction	Second Main Track, Dawes to Dayton, Texas (BNSF-UP 50/50 Line)	Mobility and Reliability
UP, KCS	Houston	Houston Sub Rationalization from Dawes to West Jct.	Rail consolidation through downtown Houston, Dawes to Spence Jct (UP rail line with KCS trackage rights)	Mobility and Reliability
UP	El Paso	I-10 Expansion and Lordburg Sub Rationalization	Future Interstate 10 expansion may require UP right-of-way that requires track relocation	Multimodal Connectivity
BNSF	Houston	Alameda- Genoa Road Grade Separation	BNSF Mykawa Subdivision, MP 14.06. Crosses three tracks at end of BNSF yard (DOT #023207W)	Safety/Mobility and Reliability
BNSF	Dallas	DART - Double Track and CTC Madill Subdivision, Phase I	Construct minimum of two-main track and centralized traffic control (CTC) system from Irving to Carrollton, including improvements to Carrollton interlocking	Mobility and Reliability
BNSF	Dallas	DART - Double Track and CTC Madill Subdivision, Phase II	Construct minimum of two-main track and centralized traffic control (CTC) system from Carrollton to Frisco, Texas	Mobility and Reliability
UP	Denton	Denton Maintenance Of Way Rail Relocation	Relocation of the UP Maintenance-of-Way track and stub track in Downtown Denton, Texas	Mobility and Reliability
UP	Dallas	Linfield Road Crossing Closure	Close the at-grade crossing at Linfield Road and build a pedestrian overpass	Safety
UP	Dallas	Prairie Creek Road Grade Separation and Crossing Closure	Grade separation of Prairie Creek Road located on the UP Main line and crossing closure at Sam Houston Road	Safety/Mobility and Reliability
BNSF	Dallas	Trinity Mills Grade Separation	Trinity Mills Road Grade Separation (Madill Subdivision)	Safety/Mobility and Reliability
BNSF, TRE, UP	DFW	Double Track Rail on TRE	Construct double-main track from Tower 55 to Dallas Union Station to enhance passenger operations. Project also includes evaluation of operational protocols to maximize freight	Mobility and Reliability/ Multimodal Connectivity

Railroad/ Sponsor	Location	Project Name	Description	Freight Mobility Category
			movement across the Dallas-Fort Worth Metroplex.	
BNSF, UP, TRE	DFW	TRE - Rehabilitate and Double Track West Fork Trinity River Bridge	Rehabilitate existing bridge and add second bridge and approximately 0.7 miles of and main line track.	Asset Preservation/ Mobility and Reliability
UP	Ennis	Ennis Ave Grade Separation	Grade separation of Ennis Ave and UP (DOT # 765532S)	Safety/Mobility and Reliability
UP	Ennis	Ennis Sealed Corridor	Enhance UP Bridges at Belknap (DOT # 765536U) and Baylor Street (DOT # 765535M), and close the at-grade crossing at Milam Road (DOT # 765528C), Brown Road (DOT # 765531K), Tyler Street (DOT # 765540J), and Baylor Street.	Safety/Mobility and Reliability/Asset Preservation
BNSF	Fort Worth	Blue Mound Road Grade Separation	BNSF Wichita Falls Subdivision, MP 7.6. Blue Mound Road Grade Separation (DOT # 274640G)	Safety/Mobility and Reliability
BNSF, UP	Fort Worth	Downtown Ft Worth Sealed Corridor	Identify key rail infrastructure upgrades in the Tower 55 area of downtown Fort Worth to create a sealed corridor for enhanced freight and passenger mobility	Asset Preservation/ Mobility and Reliability
BNSF	Fort Worth	Hemphill Street Grade Separation	BNSF Fort Worth Subdivision, MP 343.5. Hemphill Street Grade Separation provides opportunity to extend Tower 55 tracks to Birds sidings. (DOT #020486J)	Safety/Mobility and Reliability
BNSF	Fort Worth	Seminary Drive Grade Separation	BNSF Fort Worth Subdivision, MP 341.1. Seminary Drive Grade Separation (DOT #020478S)	Safety/Mobility and Reliability
BNSF, UP	Fort Worth	Sycamore School Road Grade Separation	BNSF Fort Worth Subdivision, MP 337.6. Sycamore School Road Grade Separation (DOT # 020469T)	Safety/Mobility and Reliability
KCS, UP	Laredo	Laredo Grade Separations	Relieve congestion in downtown Laredo caused by the 14 at-grade crossings along the existing Texas-Mexico approach to the existing Laredo rail bridge	Mobility and Reliability/Safety
KCS, UP	Laredo	Laredo Bridge double track	Double track bridge at Laredo to improve rail traffic flows to/from Mexico.	Mobility and Reliability
UP	Laredo	2nd ML from Laredo Bridge to Pt Laredo	Second main track from Laredo rail bridge to Port Laredo to facilitate additional movements to and from the border	Mobility and Reliability
UP	San Antonio	Grade Separation	Grade separate Frio City Road/Zarzamora Street intersection in manner that allows for the closure of 3 Tier 1s b/w, Tower 105 and SoSan yard (i.e., Drake, Cumberland, and Harriman Pl.)	Safety/Mobility and Reliability
UP	San Antonio	Grade separation	Grade separate Sunset Road, Jones Maltsberger, and Basse Road on The Austin Subdivision Main Track #1	Safety/Mobility and Reliability
UP	San Antonio	Grade Separation	Grade separate Rittiman and Walzem Road on the Glidden Subdivision to create an est. 10,000' siding just east of Kirby yard	Safety/Mobility and Reliability
BNSF	Wichita Falls	7th Street Grade Separation	BNSF Wichita Falls Subdivision, MP 114.1. Road crosses 9 tracks in middle of BNSF yard. (DOT # 274983N)	Safety/Mobility and Reliability

Railroad/ Sponsor	Location	Project Name	Description	Freight Mobility Category
BNSF	Corsicana	Grade Crossing Rationalization	Consider grade separations and closures to mitigate 15 crossings in approximately 2 miles.	Safety/Mobility and Reliability
BNSF, UP	Eagle Pass	Eagle Pass Rail Improvements	Eagle Pass Rail Improvements	Asset Preservation/ Mobility and Reliability
BNSF	Farwell	US-70 / US-84 Grade Separation	Potential improvements could include: double-tracking segments between BNSF and UP sidings and between UP siding and tracks at Eagle Pass in the vicinity of the bridge to Piedras Negras, an intermodal facility with laydown pad for container movements, and improvements to assist CBP in conducting border security measures.	Safety/Mobility and Reliability
UP	Hearne	Hearne Area Crossing Mitigation	BNSF Hereford Subdivision, MP 757.27. Grade crossing at Transcon double main and third main line from Slaton Subdivision. 60% of project is in Texas and 40% in New Mexico (DOT # 014787R)	Asset Preservation/ Safety
UP	Odem	Wye connection on N. East quadrant	Grade crossing closures or separations to improve vehicular fluidity and improve safety of the Hearne Terminal area.	Safety/Mobility and Reliability
BNSF	Sherman	Grade Crossing Rationalization	Consider grade separations and closures to mitigate 18 crossings in approximately 5 miles.	Safety/Mobility and Reliability
BNSF	Vernon	US 283 Grade Separation	BNSF Red River Valley Subdivision, MP 163.35. Road crosses three tracks. (DOT #274661A)	Safety/Mobility and Reliability
BSR	Big Spring	East Leg of the Wye and Interchange Tracks	Required unit-train interchange between UP and BSR capable of progressive moves to/from the east Additional interchange is required to handle the demand for increased rail business into the City of Big Spring, Texas-owned industrial park	Mobility and Reliability/ Multimodal Connectivity/ Economic Competitiveness
BSR	Big Spring	Replace Worn 90 Pound Rail	Replace inadequate 90 lb./yd. rail produced in the 1920's with new 112 lb./yd. rail for 1.7 miles of main lead track	Asset Preservation/ Safety
CTXR	Brady to Lometa	286k Upgrade	Upgrades all bridges to 286k	Asset Preservation/ Safety/Multimodal Connectivity/Economic Competitiveness
CTXR	Brady to Lometa	Priority 2 Bridge Repairs	Makes repairs to priority defects on bridges	Asset Preservation/ Safety
CTXR	Brady to Lometa	System Crossing Replacement	Replaces highway-rail grade crossing surface	Asset Preservation/ Safety
CTXR	Brady to Lometa	Radio Towers	Installs communications for operational safety	Safety/Mobility and Reliability
CTXR	Brady to Lometa	Class 2 Tie and Surface	Upgrades track from FRA Class 1 to Class 2 track status	Asset Preservation/ Safety/Mobility and Reliability
CTXR	Brady to Lometa	Class 1 Tie and Surface	Upgrades track from FRA Excepted Track to Class 1 track status	Asset Preservation/ Safety/Mobility and Reliability

Railroad/ Sponsor	Location	Project Name	Description	Freight Mobility Category
BRG	Brownsville	Priority 2 Repairs Br Hwy 48, 2.7 & 5.90	Makes repairs to priority defects on bridges	Asset Preservation/ Safety
BRG	Brownsville	System Crossing Replacement	Replaces highway-rail grade crossing surface	Asset Preservation/ Safety
BRG	Brownsville	Unit Train Siding Palo Alto	Constructs Unit Train Siding	Multimodal Connectivity
BRG	Brownsville	Upgrade Rail	Upgrades rail and replaces turnouts	Asset Preservation
TNW	Etter	TXNW /BNSF Interchange	Construction of 11,000 feet of track	Multimodal Connectivity
TNW	Brownsville	TXGN/Union Pacific interchange	Construction of 8,000 feet of track	Multimodal Connectivity
SJTC	Brownsville	Provide rail infrastructure to accommodate new traffic and new connection with UP & BNSF	New interchange tracks with two Class I railroads, public rail team, and storage tracks	Multimodal Connectivity
DGNO	Brownsville	McKinney Sub Rehabilitation	Raise rail line capacity to handle 286k cars and increase velocity	Asset Preservation/ Mobility and Reliability/Multimodal Connectivity/Economic Competitiveness
RVSC	Mission	Mission Wye Project	Build an East Leg connection to the Mission Railpark. Would include the installation of 2 turnouts, 858' of Track, and realignment of 1'100' of Track.	Mobility and Reliability/Multimodal Connectivity
PNR	Panhandle to Borger	Priority 2 Bridge Repairs	Makes repairs to priority defects on bridges	Asset Preservation/ Safety
PNR	Panhandle to Borger	System Crossing Replacement	Replaces priority at grade crossing surfaces	Asset Preservation/ Safety
PNR	Panhandle to Borger	Borger Yard - REMOVE 75# RAIL	Relays 75 lb./yd. rail with rail removed from other locations in yard	Asset Preservation
PNR	Panhandle to Borger	West leg Rail Relay and Panhandle Wye	Relays Rail on West Leg and Panhandle Wye	Asset Preservation
PNR	Panhandle to Borger	Mainline Tie and Surface (McBride and Abell Yards included)	Installs cross ties and surfaces railroad	Asset Preservation
TXPF	Pecos and Brewster Counties	South Orient Rail Line (SORR) Rehab	Rehabilitation of the SORR in Pecos and Brewster Counties to increase capacity and train safety to Fort Stockton and improve connectivity to Alpine which will also open the interchange with UP at Alpine: This section of the rail line includes over 75 miles of rail manufactured in 1912 that is substandard for today's loadings. Rehabilitation is essential to enable shipments to/from the border at Presidio and to provide interchange capability with UP and foster competition for	Asset Preservation/ Mobility and Reliability/Multimodal Connectivity

Railroad/ Sponsor	Location	Project Name	Description	Freight Mobility Category
			SORR freight between BNSF and UP. This would also allow crude oil shipments west to California across UP's Sunset Route.	
Blacklands Railroad	Greenville to Mount Pleasant	Northeast Texas Rural Rail Transportation District Rail Line Rehab	Rehabilitation of the Northeast Texas Rural Rail Transportation District (NETEX) rail line from Greenville to Mount Pleasant (66 miles): TxDOT owns the 31 miles of the NETEX right-of-way and has a security interest in the infrastructure from a Grant Funding Agreement in 1996. Track speeds on the NETEX line are limited to 10 mph due to defective crossties and bridge deficiencies. The rail line must be rehabilitated to continue providing service to existing customers and to attract new business to the line and the region. TxDOT would seek additional ownership in the line and infrastructure as a condition to rehabilitating the line.	Asset Preservation/ Mobility and Reliability/ Multimodal Connectivity
Port Access Study (Rail)	Beaumont	N/A	Low Line Track; Rail-to-rail grade separation on the low line track	Mobility and Reliability
Port Access Study (Rail)	Beaumont	N/A	On-port Rail; Expansion of on-port rail to accommodate two additional unit trains-includes 13,000+ feet of new track	Mobility and Reliability/Multimodal Connectivity
Texas Ports 2015-2016 Capital Program	Beaumont	N/A	Siding Track parallel to UP main line to allow oil trains to get off the main line	Mobility and Reliability
Port Access Study (Rail)	Brownsville	N/A	Brownsville Subdivision; New siding near Olmito, Texas at Palo Alto Yard next to FM 511 (110 car capacity)	Mobility and Reliability/Multimodal Connectivity
Port Access Study (Rail)	Calhoun	N/A	Rail addition; Add working and storage tracks to accommodate crude growth	Multimodal Connectivity
Port Access Study (Rail)	Corpus Christi	N/A	Bulk Terminal; Bulk Liquids loading terminal to support water-to-rail intermodal movement of petroleum liquids	Multimodal Connectivity/Economic Competitiveness
Port Access Study (Rail)	Corpus Christi	N/A	Ship Channel; Extend Double track From Bulk Terminal to East end of the inner harbor	Mobility and Reliability/Multimodal Connectivity
Port Access Study (Rail)	Freeport	N/A	Velasco; Extend rail to provide on-dock rail service to Velasco Terminal 4 tracks 2000' ft. each	Multimodal Connectivity
Port Access Study (Rail)	Galveston	N/A	Port of Galveston; Restore on-dock rail to slips 37/38	Multimodal Connectivity
Port Access Study (Rail)	Galveston	N/A	Pelican Island Bridge; Construct new rail bridge to serve future terminal	Mobility and Reliability/Multimodal Connectivity/Economic Competitiveness
Port of Harlingen	Harlingen	N/A	Construction of new rail spur	Mobility and Reliability
Port of Houston	Houston	N/A	Broadway Street: Convert a 0.28-mile (1,478-foot) segment of single-track railway to double-track railway near the Houston Ship Channel (HSC) in Houston, Texas.	Mobility and Reliability

Railroad/ Sponsor	Location	Project Name	Description	Freight Mobility Category
Port of Houston	Houston	N/A	SH 146 and Old SH 146: Construction of approximately 6,500 linear feet of new single track rail line from near the intersection of the existing UP right-of-way at Red Bluff Road to the proposed warehouse development. The project will include three at-grade crossings with signalization at SH 146 and Old SH 146, plus modification to switched and turnouts for tying into the existing mainline, and for future expansion. The project may also include approximately 1,200 linear feet of soundwall.	Safety/Mobility and Reliability/Stewardship
Port of Houston	Houston	N/A	Port Terminal Railroad Association (PTRA) Track Highway 225 to Red Bluff Road): Construct second track allowing PTRA access from 225 to Red Bluff Road to connect with crossing at Red Bluff Road being constructed in 2015, connection to future Bayport Container Terminal.	Mobility and Reliability/Multimodal Connectivity/Economic Competitiveness
Port of Houston	Houston	N/A	SH 146 and Red Bluff Area: Constructing double track and a run-around track from Red Bluff Road/SH 146 road crossing to future container terminal development.	Mobility and Reliability/Multimodal Connectivity/Economic Competitiveness
Port of Port Arthur	Port Arthur	N/A	Rail extension: Construct approximately 4,000 ft. of rail, which includes tie-in to KCS and added spur to the existing port track. Project includes track extension and relocated switch, stabilizing 6 acres of laydown yard, which is capped with RCC or a flexible base.	Mobility and Reliability
Texas Ports 2017-2018 Capital Program	Port Arthur	N/A	Rail reliever improvements	Asset Preservation
TxDOT Rail Division/KCS	Port Arthur	N/A	Grade separation of Rev. Doctor Ransom Howard Street (DOT # 329559B) in Port Arthur from KCS main line and yard access	Safety/Mobility and Reliability
Port Access Study (Rail)	Victoria	N/A	Bloomington (UP); Replace rail lift bridge over the channel at Bloomington (UP/Port)	Mobility and Reliability

Source: TxDOT, Texas Freight Mobility Plan (2017)

2.3.1.5 Port-Rail Needs and Opportunities

Much of the freight carried by rail comes into Texas through ports-of-entry (POEs), such as seaports. As rail is often utilized for shipment of bulk goods and is not typically a suitable, direct-to-consumer mode of transport, the ability of rail to transport goods and commodities from these locations to intermodal terminals, transload terminals, warehouse and distribution centers, and dock facilities are integral to the supply chain.

As the port infrastructure in the state continues to grow and expand, so must the associated rail infrastructure. Each of the major freight seaports in Texas is served by at least one Class I railroad, as shown in Table 2-60. For a list of potential freight rail improvement projects associated with freight rail-ports, see Section 5.8 in Chapter 5.

Table 2-60: Texas Ports and Connecting Railroads

Port	Connecting Railroads
Beaumont	KCS, UP, BNSF
Brownsville	Brownsville & Rio Grande International switching with UP, BNSF, KCS
Corpus Christi	KCS, UP, BNSF
Freeport	UP
Galveston	UP, BNSF
Houston	UP, BNSF, KCS (via trackage rights)
Orange	UP, BNSF
Port Arthur	KCS, UP, BNSF (via trackage rights and switching)
Port Lavaca-Point Comfort	Port Lavaca via UP, Point Comfort via Point Comfort & Northern
Texas City	UP, BNSF
Victoria	UP

Source: TxDOT

The opportunity for enhanced multimodal transportation opportunities could potentially be met through investments targeted to promote interconnectivity and capacity. Such investment could include the construction or rehabilitation of existing rail connections between principal railroad lines and seaport properties and additional sidings, spurs, or yard tracks for switching, staging, and storing railcars at or near port facilities. The addition or enhancement of bulk transload facilities (both dry and liquid) is also noteworthy.

2.3.1.6 Cross-Border Rail Connections Needs and Opportunities

Efficient customs processing at border entry ports is critical to maintaining the flow of goods at rail crossings. Texas is home to five of the eight U.S. rail border crossings with Mexico (Table 2-61), located in Brownsville (B&M Bridge), Laredo (Texas Mexican Railway International Bridge), Eagle Pass (Camino Real International Bridge), El Paso (Bridge of the Americas, which is two separate structures), and Presidio (Presidio-Ojinaga International Bridge).

Table 2-61: Texas Land Ports of Entry with Rail Connections

Railroad	El Paso	Eagle Pass	Laredo	Brownsville	Presidio
BNSF	X	X*		X*	
KCS			X		
UP	X	X	X	X	
TXPF					X**

*Note: *via agreement with UP; ** Not currently active*

Source: TxDOT

TxDOT owns the South Orient Rail Line (SORR), which once connected the U.S. to Mexico via the Presidio-Ojinaga international rail bridge in Presidio, Texas. Portions of the railroad bridge were severely damaged by fire in 2008 and 2009 leading to the closure of the railroad-border crossing. SORR is leased to Texas Pacifico Transportation Ltd. (TXPF), which operates the line and is responsible for the bridge's reconstruction. The short line is funding the cost of the project, which is scheduled to be completed by September 2019.[102]

In 2017, Texas handled 93 percent of the 499,965 loaded containers crossing the U.S.-Mexico border.[103] With the exception of Presidio, the rail border crossings are maintained by the private Class I railroads and provide important links for a wide variety of commodities. Laredo is the leading land POE for rail freight in terms of total trains (37.7 percent of the U.S.-Mexico total) and loaded rail containers (47.8 percent of the U.S.-Mexico total).[104]

Freight rail crossings at the border are also a focus for future infrastructure improvements. Existing border rail crossings should continue to be improved (e.g., enhanced staging areas, grade separations, double-tracking, etc.) and potential new rail crossings at the border will be studied and possibly implemented.

2.3.2 Passenger Rail Needs and Opportunities

This section identifies and describes potential passenger rail needs and opportunities in Texas. Specific passenger rail improvement initiatives underway and potential future investments or projects that could address Texas's passenger rail objectives, needs, and opportunities will be discussed in Chapter 3.

2.3.2.1 The Market – Population and Economic Growth

The state has strong historic population growth, and is expected to remain the second most populous state in the nation. Population is expected to continue to grow, reaching 45 million by 2040, an increase of 17 million people from 2014. Seventy percent of the population in 2040 will live in the four metropolitan areas that constitute the Texas Triangle (Houston, Dallas-Fort Worth, Austin, and San Antonio). These four metropolitan areas already rank among the top 20 most congested cities in the United States, when measured in annual person-hours of delay, according to the TTP 2040. Strong economic growth, especially international trade, is also expected to continue, and Texas will continue to outpace national growth rates. The growth in economic activity means that transportation demand will increase faster than the rate of population increase. However, Texas's current infrastructure offers few viable alternatives to auto/highway travel, which means this growth will translate into dramatic increases in vehicle miles traveled (VMT). Despite an increase in highway capacity by more than 1,000 lane miles over the last decade, congestion is still a major issue in and between the state's urban areas. Fueled by population and economic growth, and by longer trips as a result of dispersed development, VMT is expected to increase more than 60 percent between

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[102] Progressive Railroading, *Texas DOT Breaks Ground On Presidio Rail Bridge Reconstruction*, https://www.progressiverailroading.com/short_lines_regionals/news/Texas-DOT-breaks-ground-on-Presidio-rail-bridge-reconstruction--55951

[103] Bureau of Transportation Statistics, *Border Crossing/Entry Data*, https://www.bts.gov/content/border-crossingentry-data. Selections: Year: 2017, Border: U.S.-Mexico Border, State: All, Measure: All, and Port: All.

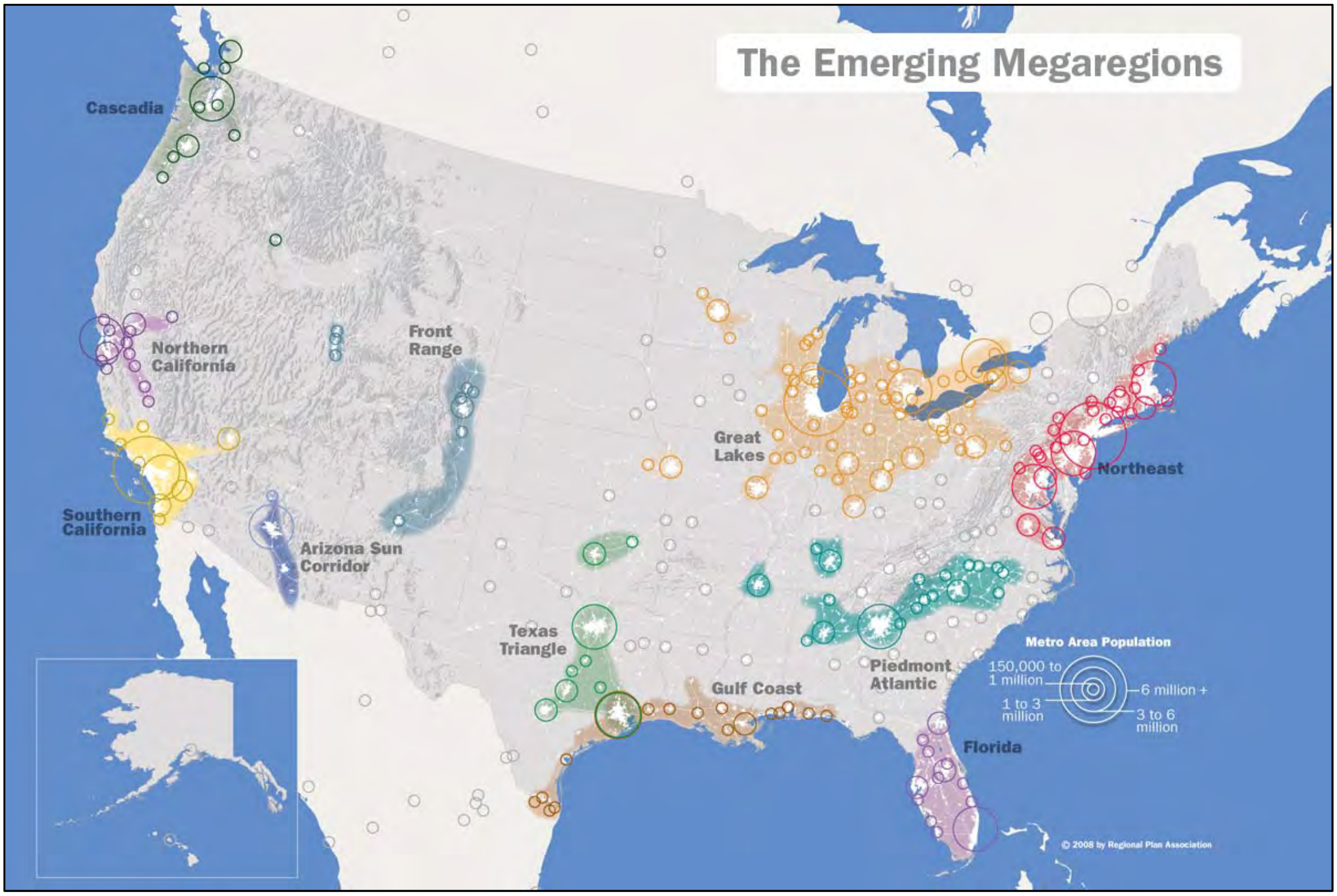
[104] Bureau of Transportation Statistics, *Border Crossing/Entry Data*, https://www.bts.gov/content/border-crossingentry-data. Selections: Year: 2017, Border: U.S.-Mexico Border, State: All, Measure: All, and Port: All.

2012 and 2040. This growth, almost totally focused in and around major metropolitan areas, indicates a need to consider investment in higher capacity alternatives.

Much of this increased travel demand is expected to be in daily commute to work trips and in short-distance trips (less than 600 miles). Texas contains two emerging megaregions, the Texas Triangle and Gulf Coast. A megaregion is a network of metropolitan areas linked by geography, settlement patterns, shared environment, infrastructure systems, economics and trade, shared culture, and history. The Texas Triangle megaregion stretches from Dallas/Fort Worth on the north to Houston and San Antonio on the south. The Gulf Coast megaregion stretches from Brownsville, Texas to Pensacola, Florida. These megaregions are shown in Figure 2-82. Three corridors connecting the cities of Houston, San Antonio and Dallas/Fort Worth link the Texas Triangle megaregion. The Houston – Baton Rouge – New Orleans corridor transits the western end of the Gulf Coast corridor. According to the 2006 *America 2050* report, most of the nation's population and economic expansion is expected to occur in the emerging megaregions. This increased traffic will strain existing infrastructure beyond capacity and require additional capacity and travel options to avoid gridlock.

Additional investment in lane miles and further "green field" development raises questions about the diminishing value of that strategy. At the point where new lane miles and new development is 60 to 70 miles from the city and 150 miles from the opposite side of the metro area, routine trips to a medical specialist, for example, take on the characteristics of intercity trips. And the longer trips generate more VMTs and additional traffic.

Figure 2-82: Megaregions of the United States in 2050



Source: America 2050, Regional Plan Association

2.3.2.2 Transit-Oriented Development

One of the challenges to developing intercity rail networks in Texas is the low density land use patterns, which generate dispersed travel origins and destinations. Working to create more efficient development patterns would provide a strong foundation for an expanded high-volume passenger transportation network. Given the stresses of long commutes many cities and private builders have embraced the concepts of "New Urbanism" and "Transit Oriented Development," which can generally be described as follows:

- *"New urbanism" or traditional neighborhood development:* Refers to creating pedestrian-friendly walkable neighborhoods radiating away from the train station on an interconnected street grid that includes a mix of development (shops, offices, housing, etc.).
- *Transit-oriented development (TOD):* Refers to higher density, mixed-use, compact development (generally in major cities) that is oriented around rail/transit stations.

The focus of these developments can be city centers, older suburbs, and new town developments.

The resulting land use resembles a traditional downtown with mixed-use development featuring a central core of denser development (offices, retail, multi-family housing), radiating out to lower density development with an integrated mobility system and a more pedestrian-friendly environment.

Passenger rail stations can provide major opportunities for this focused growth, especially in urban areas or new towns. These stations can function as local connection points for other feeder modes and create transportation hubs for the community. This pedestrian-friendly development pattern enables a higher number of trips to be made by transit and walking, reducing fuel use and air pollution.

Higher density, walkable cityscapes with improved transit links serve to greatly benefit passenger rail ridership and make expanded rail networks more feasible.

2.3.2.3 Transportation Trends among the Millennial Generation and Baby Boomers

Several recent studies indicate a substantial change is occurring in transportation and lifestyle choices prompted by the Millennial Generation (those born between 1983 and 2000 – today's 19 through 35 year olds). Recent studies indicate that in the past decade, Millennials are getting their driver's licenses at a much slower pace than previous generations. Many are forgoing a license altogether – in 2011 only 67 percent of 16 to 24 year olds held a driver's license compared to a high of almost 85 percent in 1983. Among Millennials holding driver's licenses, average vehicle miles driven have dropped by 23 percent.

Researchers are not clear as to why this change is occurring; it may be the result of several factors:

- The cost of driving has increased, both from rising gasoline prices but also from rising insurance rates. Most consumers assume that the recent reduction in gasoline prices is temporary;
- Between 1996 and 2006 states enacted tougher driver's license requirements with additional behind-the-wheel training as well as restricted first-year driving requirements;
- Residual effects from the economic downturn of the late 2000s, along with fewer jobs and lower paying jobs for young people are certainly major factors, although the trend seems to be continuing even as the economy has rebounded;
- Widespread electronic communication is making it easier to go "car-free." Also, socializing electronically allows the new generation to claim its own new lifestyle distinct from their parents;
- Environmental concerns, with Millennials making an effort to reduce the intensity of their carbon emissions;
- Many of the Millennial Generation are choosing to live in transit-oriented neighborhoods where they can walk to their destinations. Between 2001 and 2009 biking trips have increased 24 percent, walking trips are up 16 percent and transit passenger miles are up 40 percent among Millennials.

Seniors and retirees have always been a major market for intercity rail service. This is generally the result of their more flexible personal schedules and physical issues with driving long-distances and night driving. The impact of this market can be seen in the demographic overview of current Amtrak rail routes outlined earlier in this chapter. The population growth represented by the increase in the large Baby Boomer retiree market should positively impact future demand for intercity rail services.

These trends and growth of these markets may be driving the recent record levels of intercity motor coach ridership, Amtrak ridership, and transit ridership. Continuation of these trends could represent a foundation for expanded passenger rail service.

2.3.2.4 Rail Capacity Needs for New Passenger Services

A critical factor in all the above considerations is the limited availability of rail line capacity on existing host freight and commuter rail lines to accommodate new or increased services. Rail line capacity is also an underlying cause of the slow average speeds and unreliable nature of current intercity passenger rail service. These slow average speeds, for the most part, are not caused by poor track conditions or restricted alignments, but are a reflection of a capacity constrained network with frequent meet delays and delays owing to train congestion, as freight rail volumes in Texas have continued to grow. Additional rail line capacity will need to be constructed, both for the growing rail freight market as well as for any additional passenger rail service. Heavily used highway-rail grade crossings will need to be replaced with roadway overpasses or underpasses to create more reliable and fluid rail and roadway networks and also enable railroad carriers to operate without the concern of blocking highway crossings.

2019 Texas Rail Plan

Chapter 3

Potential Passenger Rail Improvements and Investments

December 2019

TABLE OF CONTENTS

List of Tables

List of Figures

3.1 INTRODUCTION

This chapter describes ongoing, proposed, and potential initiatives to develop or expand high-speed rail, intercity passenger rail, and commuter rail services in the state. As discussed in Chapter 2, those services are categorized as follows:

- *High-speed rail* is defined as rail operating at speeds of 125 mph or above, with limited stops or no stops between cities, and operating on a grade-separated, dedicated right-of-way.
- *Intercity passenger rail* is defined as rail serving multiple cities on routes with longer distances (typically 100 miles or more) and more frequent stops, and operating on tracks that are part of the existing national railroad network at conventional passenger train speeds.
- *Commuter rail* is defined as rail primarily serving work commuters and local travelers between communities in an urban area or metropolitan region, on routes with frequent stops, and typically operating on tracks that are part of the existing national railroad network.

No high-speed rail services are currently in operation in Texas, but one project is proposed, as detailed in Section 3.4.

Intercity rail passenger service in Texas is provided by three Amtrak routes. One route, the *Heartland Flyer* between Fort Worth and Oklahoma, is a state-supported passenger train operated by Amtrak under contract to Texas and Oklahoma. Both states provide annual contributions to fund the operation of the single daily round-trip service, as required under the Passenger Rail Investment and Improvement Act (PRIIA) of 2008 for passenger trains on routes of 750 miles or less. The schedule is timed to allow for transfers at Fort Worth to Amtrak's *Texas Eagle* train in each direction. The other two Amtrak routes, the *Texas Eagle* and *Sunset Limited*, are part of Amtrak's long-distance service network. The *Texas Eagle* operates daily in each direction between Chicago, Illinois, and San Antonio, Texas, serving twelve stations in Texas. At San Antonio, the service connects to the *Sunset Limited* for continued service to Los Angeles, California. Amtrak's *Sunset Limited* operates three days per week in each direction between New Orleans, Louisiana, and Los Angeles, California, serving seven Texas stations. Section 3.2 discusses potential changes to existing intercity passenger rail services in Texas that have been studied or considered by Amtrak in recent years.

This chapter has been prepared in accordance with FRA state rail plan guidance, as well as provisions in Texas Senate Bill (SB) 312 that require descriptions of existing and proposed passenger rail systems in Texas and information regarding the status of passenger rail systems under construction. As the 2019 Texas Rail Plan was being prepared, only one new passenger rail system had been proposed in Texas: the Dallas to Houston High-Speed Rail Project, also known as the Texas Bullet Train, a private-sector initiative undertaken by Texas Central Partners (Texas Central). Section 3.4 provides more information about this proposed project, including an analysis of potential interconnectivity difficulties, an analysis of short-term and long-term effects on state and local road connectivity, an analysis of the effect on statewide transportation planning, and ridership projections, in accordance with SB 312. Detailed ridership statistics for existing passenger rail systems were presented in Chapter 2. No proposed passenger rail systems are currently under construction in Texas.

Using federal funding made available between 2009 and 2011 by the High-Speed Intercity Passenger Rail (HSIPR) program, a discretionary grant program created by PRIIA, TxDOT has conducted passenger route alternative studies, service development plans, and related federal environmental requirements toward expanding intercity passenger rail operations in the state and region. These activities are discussed in Section 3.5. TxDOT anticipates that the future development and implementation of these concepts will be carried out by regional or local public agencies, with TxDOT providing support in an advisory capacity.

Three distinct commuter rail operations serve the Dallas-Fort Worth region, and a fourth commuter rail operation serves the city of Austin. Commuter rail services in Texas are operated by local transit authorities, on rail lines owned either by freight railroads or by transit agencies. However, other entities may also initiate and operate commuter rail. Section 3.7 summarizes planned improvements to existing commuter rail services in Texas, and Section 3.8 discusses potential new commuter rail services under consideration.

TxDOT's ability to directly impact specific passenger rail service levels, train frequencies, or train schedules is limited, as discussed in Chapter 2. TxDOT does not have a dedicated funding source for passenger rail projects. Funding for support of existing passenger rail services or for additional services must be approved by the Texas Legislature. Overall, however, TxDOT is committed to implementing rail-related state policies, and supports the development of modal transportation options.

3.2 POTENTIAL IMPROVEMENTS TO EXISTING AMTRAK SERVICE

Amtrak's current intercity passenger rail service in Texas is limited in its reach (number of routes), frequency (number of departures), and travel time (with trains on overnight schedules between Houston, San Antonio, and El Paso). Amtrak continues to conduct internal studies and work with TxDOT and surrounding states on ideas for possible improvements to its state-supported and long-distance services in Texas. This section identifies some potential concepts considered by Amtrak and TxDOT in recent years to improve existing Amtrak services in Texas.

3.2.1 Heartland Flyer Improvement Concepts

3.2.1.1 Potential Service Improvements

As the financial sponsors of Amtrak's *Heartland Flyer*, TxDOT and the Oklahoma Department of Transportation (ODOT) will work with Amtrak as needed on ways to improve the train's service offerings and cost-efficiency. Some of the recent initiatives identified by Amtrak as part of this effort have included:

1. Implementing a Second Round Trip at Minimal Cost: Amtrak is studying the feasibility of operating a second round trip between Fort Worth and Oklahoma City by creating a section of the long-distance *Texas Eagle* that could be combined and separated at Fort Worth. The *Heartland Flyer* train would then be rescheduled to provide an opposite-direction morning and evening trip with the new *Texas Eagle* Oklahoma City section, thus allowing for daily morning and evening departures from each end of the corridor.

2. **Lower Cost Equipment Options**: Amtrak is evaluating the possibility of furnishing lower-cost equipment for the *Heartland Flyer* service than the current bilevel Superliner equipment in use. Other ideas include potentially eliminating the cab-baggage car at the opposite end of the trainset from the locomotive, although this would require turning the trainset around between trips at both Fort Worth and Oklahoma City.
3. **Wi-Fi Installation**: The installation of wireless internet access onboard passenger rail cars has proven to be a popular and widely used customer service feature on Amtrak's routes in the northeast United States. Wi-Fi provides many passengers, not just business passengers, with the ability to be productive or just to be "connected." Installing Wi-Fi on board the *Heartland Flyer* could help enhance onboard amenities and improve the customer experience for travelers.

As part of its effort to study expanded service options, Amtrak operated an inspection train from Oklahoma City to Kansas City on June 9, 2017, during which officials discussed the feasibility of reinstating regularly scheduled passenger rail service between the two cities. (Amtrak had provided passenger rail service between Fort Worth, Oklahoma City, and Kansas City until 1979.) The inspection train operated on tracks owned by BNSF Railway, which also owns the tracks used by the current *Heartland Flyer* service between Fort Worth and Oklahoma City. The inspection train was a preliminary step in a feasibility assessment process to evaluate service options and costs for reinstating passenger rail service. Potential service options could include extending the current *Heartland Flyer* north from Oklahoma City to Newton, Kansas, where passengers would make a cross-platform connection to Amtrak's Chicago-Kansas City-Newton-Los Angeles *Southwest Chief*, or establishing a through-car operation at Newton, where passenger cars are uncoupled from the *Southwest Chief* and onto an extension of the *Heartland Flyer*.

Extending the *Heartland Flyer* northward to Newton would require at least 6 years to implement, including time for environmental reviews, preliminary engineering, construction, and commissioning, according to projections from a *Heartland Flyer* extension Service Development Plan (SDP) jointly prepared by the states of Oklahoma and Kansas in 2011. The study also estimated that developing a new daytime Kansas City-Oklahoma City-Fort Worth train, either separately or in conjunction with a *Heartland Flyer* extension to Newton, would require 7 years from the start of the environmental studies. These two service options were recommended in a previous feasibility study conducted by Amtrak in 2010[1] that was jointly paid for by Oklahoma and Kansas, with federal high-speed rail grant money providing half the funding. The ensuing SDP prepared by the states in 2011 analyzed the following alternatives:

- **Extending the *Heartland Flyer* from Oklahoma City to Newton, Kansas**: The study estimated that this service option, which would operate overnight north of Oklahoma City to connect with Amtrak's *Southwest Chief* in Newton, would require approximately $136.5 million in capital startup costs, and increase ridership on the *Heartland Flyer* by 111,300 annual passengers.

[1] Feasibility Report of Proposed Amtrak Service, Kansas City, Missouri – Oklahoma City, Oklahoma to Fort Worth, Texas, March 9, 2010

- Introducing a new daytime Fort Worth-Oklahoma City-Kansas City passenger train: The study estimated that this service option would require approximately $436.2 million in capital startup costs, and generate an annual ridership of 256,700.
- Extending the *Heartland Flyer* to Newton, and introducing a new daytime Fort Worth-Kansas City passenger train: The study estimated that this combination of services would require approximately $475.0 million in capital startup costs, and generate a combined annual ridership of 368,000.

To date, no funding has been committed to further develop any of these potential service expansions.

As noted in Chapter 2, under PRIIA, states are required to bear a higher percentage of operating costs for passenger rail routes of less than 750 miles, under a cost methodology that went into effect in FY2014 (October 2013). This change in federal law has resulted in a substantial increase in state payments for maintaining the operation of the *Heartland Flyer*. Some states have reduced their operating costs by purchasing their own passenger rail equipment, and having Amtrak crews operate state-owned locomotives and cars. (The requirements of the freight railroads over which the *Heartland Flyer* operates stipulate that Amtrak must provide the operating crew.) California and Washington are among the states that have purchased new intercity passenger rail equipment for state-supported corridor services, while North Carolina has had great success providing trains of used equipment rebuilt to its specifications. Washington and North Carolina also have arranged with private-sector contractors for rail equipment maintenance services, while Maine has reduced its costs for providing on-board food and beverages by contracting with the private sector for that service. The purchase of state-owned equipment would most likely be financed with capital grants, but states often have more flexibility in obtaining one-time grants for capital purchases or improvements compared to yearly or recurring requests for grants to support ongoing operations. The use of *Heartland Flyer* equipment owned by Oklahoma and Texas might also create some potential synergies with Trinity Railway Express (TRE), perhaps introducing the possibility of a *Heartland Flyer* extension to Dallas, perhaps using TRE crews, and potentially contracting with TRE for maintenance and servicing of the *Heartland Flyer* trainset at its Dallas maintenance facility. Under this type of arrangement, the *Heartland Flyer* could operate as a limited-stop express train between Fort Worth and Dallas, with a cross-honoring agreement for TRE ticketholders.

3.2.1.2 Concepts to Improve Connectivity

Improving the ease with which *Heartland Flyer* passengers can make connections with other services at Fort Worth has the potential to increase the train's attractiveness across a wider segment of the Dallas travel market. Currently, when passengers on Amtrak's website (www.amtrak.com) book a ticket for travel from Oklahoma and Gainesville to Dallas, the only connecting option at Fort Worth that appears is the connection with Amtrak's long-distance *Texas Eagle*. This connection has a long layover at the Fort Worth train station, especially for northbound travelers (4 hours) and introduces reliability issues, which can be especially burdensome for a short-distance trip. Passengers on the Amtrak website have no indication that they could shorten their wait time at Fort Worth by connecting to TRE commuter trains, which operate at least hourly in each direction Monday through Saturday.

One concept to improve connectivity would be to establish a through ticketing agreement between Amtrak and TRE, which would give *Heartland Flyer* travelers the option of connecting with frequent TRE trains at Fort Worth for travel to and from Dallas, and the ability to purchase a through ticket on Amtrak's website, under a revenue-sharing arrangement between Amtrak and TRE. For additional convenience, Amtrak or a contract service provider could offer a connecting motor coach service on Sundays, when TRE does not operate.

Another concept for further study would be to offer *Heartland Flyer* riders a transit transfer. Under this arrangement, conductors would provide transfers valid on participating transit agencies for travel beyond the Amtrak station. This program was pioneered on Amtrak's Capitol Corridor in Northern California, whose public funding authority secured agreements with eleven connecting transit agencies. These agencies have their logos and internet links on the Capitol Corridor website and the transit transfer is promoted in timetables as a marketing program, creating awareness among a new group of potential riders. California Department of Transportation's Division of Rail has helped to support initiatives such as Thruway ticketing programs and other ticket honoring agreements by facilitating negotiations between operators and assuming the revenue risk if there are problems with the implementation of the service.

3.2.2 Potential Sunset Limited Service Changes

Amtrak's *Sunset Limited* route (Los Angeles – El Paso – San Antonio – Houston – New Orleans) is a key link in a nationwide matrix of city pairs served by Amtrak brought about by the direct transfer of through cars at San Antonio routed between Los Angeles and Chicago via the *Texas Eagle*. Because of the through-car transfer with the *Texas Eagle*, any changes made to the *Sunset Limited*'s service or schedule may have a cascading effect on every community in Texas served by an Amtrak long-distance train, not just the cities on the *Sunset Limited* route. As was noted in Chapter 2, almost 20 percent of the ticket revenues on the *Texas Eagle* are generated by passengers continuing their journey on the *Sunset Limited.* Nevertheless, the *Sunset Limited*'s current tri-weekly service and on-time performance serve to discourage potential customers and create operational inefficiencies. Yet if the *Sunset Limited* were discontinued, the loss in revenue to the *Texas Eagle* would be immediate, and would turn the *Eagle* into one of Amtrak's worst performing routes.

In 2010, Amtrak completed a broad-based study of options to improve the performance of both the *Sunset Limited* and *Texas Eagle*, an analysis required under PRIIA for all Amtrak long-distance services.[2] The study's conclusion was that the only effective strategy to improve performance of the routes was to address its most fundamental impediment: the tri-weekly operation of the *Sunset Limited*. The study recommended a complete restructuring of the *Sunset Limited* and *Texas Eagle* to address what Amtrak believed to be the key shortfalls of the current service, which were raising costs by creating operational inefficiencies as well as reducing revenue by offering a product that was inconvenient for most travelers. The major changes recommended were:

1. Extend the *Texas Eagle* to provide daily Chicago – Dallas – Fort Worth – San Antonio – El Paso - Los Angeles service, by combining the current Chicago-San Antonio portion of the

[2] Amtrak report titled "PRIIA Section 210 FY10 Performance Improvement Plan, Sunset Limited/Texas Eagle." September 2010.

Texas Eagle and the current San Antonio-Los Angles portion of the *Sunset Limited* into one transcontinental train.

2. Convert the *Sunset Limited* into a daily New Orleans – Houston – San Antonio service, with a cross-platform connection to the *Texas Eagle* at San Antonio for riders traveling further west.

This proposed service restructuring would expand the attractiveness of the combined Texas Eagle/Sunset Limited network by providing the convenience of daily departures for all city pairs. As noted in Chapter 2, the current *Sunset Limited* route serves many major cities 300 to 400 miles apart, more than many other long-distance western trains. Daily service would better meet the customer requirements in these markets, when compared with today's tri-weekly service, and is projected to generate higher ridership. Daily service also would bring opportunities to attract new travel sectors, such as college students, riders traveling on personal business, passengers traveling to connect to cruises, and those traveling for short-stay entertainment/recreation trips.

Amtrak's study projected that the restructured *Texas Eagle/Sunset Limited* service would generate an additional 124,000 riders per year and an additional $10 million in revenue systemwide. Further, by eliminating the inefficiencies of tri-weekly service, the equipment would be used more productively. Coach and sleeping car capacity would increase, while the number of cars required for the service would be reduced, noted the study. Amtrak projected that daily operation would increase overall efficiency, noting that while train miles would increase 76 percent, avoidable costs (the direct costs of operating the service) were expected to increase only by 31 percent.

One reason for the improvement in equipment utilization is that services aboard each train would match the requirements of the passengers. The *Texas Eagle* would offer coaches, sleeping cars, a full diner, and a full lounge car between Chicago and Los Angeles, while the *Sunset Limited* would become a coach-only train with a combined diner-lounge providing food and beverage service on its daytime trip between New Orleans, Houston, and San Antonio. Currently, both the *Texas Eagle* and *Sunset Limited* operate with dining cars and lounge cars, which are underutilized on the Fort Worth–San Antonio and New Orleans–San Antonio segments.

As noted in the 2010 Amtrak report, Table 3-1 summarizes the changes projected to occur as a result of this service restructuring. Ridership and revenue show substantial increases, while avoidable costs (the direct costs of operating the service) grow less than the increase in train-miles and less than the increase in revenue. The forecasted revenue/cost ratio also shows positive improvement.

Table 3-1: Texas Eagle/Sunset Limited Restructuring Metrics

Route	FY 2009 Ridership	FY09 Total Rev (Millions)	FY09 Avoidable Costs (Millions)	Revenue/ Avoidable Cost Ratio
Baseline Sunset/Eagle	339,200	$31.1	$58.3	53.3%
Restructured Sunset/Eagle	442,300	$38.8	$70.5	55.0%
% Change	30.4%	24.8%	20.9%	3.2%

Source: PRIIA Section 210, FY10 Performance Improvement Plan Sunset Ltd/Texas Eagle, September 2009, 2010 Amtrak Monthly Performance Report, Sept 2009, 2010 Amtrak Train Earnings

Following the report's release, Amtrak in 2010 began taking steps to introduce daily service between New Orleans and Los Angeles under a restructured *Sunset Limited* and *Texas Eagle* arrangement. However, host railroad Union Pacific expressed reluctance to approve the change at the time, citing the increasing freight volumes on its transcontinental Sunset Route and its desire to complete a project to build a second mainline track along 760 miles of the route between El Paso, TX and Colton, CA. UP did perform an analysis of potential impacts to its operation resulting from daily passenger service, and informed Amtrak that daily operation of the *Sunset Limited* on its line would require an investment of $750 million in additional infrastructure and other capital improvements.[3] Lacking the capital funds to make the requested improvements, Amtrak stopped actively pursuing the project.

Since then, Amtrak and UP have agreed on a retiming of the *Sunset Limited*'s schedule and a change in the westbound train's days of departure. This service adjustment, introduced in 2012, reduced the layover times at San Antonio for through *Texas Eagle-Sunset Limited* passengers, reduced equipment requirements by one less trainset, and created better connections with other Amtrak trains at Los Angeles Union Station including the Los Angeles-Seattle *Coast Starlight*.[4] Amtrak management in late 2018 told the Rail Passengers Association, an advocacy group for rail passengers, that it will again look at opportunities for daily *Sunset Limited* service.[5] The association, meanwhile, has launched a campaign to gain municipal support for the idea. One early proponent has been the Jefferson County Commissioners Court, which voted unanimously in January 2019 to support an expansion of daily train service in Southeast Texas.[6] Any type of *Sunset Limited* service expansion would require engagement with the host freight railroads, as well as funding commitments and agreements, both for capital expenditures as well as ongoing operating and maintenance costs.

3.2.3 Amtrak Five Year Strategic Plans

In more recent years, the individual long-distance train studies prepared under PRIIA have been replaced by a requirement that Amtrak produce five-year strategic plans, as mandated under Section 11203(b) of the Fixing America's Surface Transportation (FAST) Act. In 2018, Amtrak released its FY2018 "Five Year Service Line Plans," which outlines strategic, five-year initiatives for each service line between FY2019 and FY 2023.[7] These plans do not identify initiatives for individual trains such as the *Sunset Limited*, but focus on overall improvements that benefit particular types of services, such as long-distance trains and state-supported regional trains, regardless of location.

Amtrak's five-year plan for the State Supported Service Line, which the *Heartland Flyer* is a part of, lists the following overall strategies:

- Deliver reliable service on behalf of State Partners.
- Maintain and grow connectivity and access in markets that supplement Amtrak's State Supported network.

[3] http://cs.trains.com/trn/b/fred-frailey/archive/2010/09/03/is-a-daily-quot-sunset-limited-quot-worth-750-million.aspx
[4] http://www.railpac.org/2012/03/15/amtrak-changes-the-sunset-limited-schedule-positives-negatives-and-they-agreed-to-what/
[5] https://www.railpassengers.org/site/assets/files/7984/ltr_to_j__mathews_3.pdf
[6] https://www.beaumontenterprise.com/news/article/Jefferson-County-Commissioners-vote-on-supporting-13552862.php
[7] https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/businessplanning/Amtrak-Five-Year-Service-Plans-FY18-FY23.pdf

- Capture economic growth through service adjustments or additions in markets experiencing or projecting population increases.
- Continually evaluate cost allocation processes to ensure routes are charged fairly for the services they use.
- Provide transparent, accurate, timely, detailed, collaborative financial documentation, based on aligned Section 209 of PRIIA interpretation, which provides actionable insights.
- Improve route performance through better asset and resource allocation.
- Improve equipment condition, right-size fleet across the National Network, and introduce new fleet types and technologies to better align with service requirements and customer expectations.
- Advance Amtrak's "Customer Now" station refresh program to improve customer experience.

In its strategic plan, Amtrak identified the following initiatives for FY2019 – FY2023 to support the State Supported Service Line strategies listed above:

- Address Reliability and On-Time Performance: Improve Amtrak's operational performance and increase the desirability of its service by focusing on host railroad performance, enforcement of Amtrak's access rights, and opportunities for targeted investment and collaboration.
- Improve Access and Connectivity: Improve availability of connectivity information; aggressively advance service expansion opportunities for Thruway bus connectivity services and case-by-case needs to integrate with multimodal ticketing platforms.
- Service Changes and Route/Frequency Expansions: Work with State Partners to add new frequencies and routes each year.
- Fleet Analysis and Improvements: Work with State Partners and Amtrak's Corporate Planning group to analyze current fleet condition, utilization, and suitability for current services; undertake fleet refresh program across various fleet types to enhance onboard customer experience; begin fleet acquisitions to enable growth, increased economic performance, and better service delivery.
- Targeted Outreach and Advertising to Millennials and College Students: Work with State Partners to deliver targeted outreach to nearby college and university students to drive ridership and awareness.
- Improve Service Change Forecasting Process: Streamlined process for evaluating route expansion and new service delivery opportunities from State Partners.
- Bicycle Racks: Evaluate installing bicycle racks on existing fleet and expanding bike program.
- Formalized State Collaboration: Partner with the State-Amtrak Intercity Passenger Rail Committee (SAIPRC) Work Groups to address prioritized opportunity areas. (The SAIPRC was created by Amtrak, FRA, and states in 2015 to manage state cost-sharing and other issues related to Section 209 of PRIIA, and to coordinate decision-making and oversee implementation of decisions.)

Amtrak's five-year plan for the Long Distance Service Line, which includes the *Texas Eagle* and *Sunset Limited*, lists the following overall strategies:

- Continue commitment to safety and reliable performance.
- Effectively position Long Distance Service Line projects and services to meet the needs of new and growing customer segments within the long distance network while exploring strategies to preserve intercity mobility for underserved communities and populations.
- Increase alignment between product and distribution strategy.
- Evaluate service model to improve revenue performance.
- Evaluate areas to improve customer service including on-time performance, consists optimization and right-sizing, food and beverage offerings, onboard classes of service/configuration, and other customer amenities.
- Acquire new and improve existing fleet.

In its strategic plan, Amtrak identified the following initiatives for FY2019 – FY2023 to support the Long Distance Service Line strategies listed above:

- Achieve Positive Train Control (PTC) Implementation Across Long Distance Routes: Finish equipping approximately 310 locomotives and complete related technology projects to comply with federal deadline to support PTC implementation by December 31, 2018.
- Address Reliability and On-Time Performance: Improve Amtrak's operational performance and increase the desirability of its service by focusing on host railroad performance, enforcement of Amtrak's access rights, and opportunities for targeted investment and collaboration.
- Network and Fleet Planning and Acquisition: Optimize long distance network for national demand; better align fleet of equipment to routes and begin targeted fleet acquisition program.
- Cost Driver Analysis: Analyze and prioritize opportunities for continued cost reduction across the Long Distance Service Line including the reduction of losses from non-transportation related activities such as food & beverage service and maintenance/turnaround.
- Service Model Evaluation: Investigate the most relevant service model for long distance routes and right approach for serving their diverse customer base to drive customer preference, repurchase, and revenue growth with most efficient use of personnel, assets, and capacity.
- Increase Productivity and Accountability: Ensure standard levels of service across the network and drive accountability of internal service providers through defined metrics and clear targets; efforts will also focus on optimizing workforce scheduling and productivity through process improvements and service standards; managing services and crew at the train level will ensure standard levels of service across the network.

Since the release of this plan, Amtrak has progressed with efforts to modernize its equipment, one of its most immediate needs. In December 2018, the passenger railroad announced it had placed an $850 million order with Siemens Mobility for 75 new, low-emissions "Charger" diesel-electric locomotives, primarily to replace older diesel locomotives used on its long-distance trains, but with options to purchase additional units for state-supported services and potential service increases.[8] The locomotives will be assembled in Sacramento, CA, and the entire fleet is expected to be in service by 2024. Amtrak also is currently in the midst of receiving 130 single-level, long-distance passenger cars built by CAF in Elmira, NY.[9] The $298 million order, placed in 2010, includes 70 baggage cars, which are now being deployed on long-distance trains across the country, including the *Texas Eagle* and *Sunset Limited*.

3.2.4 Potential Station Improvements

As noted in Chapter 2, many local communities, local developers, and rail supporters have obtained funding for new or refurbished passenger rail stations in Texas. However, other stations have state-of-good repair needs or require modifications or improvements to meet accessibility requirements under the Americans with Disabilities Act of 1990 (ADA). Amtrak is committed to bringing its facilities into compliance with ADA station requirements through its Accessible Stations Development Program (ASDP). The plan is based on funding at the average annual rate of approximately $50 million over the next several years, to support such station work as ASDP, passenger information display systems, and a platform gap solution.[10] However, that is not sufficient to address all accessibility requirements at stations in a timely manner. TxDOT will continue to encourage and help facilitate local communities in applying for federal, state, local, and private funding to address state-of-good repair and ADA needs at their stations.

Table 3-2 lists proposed improvements for Amtrak stations in Texas to bring the facility's functionality or convenience for passengers in line with Amtrak station planning guidelines, or to improve the connectivity of the station with the surrounding area. These recommendations are high-value or durable improvements requiring longer lead times for programming, design, funding and implementation.

Table 3-2: Proposed Amtrak Station Improvements

Station	Long-Term Improvements
Alpine	Improve platform, add shelter
Austin	Install platform seating
Beaumont	Add sidewalk connection from station to street
Cleburne	None proposed
Dallas	None proposed
Del Rio	Improve platform, add sidewalk connection to south
El Paso	Install platform seating
Fort Hood	None proposed
Fort Worth	None proposed
Gainesville	Pave sidewalk crossing tracks near station

[8] https://www.progressiverailroading.com/amtrak/news/Amtrak-orders-75-new-locomotives-from-Siemens--56369
[9] https://history.amtrak.com/blogs/blog/welcoming-the-next-generation-viewliner-II
[10] Texas Transportation Plan 2040, Tech Memo 6: Passenger Rail Modal Profile

Station	Long-Term Improvements
Galveston	None proposed
Houston	Pave sidewalk, add lighting from station platform to adjacent sidewalk and street. Construct new North Intermodal Center
Killeen	None proposed
Longview	None proposed
Marshall	Increase platform length and height
McGregor	Improve platform, add shelter. Pave parking lot, pave and light street and sidewalk from station to Main Street
Mineola	Improve platform, add shelter, pave sidewalk crossing tracks
Nacogdoches	None proposed
San Antonio	Station may relocate to West Side Multimodal Center
San Marcos	None proposed
Sanderson	Construct paved platform. Add shelter and lighting
Taylor	Improve platform, add shelter
Temple	None proposed

Two local groups have been actively working to add station stops along the *Sunset Limited* route. The City of Flatonia reached an agreement in 2017 with Union Pacific and Amtrak to add a station stop in their community, located approximately halfway between Houston and San Antonio. (Currently, the train does not make any station stops between the two major cities.) UP had agreed to allow the stop provided a station track was constructed so that the train could board and detrain passengers without stopping on the mainline tracks.[11] However, the City's agreement expired in October 2018 and would need to be reviewed by the host railroad if interest and funding were made available for this project in the future.

Further west, a local campaign is underway to establish a station stop in the arts community of Marfa, as a possible replacement for the *Sunset Limited*'s current stop at Sanderson. (Marfa is located about 115 miles west of Sanderson, and about 25 miles west of Alpine, the closest current Amtrak station.) Local leaders have tried several times in the past to advance the idea of a station stop at Marfa. The current initiative, begun by a San Antonio resident who organized a letter-writing campaign, is in the early stages of development, but is under consideration by Amtrak as a possible capital investment alternative to bringing the existing Sanderson station into ADA compliance.[12] Sanderson's station building was razed in 2012, and the current facility consists of an unpaved parking area and an asphalt platform with no canopy or passenger shelter.

3.2.5 Thruway Bus Service

Thruway bus connections provide a convenient way for rail travelers to reach destinations beyond the physical limits of a rail corridor by offering coordinated bus-rail schedules, through fares (one-

[11] https://csanders429.wordpress.com/2017/09/12/sunset-limited-to-serve-flatonia-texas/
[12] https://csanders429.wordpress.com/2018/02/12/marfa-seeks-to-be-sunset-limited-stop/

purchase ticketing), and guaranteed connections to and from the trains they feed. Thruway connecting bus routes add additional cities to the passenger rail network and provide vital service to transit-dependent residents in rural areas. They have proven successful in generating incremental ridership and revenue, and have the ability to build a ridership base for a future rail corridor service if conditions permit. Routes with the highest traffic may have dedicated charter motor coaches, although successful Thruway bus services may also utilize regularly scheduled motor coaches, carrying both rail and bus passengers ("mixed mode"). Chapter 2 identifies the existing Thruway bus and interline bus routes that provide connecting services at passenger rail stations in Texas.

TxDOT supports partnerships between the motor coach industry and Amtrak to create additional intercity transportation routes for rural Texas communities, some of which lost their intercity bus and airline service as a result of market-based restructurings of the service providers. A broad-based study with input from rail service stakeholders plus discussions with motor coach operators may also be an effective next step in this effort.

3.3 PLANNING PASSENGER RAIL INVESTMENTS

The National HSIPR Strategic Plan published by the U.S. Department of Transportation and FRA in 2009 contains strategy, definitions, and guidelines for the development of passenger rail corridors across the United States.[13] In the near term, this plan proposes investing in infrastructure, equipment, and multimodal connections that will lay the foundation for an efficient high-speed passenger rail network of corridors 100 to 600 miles in length. FRA's original definitions of passenger rail service types to be developed under this strategy were later revised to better reflect market demands and service capabilities. As a result, HSIPR is currently being developed under the following three-tiered passenger rail service definitions:[14]

- Core Express services: These trains connect major population centers, typically 200 to 600 miles apart, in the nation's densest and most populous regions. Top speeds are between 125 and 250+ mph, primarily on completely grade-separated and dedicated rights-of-way. Some exception to grade-separated and dedicated track requirements may be acceptable in terminal areas.
- Regional services: These trains provide relatively frequent service between large and mid-sized cities, 100 to 500 miles apart, with some intermediate stops. Top speeds range between 90 and 125 mph, with some dedicated and some freight-shared tracks. Tracks are grade-separated with terminal area exceptions.
- Feeder services: These trains connect communities to the passenger rail network in corridors 100 to 500 miles long, and provide a foundation for future higher-speed corridor development. Top speeds range from 79 to 90 mph, generally on shared track with advanced grade-crossing protection or grade separations. This stage is intended to provide travel options and develop a market for rail service. The Oklahoma City-Fort Worth corridor is currently identified as a Feeder Service by FRA.

[13] https://www.fra.dot.gov/Page/P0060
[14] https://www.fra.dot.gov/Page/P0134

Given the strong population and economic growth in Texas, ideas for developing higher and high-speed rail have been considered in recent decades to provide the additional mobility and transportation capacity needed to accommodate future population growth in the state. In 1989, the Texas Legislature created the Texas High-Speed Rail Authority (THSRA) as a separate state agency to determine whether high-speed rail in Texas was feasible. THSRA was to determine the best-qualified applicant for award of a franchise to design, build, and operate a high-speed rail service in the state. THSRA awarded a franchise to the Texas TGV Corporation, but the company was unable to secure financial backing. The THSRA subsequently was abolished in 1995.

The motivation and projected need that first prompted the State of Texas to study high-speed rail in the 1980s and 1990s still exists. Four additional proposals and studies targeted at key segments of what's known as the Texas Triangle (linking Austin, Dallas/Fort Worth, Houston, and San Antonio) have been authored since the Texas TGV effort. High-speed passenger trains that run frequently are competitive with air travel between urban regions 200 to 500 miles apart from each other. Quicker travel times, and passenger amenities unavailable to auto and airline passengers, differentiate high-speed rail from existing intercity passenger service. High-speed rail is faster than automobile travel and more convenient than flying. Travelers benefit from high-speed rail's reduced travel time and expense, reduced stress, the ability to work while traveling, increased mobility, and the availability of an additional, competitive transportation choice. Indirect benefits to the general public include the freeing up of capacity for more efficient air and highway systems, improved energy efficiency, and reduced emissions. The technology also shifts travelers from driving to a safer travel mode, thus reducing costs from highway accidents. The shorter travel times brought about by high-speed or enhanced passenger rail service can increase economic activity by creating larger regional markets, and can act as a catalyst for development that can transform the urban landscape.

3.4 PROPOSED PASSENGER RAIL PROJECT: TEXAS BULLET TRAIN

As the 2019 Texas Rail Plan was being prepared, only one new intercity passenger rail system had been proposed in Texas: the Dallas to Houston High-Speed Rail Project, also known as the Texas Bullet Train, a private-sector initiative undertaken by Texas Central Partners (Texas Central). This section provides more Information about the proposed Texas Bullet Train.

3.4.1 Project Overview

3.4.1.1 Project Description

Texas Central Partners, a private company, has proposed to build and operate a dedicated high-speed passenger rail system between Dallas and Houston. An affiliated company, Texas Central Railway, which is incorporated as a railroad with the Texas Secretary of State, is working with federal and state agencies to obtain the environmental regulatory approvals for the project. Texas Central proposes to construct a 240-mile-long dedicated rail corridor (fully separated from motor vehicle traffic, other railroad traffic, pedestrian traffic, and wildlife) that would enable passenger trains to operate at speeds of up to 205 miles per hour and achieve travel times of approximately 90 minutes between Dallas and Houston, with one intermediate station stop in the Brazos Valley.

The project intends to use the N700-S bullet train system, which is based on the most recent Japanese *Shinkansen* high-speed rail technology. Features of this technology to be adopted by the

Texas Bullet Train include the use of self-propelled, bidirectional high-speed trainsets powered by electricity that is supplied to the train from overhead catenary wires, and an Automatic Train Control system (a form of Positive Train Control) that automatically controls the train's speed to ensure it does not exceed the speed limit prescribed by the signal system. The proposed design includes the construction of two parallel high-speed tracks, one for northbound travel and one for southbound travel, enabling trains moving in opposite directions to pass each other without conflict. The high-speed rail system would be self-contained and would not have connections to the existing national railroad network. The train technology used for the Texas Bullet Trains will be modified from the Japanese prototype to meet U.S. regulatory requirements and local environmental conditions, as determined by the FRA's Rule of Particular Applicability or other regulatory actions developed to establish a safe operating environment for the system.

The proposed high-speed rail system would be built and operated as a private, investor-driven venture. Texas Central Partners has stated it will not use any state or federal grants as funding sources for the development, construction, or operation of its passenger rail system.

3.4.1.2 Environmental Documentation

In compliance with the National Environmental Policy Act (42 U.S.C. §4321 et seq.), the FRA is preparing an environmental impact statement (EIS) for the proposed Texas Central project. TxDOT is assisting FRA in providing oversight of the environmental review. Texas Central's proposal to build and operate a high-speed passenger rail system between Dallas and Houston established this federal action, because FRA must review and approve the safety of the system.

FRA has released the Dallas to Houston High-Speed Rail Draft Environmental Impact Statement (Draft EIS), which was signed on December 15, 2017 and published in the Federal Register on December 22, 2017. The Draft EIS evaluated potential impacts to the human and natural environment of six build alternatives for the proposed route between Dallas and Houston as well as the No-Build Alternative. The document also included analysis of a terminal station site in Dallas, an intermediate station in the Brazos Valley, and three options for terminal stations in Houston: the Industrial Site Terminal, the Northwest Mall Terminal, and the Northwest Transit Center Terminal. The evaluation concluded with the selection of Build Alternative A as the proposed Preferred Build Alternative. FRA held a public comment period for the Draft EIS during the spring of 2018 that included 11 public hearings in Texas counties along the proposed rail line. FRA is currently preparing a Final EIS that will refine its analysis of the build alternatives and address comments received from the public. FRA currently anticipates publishing a Final EIS and Record of Decision in 2020.

The Texas Commission on Environmental Quality (TCEQ) is conducting a water quality review to determine whether or not to approve Texas Central's application to the State and the Army Corps of Engineers for permits to discharge dredged or fill material into Waters of the United States during construction of the project. The TCEQ is reviewing the permit applications under Section 401 of the Clean Water Act and in accordance with Title 30, Texas Administration Code Chapter 279, to determine if the proposed work would be consistent with Texas Surface Water Quality Standards and the Clean Water Act. The commission began its review in late 2017 and held three public meetings during August and September of 2018 as part of its certification decision process.

3.4.1.3 Proposed Route and Service

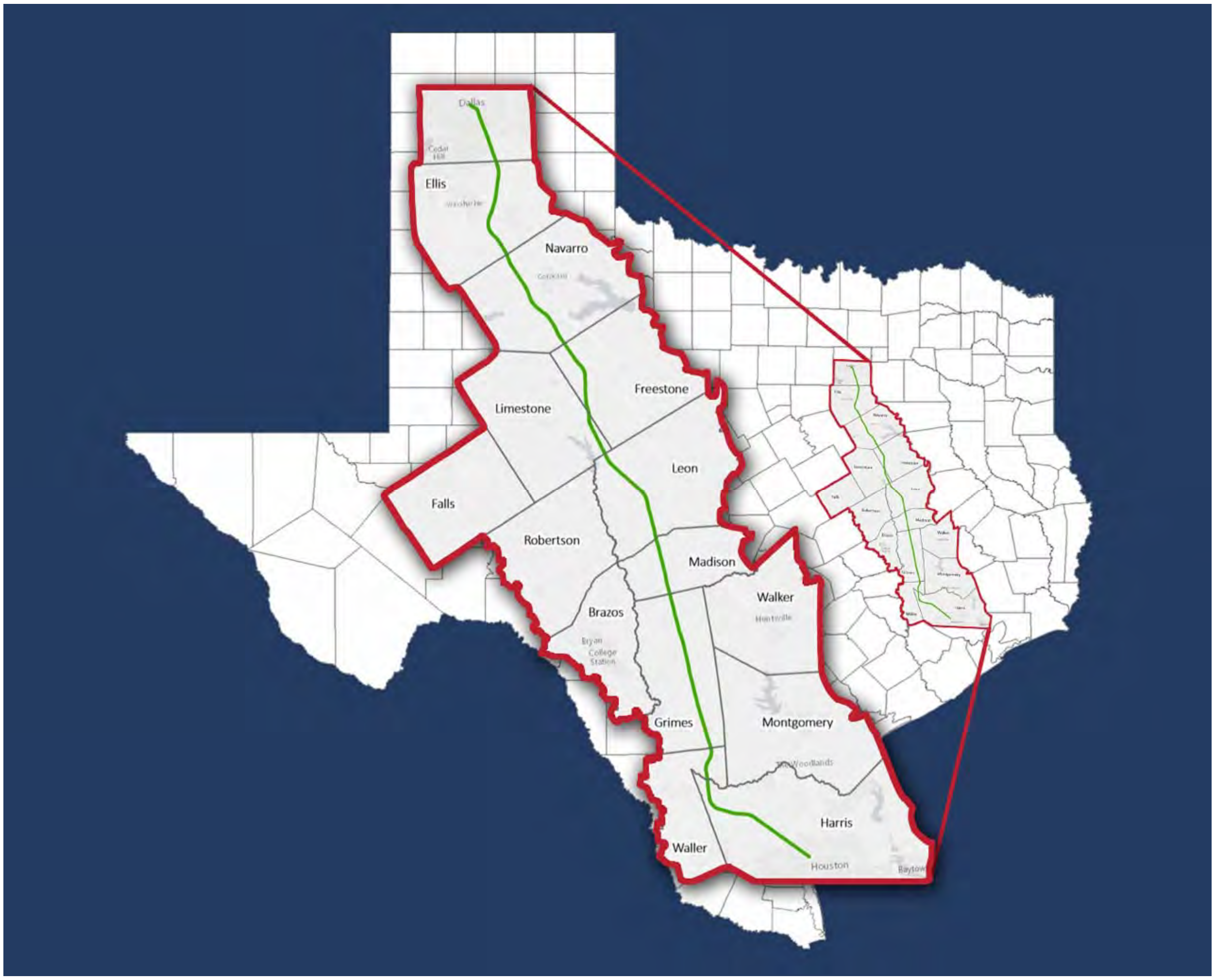
The Texas Bullet Train would operate on a newly constructed high-speed railroad corridor between Dallas and Houston. The Preferred Build Alternative for the corridor identified in the Draft EIS is Build Alternative A, which follows existing high-voltage power line easements (the CenterPoint Energy and Oncor Electric Delivery high-voltage electrical transmission lines) between Palmer (outside of Dallas) and Hockley (outside Houston), and follows other adjacent existing infrastructure, such as highways and railroads, for entry into Dallas and Houston. The selection of Build Alternative A as the Preferred Build Alternative was the end result of a rigorous screening process that began with a Corridor Alternatives Analysis, during which FRA evaluated four potential high-speed rail corridors between Dallas and Houston, and ultimately selected the “Utility Corridor” as its preferred route. FRA then conducted a second level of alternatives screening that evaluated 21 alignment alternatives within the Utility Corridor. Based on that analysis, FRA carried forward six end-to-end Build Alternative alignments (A through F) for evaluation in the Draft EIS.

Build Alternative A has an end-to-end length of approximately 234.37 miles. FRA selected this alternative because it would have the fewest permanent impacts to the natural, physical, socioeconomic, and cultural resources environment. The Draft EIS presents detailed results of FRA’s route evaluation and selection process. Figure 3-1 illustrates the route of the Preferred Build Alternative.

Approximately 58 percent (136 miles) of the Preferred Build Alternative’s route would be built on elevated viaducts, at clearances similar to the highway standards used by TxDOT, to eliminate at-grade intersections of roadways, walkways, and bike paths; to maintain access to land for people and wildlife; and to allow both the high-speed trains as well as vehicle and pedestrian traffic to move without obstruction from one another. At locations where viaducts are not feasible, approximately 33 percent of route (77 miles) would be built atop elevated embankments, while the remaining 9 percent of the route (21 miles) would be built at ground level. At all locations, the right-of-way would be protected to prevent incursions onto the tracks from pedestrians or wildlife. The Draft EIS states that the minimum right-of-way width required is 100 feet to accommodate the two mainline tracks, the overhead electric catenary system, an access road, and security fencing. The routes analyzed in the Draft EIS considered a maximum right-of-way width of 500 feet.

The high-speed rail service would have three passenger rail stations: a northern terminal in Dallas, a southern terminal in Houston, and an intermediate stop in the Brazos Valley near Roans Prairie, approximately halfway between Bryan/College Station and Huntsville. The proposed Dallas terminal site is located south of the Kay Bailey Hutchison Convention Center, in the Cedars neighborhood just south of downtown Dallas and Interstate 30. The proposed Houston terminal site is located in the northwest part of the city at the Northwest Mall, near the interchange of Interstate 610 and U.S. Highway 290. In addition to the passenger rail stations, the project would also require the construction of service, inspection and repair facilities for the trainsets; maintenance-of-way facilities for the right-of-way, track, and signal infrastructure; and traction power substations and other supporting electric power infrastructure.

Figure 3-1: Preferred Build Alternative Route of the Texas Bullet Train



Source: Draft EIS, Preferred Alignment map

Under the operating plan for initial service (opening day) published in the Draft EIS, trains would depart the Dallas and Houston terminals every 30 minutes between 5:30 a.m. and 10:00 p.m., with a projected trip time of 90 minutes between the two endpoint terminals, including one intermediate station stop in the Brazos Valley. (The last arrival of the day would be at 11:30 p.m. at each terminal.) A total of 34 northbound trains and 34 southbound trains would operate each day, for a daily system total of 68 revenue trains. Two additional levels of service, final and peak, have also been developed and could be implemented after startup if travel demand warranted. Features of these service levels include more departures per hour (as frequent as every 10 minutes during peak periods) and nonstop express trains between Dallas and Houston. Trains would operate at 186 mph in the initial service phase, although the more robust service levels include provisions for raising maximum speeds up to 205 mph, provided regulatory approvals are secured and travel demand warrants the increase.

Each trainset would be eight cars long and assembled as a fixed consist (cars would always be connected in regular operation) with seating for approximately 400 passengers. The trainset would not use locomotives to pull railcars, but instead would be built as a self-propelled electric multiple unit train. Cars would be equipped with devices to draw electric current from the 25,000-volt A.C. overhead catenary and feed it to motorized wheel sets beneath the railcar floor that propel the train forward.

3.4.1.3 Project Partners

Texas Central Partners has assembled a team of private companies to assist in the design, construction, operation, and maintenance of the proposed high-speed rail system. The construction and engineering company Bechtel has been contracted as program manager overseeing the entire project and managing the budget and schedule. The international construction and engineering company Salini Impregilo, along with its U.S. subsidiary Lane Construction, will lead the design and construction of the railway, including viaducts, embankments, and drainage systems. Lane Construction and Fluor Corporation were involved in the pre-construction planning and development of the system, along with WSP USA, which is providing engineering services. The Spanish railroad operating company RENFE and Spanish railroad infrastructure manager Adif will operate the trains, manage the stations, and maintain the rolling stock, signal system, power systems, and other equipment. The Central Japan Railway Company will provide technical support for the development, construction, and implementation of the high-speed trainsets that will operate on the line, as well as the overhead catenary system, signal and safety systems, and communication systems. The Texas Bullet Train will be based on the N700 Shinkansen high-speed rail trains and technology developed and operated in Japan by the Central Japan Railway.

Texas Central plans to offer through-ticketing and a connecting shuttle service for rail passengers making trips that use both Amtrak intercity passenger rail services and the Texas Bullet Train. Under an agreement with Amtrak announced by Texas Central on May 4, 2018, passengers will be able to use the Amtrak reservation system to purchase tickets for trips that have travel segments on Amtrak's national passenger rail network as well as the Texas Central high-speed rail system.[15] EBJ Union Station in Dallas, used by Amtrak and Trinity Railway Express, is approximately 1 mile from the proposed site of the Texas Central Dallas rail terminal. Amtrak's passenger rail station in Houston is approximately 7 miles from the proposed Texas Central rail terminal at the Northwest Mall. Texas Central has stated it will provide a connecting shuttle service between the Amtrak and Texas Central stations in Dallas and Houston for passengers with through tickets.

3.4.1.4 Potential Implementation Timeline

Texas Central is working to secure the safety and environmental approvals that are required before construction can start. Texas Central anticipates construction would begin in 2020. An article about the project published December 7, 2018 on the *Railway Age* magazine website stated that construction will take 5 years, and that the earliest operations could begin would be 2024 or 2025.[16]

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15 http://www.texascentral.com/wp-content/uploads/2018/05/Texas_Central_Amtrak_release_05042018.pdf
16 https://www.railwayage.com/passenger/high-performance/texas-central-trailblazing-privately-funded-hsr/?utm_source=&utm_medium=email&utm_campaign=268

3.4.2 Potential Ridership and Revenue

Texas Central commissioned L.E.K. Consulting to conduct a market analysis of existing and future passenger travel demand between the Dallas and Houston metropolitan areas and develop ridership projections for the proposed Texas Bullet Train. The results of the study were announced in November 2016, then updated in 2019 with new data and consumer research. The 2019 study results are summarized in a ridership brochure posted on the company's website.[17] The study's major findings, as summarized in the ridership brochure, are presented below.

Existing Travel Market. The study noted the following characteristics of existing passenger travel between Dallas and Houston:

- Approximately 16 million trips per year are made between North Texas and the Houston metropolitan area.
- More than 90 percent of these trips are made by personal automobile.
- Driving times between North Texas and Greater Houston range from 3.5 to 5.5 hours but can vary considerably because of roadway congestion.
- Approximately 1 million airline trips per year are made between Dallas and Houston.

Future Travel Market. The study noted the following characteristics of projected future passenger travel between Dallas and Houston:

- The size of the travel market between North Texas and the Houston metropolitan area is estimated to increase at 2.3 percent per year between 2022 and 2050.
- Just under 20 million trips per year between North Texas and the Houston metropolitan area are projected to be made in 2022.
- More than 34 million trips per year between North Texas and the Houston metropolitan area are projected to be made in 2050.
- The increase in projected travel demand between 2022 and 2050 is based on forecasts that estimate population in the North Texas-Houston corridor will grow at 1.5 percent per year through 2050, adding 10 million residents in the corridor through 2050.
- High-speed rail would save travelers 60 to 90 minutes of travel time when compared to a road or airline trip in the corridor.

Ridership projections. The study presented the following ridership forecasts for the Texas Bullet Train, based on the travel demand projections summarized above, combined with market research conducted to determine travelers' satisfaction with current transportation options between Dallas and Houston and the feasibility and willingness of travelers to consider a high-speed train for travel in the corridor:

- More than 6 million travelers are estimated to use the Texas Bullet Train by 2029, representing over 25 percent of the end-to-end North Texas-Greater Houston travel market.

[17] https://www.texascentral.com/ridership/

- Approximately 13 million travelers are estimated to use the Texas Bullet Train by 2050, representing almost 35 percent of the end-to-end North Texas-Greater Houston travel market.

Additional information from the initial 2016 market analysis appears in the Draft EIS Appendix F (Texas Central Railroad Conceptual Engineering Design Report).[18] Appendix F, Section 6.4.1 (Ridership Forecasts and Passenger Profiles) of the Draft EIS identified slightly more modest ridership projections for the proposed high-seed rail system than those presented on Texas Central's website, but also used a future year of 2040, not 2050:

- High-speed rail ridership in 2026 is projected to be 4.4 million passengers per year.
- High-speed rail ridership in 2040 is projected to be 7.2 million passengers per year.

Draft EIS Chapter 3, Section 3.11.5.2 (Build Alternatives)[19] provided the following additional information concerning projected travel market share:

- Among travelers currently making trips between Dallas and Houston, 89 percent use personal automobiles, 2 percent use buses, and 9 percent use airplanes.
- By 2043, the high-speed rail system is projected to be used for 21 percent of all trips made by the traveling public between the Dallas and Houston metropolitan areas. This market share capture would come from diversions of motor vehicle trips (16 percent of all Dallas-Houston passenger trips would be diversions from highway to rail) and diversions of air trips to rail (6 percent).

Texas Central has not disclosed potential revenue projections for the high-speed rail project, either in the Draft EIS or on its website. Revenue will be based on ticket sales, and Texas Central has stated that ticket prices will fluctuate depending on travel demand. Texas Central states on its website that the higher range of fares will be competitive with the cost of flying and the lower range of fares will be competitive with the cost of driving.[20]

3.4.3 Projected Capital Costs, Subsidies, and Financing Strategies

The Draft EIS Appendix E, Socioeconomic and Community Facilities Technical Memorandum, contains construction cost estimates in the Final Draft Conceptual Engineering Design Documentation-FDCEv5 Transmittal for Capital Cost Estimate and Construction Schedule.[21] Texas Central estimates that capital construction costs for the high-speed rail system would range between $15 billion and $18 billion (in $2017). This estimate includes costs to construct the tracks, viaducts, embankments, maintenance facilities, power substations, and three passenger rail stations. Table 3-3 summarizes the range of capital cost estimates for the Texas Bullet Train presented in Appendix E of the Draft EIS. These estimates include direct construction costs (such as construction labor and materials), indirect costs (such as engineering and environmental review, and administration), and between $2 billion and $3 billion for power systems and rolling stock. The

[18] https://www.jbic.go.jp/ja/business-areas/environment/projects/pdf/60571_21.pdf
[19] https://www.fra.dot.gov/eLib/details/L19202
[20] https://www.texascentral.com/facts/
[21] https://www.fra.dot.gov/eLib/Details/L19230

analysis of construction costs assumed approximately 85 percent of the mean capital investment would represent construction and 15 percent would be applied to professional services.

Table 3-3: Capital Cost Estimate for the Proposed Texas Bullet Train

Cost ($2017)	Low Estimate	High Estimate
Construction Costs (direct and indirect)	$13 billion	$15 billion
Train Control/Power Systems and Rolling Stock	$2 billion	$3 billion
Total	$15 billion	$18 billion

Source: Draft EIS, Appendix E, Socioeconomic and Community Facilities Technical Memorandum

The cost estimates in the table above do not include costs for land acquisition or real estate transaction fees. Texas Central's website states that the proposed high-speed rail system will cost more than $12 billion to construct.[22] Neither the Draft EIS nor the Texas Central website contain projections of operating costs.

Texas Central has stated it will privately finance the development, construction, and operation of the high-speed rail service and will not request capital grants or operating subsidies from the federal government or the State of Texas for the proposed service.[23] The company plans to raise money for the project using a mix of debt and equity. The company intends to seek financing in phases, initially for permitting, then for construction. According to news reports from 2018, the company has secured options to acquire one-third of the land it needs to build the system and is negotiating for the rest.

In September 2018, Texas Central secured a $300 million loan for the project from the Japan Overseas Infrastructure Investment Corporation for Transport and Urban Development (JOIN) and the Japan Bank for International Cooperation (JBIC). JOIN was established in 2014 as a public-private partnership backed by the Japanese government to pursue private investment opportunities in overseas infrastructure. JOIN not only provides financing but also arranges for Japanese companies to provide technology, equipment, or other services for the venture. According to an article in the *Dallas Morning News*, the loan will be used for permitting, design, and engineering, and provides Texas Central with the remainder of committed funding for the construction of the system.[24] In 2015, JOIN had committed $40 million to become an equity investor in Texas Central. Texas Central has stated that the majority of the project's investment partners are Texas investors.

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22 https://www.texascentral.com/facts/
23 https://www.texascentral.com/facts/
24 https://www.dallasnews.com/news/transportation/2018/09/13/texas-central-lands-300-million-loanfor-dallas-houston-bullet-train-project

3.4.4 Analysis of Interconnectivity of Proposed New Passenger Rail System

The proposed Texas Bullet Train would not share any existing tracks or stations with currently operating intercity passenger or commuter rail services in Texas. Access to the highway and roadway network, and access to the public transportation network, were two key criteria used in selecting the proposed locations for the high-speed rail system's three train stations, according to the Draft EIS. The designs for each of the three high-speed rail stations include infrastructure options that would enable passengers to make connections with local transit systems, and also include pickup/drop-off areas for taxi and ride-share services, as well as parking garages. Conceptual renderings in the Draft EIS of the Dallas and Houston terminals also show spaces identified for car rental counters.

Texas Central announced in January 2018 that it had selected a site for its Dallas passenger rail terminal. The site is located south of the Kay Bailey Hutchison Convention Center, in the Cedars neighborhood just south of downtown Dallas and Interstate 30. This area had been identified in the Draft EIS as the preferred Dallas terminal location. Appendix G of the Draft EIS includes conceptual renderings of the proposed station that show a pedestrian bridge connecting to a parking garage and bus drop-off area along South Austin Street.[25] The press release announcing the selection of the station site stated that conceptual plans for the station had been developed that included pedestrian bridges to parking lots, and that the pedestrian bridges could be further extended to provide convenient connections to DART light rail trains and buses.[26] DART Red and Blue light rail trains stop at the Convention Center, as well as a station in the Cedars neighborhood along Belleview Street approximately five blocks from the proposed high-speed rail terminal site. The design of the Dallas terminal includes a tail track, which is intended to provide a potential direct entry for DART light rail trains or Trinity Railway Express commuter trains, should either system decide in the future to extend service or relocate to the high-speed rail terminal. Texas Central also has stated it will improve roadways near the station site to ease road congestion and improve traffic flow.

One month after announcing the selected site for its passenger rail terminal in Dallas, Texas Central announced it had selected a preferred site for its passenger rail terminal in Houston. The location selected is the Northwest Mall, near the interchange of Interstate 610 and US Highway 290. This site was one of three options identified in the Draft EIS for the location of the Houston terminal. According to the press release announcing the station location, Texas Central has reached an agreement with the property owners to redevelop the mall site as a multimodal high-speed rail terminal and transit hub, if the high-speed rail project advances.[27] Appendix G of the Draft EIS includes conceptual renderings of the proposed station that show a pedestrian bridge connecting to a parking garage and automobile pickup/drop-off locations, but no identified locations for bus or transit connections. Texas Central had previously signed a memorandum of understanding with the City of Houston to ensure that the high-speed rail terminal would have a "high level of integration with local transit systems."[28] In addition, the agreement with the City requires Texas Central to develop plans for multimodal connections between the high-speed rail station and major employment and recreation centers in Houston, and also work with Houston METRO and other

[25] https://www.fra.dot.gov/eLib/details/L19243
[26] http://www.texascentral.com/wp-content/uploads/2018/01/North-Texas-Station-Press-Release-Texas-Central.pdf
[27] http://www.texascentral.com/wp-content/uploads/2018/02/Houston-Bullet-Train-Station-release_01052018.pdf
[28] http://www.texascentral.com/wp-content/uploads/2017/08/Houston_and_TC_MOU_Release_20170817.pdf

stakeholders on future plans for a potential commuter rail service in the Hempstead Corridor extending northwest of the city.

At the proposed Brazos Valley station along State Highway 30 near Roans Prairie, Texas Central plans to have a connecting shuttle service to Texas A&M University in College Station. Appendix G of the Draft EIS includes conceptual renderings of the proposed station that show a shuttle bus drop-off location at the north side of the station facility.

Texas Central plans to offer through-ticketing and connecting shuttle service for rail passengers making trips that use both Amtrak intercity passenger rail services and the Texas Bullet Train. Under an agreement with Amtrak announced by Texas Central on May 4, 2018, passengers will be able to use the Amtrak reservation system to purchase tickets for trips that have travel segments on Amtrak's national passenger rail network as well as the Texas Central high-speed rail system.[29] Dallas Union Station, used by Amtrak and Trinity Railway Express, is approximately 1 mile from the proposed site of the Texas Central Dallas rail terminal. Amtrak's passenger rail station in Houston is approximately 7 miles from the proposed Texas Central rail terminal at the Northwest Mall. Texas Central has stated it will provide a connecting shuttle service between the Amtrak and Texas Central stations in Dallas and Houston for passengers with through tickets.

3.4.5 Analysis of Short-Term and Long-Term Effects of Proposed Passenger Rail System on State and Local Road Connectivity

As detailed in the Draft EIS, most of the high-speed rail line will be built one of two ways: as an at-grade alignment where the rail is located on an embankment and separated from other transportation modes, or as an elevated alignment where the rail is located on an elevated viaduct structure supported by piers and beams. Preliminary engineering plans in the Draft EIS show that the rail line when on an embankment would have a maximum height of approximately 50 feet, and when on an elevated structure would have a maximum height of approximately 70 feet. All at-grade roadway crossings of the alignment would be replaced by grade-separated crossings, following one of three methods: Road Under Rail (the high-speed rail line would pass above existing or proposed roadways), Road Over Rail (new or rerouted roads would pass above the proposed high-speed rail line), or Reroute (the roadway would be rerouted to eliminate the crossing, and either use an alternative crossing at a different location, or construct connections to other existing or proposed roadways that would cross the rail alignment.)

Appendix F of the Draft EIS contains a Basis of Design that guided the Final Draft Conceptual Engineering. The Basis of Design established the following clearance guidelines:

- Road Over High-Speed Rail (HSR): A minimum overhead clearance from the track of 21 feet, 2 inches would be used, and a typical vertical clearance above the high-speed rail track to the underside of the road structure would be 24 feet, 6 inches.
- HSR Over Road: Vertical clearance from the roadway surface to the underside of the high-speed rail structure would be a minimum of 16 feet, 6 inches, and a minimum of 22 feet for

[29] http://www.texascentral.com/wp-content/uploads/2018/05/Texas_Central_Amtrak_release_05042018.pdf

Interstate highways, in accordance with the current version of TxDOT Highway Design Standards.

Conceptual engineering drawings located in Appendix G of the Draft EIS indicate that the bridge piers supporting rail bridges above roadways would have a minimum clearance of 30 feet beyond the edge of each roadway shoulder. This clearance is expected to be sufficient to accommodate oversized vehicles on roadways beneath the proposed rail lines.[30]

The Draft EIS states that no public roads would be closed as a result of the project, although some private roads would be closed, and some public roadways would be reconfigured following TxDOT and local regulations.

Section 3.5.11.2 of the Draft EIS (Build Alternatives) describes the project's overall impacts on road connectivity. According to the Draft EIS, approximately 50 percent of the roadways intersecting the proposed high-speed rail route would be located beneath an elevated viaduct segment of the rail line. Of those crossings, approximately 69 percent would require limited road modifications owing to the height of the viaduct. Specific road crossings that would require modification are discussed in detail by county in Chapter 3 of the Draft EIS. Reroutes to existing roads would result in the addition of approximately 18 miles of public roads. Additionally, roads around the terminal stations may require changes to accommodate new traffic patterns. **Table 3-4** summarizes the roadway and other transportation impacts of the High-Speed Rail (HSR) Preferred Build Alternative (Alternative A).

Table 3-4: Summary of Transportation Impacts of HSR Preferred Build Alternative (Alternative A)

Impact	Number
Roads Permanently Impacted	240
Length Added to Public Roads (miles)	18
Length Removed from Public Roads (miles)	11
Freight Rail Crossings	34
Impacts to Airports	1

Source: Draft EIS, Chapter 3, Section 3.11.7, Build Alternatives

3.4.6 Analysis of the Effect of the Proposed Passenger Rail System on Statewide Transportation Planning

Section 3.2.3.3.2 (Vehicle Emission Reductions) of the Draft EIS includes calculations of the reduction in long-distance personal vehicle use if the high-speed rail project were built. The proposed service is projected to remove 14,630 vehicles per day, or 5.3 million cars per year, on Interstate 45 (IH-45) between Dallas and Houston in the year 2035, representing about 14 percent of the projected average daily traffic volume of 106,475 in the Dallas-Houston corridor for that year. FRA concluded from this analysis that the "mode shift would not be assumed to constitute the majority of

[30] https://www.fra.dot.gov/eLib/details/L19234#p1_z5_gD_lRE_y2017_m12

travel along IH-45." Appendix F of the Draft EIS includes a traffic analysis for each terminal station. Table 3-5 presents the mode split assumptions for the system's terminal stations.

Table 3-5: Mode Split Assumptions for Terminal Stations

Station	Drive and Park	Rental Car	Pickup/ Drop-off	Taxi	Bus/Shuttle	Walk/Bike/Other
Dallas	25%	14%	32%	21%	4%	4%
Houston	32%	13%	31%	18%	2.5%	3.5%

Source: Draft EIS, Appendix F, TCRR Conceptual Engineering Design Report

Based on this modal split analysis, the Draft EIS projects an average of 1,481 vehicle trips per hour would be made to and from the Dallas high-speed rail terminal in 2040. Approximately 47 percent of trips to and from the Dallas terminal would be made to/from Downtown Dallas (23 percent) or to Tarrant County (24 percent). In Houston, the high-speed rail terminal is projected to generate an average of 1,381 vehicle trips per hour. Approximately 77 percent of trips to and from the Houston terminal would be made to/from Harris County. Roadway access improvements for each terminal station are identified to accommodate the anticipated increases in local road traffic around station areas and mitigate impacts to existing traffic. The types of roadway modifications recommended include: the addition of new turn lanes or dual turn lanes at intersections; replacement of through lanes with turn lanes at intersections; elimination of left-turn options at certain high-traffic intersections where alternate left-turn routes exist nearby and demand for left-hand turns is low; modification of traffic lights to add a left-turn-only signal timing; conversion of intersections with two-way stop signs to four-way stop signs; and addition of acceleration and deceleration lanes on State Highway 30 at the entrance to the Brazos Valley station. Appendix F of the Draft EIS also contains recommendations for phased improvements at specific intersections near each terminal station.

Future impacts on planning, maintenance and construction activities will depend on the terms of crossing agreements reached between governmental entities and Texas Central. TxDOT will develop crossing agreements to ensure that future roadway expansion plans are incorporated into Texas Central's design and that the proposed rail line will not impact maintenance activities. Currently no crossing agreements have been reached between other governmental entities and Texas Central so future impacts to non-state roads cannot be determined.

3.4.7 Detailed Ridership Projections for the Proposed Passenger Rail System Developed in Previous TxDOT Studies

TxDOT has previously prepared Statewide Ridership Analysis Reports to provide a high-level of forecasted ridership and cost effectiveness for various potential passenger rail corridors in the state. These reports were prepared to determine which corridors might warrant further analysis, should funding become available, and what level of service might be supported by the different corridors. TxDOT issued a ridership analysis using Statewide Analysis Model Version 2.5 in December 2013.[31] The report includes projections for the Dallas-Houston corridor, under a passenger rail service plan whereby trains would operate at speeds between 125 and 250 mph, and provide up to 20 trips per

[31] https://ftp.dot.state.tx.us/pub/txdot-info/rail/rail-ridership-report-1213.pdf

day in each direction. Table 3-6 summarizes the primary findings from that analysis for the Dallas-Houston corridor (upfront capital cost, annual operation and maintenance cost, and projected annual ridership in 2035). The forecasts presented below were developed under an assumption that the Dallas-Houston service would be operated as a standalone high-speed passenger rail corridor without additional, connecting high-speed route segments to other cities such as San Antonio.

Table 3-6: Forecasted 2035 Dallas-Houston Intercity Passenger Rail Ridership Summary Results

Corridor	Service Type	Upfront Capital Cost	Annual O&M Cost	2035 Annual Ridership
Dallas-Houston	Core Express (HSR)	$16.8 billion	$266 million	1.5 million-5.7 million

Note: Range of ridership is forecasted with a 70 percent probability of occurrence
Source: Statewide Ridership Analysis Report, Statewide Analysis Model – Version 2.5 (SAM-V2.5), December 2013

3.4.8 Ridership Statistics for Existing Passenger Rail System in the State

Existing intercity rail passenger service in Texas is provided by three Amtrak routes. The *Heartland Flyer* is a daily intercity passenger train that operates between Oklahoma City, Oklahoma, and Fort Worth, Texas. The service is operated by Amtrak under contract to the states of Texas and Oklahoma. The schedule is timed to allow transfers to the *Texas Eagle* in each direction. The other two trains, the *Texas Eagle* and *Sunset Limited*, are part of Amtrak's long-distance service network. The *Texas Eagle* operates daily between Chicago, Illinois, and San Antonio, Texas. At San Antonio, the service offers through connections to the *Sunset Limited* for continued travel to Los Angeles, California. Twelve stations within Texas are served by the *Texas Eagle*. The *Sunset Limited* provides tri-weekly service between New Orleans, Louisiana, and Los Angeles, California. Seven Texas stations are served by this train. Table 3-7 provides an overview of the ridership results for Amtrak's three routes serving Texas from Fiscal Year (FY) 2013 through FY 2017.

Table 3-7: Amtrak Riders on Routes Serving Texas FY 2013–2017

Route	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Heartland Flyer	81,226	77,861	69,006	66,105	71,340
Year Over Year Change	-7.8%	-4.1%	-11.4%	-4.2%	7.9%
Texas Eagle	340,081	313,338	317,282	306,321	345,679
Year Over Year Change	0.6%	-7.9%	1.3%	-3.5%	12.8%
Sunset Limited	102,924	105,041	100,713	98,079	98,649
Year Over Year Change	1.7%	2.1%	-4.1%	-2.6%	0.6%

Source: Amtrak Market Research and Analysis Department.

3.5 POTENTIAL NEW INTERCITY PASSENGER ROUTES AND SERVICES

This section summarizes the studies and analysis of potential new intercity passenger rail routes and services undertaken within the past decade at the federal, state, and local levels. Between 2009 and 2011, TxDOT received federal grant funding under the HSIPR program to assist FRA and other stakeholders in the development of planning documents for two route segments of the federal South Central High-Speed Rail Corridor, linking El Paso with Oklahoma City and Little Rock: the Texas-Oklahoma Passenger Rail Study and the Dallas-Fort Worth Core Express Alternatives Analysis. Both studies have been completed and are summarized below. TxDOT anticipates that the future development and implementation of these corridors, as well as others discussed in this section, will be carried out by regional or local public agencies. This is already occurring for two of the corridors described below: Fort Worth-Dallas and Fort Worth-San Antonio.

3.5.1 Texas-Oklahoma Passenger Rail Study

The Texas-Oklahoma Passenger Rail Study is an evaluation of a range of passenger rail service options in an 850-mile corridor roughly paralleling Interstate 35 (I-35) from Oklahoma City to South Texas.[32] The study concluded in November 2017 after the completion of a service-level Tier 1 Final Environmental Impact Statement (FEIS), Record of Decision (ROD), and Service Development Plan. The $14 million study was prepared by TxDOT and FRA, and funded by a federal HSIPR grant ($5.6 million), Texas General Revenue funds ($1.4 million), the North Central Texas Council of Governments ($1.4 million), the Texas and Oklahoma Departments of Transportation ($2.6 million), and the Federal Highway Administration ($3 million). In addition to the agencies that provided funding for the study, transit service providers, railroads, metropolitan planning organizations, cities and counties, and community members were engaged throughout the evaluation process.

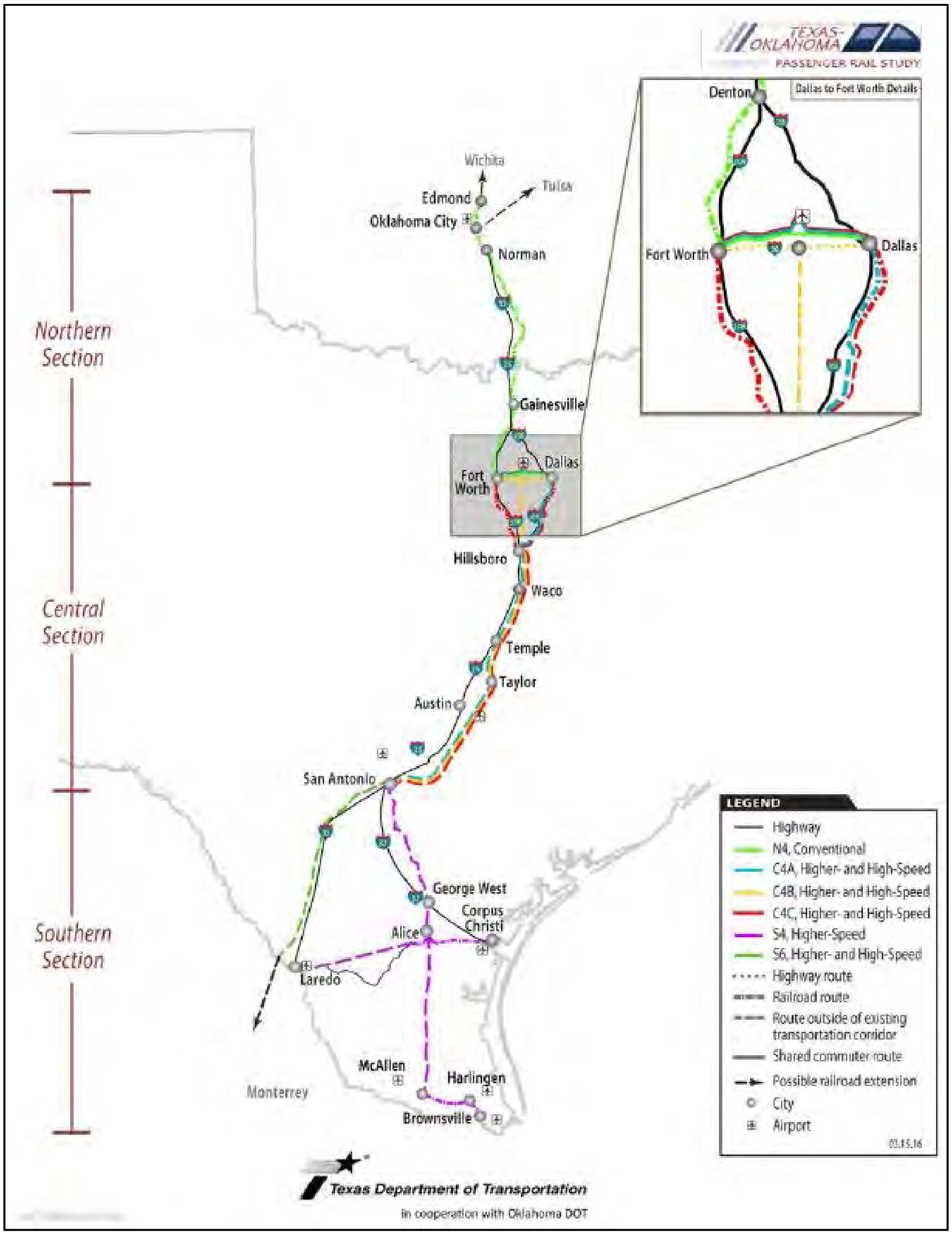
The study documents how passenger rail could serve Texas communities and the benefits and impacts of different passenger rail choices. Preferred service alternatives were developed for the 850-mile corridor as a whole as well as three discrete segments of the corridor:

- Northern: Oklahoma City to Dallas/Fort Worth
- Central: Dallas/Fort Worth to San Antonio
- Southern: San Antonio to Rio Grande Valley/Corpus Christi/Laredo

Because the study was federally funded, a service-level EIS was required to comply with the National Environmental Policy Act (NEPA) and concluded with the issuance of a combined FEIS/ROD.[33] The service-level EIS documents the impacts, benefits, and costs of each passenger alternative compared to a No Build alternative. Figure 3-2 shows the 850-mile rail corridor analyzed in the study.

[32] http://www.txdot.gov/inside-txdot/projects/studies/statewide/texas-oklahoma-rail.html
[33] https://cdxnodengn.epa.gov/cdx-enepa-II/public/action/eis/details?eisId=241034

Figure 3-2: Texas-Oklahoma Passenger Rail Study Corridor



Source: Texas-Oklahoma Passenger Rail Study Combined FEIS and ROD

Texas' population and economy are booming, and much of the growth is occurring in the already-congested I-35 corridor (86 percent of all Texans live along or just east of the I-35 corridor).[34] While TxDOT continues to explore roadway improvements in the corridor to improve mobility and the economy, other options, such as passenger rail service, could reduce demand on some of the state's most congested roadways. Through the Texas-Oklahoma Passenger Rail Study,[35] TxDOT studied how

[34] https://ftp.dot.state.tx.us/pub/txdot/commission/2017/1025/2-presentation.pdf
[35] http://www.txdot.gov/inside-txdot/projects/studies/statewide/texas-oklahoma-rail.html

passenger rail service could fit in this travel corridor, if delivered efficiently, reliably, comfortably, and with trip times comparable to or faster than automobiles. The study recommended the following service options, based on projected ridership, capital costs, and impacts:

Northern Section (Oklahoma City to Dallas/Fort Worth) – Conventional Rail. The study recommended that service in this section be provided by conventional diesel-powered trainsets operating on shared-use passenger and freight tracks at top speeds of 79 to 90 mph. The study proposed increasing service frequencies along the route to between three and six daily round trips, extending the route north to Edmond on BNSF trackage, and extending the route east from Fort Worth to Dallas using the Trinity Railway Express commuter line to provide travelers in Oklahoma with a one-seat ride to both Fort Worth and Dallas. Two or three of the round trips were recommended to operate as "express" trains, making roughly seven stops, with the remaining "local" trains making as many as 12 stops. The Draft EIS estimated that approximately $1.8 billion (in 2013 dollars) of infrastructure improvements would be needed to implement the recommended service alternative.[36] The study projected the service would attract 700,000 rail passengers per year by 2035, which would be a 500 percent increase in mode share over the 2035 No Build Alternative.

Central Section (Dallas/Fort Worth to San Antonio) – High-Speed Rail. The study recommended that service in this section be provided by electric-powered high-speed trainsets operating on a dedicated high-speed rail right-of-way at top speeds of 220 to 250 mph. The study identified three possible alignment options between Dallas/Fort Worth and Hillsboro, and then proposed a common, dedicated high-speed rail alignment south of Hillsboro to San Antonio located outside of existing highway and rail corridors to enable trains to achieve the recommended maximum operating speeds. The proposed conceptual alignment between Hillsboro and San Antonio would follow the same general trajectory of existing BNSF and UP freight rail lines in order for high-speed trains to serve intermediate cities such as Waco, Temple, Taylor, and Austin, The study recommends operating 12 to 20 round trips per day, with a mix of "express" trains making six stops and "local" trains making eight or nine stops depending on the alignment option. The Draft EIS estimated that property and construction costs would total nearly $6 billion (in 2013 dollars) to implement the recommended service alternative. Depending on the alignment option, the study projected that a high-speed rail service in the corridor would attract 5 million to 8 million riders per year by 2035, representing approximately 12 to 20 percent of all passenger travel in the corridor (air, auto, bus, and rail), and an increase in mode share of 6,000 to 9,000 percent over the 2035 No Build Alternative.

Southern Section (San Antonio to South Texas) – Higher-Speed Rail, with a High-Speed Rail Option to Monterrey, Mexico. The study recommended that service in this section be provided by high-performance diesel-powered trainsets operating at top speeds of 110 to 125 mph on three routes: Laredo-Alice-Corpus Christi, San Antonio-Alice-McAllen-Brownsville, and San Antonio-Laredo with an extension to Monterrey, Mexico. Monterrey is a leading industrial and corporate center in Mexico with strong historic, economic, and social ties to Texas. The direct San Antonio-Laredo route was recommended only if the Monterrey connection is also built, with options to provide service using either high-performance diesel trains at up to 125 mph or electric-powered high-speed trains on a dedicated alignment with top speeds of 220 to 250 mph. Both options were recommended because

[36] https://www.fra.dot.gov/Elib/Document/16565

it was not known which speed and technology would be more compatible with the connecting infrastructure in Mexico. The north-south and east-west passenger routes intersecting at Alice are proposed to use a combination of existing freight rail corridors (but with separate passenger tracks adjacent to the existing freight tracks), abandoned rail lines, and new alignments. The direct San Antonio-Laredo route is proposed to use a new alignment outside existing transportation corridors to a station near the Laredo-Columbia Solidarity Bridge, which crosses the Rio Grande north of Laredo.

The study recommends operating four to six round trips per day from San Antonio south via Alice to Laredo or Corpus Christi, with a connecting feeder service from Alice to Brownsville. Service on the direct San Antonio-Laredo-Monterrey route is assumed to have four to six diesel-powered round trips per day, with no intermediate stops between San Antonio and Laredo, but if electrified high-speed rail service to Monterrey were built, frequencies could rise to between eight and 12 round trips per day. The Draft EIS estimated that property and construction costs would total approximately $2 billion to $3 billion (in 2013 dollars) to implement service on the north-south and east-west routes through Alice, and an additional $0.9 to $1.3 billion to implement direct service between San Antonio and Laredo. The study projected that the San Antonio-Brownsville/Laredo-Corpus Christi service would attract more than 600,000 rail passengers per year by 2035, of which approximately 42 percent would divert from highway travel and 43 percent would divert from local air travel. Direct rail service between San Antonio and Laredo on the route to Monterrey is projected to attract nearly 60,000 passengers per year by 2035 with a higher-speed diesel-powered service, and more than 138,000 passengers per year with a more frequent, electrified high-speed rail service.

TxDOT and FRA decided to recommend different alternatives for each geographic region because the study did not identify a single service type (conventional, higher-speed, or high-speed rail) that could optimally or feasibly serve all three geographic sections. However, the study noted that the alternatives recommended would not preclude the establishment of shared station facilities, timed transfers, or other types of connectivity between the services in the three geographic sections, although the study does not assume or call for such connectivity either. Future coordination with Mexico also would be required to establish protocols for trans-border passenger rail service.

With the conclusion of the study, regional and local groups have begun to pool their resources for the continued development of specific sections of the Texas-Oklahoma Passenger Rail Study's study area, as discussed below in Sections 3.5.2 and 3.5.3.

3.5.2 Dallas-Fort Worth Core Express

In 2017, TxDOT and FRA completed a federally funded alternatives analysis report to study potential alignments for a high-performance, intercity passenger rail corridor between Dallas and Fort Worth that also could provide a link with other planned new high- and higher-speed rail services at Dallas and Fort Worth. The Dallas-Fort Worth Core Express Service report[37] evaluated the feasibility and impacts of a establishing a dedicated, limited-stop passenger rail connector between the two cities. The study was 100 percent federally funded and considered possible rail alignments, train types, and speeds. The alternatives analysis was undertaken as the first step toward preparing a project-

[37] https://www.txdot.gov/inside-txdot/projects/studies/statewide/dfw-core-express.html

level Tier 2 Environmental Impact Statement and builds on recommendations in the Texas-Oklahoma Passenger Rail Study for establishing high-performance rail service between Dallas and Fort Worth.

The study evaluated three potential passenger rail corridors between Dallas and Fort Worth and assessed their feasibility to accommodate track alignments that could support operations at three different maximum speeds: 90 mph, 125 mph, and 220 mph. Figure 3-3 shows the three corridors evaluated in the study.

Figure 3-3: Corridors Evaluated in the Dallas-Fort Worth Core Express Alternatives Analysis

Source: TxDOT Dallas-Fort Worth Core Express Service Alternatives Analysis Final Report

The alternatives analysis concluded by recommending two corridors to carry forward for detailed analysis in a future Tier 2 EIS: the TRE Corridor and the Hybrid Corridor.[38] The TRE Corridor follows the existing rail alignment used by Trinity Railway Express commuter trains between Dallas and Fort Worth through Irving and Richland Hills. The Hybrid Corridor uses a combination of alignments, including the TRE commuter line between Dallas and Centreport, State Route 360 between Centreport and Arlington, and I-30 between Arlington and Fort Worth. Both recommended corridors can support train operations at 90 mph and 125 mph, noted the study, but neither corridor was considered viable for 220-mph service because of the higher costs, corridor lengths, physical constraints, and safety requirements associated with operations at that higher speed. Capital cost

[38] http://ftp.dot.state.tx.us/pub/txdot-info/rail/chsr-dfw/dfwces-alternatives-analysis-report.pdf

estimates developed during the alternatives analysis study ranged from $3.5 billion to $5.7 billion for the TRE Corridor, depending on track speed (90 mph or 125 mph) and propulsion technology, and $5.3 billion to $6.7 billion for the Hybrid Corridor. The study projected that the Hybrid Corridor would generate higher ridership, by serving Arlington and connecting with other Texas-Oklahoma Passenger Rail Study services, and had lower environmental impacts, but the TRE Corridor had better financial viability because of its lower estimated capital cost. As a result, both corridors were recommended for further analysis.[39]

FRA is currently working the North Central Texas Council of Governments (NCTCOG), the metropolitan planning organization (MPO) for the Dallas-Fort Worth Region, on the preparation of a Tier 2 EIS for the project. NCTCOG had included high-speed or express passenger rail corridors in its long-range regional transportation plan (Mobility 2045[40]). As part of the environmental analysis, NCTCOG, along with the Dallas-Fort Worth Regional Transportation Council and FRA, will initiate conceptual engineering of the alternatives, with support from TxDOT. In addition to the conventional rail options recommended in the Core Express alternatives analysis, the Tier 2 EIS will also include evaluation of a hyperloop alternative between the two cities.[41] (Hyperloop is an emerging transportation technology based on the concept of magnetically propelling pods carrying passengers or freight through a pneumatic tube at a high rate of speed.)

Although regional discussions have occurred about station concepts serving downtown Dallas, Arlington, and downtown Fort Worth, specific station locations have not yet been determined. However, in September 2017, NCTCOG and other local agencies released the results of its own Fort Worth High-Speed Rail Station Area Planning Study,[42] which evaluated potential high-speed rail station sites and recommended the existing Intermodal Transportation Center (ITC) area in downtown Fort Worth (since renamed Fort Worth Central Station) as its preferred location.[43] The report stated that the ITC provided a location that offered connectivity to existing rail and transit services, was compatible with the most likely high-speed rail alignment into the core of Fort Worth, and would generate significant opportunities for economic and cultural growth in the city center.

While the environmental study is going on, NCTCOG is also preparing an interlocal agreement with the cities of Dallas and Fort Worth for the establishment of a local government corporation, which will manage the design, financing, construction, operation, and maintenance of the Dallas-Fort Worth Core Express Service.[44] No funding for construction of the corridor has been programmed or identified at this time.

[39] http://ftp.dot.state.tx.us/pub/txdot-info/rail/chsr-dfw/dfwces-alternatives-analysis-report.pdf
[40] NCTCOG Mobility 2045: https://www.nctcog.org/trans/plan/mtp/2045
[41] https://hyperloop-one.com/texas-officials-confirm-hyperloop-technology-option-dallas-arlington-ft-worth-high-speed-corridor
[42] http://www.gatewayplanning.com/radiate/radiateUploadFiles/FortWorthHSR_FinalReport_FINAL_0911170.pdf
[43] https://www.nctcog.org/nctcg/media/Transportation/DocsMaps/Plan/Transit/FWHSR.pdf
[44] http://dallascityhall.com/government/Council%20Meeting%20Documents/msis_4_dfw-core-express-update_combined_111317.pdf

3.5.3 Fort Worth to Laredo

In fall 2018, NCTCOG and five other MPOs announced their intent to fund a transportation study that would develop a more precisely defined set of passenger rail transportation options in the Fort Worth-Waco-Temple-Austin-San Antonio-Laredo corridor. Led by NCTCOG, the study will build on the recommendations from the Texas-Oklahoma Passenger Rail Study Tier 1 Final EIS and Record of Decision. The upcoming transportation study will analyze and recommend specific alignments, technology options (including conventional rail, high-speed rail, magnetic levitation, and hyperloop options), and potential station locations that will be grouped into sets of alternatives to be carried forward for evaluation in future service level (Tier 2) NEPA documents. Work on the study is expected to begin in 2019 and conclude in 2020.

Amtrak had previously studied establishing a passenger rail service on a 375-mile route between San Antonio, Laredo, and Monterrey, Mexico, as part of its Network Growth Strategy published in 2000 and had even held preliminary discussions with Mexican authorities concerning alignment and right-of-way issues. However, no further action was taken once the study concluded.

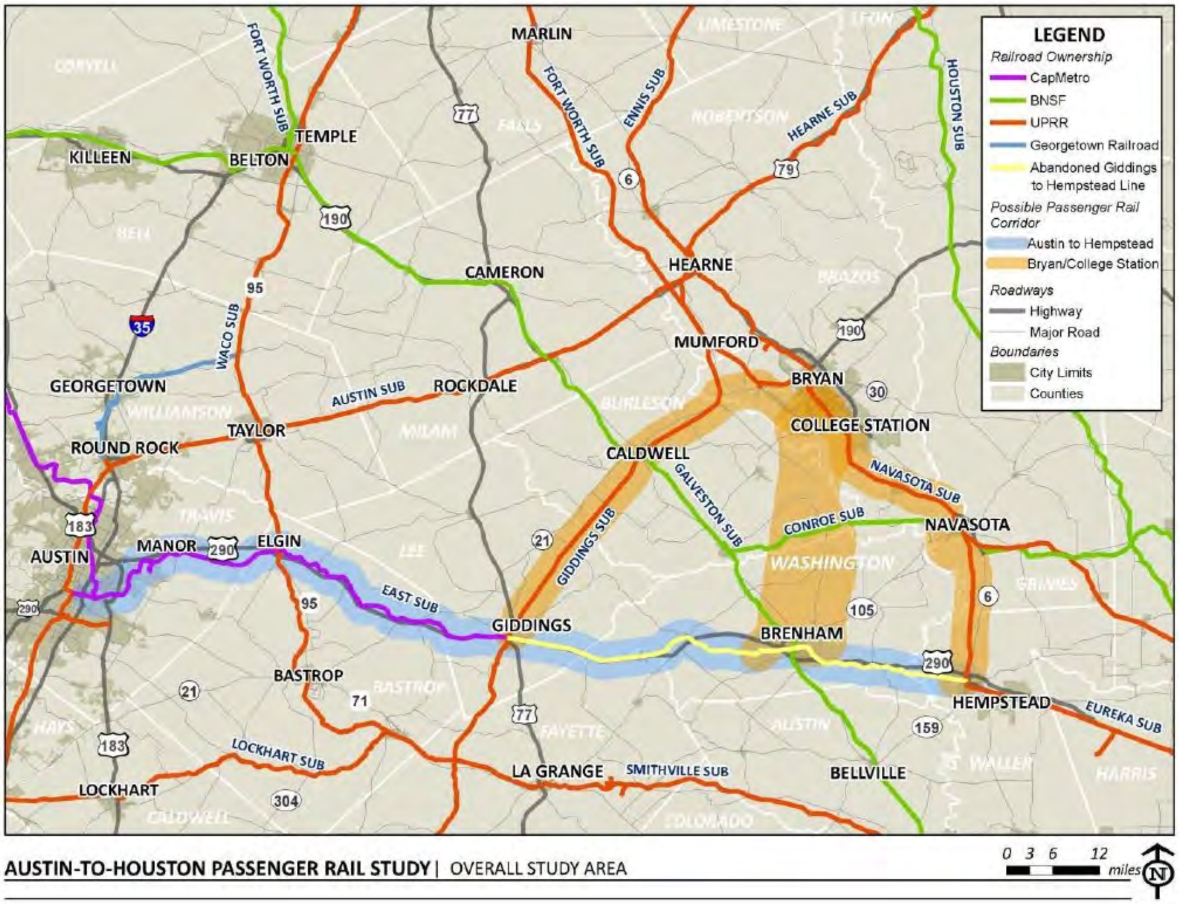
3.5.4 Austin to Houston

The Austin to Houston Passenger Rail Study, completed by TxDOT in December 2011, analyzed the feasibility of implementing 110-mph passenger rail service between Austin and Houston, including possible service to Bryan/College Station.[45] The corridor analyzed in the study lies roughly parallel to U.S. Highway 290 and incorporates the intermediate cities of Bryan/College Station, Giddings, Brenham, and Hempstead. The evaluation consisted of identifying the characteristics of existing rail infrastructure and operations in the corridor study area, analyzing potential alternative alignments for passenger rail operations, and determining possible infrastructure requirements and impacts of potential passenger rail service in the area.

Alignments evaluated in the study routes between Austin and Hempstead (direct), Austin and Hempstead via Bryan/College Station, Austin and Hempstead via Giddings and Bryan/College Station, and Austin and Hempstead via Brenham and Bryan/College Station. A connection at Hempstead to a potential Gulf Coast Rail District commuter rail line undergoing independent analysis at the time was assumed for the eastern end limit of the alignments. Figure 3-4 shows the alignments evaluated in the study.

[45] https://ftp.dot.state.tx.us/pub/txdot-info/rail/austin_houston_final.pdf

Figure 3-4: Austin to Houston Passenger Rail Study Alternatives



Source: TxDOT Austin to Houston Passenger Rail Study

The study analyzed four potential alignments, under two different service scenarios: a “start-up” schedule of four trains (two round trips) with a morning departure and evening return daily from both Austin and Houston, and a “build out” frequency of eight trains (four round trips) on weekdays with two morning departures and evening returns from both Austin and Houston and four trains (two round trips) on weekends. In all scenarios, passenger trains were assumed to operate at a top speed of 110 mph, where feasible.

The alignment alternatives were evaluated for environmental fatal flaws and flaws in the passenger rail alignments. The screening results were presented in exhibits and compared to determine a recommended alignment that was then carried forward for computer-based railroad operations simulation modeling. Lastly, a list of corridor requirements, based on the recommended alternative and additional infrastructure defined through the rail operations modeling was developed to outline the rail improvements needed for passenger rail implementation. The intercity passenger routes modeled included station stops at Austin, Elgin, Giddings, Brenham, Hempstead, and College Station. In the absence of a ridership analysis study, station locations were determined to be the areas with the greatest population along each corridor. The start-up service cost estimated in the study ranged from $936 million to $1.2 billion. Since the study’s publication, no additional steps have been taken to advance the implementation of service.

3.5.5 Dallas/Fort Worth to Meridian

Establishing a passenger rail service between the Dallas/Fort Worth region and the East Coast has been a longtime goal of cities and planning organizations along the I-20 corridor. The service would improve passenger rail travel options by providing direct service from Dallas/Fort Worth to other metropolitan regions in the southeastern U.S. such as Atlanta as well as Northeast destinations such as Washington, D.C. and New York. In addition, the service could further strengthen the Dallas/Fort Worth region as a future passenger rail hub where travelers would board or connect with trains serving routes throughout the South and Southwest. The most recent effort to evaluate the feasibility of passenger rail in this corridor occurred with the October 2017 release of the Dallas/Fort Worth to Meridian Passenger Rail Study.[46] The study was prepared by TxDOT using FRA grant funding provided by the I-20 Corridor Council.

The study identified the infrastructure requirements, estimated capital costs, and projected cost-benefits to reliably operate one daily round-trip intercity passenger train between Fort Worth and Meridian, MS. The passenger rail service was assumed to operate as a new section of Amtrak's existing *Crescent*, a long-distance train operating between New York and New Orleans. Through cars would depart New York as part of the *Crescent*, serving the major cities of Philadelphia, Washington, D.C., Charlotte, NC, Atlanta, and Birmingham, then split from the train at Meridian to operate west on a new route serving Jackson, MS, Vicksburg, MS, Shreveport, LA, Marshall, TX, Longview, Mineola, and Dallas, and terminating at the Fort Worth Central Station. Rail passengers would be able to make connections at Jackson, MS with Amtrak's Chicago-New Orleans *City of New Orleans*, and at Fort Worth with the *Heartland Flyer* and *Texas Eagle*. Figure 3-5 shows the proposed rail corridor in relation to existing Amtrak routes serving Texas and the Gulf Coast.

Figure 3-5: Project Corridor between Dallas/Fort Worth and Meridian plus Existing Amtrak Routes

Source: TxDOT Dallas/Fort Worth to Meridian Passenger Rail Study

[46] https://irp-cdn.multiscreensite.com/be785d40/files/uploaded/DFW%20to%20Meridian%20Passenger%20Rail%20Study.pdf

The service was assumed to use an existing 535-mile freight rail corridor, formed from contiguous segments of rail lines owned by NS (within the city of Meridian), KCS (Meridian-Shreveport, 310 miles), UP (Shreveport-Dallas, 192 miles), and TRE (Dallas-Fort Worth, 33 miles). The study analyzed existing track, signaling, and train volumes to determine the infrastructure upgrades and additional track capacity likely needed to support the reliable, 79-mph operation of intercity passenger rail service in the corridor. Based on that analysis, order of magnitude capital costs for new track capacity and stations were estimated to be $91.5 million. The study's benefit-cost analysis forecast that public benefits (measured in cost reductions of highway accidents, emissions, travel time, and travel costs from highway trips diverted to rail) would exceed the capital costs of the project by 2.23 to 1 after 20 years at a 7 percent discount rate.

The study used a conceptual schedule and base ridership projections developed by Amtrak in a previous 2015 route and service evaluation for establishing a Fort Worth Section of the *Crescent*. The Amtrak study had compared three possible train schedules, serving the corridor at three different times of day. The alternative recommended by Amtrak in the study kept the *Crescent* operating at times that closely adhered to the existing schedule between New York and New Orleans and called for a nighttime departure and arrival at Fort Worth of the new Texas section. This was the alternative evaluated by TxDOT in the 2017 study. The earlier Amtrak study projected that, under the recommended alternative, ridership on the *Crescent* would increase by 107,100 passengers per year, generating $22.997 million in annual incremental ticket revenue. The study also forecast that the day-to-day operation of a Fort Worth section of the *Crescent* would be economically viable without requiring an annual operating subsidy from the states along the extension.[47]

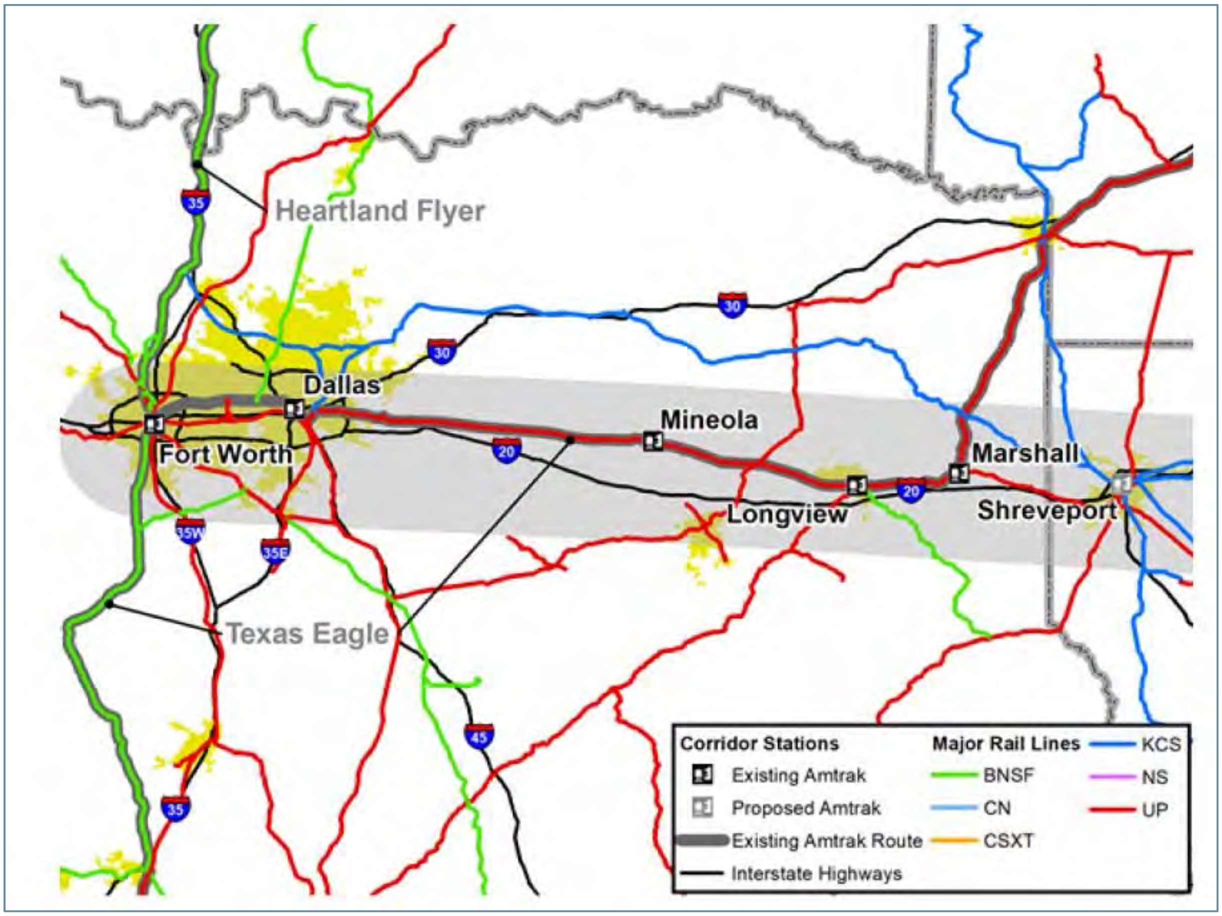
Because the host railroads did not participate in the TxDOT transportation study, the projected infrastructure requirements and capital costs may be underestimated and subject to change during future stages of development. Any type of service expansion of this nature would require agreement between all parties, including Amtrak and the host railroads. Funding for the project's next phases of planning, environmental, or engineering work has not been secured at this time.

3.5.6 Dallas/Fort Worth to Shreveport/Bossier City

In addition to adding long-distance passenger rail service, the I-20 Corridor Council, East Texas Council of Governments, and the Texas-Louisiana Rail Coalition have been working with cities and planning agencies along the I-20 corridor to establish a multi-frequency regional passenger rail service in the Texas-Louisiana Corridor, linking the Dallas/Fort Worth Metroplex with east Texas and Shreveport/Bossier City, LA. Using grant funding provided by the I-20 Corridor Council, TxDOT and Amtrak developed a passenger rail transportation study for the corridor that identified the capital and operating requirements projected to run two round-trip passenger trains per day on UP's freight rail line between Dallas and Shreveport. The study included evaluation of a direct rail connection between Marshall and Shreveport, as well as the use of the TRE commuter rail line between Dallas and Fort Worth, providing a potential link to DFW International Airport. Figure 3-6 illustrates the corridor analyzed in the study.

[47] http://www.i-20corridorcouncil.com/overview

Figure 3-6: Texas-Louisiana Corridor



Source: TxDOT Dallas/Fort Worth to Meridian Passenger Rail Study

TxDOT concurrently prepared a Statewide Ridership Analysis that analyzed rail travel demand between various city pairs statewide, including the Dallas-Shreveport/Bossier City corridor, and evaluated transit connectivity and potential service frequencies. The two efforts together helped establish a blueprint for future corridor development and service implementation, however, no funding has been secured for future stages of the project and agreements with host railroads have not been established.

3.6 INFRASTRUCTURE CONSIDERATIONS FOR NEW AND EXPANDED PASSENGER SERVICES

A critical factor in all proposals to add or increase passenger rail service on existing rail lines is railroad line capacity, and the ability of existing freight railroad corridors to reliably accommodate additional passenger train frequencies. As freight volumes continue to grow on existing routes, opportunities to add passenger service may be limited or require significant investments in additional track infrastructure. On routes where higher travel speeds are desired, track reconfigurations that separate freight operations from passenger operations might need to be developed.

Intercity passenger trains currently must meet very high reliability standards, established under federal law with the passage of PRIIA, that can be challenging to achieve when traveling on rail lines with growing volumes of freight traffic. Investments in additional rail line capacity will be needed to meet the increasing demands of freight rail customers as well as any additional passenger rail services, and financial contributions from the public sector will be required to support passenger operations under the federally mandated reliability thresholds. In some locations, underutilized or inactive freight railroad lines (often former mainlines considered duplicative or incompatible for today's large transcontinental freight rail networks) might be upgraded as bypass routes where feasible, or new bypass routes might be constructed. In addition, busy highway-rail grade crossings will likely need to be closed or replaced with grade-separated bridges to create more reliable, fluid rail and road transportation networks that can be operated without concerns over blocked grade crossings.

When planning any passenger rail expansion or new service on freight railroad infrastructure, capacity provisions for rail freight and their growth must be included as well. The corridor improvement strategy must not only account for investments to improve and add capacity for the proposed rail passenger service, but in accordance with PRIIA, must also include infrastructure solutions to prevent existing freight services and forecasted higher future freight volumes from being impaired by the passenger operation. An additional issue is that public investments made to expand passenger rail consume right-of-way and likely require the purchase of additional real estate to expand rail corridor capacity, increasing the cost of passenger rail capacity investments.

3.7 POTENTIAL IMPROVEMENTS TO EXISTING COMMUTER SERVICES

This section summarizes future projects that are in development or under consideration to improve existing commuter rail operations in Texas. The four existing commuter rail operations in Texas are:

- Trinity Railway Express between the cities of Dallas and Fort Worth
- A-Train between the cities of Denton and Carrollton
- TEXRail between the city of Fort Worth and DFW Airport
- MetroRail Red Line between the cities of Austin and Leander

3.7.1 Trinity Railway Express Initiatives

The following TRE improvement projects have been identified from planning documents, budgets, and media releases.

3.7.1.1 Positive Train Control Implementation

Positive Train Control (PTC) will be fully implemented on TRE's Dallas-Fort Worth corridor no later than the federally established deadline of December 31, 2020, as mandated by Congress in accordance with the Rail Safety Improvement Act of 2008. Costs will be shared by TRE's parent agencies, DART and Trinity Metro, with support from NCTCOG. As of October 31, 2018, TRE had made the following progress toward installing PTC[48]:

[48] TRE: https://trinityrailwayexpress.org/positive-train-control/

- All TRE locomotives and cab cars have been fully equipped and are PTC operable
- All TRE track segments are completed and PTC-compliant
- All required radio towers are installed, but not yet operable
- Required PTC radio spectrum is available and ready for use
- All wayside hardware has been installed
- Sixty-four percent of training has been completed

In August 2018, FRA announced a joint award to DART and Trinity Metro of up to $9.5 million in grant funding through the Consolidated Rail Infrastructure and Safety Improvements (CRISI) program to assist Fort Worth's two commuter rail operations, TRE and TEXRail, with the implementation of a PTC back office system, PTC systems integration and testing with multiple freight and passenger railroads, PTC interoperability testing, and employee training.[49] DART had budgeted $10,201,000 in FY18 for its share of PTC installation on TRE and TEXRail, and $34,800,000 overall for its share of the complete installations.[50]

3.7.1.2 Track Capacity Expansion

TRE is engaged in an ongoing process to add track capacity to its 34-mile Dallas-Fort Worth corridor, which will improve the reliability of existing passenger and freight operations, as well as enable more frequent passenger rail service, increasing ridership and reducing congestion. As of spring 2018, approximately 42 percent of TRE's corridor had a second mainline track, while the rest of the corridor was single track with passing sidings. The capacity expansion effort includes double-tracking additional line segments, creating grade-separated crossings, and replacing or rehabilitating bridges.

3.7.1.3 Inwood Road Bridge Rehabilitation

DART in 2016 awarded an engineering services contract for the rehabilitation of the single-track, timber pile trestle span TRE bridge over Inwood Road in Dallas[51]. The work included developing repair options for the bridge structure, with associated plans, specifications, and cost estimates. The scope of work encompassed structural design, geotechnical services, field and design survey, drainage and services during construction. A critical aspect of the project is maintaining access to Inwood Road, a primary gateway into the Southwestern Medical District. Figure 3-7 shows the current Inwood Road bridge.

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[49] https://railroads.dot.gov/newsroom/fra-awards-more-200-million-ptc-implementation
[50] DART FY19 Business Plan (September 18, 2018), DART Reference Book (March 2018)
[51] Jacobs: https://www.ch2m.com/newsroom/news/ch2m-rehabilitating-vital-commuter-railway-bridge-for-dallas-area-rapid-transit

Figure 3-7: TRE Bridge over Inwood Road

Source: Google Streetview

3.7.1.4 Obsession Bridge Replacement

TRE has begun work to replace a single-track double lattice through truss bridge built in 1903 with a new double-track structure. Known as the Obsession Bridge, shown in Figure 3-8, the structure crosses a tributary of Ash Creek and is located between I-35E and Record Crossing Road in Dallas. The bridge replacement project was proposed to begin construction in early 2017 with a proposed 18-month construction duration.[52] TRE intends to preserve the current historic structure within the right-of-way as mitigation.

[52] DART Reference Book (March 2018)

Figure 3-8: TRE Obsession Bridge

Source: Google Streetview

3.7.1.5 Trinity River Bridge Project

TRE's Trinity River Bridge project in Fort Worth will increase track capacity and improve existing operations by adding 4,000 feet of second mainline track, constructing four new bridges, and rehabilitating the existing TRE bridge over the Trinity River, which was originally built in 1903. This project will reduce travel times for commuters and eliminate delays on a section of the corridor used by TRE commuter trains, Amtrak passenger trains, and Union Pacific and BNSF freight trains. The estimated project cost is $24.2 million.[53] Construction began in October 2018, and is expected to be completed in the summer of 2020.[54]

3.7.1.6 Medical District Drive Bridge Project

TRE's Medical District Drive project in Dallas involves widening the existing road under the TRE bridges from four lanes to six lanes. Two TRE bridges will be extended to allow for the roadway expansion below. The estimated project cost is $26 million, and completion is expected in the second quarter of 2020.[55]

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[53] Progressive Railroading 2018 – Passenger Rail At A Glance
[54] https://trinityrailwayexpress.org/alert/trinity-railway-express-tre-bridge-construction-project/
[55] Progressive Railroading 2018 – Passenger Rail At A Glance

3.7.2 Denton County Transportation Authority Initiatives

Denton and Collin counties are projected to be the nation's fastest growing economies between 2017 and 2021, according to an Oxford Economics forecast.[56] The following Denton County Transportation Authority (DCTA) improvement projects, which have been identified from planning documents, budgets, and media releases, provide alternatives for efficiently moving large numbers of people through counties using rail transportation.

DCTA completed a vision service plan in February 2012 that complemented regional planning efforts undertaken by NCTCOG. From that initial planning, the two highest priority expansion corridors in the county were determined to be an extension of A-Train service farther into Carrollton, which would allow future connections with the proposed Cotton Belt and Frisco commuter rail lines, and the development of the Frisco Line commuter rail corridor between Carrollton and Celina. These plans, along with a new station on the existing A-Train line and a northern extension in Denton, were carried forward into DCTA's 2018 Strategic Planning Guidance Report.[57] Figure 3-9 illustrates DCTA's current rail expansion plans.

The 2018 Strategic Planning Guidance Report also sets immediate, short-term, and long-term goals for the further development of these initiatives.[58] These goals include:

Immediate Goals (within 1 to 2 years):

- Expand stakeholder outreach to additional communities along the existing A-Train corridor
- Prepare a feasible plan to add an A-Train station near North Central Texas College in Corinth
- Develop initial evaluations of A-Train extensions to the north and to the south
- Develop a legislative package to allow the use of freight rail corridors for commuter rail

Short-Term Goals (within 2 years):

- Receive FRA certification for A-Train PTC operation
- Facilitate development near stations that will grow ridership and property values

Long-Term Goals (within 2 to 5 years or more):

- Implement A-Train extensions to the north and south
- Implement service on BNSF Railway trackage from Belt Line to Celina

The planned A-Train additions will create new system endpoints by extending service northward from the Downtown Denton Transit Center to Pilot Point and extending service southward from the Trinity Mills station into downtown Carrollton. The 2-mile south extension to Carrollton has a projected capital cost of $125 million.[59]

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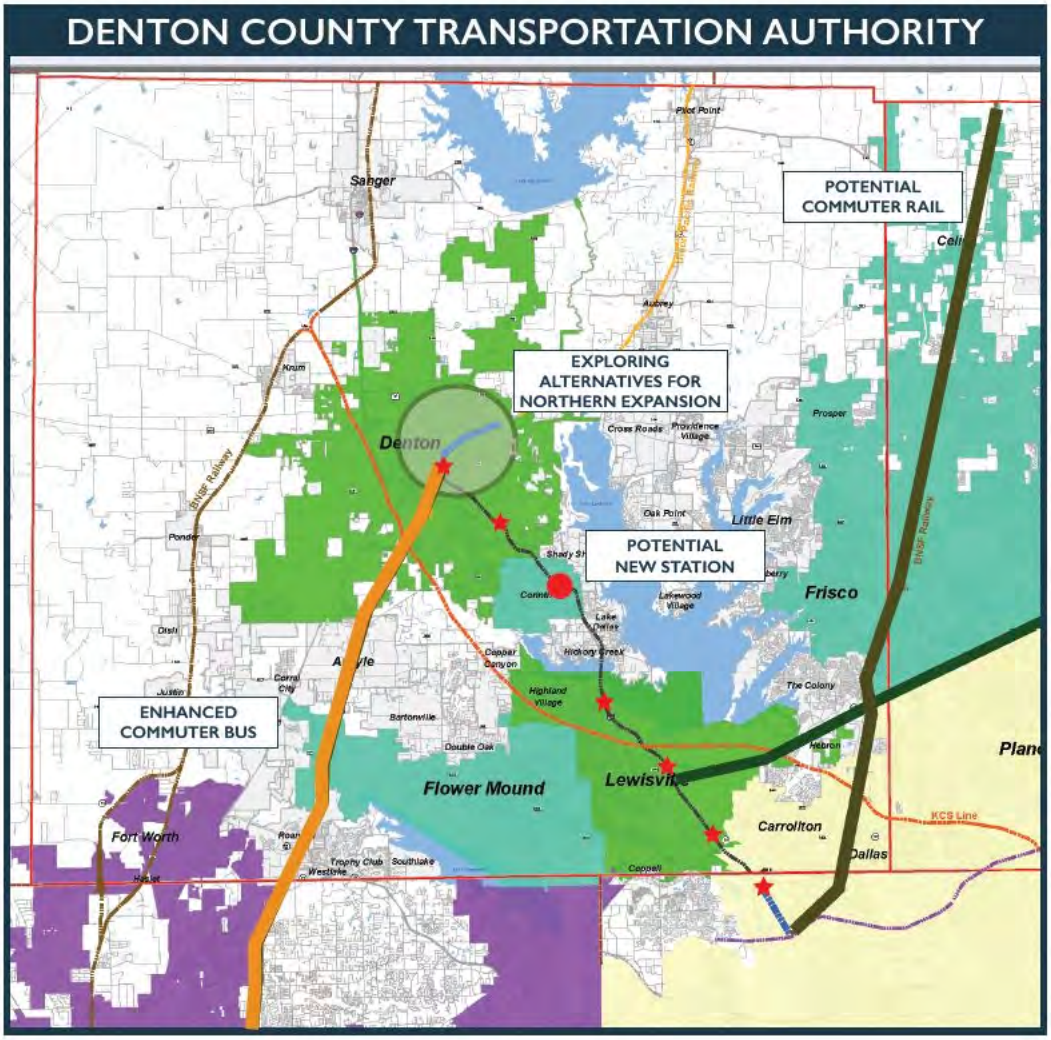
[56] Dallas News, August 2017: https://www.dallasnews.com/business/economy/2017/08/10/two-dallas-fort-worth-counties-lead-nation-economic-growth-potential-next-five-years
[57] https://www.dcta.net/sites/default/files/documents/about-us/Strategic_Guidance_Report_(FINAL)_-_3.23.18.pdf
[58] DCTA Strategic Planning Guidance Report, Resolution 18-02, Adopted March 22, 2018
[59] NCTCOG Mobility 2045 Appendix E Mobility Options: https://www.nctcog.org/nctcg/media/Transportation/DocsMaps/Plan/MTP/E-Mobility-Options.pdf

Figure 3-9: Potential DCTA Rail Extension in Denton and Collin Counties



Source: DCTA 2018 Strategic Planning Guidance Report

The other long-term goal is to establish commuter rail service on the Frisco Line, extending from the Downtown Carrollton Station (Belt Line Road) northward through Frisco to Celina in Collin County over BNSF Railway freight tracks. DCTA's 2012 vision plan noted that Frisco Line service would attract a projected 12,000 daily riders, the highest ridership among the various future rail corridors studied and provide a needed transportation link that has been identified frequently in prior regional mobility plans.

DCTA is also working with NCTCOG on advancing the initiatives recommended for Denton and Collin counties in NCTCOG's Mobility 2045 regional transportation plan.[60] This plan also calls for building the A-Train South Extension to Carrollton and adding commuter rail service on the Frisco corridor, as

[60] NCTCOG June 2018

well as adding commuter rail service on the McKinney corridor from Plano to McKinney, without specifying precise alignments.

PTC implementation, an immediate need identified in the strategic plan, is also progressing. By January 2018, DCTA had installed 100 percent of the A-Train's PTC wayside and on-board equipment.[61] The agency began testing the system in spring 2018 and in January 2019, DCTA received FRA approval to initiate Revenue Service Demonstration operations on the 21-mile commuter line.[62] RSD approval allows the agency to begin operating revenue (regularly scheduled) trains under the PTC system. In August 2018, FRA awarded DCTA up to $4 million in grant funding through the Consolidated Rail Infrastructure and Safety Improvements (CRISI) program to assist the agency with its continued PTC installation, testing, and training efforts.[63] DCTA will fine-tune the A-Train's PTC system based on data received from the revenue service demonstration operations and expects to receive FRA certification of its PTC system in June 2020.

3.7.3 TEXRail Initiatives

Although it only began operation in January 2019, efforts to extend the TEXRail commuter service are already underway. Trinity Metro is actively pursuing a long-term plan to build an 11-mile extension of the TEXRail system from the Fort Worth T&P Station southwest to Sycamore School Road in southwest Fort Worth near McPherson. The extension has an estimated capital cost of $1.1 billion, and is anticipated to be in service by 2045.

The extension will likely be built in phases. In fall 2018, Trinity Metro had submitted a proposal to the City of Fort Worth to implement an extension of service from downtown Fort Worth to Summer Creek in southwest Fort Worth near the Chisholm Trail Parkway, with intermediate stations serving the Medical District, Texas University, and I-20 at Granbury Road. This line segment, which has a projected capital cost of $500 million, was originally planned to open as part of the existing service but was dropped to redirect resources to initiating service between Fort Worth and DFW Airport.[64] Figure 3-10 illustrates the existing TEXRail route and planned southwest extension.

Trinity Metro also has a long-term plan to double-track the complete TEXRail line, improving both passenger and freight operations in the corridor.

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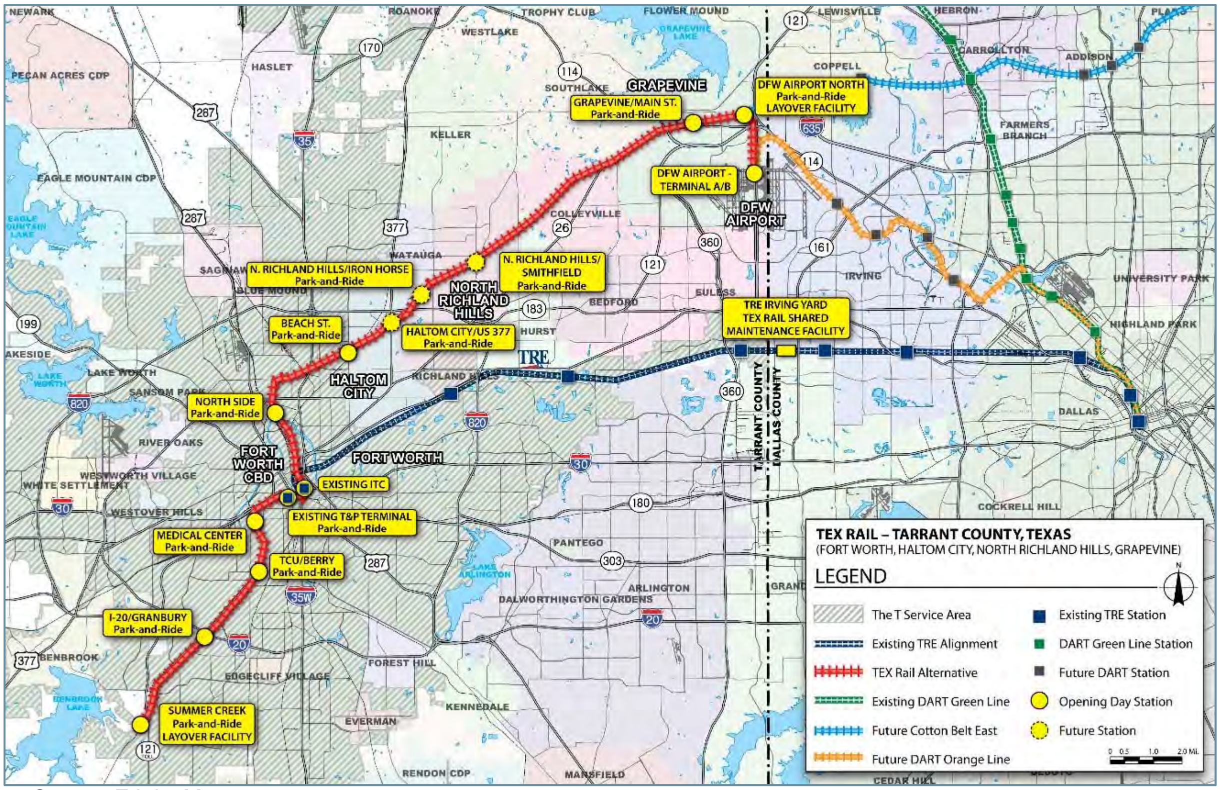
[61] DCTA Press Release "Denton County Transportation Authority Moves Forward with Adopted FY' 18 Strategic Planning Guidance Report": https://www.dcta.net/images/uploads/press_releases/DCTA_FY18_Strategic_Guidance_Plan_Board_Approval_%28FINAL%29.pdf
[62] https://www.dcta.net/media-center/news/2019/dcta-receives-fra-approval-go-revenue-service-demonstration-positive-train-control
[63] https://railroads.dot.gov/newsroom/fra-awards-more-200-million-ptc-implementation
[64] http://www.fwtx.com/articles/fwincfeatures-fwinc/fwinc-features/6-projects-around-texrail-keep-eye-and-whats-next

Figure 3-10: Existing TEXRail System and Planned Southwest Extension



Source: Trinity Metro

3.7.4 Austin Capital Metro Initiatives

Austin's Capital Metropolitan Transportation Authority (Capital Metro) unveiled its long-term transit plan for Central Texas to the public on October 1, 2018.[65] Capital Metro's Project Connect initiative will address anticipated transportation impacts associated with the growing population and increasing road congestion in the capital area by implementing a series of transportation improvement projects in distinct corridors over the next several years. Following an initial evaluation phase of potential corridors where transportation investments would be directed, two commuter corridors were advanced for further evaluation in Phase 2 of Project Connect study: the existing MetroRail 32-mile Red Line corridor between Austin and Leander, and a proposed 27-mile Green Line rail corridor from Austin northeast to Manor and Elgin.

3.7.4.1 Proposed Green Line Commuter Rail Service

The proposed Green Line commuter rail project is part of Project Connect, but a feasibility study for the service had already been approved by the board of directors on July 30, 2018.[66] The new line would originate in Austin, and follow an existing Capital Metro freight line north and east through Travis and Bastrop counties serving Pleasant Valley, Loyola, Colony Park, Manor, and Elgin. Capital

[65] KVUE: https://www.kvue.com/article/news/local/after-unveiling-autonomous-transit-maps-capmetro-wants-feedback-on-long-term-plans/269-599925806
[66] Austin Monitor: Capital Metro gives green light to Green Line, August 1, 2018

Metro has identified the Green Line as an "equity corridor" serving Austin's Eastern Crescent that could provide low-income households with access to more affordable housing options along a high-capacity transit system that would link them to jobs and services within Central Austin and beyond. The Green Line would connect with the MetroRail Red Line at the Plaza Saltillo and Downtown Austin stations, as well as other potential high-capacity corridors and Capital Metro's high-frequency bus network. The Manor station would be located adjacent to an existing Capital Metro bus park and ride. Figure 3-11 shows the proposed route of the Green Line.

Early planning efforts indicated that the Green Line would be one of the least invasive transit expansion projects and would result in limited impacts to right-of-way and travel lanes using railroad infrastructure already owned by Capital Metro. However, the cost to repurpose the existing freight-only tracks for passenger rail service is relatively high, given the length of the corridor and the number of bridges. The proposed service would use diesel multiple unit trainsets like those used on the Red Line and operate with 30-minute peak frequencies and 60-minute off-peak frequencies.

Capital Metro's initial planning considers two investment alternatives for development of the Green Line. The first alternative is a Short-Term Green Line Investment between Downtown Austin and Manor. The second alternative is the Long-Term Green Line Extension between Manor and Elgin. Elgin is outside Capital Metro's current service area, and thus service to Elgin would require a shared funding agreement with the city, Bastrop County, or other funding partners. The short-term corridor from Austin to Manor is projected to cost $264 million to build and would generate a daily ridership of 1,800 by 2025. The long-term extension from Manor to Elgin is projected to cost $98 million to build and would generate an additional 100 passengers a day.[67]

3.7.4.2 Short-Term Red Line Investments

In addition to Project Connect, Capital Metro has identified several short-term investment needs for the MetroRail Red Line, which are discussed in this section.[68]

Additional Passing Sidings. The MetroRail Red Line uses a single-track freight line with minimal passing sidings. This existing infrastructure limits the number of trains that can operate at the same time, which in turn limits the number of riders. Under the current schedule and infrastructure, with service every 10 to 30 minutes during peak periods and limited reverse-peak trips, the line has reached its maximum capacity during peak hour service. There are currently two passing sidings and four more under construction. The sidings under construction are being funded in part by an $11.3 million TIGER V grant awarded by U.S. Department of Transportation for the $27.3 million Moving Central Texas project sponsored by Capital Metro.[69] The project includes the construction of passing tracks located near the Lakeline, Howard, and Crestview stations, realignment of track and construction of a new siding at the Austin Junction wye, creation of super-elevation sections on selected, curves and related signal work.

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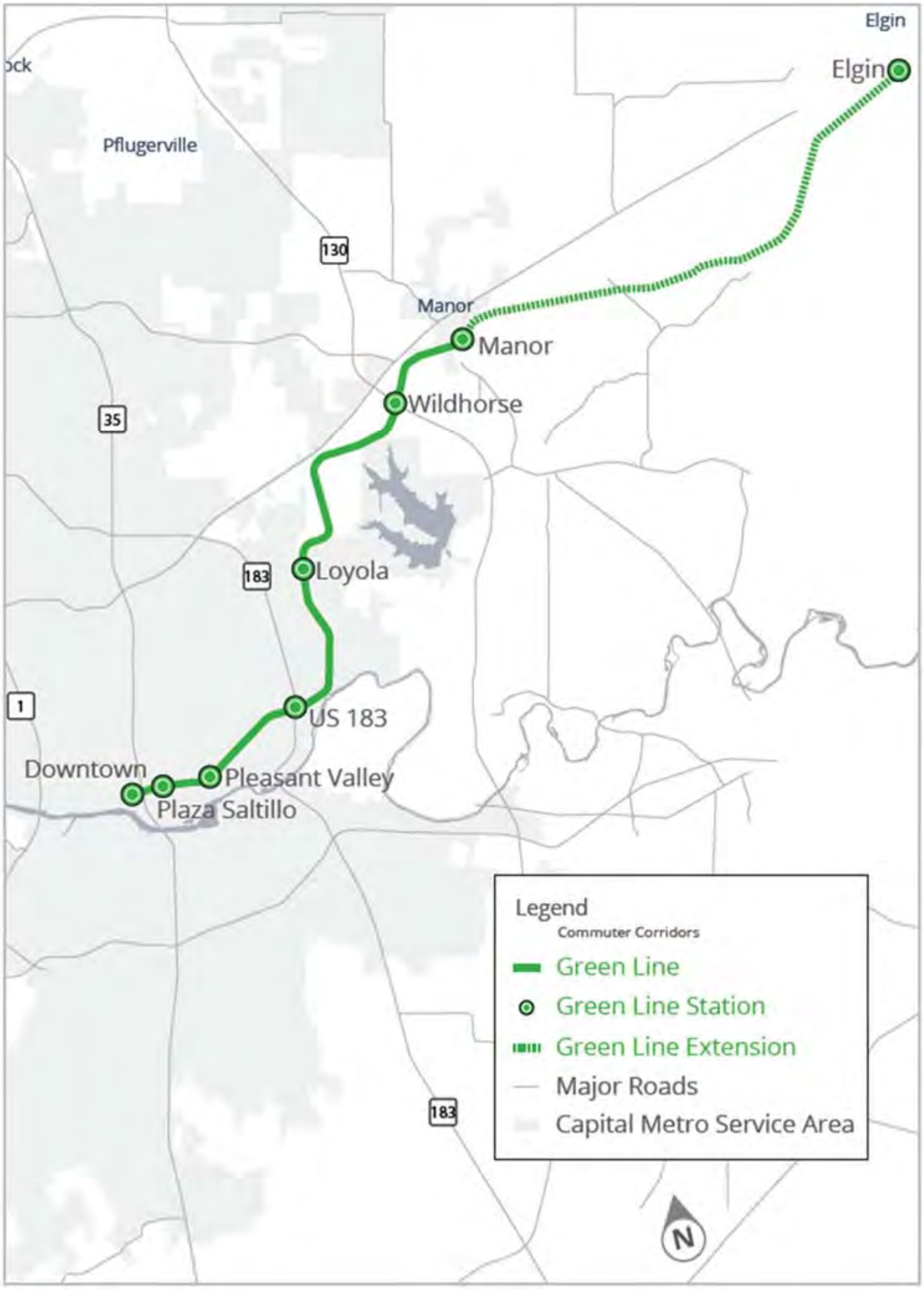
[67] https://www.capmetro.org/uploadedFiles/New2016/ProjectConnect/Resources/Project_Background/Corridors_and_Services/Green_Line_Flipbook_032818.pdf
[68] Capital Metro: https://capmetro.org/uploadedFiles/New2016/ProjectConnect/Resources/Project_Background/Corridors_and_Services/Red_Line_Short-Term_Flipbook_032818.pdf
[69] https://www.transportation.gov/sites/dot.dev/files/docs/TIGER_2013_FactSheets.pdf

Figure 3-11: Austin's Proposed MetroRail Green Line



Source: Capital Metro

In addition, Capital Metro is constructing a second main track near the Plaza Saltillo station. Both capacity expansion projects are expected to conclude in 2019. In its Capital Improvement Program for FY 2019 through FY 2023, the agency has budgeted $450,000 for a new passing siding between Leander and Lakeline Stations. (During midday periods and on weekends, trains terminate at Lakeline and do not operate to the end of the line at Leander.)

Capital Metro's Connections 2025 Service Plan proposes 15-minute frequencies for MetroRail between Downtown and Kramer stations. With additional sidings, Capital Metro could operate more trains in each direction, providing the ability to increase passenger capacity by operating trains on 15-minute frequencies. Based on planning-level analysis, six additional sidings would be needed for this service plan, with a projected cost of approximately $21 million. MetroRail forecasts that design and construction of additional sidings would take approximately 2 to 3 years at minimum.

Platform Extensions. Red Line stations were built with single-car train platforms but were originally designed with platform footprints to accommodate two-car train platforms in the future. The current one-car platforms limit the length of Red Line trains, and thus the number of riders that can board the train. As a result, the MetroRail Red Line ridership during peak periods has exceeded the seating capacity of its trainsets, creating standing-room-only conditions on some trips. Capital Metro is moving ahead with a plan to extend platforms at its Red Line stations to accommodate two-car trains, which will double seating capacity. The Downtown Station is currently funded for expansion by TxDOT and is being designed with extended platform leaving eight more stations in need of improvement. The Red Line station platforms currently contain a signature canopy for weather protection, benches, and lighting, and the extended platforms will be designed to include these same amenities. Based on planning-level analysis, Capital Metro estimates eight new platform extensions will cost approximately $18 million and would require approximately 3 years to construct.

3.7.4.3 Long-Term Red Line Investments

Capital Metro has identified several long-term investment needs for the MetroRail Red Line, which are discussed in this section. The two long-term projects listed below have a combined projected capital cost of $156 million that will enable the Red Line to meet a projected ridership four times the current level.[70]

Double Track. The type of passenger rail equipment used for Red Line operations, and the limited track infrastructure, requires that passenger trains and freight trains operate over the line at separate times, limiting the ability of each mode to best serve its customers and generate economic benefits for the region. However, commuter and freight trains could use the line at the same time if the commuter equipment is federally certified for operation on shared track and if the corridor has enough double-track. One of the long-term investment scenarios recommended in Project Connect is to double-track the entire Red Line between the Downtown Austin and Kramer stations, and construct sections of double track between the Kramer and Leander stations. This additional infrastructure would allow for more Red Line daytime, evening, and late-night service, with 15-minute

[70] https://www.capmetro.org/uploadedFiles/New2016/ProjectConnect/Resources/Project_Background/Corridors_and_Services/Red_Line_Long-Term_Flipbook_032818.pdf

frequencies during peak periods and 30-minute frequencies in off-peak periods, as well as additional weekend service that would allow more freight rail service to operate during the same time periods.

New Heavy Maintenance Facility and Additional Trains. Red Line trains receive routine maintenance and servicing at a “light maintenance” facility built as a temporary measure when the line first opened. Any “heavy maintenance” such as equipment overhauls or major repairs must be done elsewhere by special contractors. In addition, the existing maintenance facility can only accommodate a limited number of trains, which limits the total amount of equipment that can be stored and used on the line, and in turn limits the ability of the Red Line to handle more passengers. Under Project Connect, Capital Metro is recommending a project to construct a heavy rail maintenance facility in Leander that would perform major repairs on Red Line trainsets, cutting repair costs and providing additional equipment storage and servicing capacity, as well as the purchase of four new two-car trainsets to alleviate crowding conditions on rush-hour trains.

3.7.4.4 Other Proposed MetroRail Improvements

Refurbished Rail Cars. Capital Metro proposes to retrofit its Red Line equipment fleet to meet FRA requirements that would permit its commuter trains and freight trains to operate on the line at the same time. The equipment upgrades include new seats and modified tables, although the cars would remain the same size and have the same number of seats, tables, and handholds. Capital Metro has budgeted $300,000 for safety upgrades to its existing rail cars in its Capital Improvement Program for FY19-23.

Austin Downtown Station Improvements. Capital Metro has budgeted for several improvement projects at its Downtown Station to help fulfill a municipal planning vision of creating a great public plaza that ties together Downtown Station, the Convention Center, and surrounding hotels and businesses to offer a unique, integrated visitor experience for downtown Austin. The following station improvements are included in the FY19-23 Capital Improvement Program:

- Improvements funded by TxDOT, including two extended-length platforms able to load four trains at a time: $29,986,760
- Pedestrian Crossings: $500,000
- Storm Water Improvements: $5,263,520
- Double Tracking: $4,535,000

Kramer Station Relocation. Capital Metro is planning to relocate its Kramer Station a half-mile north to the IBM Broadmoor Campus. The existing station does not have any parking and has limited access. More than half of the funding for the project will come from Brandywine, the owner of the IBM campus, as well as Charles Schwab & Co. Inc., which has a North Austin campus located adjacent to the IBM campus. Capital Metro is seeking federal funds to help cover the $16.7 million cost.[71] The agency applied for a $7.7 million federal discretionary BUILD grant, but it was not awarded. Capital Metro has budgeted $13,369,000 for the project in its FY19-23 Capital Improvement Program.

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[71] Community Impact Newspaper, June 27, 2018: Capital Metro applying for federal grant to relocate Kramer MetroRail station

Potential McKalla Place Station. The City of Austin owns 24 acres of land in North Austin at McKalla Place that could become the site of a proposed 20,000-seat Major League Soccer stadium to be developed by Precourt Sports Ventures. The site could be served by a new Red Line station at 10414 McKalla Place, although Precourt Sports Ventures has said it would not build a commuter rail station, estimated to cost $13 million, as part of the stadium development Two other mixed-use proposals by local developers do, however, include plans for a new MetroRail station at McKalla Place. No funding source for the station currently exists.

Plaza Saltillo Station Improvements. Development is underway of a 10-acre mixed-use community near the Plaza Saltillo Station that is expected to generate a significant volume of additional Red Line ridership. As a result, Capital Metro has planned improvements to station access areas to accommodate ridership growth. The agency has budgeted $62,775 for the project's engineering and another $62,775 for construction in its Capital Improvement Program for FY19-23.

Positive Train Control. Capital Metro has budgeted $25,084,346 for Positive Train Control in its FY19-23 Capital Improvement Program. An additional $536,224 has been allocated to Positive Train Control IT Support. Federal funding will assist Capital Metro with Positive Train Control installation, including $5.65 million awarded by the FRA through the 2018 Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program for integration testing, safety plan development, training, and systems testing of the technology, as well as two grants awarded in 2016, of $3 million from FRA and $9.8 million from the FTA through separate federal programs to help fund the installation of Positive Train Control.[72]

Additional Projects. Table 3-8 lists additional commuter rail projects that have been proposed in Capital Metro's FY19-23 Capital Improvement Program.

Table 3-8: Capital Metro Commuter Rail Proposed Improvements

Project Name	Proposed Budget ($)
Rail Maintenance Building Drainage	77,880
North Ops Rail Maintenance of Way Storage	2,677,256
Tiger V Grant Project	6,834,737
East Subdivision Quiet Zone (Freight Track)	200,000
Crossing Improvements Reimbursed by TxDOT (Freight Track)	1,707,000
Bridge Replacement (Freight Track)	2,000,000
Crossings Improvements Reimbursed by TxDOT	1,250,000
Rail Vehicle Engineering Support	1,300,000
Commuter Rail Vehicle Maintenance - Diagnostic Equipment	150,000
Leander Quiet Zones	1,000,000

[72] https://www.capmetro.org/uploadedFiles/New2016/About_Capital_Metro/Financial_Transparency/Annual_Budgets/Proposed-Fiscal-Year-2019-Budget.pdf

Project Name	Proposed Budget ($)
Bridge Replacement Survey	450,000
G4 DMU Special Tools and Capital Spares	450,000
Fleet Replacement	450,000
Signal System Replacement	450,000
Crossing System Replacement	450,000
Gate Mechanism Change out	450,000

Source: Capital Metro

3.7.4.5 Capital-Alamo Connections Study

The Capital-Alamo Connections Study is a joint effort between TxDOT, the Capital Area MPO (CAMPO), and the Alamo Area MPO (AAMPO) to develop a strategy for mobility improvements within the greater Austin-San Antonio region[73]. The study area encompasses a 12-county region including Bastrop, Bexar, Burnet, Caldwell, Comal, Guadalupe, Hays, Kendall, Travis, and Williamson counties, which are represented by both MPOs, and Blanco and Wilson counties which are outside the MPO boundaries.

The study is intended to establish a multimodal approach to managing roadway congestion and improving overall mobility between the Austin and San Antonio regions. Population growth in and between Austin and San Antonio is expected to increase in the coming years, leading to an increase in congestion and travel delay. The I-35 corridor is the main connector between Austin and San Antonio, but opportunities to expand or improve I-35 are limited. For this reason, the study will consider possible solutions in addition to adding capacity to I-35. The purpose of the study is to develop a regional transportation strategy for enhancing mobility through infrastructure, policy, and technology solutions for the greater Austin-San Antonio region. These solutions will be organized into short and long-term timeframes for implementation

Although most of the recommendations focused on roadway upgrades and improvements to enhance freight transportation in the region, some strategies pertain to the expansion of transit and further cooperation between the transit agencies of the two cities at each end of the study. One of the plan's recommendations is to create a Regional Rail Strategy for the movement of people and goods. This could eventually lead to commuter rail expansion. As part of the "Implement Regional Intercity Transit Services" strategy, the study suggests adding or improving rail connections between New Braunfels and San Antonio and between Buda and Austin.[74] The study also recommended establishing a bi-regional passenger rail technical committee to pool resources and coordinate future efforts targeted at increasing passenger rail service in the region.

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[73] TxDOT: Project Website: https://www.txdot.gov/inside-txdot/projects/studies/statewide/capital-alamo-connections.html

[74] TxDOT: Joint MPO Transportation Policy Board Regional Workshop Meeting Summary, December 5, 2018: http://ftp.dot.state.tx.us/pub/txdot/get-involved/aus/capital-alamo-connections/120818-jointtac-workshop-summary.pdf

3.8 Potential New Commuter Rail Routes and Services

This section identifies several potential new commuter rail services under development or consideration, backed by local or regional public agencies that have the responsibility for planning, funding, and managing the service. In some cases, the expansion or improvement of commuter rail may depend on the availability of funding, which could include bonds or other sources that require approval through a ballot measure.

3.8.1 Cotton Belt Corridor Regional Rail Project

The Cotton Belt Corridor Regional Rail Project will establish a new commuter rail operation on a 26-mile route that extends from Dallas-Fort Worth International Airport Terminal B to Shiloh Road in Plano. The project will use the eastern segment of the Cotton Belt Corridor, a 52-mile rail line linking Fort Worth and Wylie that was purchased by DART in 1990. Trinity Metro's TEXRail commuter rail service, inaugurated in January 2019, uses the western section of the corridor between DFW Airport and downtown Fort Worth. DART's Cotton Belt Corridor Regional Rail Project will link growing employment and activity centers along a heavily traveled, east-west crosstown corridor north of central Dallas in the northern part of the DART service area. Commuter rail service on the corridor will be operated with the name "Silver Line," under a resolution approved by the DART board of directors approved on June 18, 2019.[75]

The corridor passes through the cities of Grapevine, Coppell, Carrollton, Addison, Dallas, Richardson, and Plano. DART's Silver Line service also will allow riders to reach central Dallas and additional suburban areas by providing transfer opportunities with DART's hub-and-spoke network of light rail lines at Richardson (Orange Line), Carrollton (Green Line), and Plano (Red Line), as well as TEXRail at the DFW Airport and DFW North stations. The DFW North Station will include a future "through" platform that will allow direct east-west movements on the Cotton Belt rail corridor to/from Fort Worth. While the project is mostly within DART-owned right-of-way, trains will deviate from the existing railroad corridor at DFW Airport to reach the Terminal B commuter rail station in the Coppell/Dallas area near North Lake to serve Cypress Waters, in downtown Carrollton where several rail lines intersect, and in Richardson/Plano to serve the CityLine development.

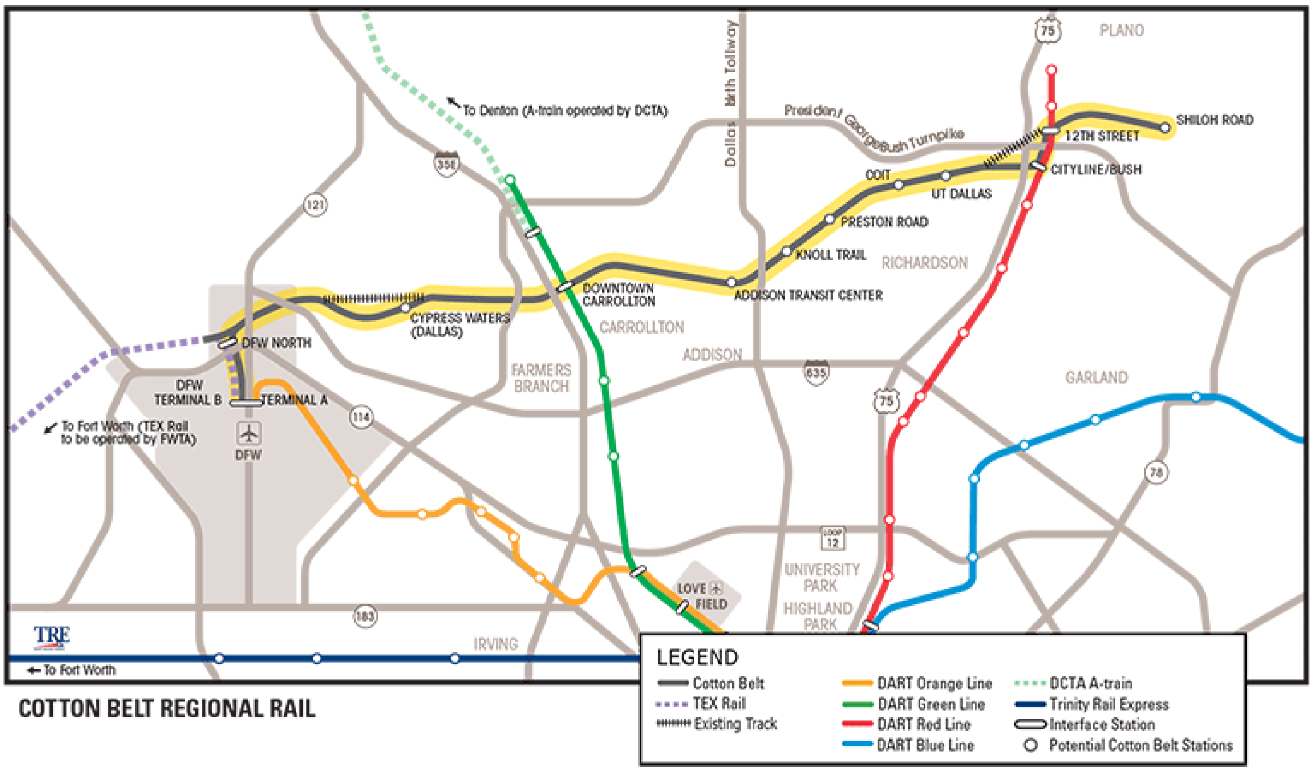
Ten new station locations are included in the Preferred Alternative described in the project's Final Environmental Impact Statement (FEIS) and approved in a federal Record of Decision signed in November 2018.[76] Stations will be located at DFW Airport, DFW North, Cypress Waters, Downtown Carrollton, Addison, Knoll Trail, University of Texas (UT) Dallas, CityLine/Bush, 12th Street (which includes a new infill LRT Station on the existing DART Red Line), and Shiloh Road. (Two additional proposed stops at Coit and Preston Road were eliminated from the final plan.) Figure 3-12 shows the Cotton Belt commuter line's proposed stations and connections with other rail transit lines.

A succession of transportation plans prepared by DART had recommended development of the Cotton Belt rail service as a priority project to serve a travel corridor that had frequently been identified as heavily congested and in need of additional transportation capacity and mobility

[75] https://www.dart.org/news/news.asp?ID=1405
[76] https://www.dart.org/ShareRoot/about/expansion/cottonbelt/cottonbeltfeis/CottonBeltFEISandROD.pdf

options. DART's 2030 Transit System Plan, published in 2006, stated that passenger rail service on the corridor between DFW Airport and Plano, operating on 20-minute peak and 60-minute off-peak frequencies, would be the most cost-effective and direct means of serving the crosstown corridor.[77] DART's 2022 operating plan for the corridor is based on a planned schedule of trains operating seven days per week, with 30-minute frequencies during weekday peak periods and 60-minute off-peak frequencies at start-up (2022), and 20-minute peak frequencies by 2040.[78]

Figure 3-12: Cotton Belt Corridor Regional Rail Map



Source: DART

DART advanced the project's proposed startup from 2035 to 2022 in its FY17 20-Year Financial Plan, after the agency decided to finance the project by taking advantage of the federal Railroad Rehabilitation and Improvement Financing (RRIF) loan program.[79] By funding the commuter rail startup with a low interest rate RRIF loan, DART could use its bond-issuing capabilities to finance other rail transit expansion projects in the region. The project's estimated $1.135 billion startup cost would be paid for with a $908 million RRIF loan awarded by U.S. DOT's Build America Bureau in

[77] Fact Sheet: Expanding Passenger Rail Through Innovation, NCTCOG, September 2011
[78] DART; Railway Age: DART approves Cotton Belt commuter line, September 27, 2018
[79] https://www.dart.org/about/dartreferencebookmar18.pdf

December 2018,[80] along with a $139,300 grant and $87,700 from funding partners and local money.

DART Silver Line commuter trains will operate on tracks that are shared with freight trains for nearly the entire route. Freight service on the line is provided by shortline and regional railroads. As a result, the commuter equipment will consist of FRA-compliant Diesel Multiple Unit (DMU) trainsets (see Figure 3-13), with plans to purchase a fleet of eight vehicles for the service. In June 2019, DART announced it had signed a contract with the Swiss car builder Stadler worth $119 million for the construction of eight self-propelled FLIRT (Fast Light Innovative Regional Train) DMU trainsets to be used on the Cotton Belt corridor and the design of an equipment maintenance facility for the fleet.[81] Each trainset will consists of five permanently coupled cars, four for passengers plus a fifth power pack in the middle, and will accommodate approximately 240 seated and 225 standing passengers. Stadler has built self-propelled DMU trainsets currently in use in Texas on Denton County's A-Train, Austin Capital Metro's Red Line, and Trinity Metro's TEXRail.

Figure 3-13: Conceptual Rendering of a Cotton Belt DMU Train

Source: DART

Three federal agencies have been involved in oversight of the Cotton Belt Project. The Federal Transit Administration (FTA) serves as Lead Agency, the Federal Aviation Administration (FAA) is a cooperating agency (FAA has jurisdiction over DFW Airport and Addison Airport), and the FRA is a participating agency. In accordance with NEPA, DART developed a Draft EIS for the Cotton Belt Corridor Regional Rail project, which was made available to the public for review and comment on April 20, 2018. Those comments were incorporated into FEIS. In addition, the DART Board held a Service Plan amendment public hearing on March 27, 2018 and subsequently approved the Service Plan Amendment for the project on August 28, 2018. The Service Plan Amendment removed two stations and added three grade separations from what had been proposed in the DEIS. These changes were also incorporated into the FEIS. The combined FEIS/Record of Decision was approved

[80] https://www.transportation.gov/briefing-room/us-department-transportation-announces-908-million-loan-finance-cotton-belt-corridor
[81] https://www.railwayage.com/passenger/commuterregional/dart-flirts-with-stadler-for-119m-contract/

on November 9, 2018.[82] Residents along the corridor, as well as City Council resolutions for the project, requested consideration of additional walls and betterments in residential areas where noise barrier mitigation was not deemed warranted in the DEIS. The DART Board approved a Cotton Belt Corridor Betterments Program on August 28, 2018 to include potential additional walls or other betterments for residential areas along the corridor.

3.8.2 Potential Dallas/Fort Worth Regional Rail Corridors

In 2005, the North Central Texas Council of Governments (NCTCOG) produced a comprehensive Regional Rail Corridor Study in partnership with DART, Trinity Metro (known as The T at that time), and DCTA. The study's goal was to provide data and recommendations to decision makers on the best way to implement expanded passenger rail and other transit services in 11 corridors around the Dallas/Fort Worth region.[83] While the regional planning effort was underway, DCTA was moving forward in developing the A-Train service. Immediately following the regional effort, The T initiated a strategic plan, and subsequent corridor-specific planning and engineering efforts, to pursue implementation of the additional corridors identified in the regional plan from southwest Fort Worth, through downtown Fort Worth, and into the north end of DFW International Airport, now in operation as TEXRail. Since the plan's publication, NCTCOG has actively pursued regional agreements to advance passenger and rail transit development and connections to and from the region and initiated the next level of individual corridor planning on a number of corridors.

3.8.2.1 Mobility 2045 Overview

NCTCOG is the MPO for the Dallas/Fort Worth region, created by and for local governments to assist in regional planning. In 2018, NCTCOG released its most recent long-range regional transportation plan, called Mobility 2045.[84] The preparation of Mobility 2045 is the product of detailed analysis and extensive coordination, and contains detailed recommendations for expanding all modes of transportation, including freight and passenger rail transportation improvements, to best address regional mobility needs. The study notes that the North Central Texas region is projected to add 4 million new residents by 2045, which is a 55 percent increase. The plan calls for investing $135.4 billion in transportation projects and programs through 2045, which is an amount equal to the anticipated revenue that will be passed through the North Texas MPO's Regional Transportation Council during that timeframe.[85] The plan includes $30.1 billion in rail and transit system expansion. The investments recommended in the plan were selected for their ability to provide the greatest improvement to regional mobility compared with their cost, recognizing the constraints of available funding.

3.8.2.2 Recommended Commuter and Rail Transit Corridors

The Mobility 2045 plan identifies major transit corridor projects for the region, including high-performance regional passenger rail corridors linking communities throughout North Central Texas. Figure 3-14 illustrates the regional rail corridors and other light rail and bus transit corridors

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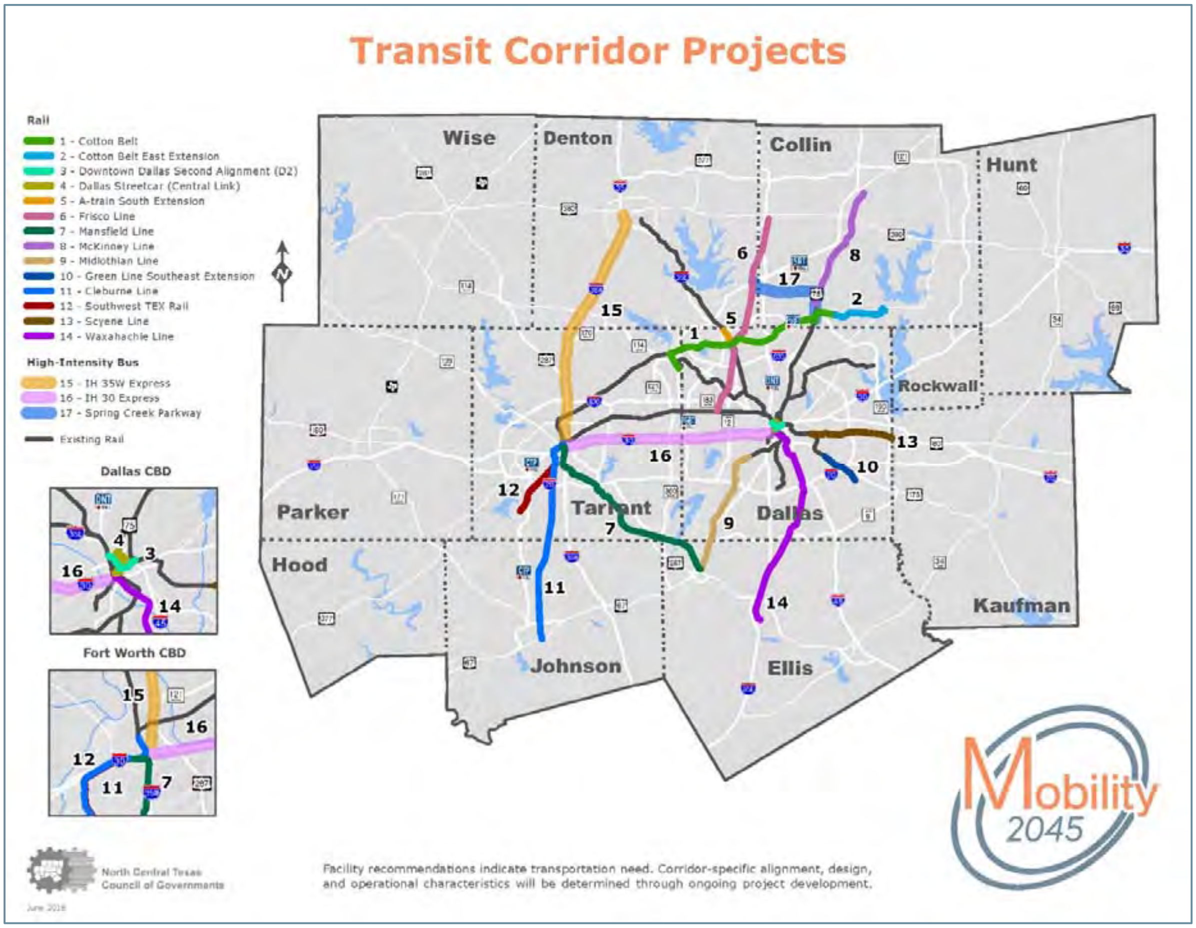
[82] DART: https://www.dart.org/about/expansion/cottonbelt.asp
[83] Report can be viewed at www.nctcog.org/trans/transit/planning/rrcs/.
[84] NCTCOG Mobility 2045: https://www.nctcog.org/trans/plan/mtp/2045
[85] https://www.dallasnews.com/news/transportation/2018/06/15/mobility-2045-plan-north-texas-envisions-ways-keep-millions-us-moving-includes-tolls

recommended for development in the plan. Many of the proposed regional passenger corridors are located along active freight corridors. Regional rail corridors vary in existing conditions, future travel demand, interaction with freight, financial requirements, and other factors; therefore, they reflect different levels of opportunities for implementation. As a result, the plan identifies potential corridors rather than distinct projects.

Figure 3-14: Mobility 2045 Major Transit Corridor Projects



Source: NCTCOG Mobility 2045, Chapter 6

With the opening of TEXRail in 2019, 11 additional regional rail projects that have long been recommended for development were incorporated into the plan's recommendations and appear on the figure above. NCTCOG recognizes that planning for future rail corridors requires detailed technical analysis, as well as participation from transit agencies and communities to ensure the right factors are in place to build and operate the system. Table 3-9 summarizes the specific corridors recommended for regional passenger rail development in the Mobility 2045 plan, as detailed in the plan's Appendix E (Mobility Options).[86]

[86] https://www.nctcog.org/nctcg/media/Transportation/DocsMaps/Plan/MTP/E-Mobility-Options.pdf

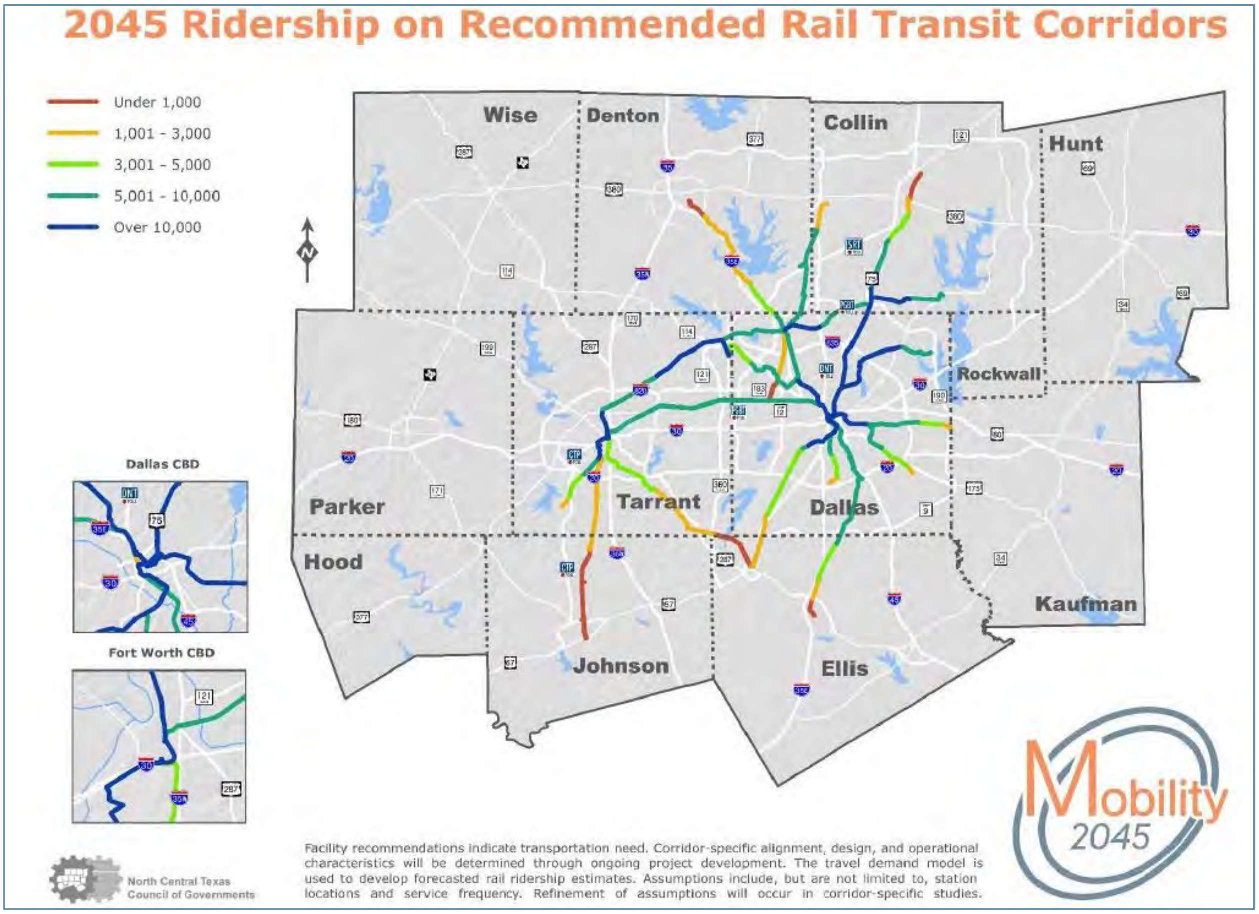
Table 3-9: Dallas-Fort Worth Area Regional Rail Corridors Recommended in Mobility 2045

Corridor	Endpoints	Estimated Length (miles)	Recommending Agency	Projected Capital Cost ($ millions)
Cotton Belt East Extension	Shiloh to Wylie	9	DART/NCTCOG	$908
A-Train South Extension	Trinity Mills to Carrollton (Belt Line)	2	NCTCOG	$125
Frisco Line	South Irving Transit Center to Frisco	29	NCTCOG	$1,271
Mansfield Line	Midlothian to Fort Worth Central Station	30	NCTCOG	$1,730
McKinney Line	Plano (Parker Road) to McKinney North	18	NCTCOG	$1,817
Midlothian Line	Westmoreland to Midlothian	18	NCTCOG	$1,817
Green Line Southeast Extension	Green Line (light rail) extension between Buckner Blvd. and South Belt Line Road	6	NCTCOG	$606
Cleburne Line	Fort Worth Central Station to Cleburne Intermodal Transportation Depot	30	NCTCOG	$1,730
Southwest TEXRail Extension	Fort Worth T&P Station to McPherson	11	FWTA	$1,100
Scyene Line	Lawnview to Masters	4	NCTCOG	$404
Scyene Line	Masters to Lawson Road	8	NCTCOG	$807
Waxahachie Line	Downtown Dallas to Waxahachie	31	NCTCOG	$1,788
Dallas-Fort Worth Core Express HSR	Downtown Dallas to Downtown Fort Worth	32	FRA	$3,600

Source: North Central Texas Council of Governments, Mobility 2045 plan, Appendix E

Among the lines listed in the table above, the plan estimates that the Frisco Line, Waxahachie Line, and McKinney Line have the highest ridership potential. The study also suggests that corridors with higher projected ridership that are located in active freight corridors with good track conditions (such as the Frisco and Waxahachie lines) may be good candidates for prioritized implementation. Track infrastructure costs may be comparatively lower than on other routes, which could provide opportunities for phased interim service on a portion of the line while the full buildout is being completed. By contrast, corridors not located on active freight corridors or with poor track condition typically require a full buildout before implementation and comparatively higher capital costs, which the plan estimated to be $35 million per mile.[87] Favorable ridership projections coupled with lower project costs are strong factors for FTA support.[88] Figure 3-15 shows the projected ridership in the year 2045 on the rail corridors recommended for development in the plan.

Figure 3-15: Projected 2045 Ridership on Recommended DFW-Area Transit Corridors



Source: NCTCOG Mobiity 2045, Chapter 6

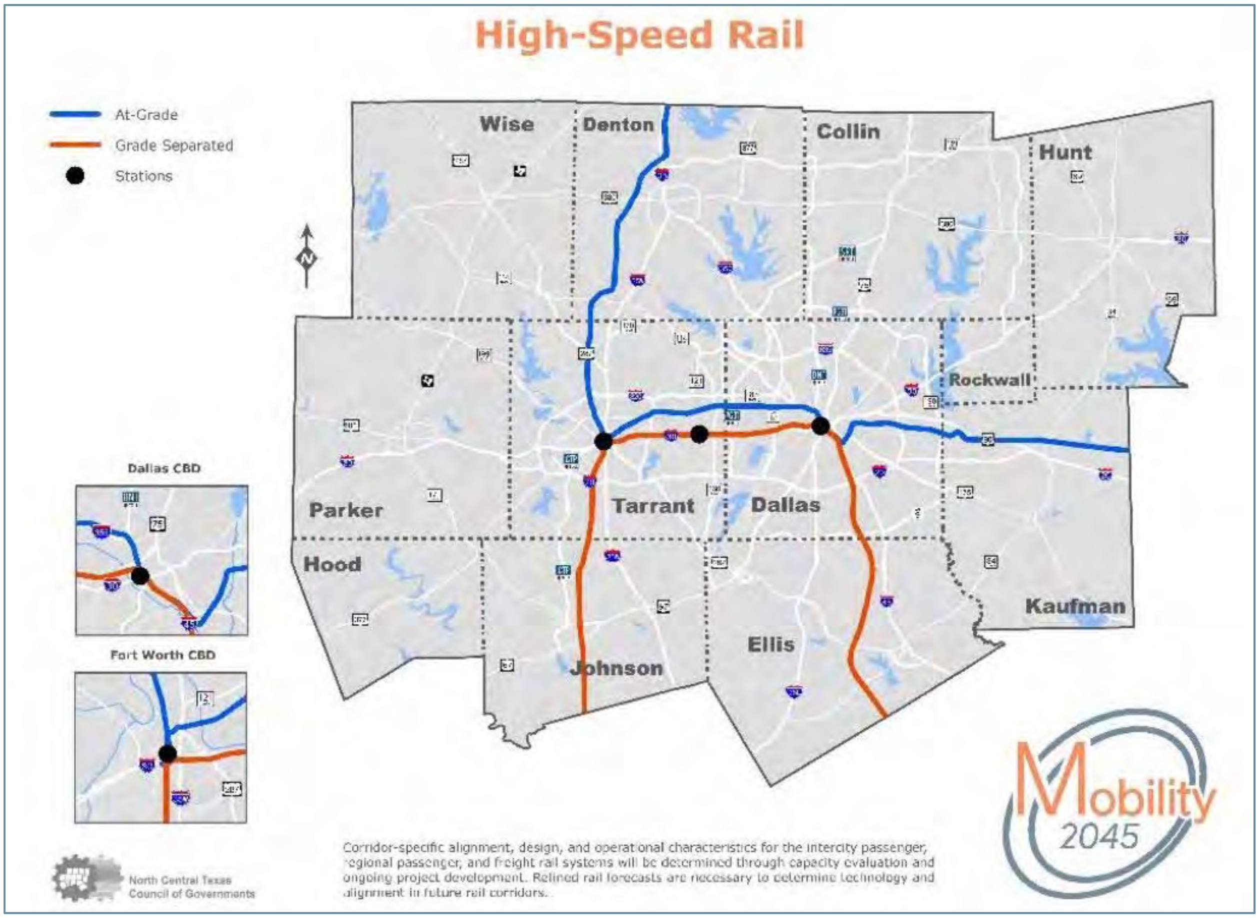
3.8.2.3 Recommended High-Speed Rail Corridors

The Mobility 2045 plan also identifies potential high-speed rail lines serving Dallas and Fort Worth, although the plan does not specify exact routes. The plan recognizes that North Central Texas could become a potential hub for high-performance passenger routes serving different regions, and that a need exists for the integration of high-speed rail and higher-speed rail in the region. The Mobility 2045 plan recognizes current high-speed rail initiatives proposed for the region and calls for a grade-separated high-speed link between Dallas and Fort Worth that would connect existing and planned intercity passenger rail services. The recommended grade-separated high-speed rail corridor,

[87] https://www.nctcog.org/nctcg/media/Transportation/DocsMaps/Plan/MTP/6-Mobility-Options.pdf
[88] Email correspondence from Curvie Hawkins, Assistant Vice-President, Planning, Fort Worth Transportation Authority, December 10, 2014

identified in **Figure 3-16**, includes stations in downtown Dallas, Arlington, and downtown Fort Worth, and would permit one-seat-ride opportunities and passenger rail connectivity among the potential services. NCTCOG estimates that construction of a grade-separated high-speed rail corridor linking Dallas and Fort Worth could cost $3.6 billion.

Figure 3-16: Mobility 2045 High-Speed Rail Recommendations



Source: NCTCOG Mobility 2045, Chapter 6

3.8.2.4 Regional Rail Corridor Development

NCTCOG had previously completed conceptual engineering and funding studies for the Frisco, McKinney, and Waxahachie corridors included in the Mobility 2045 plan, as detailed below. The McKinney and Waxahachie corridors have seen no further action. However, the Frisco Corridor was included in NCTCOG's FY 2014-2015 Unified Planning Work Program for a study similar to the Innovative Finance Initiative that occurred for the Cotton Belt Corridor in the 2010–2012 timeframe. The approach emphasizes the possibilities of developing the service with heavy private sector involvement.

3.8.2.5 Frisco Regional Rail Corridor

NCTCOG's regional 2014–2015 Unified Work Program included a project to investigate development of the Frisco Corridor through a public-private venture. That evaluation was undertaken after NCTCOG completed a conceptual engineering and funding study in May 2010 that analyzed the feasibility of implementing regional passenger rail service in the 30-mile Frisco Corridor. The Frisco Corridor extends from the TRE station in downtown Irving northward to North Frisco. BNSF owns most of the corridor right-of-way, although the City of Dallas and DART own some portions, as illustrated in Figure 3-17.

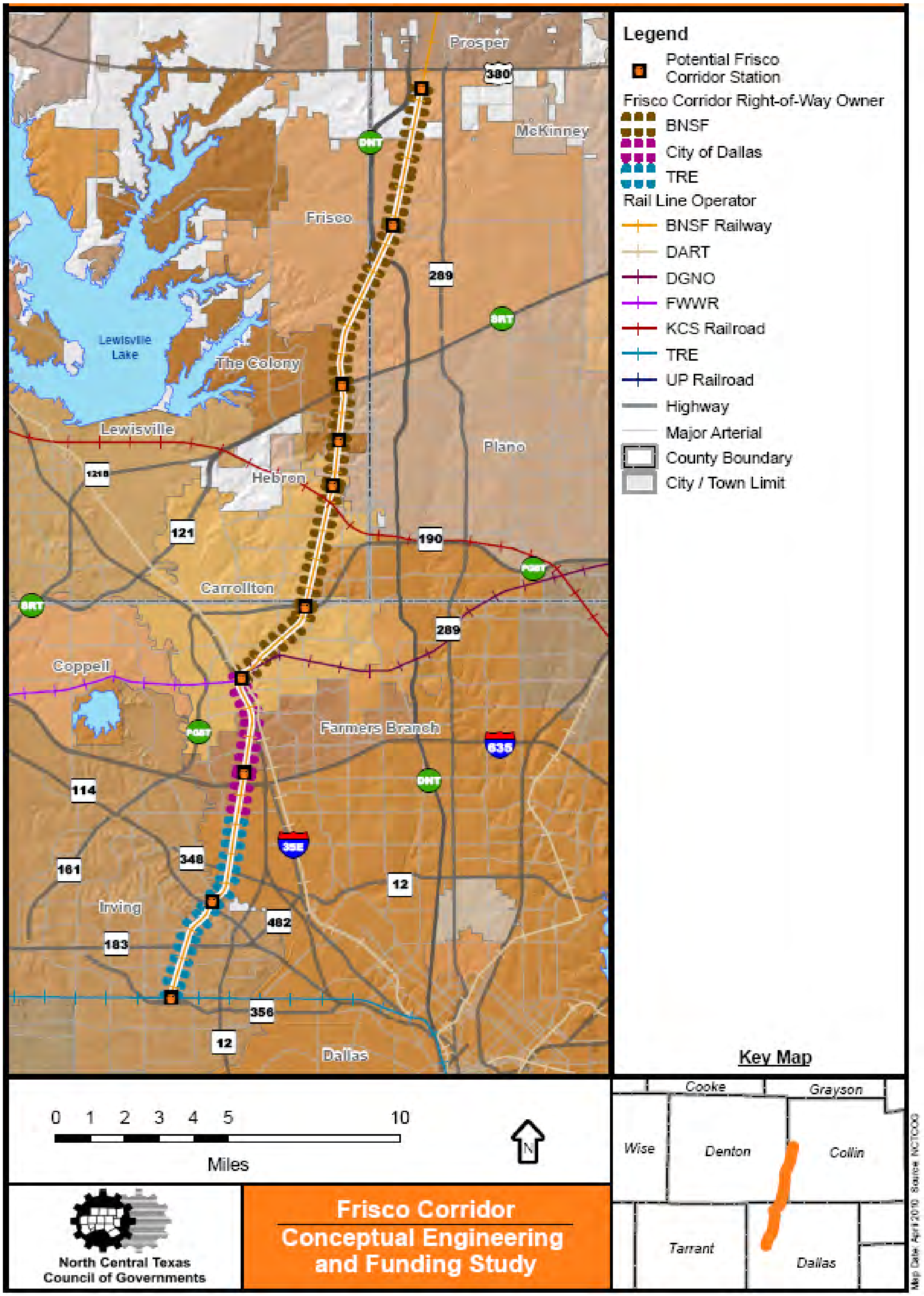
BNSF considers the corridor an integral part of its national network. On average, 8 to 12 freight trains per day were using the corridor during NCTCOG's first study. The Mobility 2045 plan recommends implementation of passenger service on the Frisco Corridor. The section of the corridor in Denton County is also included as a priority future rail corridor in the DCTA Service Plan. The Frisco Corridor rail could connect with the following existing rail services and proposed rail projects:

- TRE commuter rail
- Existing DART Green Line LRT service to downtown Dallas
- DCTA "A-Train" (when service extends from the Trinity Mills Station to the Downtown Carrollton Station)
- DART Orange Line LRT service at DFW International Airport
- Proposed Cotton Belt Corridor commuter rail service

NCTCOG's 2010 conceptual engineering and funding study considered light rail transit (LRT), Diesel Multiple Unit (DMU) trains, and commuter rail. The study concluded that light rail would not be feasible, because freight trains also use the Frisco corridor. Either conventional commuter rail equipment or FRA-compliant DMU equipment was recommended for service. The 2030 daily rail passenger volume projected for the Frisco Corridor in the study ranged from a low of 900 for a four-station route alternative (using only a portion of the corridor between downtown Carrollton and downtown Irving) and a high of 5,700 for the 10-station full corridor between downtown Irving and North Frisco.[89] The conceptual study provided a foundation for future environmental studies required for implementation and identified possible funding strategies to reach the implementation phase.

[89] North Central Texas Council of Governments, Frisco Corridor: Conceptual Engineering and Funding Study, May 2010

Figure 3-17: Proposed Frisco Regional Rail Corridor



Source: NCTCOG

3.8.2.6 McKinney Regional Rail Corridor

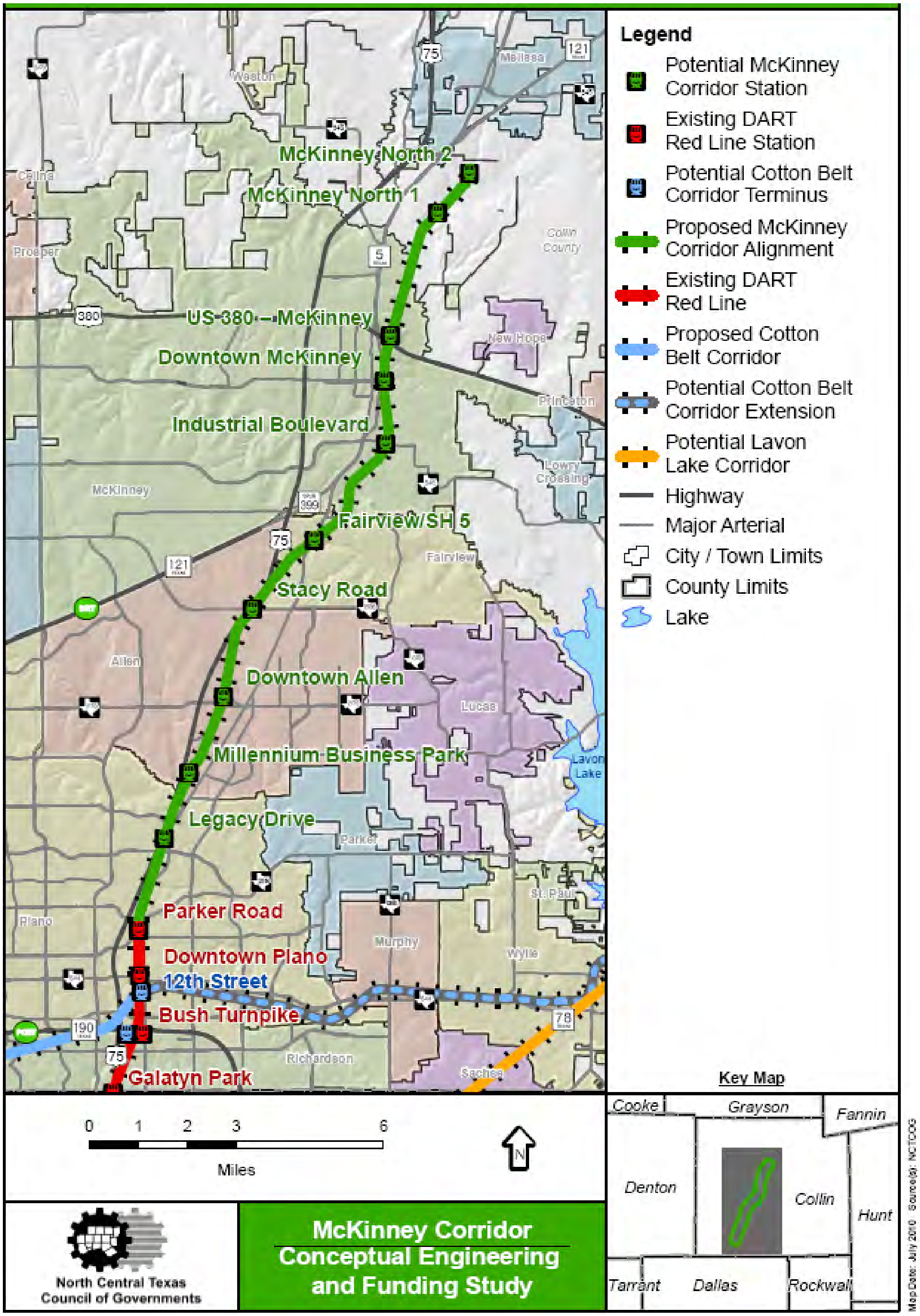
In July 2010, NCTCOG concluded a conceptual engineering and funding study for a proposed regional rail service in the 17.7-mile McKinney Corridor, an existing rail corridor extending from Plano northward to McKinney, as illustrated in Figure 3-18. DART owns the corridor. The McKinney Corridor rail could connect with the following existing rail services and proposed rail projects:

- Existing DART Red Line LRT rail service to downtown Dallas
- Proposed Cotton Belt Corridor commuter rail service

NCTCOG's 2010 conceptual engineering and funding study considered LRT trains, DMU equipment, and conventional commuter trains. The study concluded that either light rail or DMU equipment would be the most appropriate options for the corridor. The 2030 daily rail passenger volume projected for the McKinney Corridor ranged from a low of 3,830 for an eight-station LRT route alternative that combined service with a Cotton Belt DMU service, and a high of 5,560 for an 11-station LRT route alternative that combined service with the DART Red Line.[90] The conceptual study provides a foundation for future environmental studies required for implementation and identifies potential funding strategies to reach the implementation phase.

[90] North Central Texas Council of Governments, McKinney Corridor: Conceptual Engineering and Funding Study, May 2010

Figure 3-18: Proposed McKinney Rail Corridor



Source: NCTCOG

3.8.2.7 Waxahachie Regional Rail Corridor

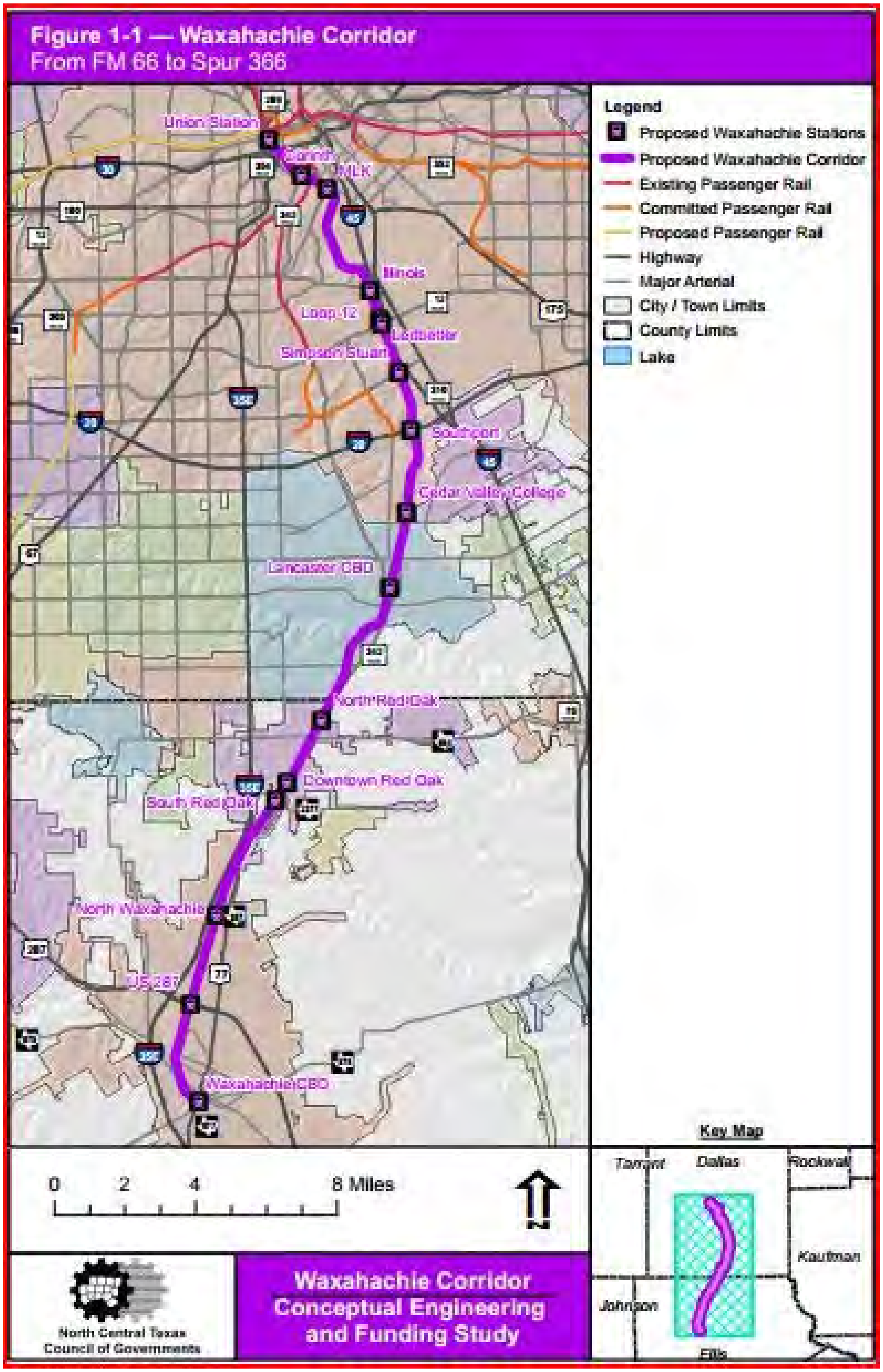
In November 2010, NCTCOG completed a conceptual engineering and funding study for a proposed regional rail service in the Waxahachie Corridor, an existing rail corridor extending from Dallas south to Waxahachie, as illustrated in Figure 3-19. BNSF owns the right-of-way from the downtown Waxahachie Station to Forest Lane/Martin Luther King Jr. Boulevard in Dallas, and UP owns the right-of-way from Forest Lane/Martin Luther King Jr. Boulevard to Union Station. The corridor was included in NCTCOG's long-term metropolitan transportation plan Mobility 2030–2009 Amendment and remains in the new Mobility 2045 regional transportation plan. The Waxahachie Rail Corridor would connect with the following existing rail services:

- Existing Amtrak intercity passenger rail at EBJ Union Station in Dallas
- Existing TRE commuter rail at EBJ Union Station in Dallas
- Existing DART light rail lines at EBJ Union Station in Dallas

NCTCOG's 2010 conceptual engineering and funding study initially considered LRT, but that equipment option was replaced early on with five other equipment alternatives comprised of either DMU trains or conventional commuter rail equipment. The 2030 daily rail passenger volume projected for the Waxahachie Corridor in the study ranged from a low of 2,100 riders for a six-station, 20.7-mile route with a terminal in Southport, to a high of 5,900 estimated daily passenger trips for a 16-station, 64.5-mile route alternative that continued west from Union Station in Dallas on the TRE commuter rail line and terminated at the Fort Worth T&P Station. Two 30.9-mile alternatives with a Union Station terminus in Dallas produced forecasted passenger trips of 4,300 to 4,600 daily in 2030.[91] The conceptual study provides a foundation for future environmental studies required for implementation and identifies potential funding strategies to reach the implementation phase.

[91] North Central Texas Council of Governments, Waxahachie Corridor: Conceptual Engineering and Funding Study, November 2010

Figure 3-19: Proposed Waxahachie Rail Corridor



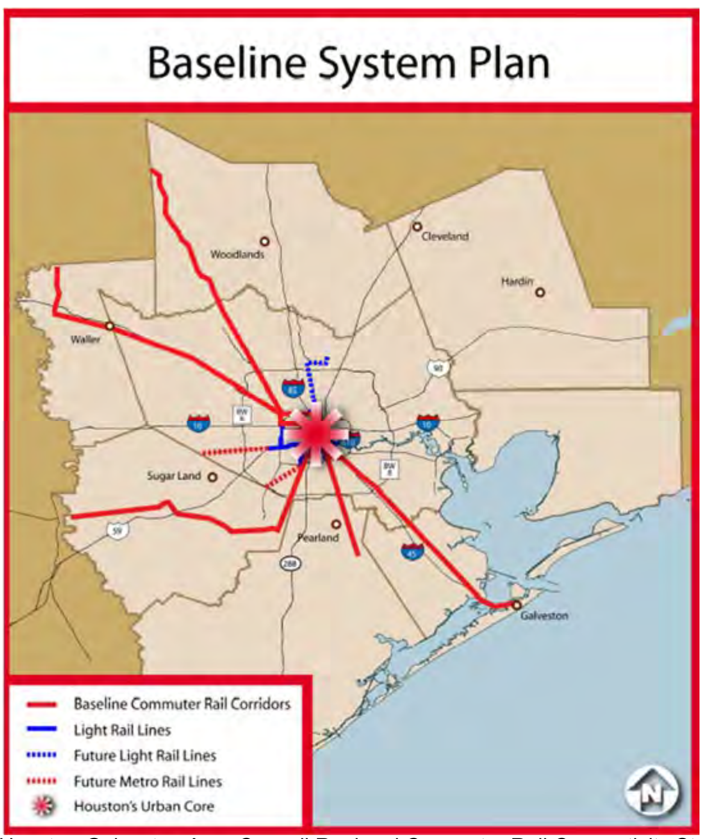
Source: NCTCOG

3.8.3 Houston-Galveston Commuter Rail Initiatives

Regional transportation plans for Houston and surrounding areas are regularly developed and updated by the Houston-Galveston Area Council (H-GAC), a region-wide voluntary association of local governments in the 13-county Gulf Coast Planning Region. H-GAC's Regional Transportation Plan (RTP) serves as a guide for identifying needed projects to maintain the region's existing transportation infrastructure, add capacity, improve mobility, and prioritize future transportation investments. H-GAC considers public transportation to be a critical solution for accommodating projected increases in regional population and employment.[92]

In 2008, H-GAC released a Regional Commuter Rail Connectivity Study, evaluating the feasibility of implementing commuter rail service along multiple corridors in its planning area. Five corridors were identified from information gathered from the Houston Freight Study and were ranked by factors such as cost, right-of-way availability, and freight rail capacities or freight volumes.[93] The study analyzed routing viability along each corridor, potential ridership, potential station locations, and the operability, logistics, and challenges associated with connecting these corridors to the existing and proposed transit network. The corridors shown in Figure 3-20 comprise the report's proposed commuter rail system to be carried forward for additional studies.

Figure 3-20: Potential Houston Commuter Rail Corridors from 2008 H-GAC Study



Source: Houston-Galveston Area Council Regional Commuter Rail Connectivity Study, 2008

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92 2035 Regional Transportation Plan (RTP) Update approved January 25, 2011

93 Kimley-Horn & Associates, Inc., Regional Commuter Rail Connectivity Study, Houston-Galveston Area Council, September 2008

One year prior to the release of the commuter rail study, Harris County, the City of Houston, and Fort Bend County created the Gulf Coast Rail District (GCRD), under authority granted by the State of Texas in Section 171 of the Transportation Code. Formed in 2007, the GCRD works with public and private partners to develop and implement a systematic approach for the improvement of the regional freight and passenger rail networks for the benefit of the region's residents and economy. Since then, H-GAC, GCRD, and the Metropolitan Transit Authority of Harris County (METRO) have continued evaluating three commuter rail corridors identified in the 2008 study: the Hempstead Corridor parallel to U.S. Highway 290 to the northwest; U.S. Highway 90A corridor from Houston to Fort Bend County; and the Gulf Freeway/State Highway 3 corridor from Houston to Galveston.

The initial work to conceptually plan a regional commuter rail system in Houston had focused on the use of existing freight rail tracks. However, in light of the region's strong growth, the Class I railroads have indicated that the freight rail network will not have adequate capacity to include passenger trains. As a result, the GCRD enlisted the assistance of regional planners and engineers and technical experts from the Texas A&M Transportation Institute (TTI) to analyze the situation and the potential for adding commuter services. Based on their additional analysis, GCRD concluded that new passenger rail infrastructure on new right-of-way would be required.[94]

H-GAC's most recent plan, RTP 2040, calls for approximately $75 billion in capital investments across the region for transportation, including investments to establish commuter rail lines.[95] However, whereas the previous plan, RTP 2035, had prioritized building a commuter rail link to Galveston,[96] the focus in RTP 2040 has shifted to the west. H-GAC's RTP 2040 recommends the development of high-capacity commuter rail corridors branching out along U.S. Highway 90A to Rosenberg and along U.S. Highway 290 to Hempstead, as seen in Figure 3-21, although also mentions commuter rail service to Galveston as a potential candidate rail project that could accommodate other identified needs.

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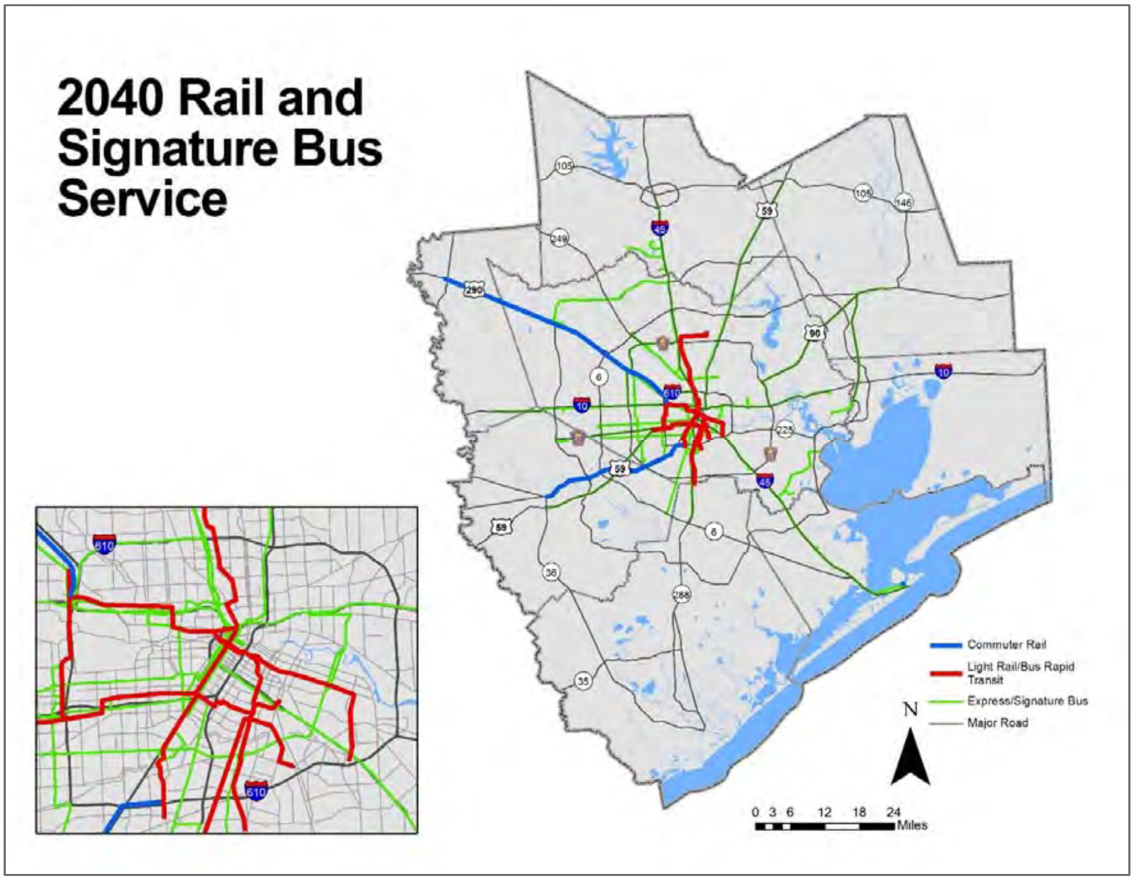
[94] http://www.gcrd.net/hempstead.htm
[95] H-GAC: http://www.h-gac.com/taq/plan/2040/default.aspx
[96] H-GAC 2035 RTP Update Phase III Conformity Appendix E Project Listing, updated July 16, 2013: http://www.h-gac.com/taq/airquality_model/conformity/2013_Phase3/docs/Appendix12.pdf

Figure 3-21: Houston Commuter Rail Lines Recommended by H-GAC in RTP 2040



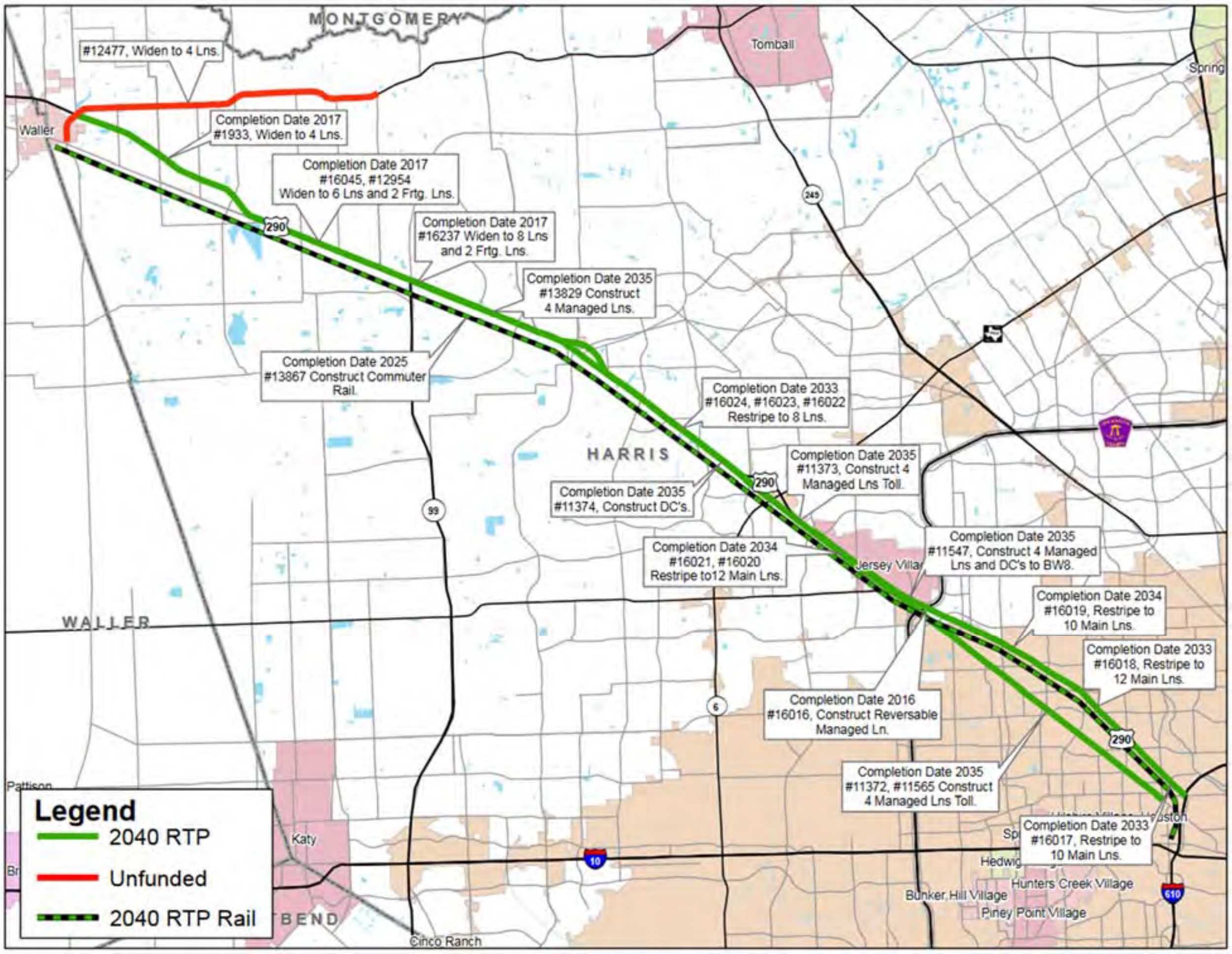
Source: H-GAC (RTP 2040 Appendix A Map Book)

3.8.3.1 U.S. Highway 290 Corridor Commuter Rail

In the RTP 2040, H-GAC recommends establishing commuter rail service on the U.S. Highway 290 corridor between Houston and Waller, as illustrated in Figure 3-22. The 24-mile line would begin at Houston METRO's Northwest Transit Center, a multimodal bus transfer station approximately 6 miles from downtown Houston. The project would establish service along 75 percent of a previously proposed commuter rail corridor from Houston to Hempstead in Waller County. RTP 2040 estimates the startup costs for the service to Waller to be $1.1 billion,[97] and H-GAC included the project in its 2019-2022 Transportation Improvement Program.

[97] RTP 2040 Appendix D Corridor Summary Sheets: http://www.h-gac.com/regional-transportation-plan/2040/documents/Appendix-D-Fiscal-Constraint-1-22-2019.pdf

Figure 3-22: Proposed U.S. Highway 290 Corridor Commuter Rail Line



Source: H-GAC

Previously in 2012, the GCRD had examined the feasibility of operating commuter rail service on or adjacent to the UP Eureka Subdivision, which runs parallel to U.S. Highway 290 through northwest Harris County to Hempstead.[98] The study evaluated two service options: (1) a short-term startup running 45 miles from Hempstead to the Loop 610 terminal in northwest Houston, where commuters would transfer to buses to reach their employment destinations, and (2) a long-term implementation plan that assumed the commuter line would be completed with an additional 6-mile extension directly into downtown Houston. The study estimated that the short-term option terminating near Loop 610 would generate about 6,000 daily boardings by 2035. Although no specific alignments were studied, when the long-term connection to downtown Houston was included and current plans for parallel highways incorporated, projected daily boardings on the commuter rail line increased to 22,500 by 2035. The study projected that the startup service to Loop 610 would cost approximately $290.7 million to construct within the UP right-of-way and $6.6 million to operate

[98] http://www.gcrd.net/docs/Final%20Report%20February%202012.pdf

and maintain annually. Extension of the rail service to downtown Houston was estimated to cost an additional $254.2 million for new rail right-of-way and construction and would increase annual operating and maintenance costs to $21.3 million. Costs associated with the use of the UP right-of-way were not added, but the report noted those costs would have to be accounted for after UP reviewed freight operational issues and set forth requirements associated with implementing the commuter rail service plan on its right-of-way.[99] According to GCRD, the initial service plan to Loop 610 was not considered financially feasible because of the low estimated ridership, however, the full corridor from Hempstead to downtown Houston was forecast to generate favorable cost-effectiveness metrics.[100] The study did not identify a funding mechanism to construct and operate a Houston region commuter rail system, but advocated corridor preservation.

3.8.3.2 U.S. Highway 90A/Southwest Rail Corridor Commuter Rail

The "US 90A/Southwest Rail Corridor project" would establish commuter rail service in the Southwest Corridor between Houston and Rosenberg, with intermediate station stops to serve communities along U.S. Highway 90A. The corridor would begin at Houston METRO's Fannin South Transit Center and park and ride, just south of the NRG Arena and Texas Medical Center, currently served by the METRORail Red Line light rail and multiple bus routes. In 2011, Houston METRO prepared a Draft Environmental Impact Statement (DEIS) for the US 90A/Southwest Rail Corridor project, evaluating a route extending from the Texas Medical Center in Houston west to Missouri City.[101] METRO completed the DEIS and associated conceptual engineering the following year, and held public meetings in June 2012. However, the METRO Board of Directors subsequently placed the project on hold in September 2012 to reassess investment priorities in the region through the Transit Re-imagining Plan.[102] The project had been forecast to generate a daily ridership of 13,000.[103] The corridor is currently served by bus commuter service. With the conclusion of the DEIS, METRO did not identify a schedule or the resources for further implementation.
Under H-GAC's RTP 2040 plan, development of the project would resume and be divided into two phases, as illustrated in Figure 3-23:

- Phase 1: An initial 8-mile segment from the Fannin South Park & Ride to the Harris County Line, including four stations, to be completed by 2025. The total project cost for this phase is forecast to be $400 million, and is sponsored by METRO, according to the RTP 2040 and H-GAC's 2019-2022 TIP.
- Phase 2: Includes 23 miles from the Harris County Line to the city of Rosenberg to be completed by 2035. The total project cost for this phase was forecast to be $345 million, according to the RTP 2040 and H-GAC's 2019-2022 TIP, but it is unsponsored.

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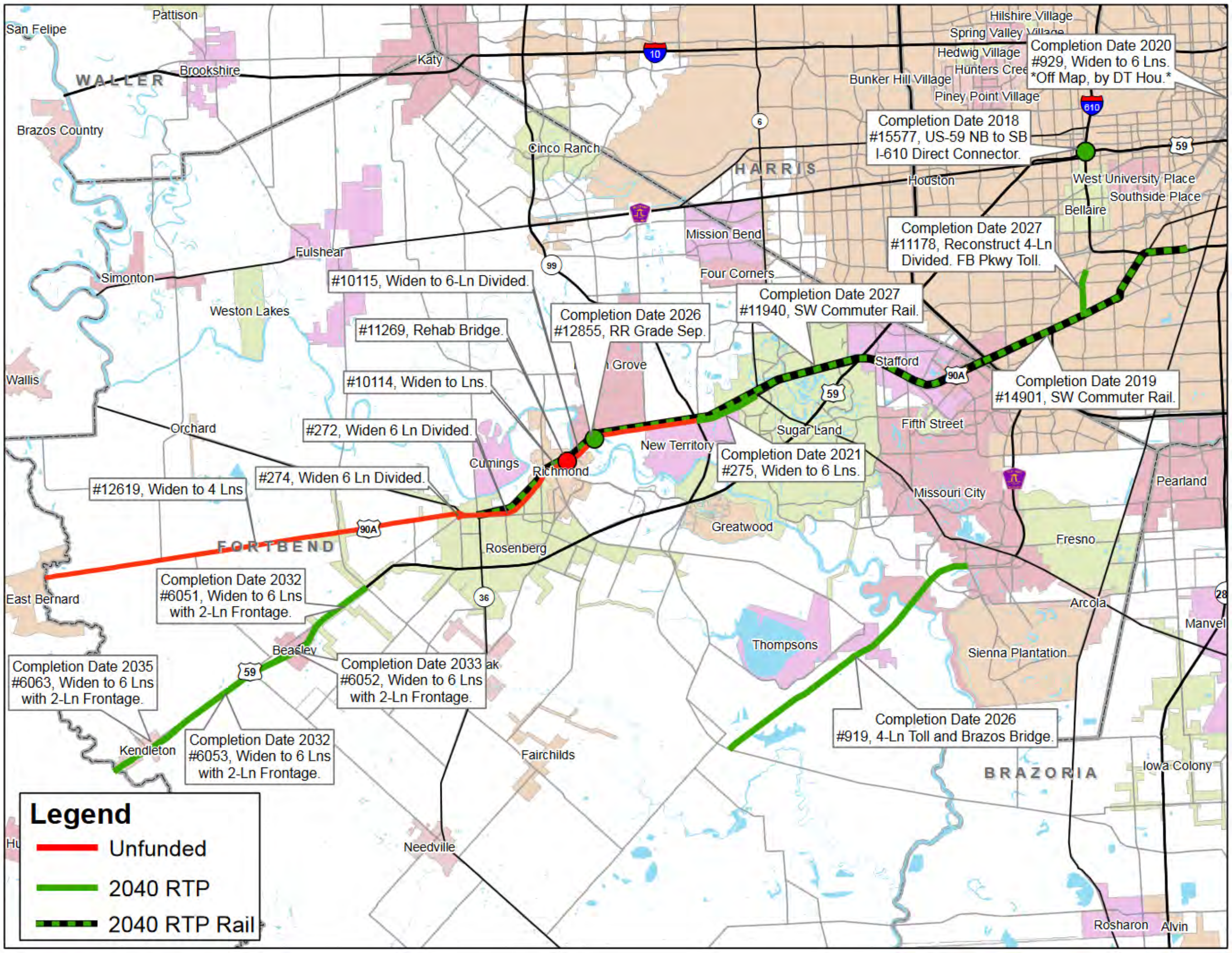
[99] Klotz Associates, Inc. and TranSystems Corporation, Conceptual Engineering Study for the Hempstead Corridor Commuter Rail for Gulf Coast Rail District, February 2012
[100] Presentation by Gulf Coast Rail District Board Member Nancy Edmonson before Transportation Policy Council for the Houston-Galveston Transportation Management Area, June 22, 2012
[101] http://www.ridemetro.org/AboutUs/Board/working_meetings/2012/Presentations/052412/Capital/Presentation-US-90A.pdf, Accessed June 21, 2012
[102] http://www.ridemetro.org/CurrentProjects/90A-Southwest_RailCorridor.aspx , Accessed July, 2013.21, 2012
[103] http://ridemetro.granicus.com/MediaPlayer.php?view_id=2&clip_id=366 , Accessed June 21, 2012

Figure 3-23: Proposed Southwest Corridor Commuter Rail Line



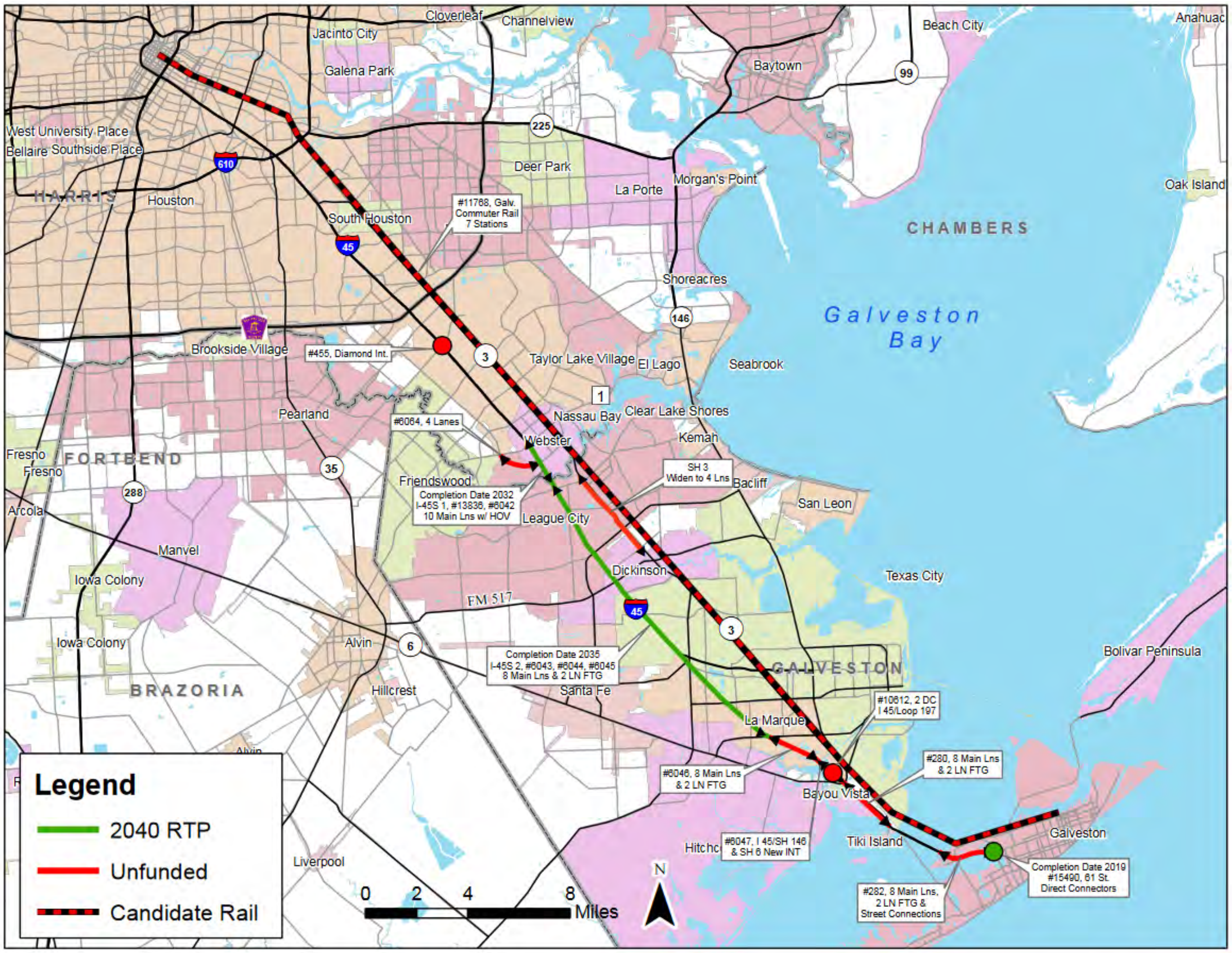
Source: H-GAC

3.8.3.3 Galveston Commuter Rail

The SH3 Commuter Rail project is a proposed 50-mile rail link along State Highway 3, with seven stations, from Houston METRO's Intermodal Transit Terminal to the Galveston Cruise Terminal, as shown in **Figure 3-24**. Although recommended in RTP 2035, the project has been relabeled in the RTP 2040 study as a "Candidate Rail" project that could fill other identified needs, and with no recommended completion date.[104] H-GAC forecasts the project's implementation cost to be $200 million, according to RTP 2040, but the project is unsponsored.

[104] RTP 2040 Appendix G Corridor Summary Sheets: http://www.h-gac.com/taq/plan/2040/docs/Appendix%20G%20Corridor%20Summary%20Sheets.pdf

Figure 3-24: Proposed Galveston Commuter Rail Line



Source: H-GAC

The City of Galveston and Galveston County had previously sponsored an alternatives analysis of potential transit investments in the corridor connecting Houston and Galveston along the Gulf Freeway (Interstate 45 South) and State Highway 3. The alternatives analyzed included express bus and bus rapid transit in either the Gulf Freeway or State Highway 3 corridors, as well as commuter rail service along the UP right-of-way. The study was published in June 2010 and concluded that local and federal funding was not currently available for the large capital improvements that would be needed to implement either bus rapid transit or commuter rail. The study recommended an implementation strategy that recognized commuter rail as the locally preferred alternative in the long-term, but recommended development of bus service along State Highway 3 to link communities in the corridor as a short-term improvement option. Mid-term improvements were also suggested, in the form of capital improvements in the corridor that would support the implementation of commuter rail in the future, such as grade separations and park and ride facilities at locations that could become rail stations in the long-term. The study recommended that GCRD, Galveston County, and Houston METRO pursue negotiations with UP to purchase or lease the rail corridor right-of-way.[105]

3.8.4 Hidalgo County

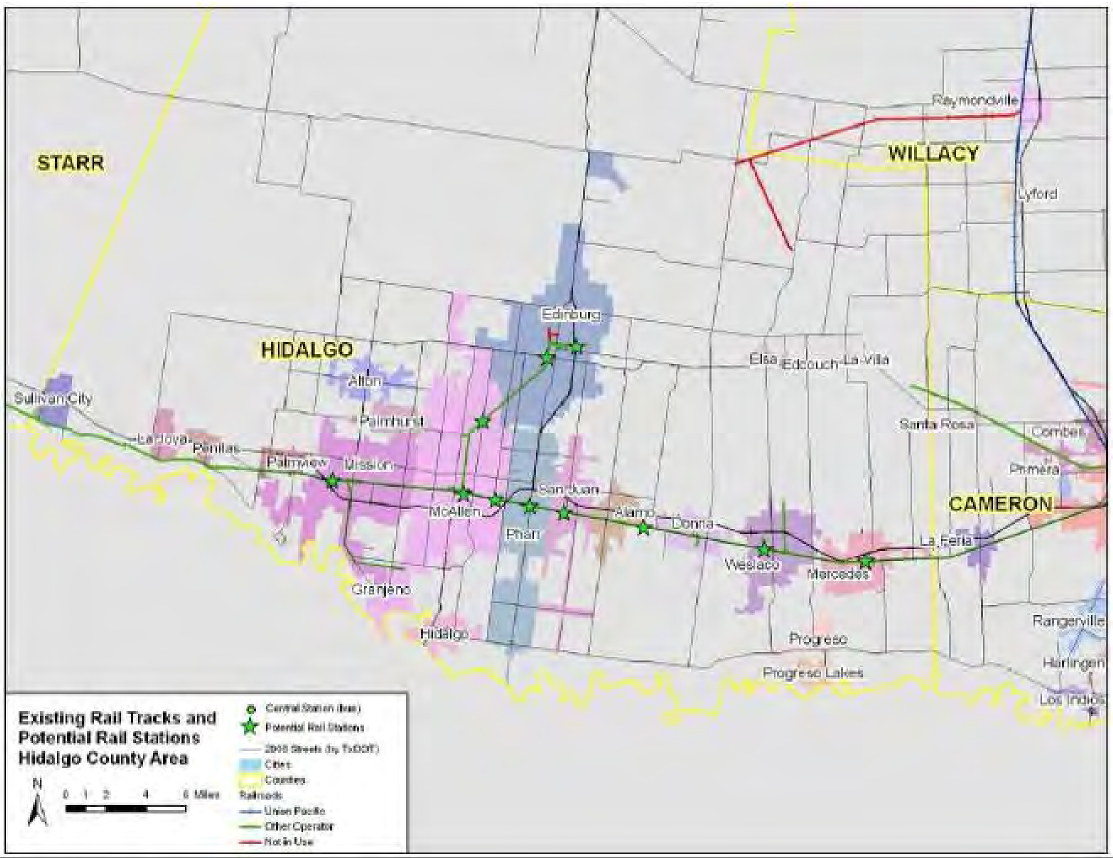
Hidalgo County's 2010 population was 775,000 (up from 569,000 in 2000) a 36 percent increase, which was almost double that of the state's rate of growth. The Hidalgo County MPO had forecast the county population in 2030 would be approximately 1,644,000, or more than double the 2010 population. As a result, the Hidalgo County Commissioners Court created the Hidalgo Commuter Rail District to provide passenger rail services between Brownsville and the urban areas of McAllen-Pharr-Edinburg, following the passage of a 2007 bill authorizing the formation of a commuter rail district along the Texas-Mexico border. The rail district proposed establishing a commuter rail line to meet the needs of the growing population, connecting cities in Hidalgo County and also cities in adjacent Cameron County (see Figure 3-25). There are 11 proposed stations located in Mission, McAllen, Edinburg, Pharr, San Juan, Alamo/Donna, Weslaco, and Mercedes.

Hidalgo County conducted a feasibility study for the proposed rail system in August 2011 that included an assessment of station locations, needs assessment, and cost analysis. The study included preliminary ridership projections based on train speed. The ridership was projected to be approximately 30,000 boardings per day with an operating speed of 35 mph. The 2011 study projected implementation of the service would require a $310 million capital investment.[106] The commuter rail district has not identified a source of funding for construction or operations, and the project is currently pending identification of a viable funding strategy.

[105] The Goodman Corporation, Results Summary for the Galveston-Houston Mobility Corridor Alternatives Analysis for the City of Galveston, June 2010

[106] https://www.brownsvilleherald.com/news/valley/valley-rail-transit-a-long-way-away/article_8933a074-3c58-11e3-a1df-001a4bcf6878.html

Figure 3-25: Proposed Hidalgo County Commuter Rail System



Source: Hidalgo County Commuter Rail Feasibility Study

3.9 CONCEPTS FROM STAKEHOLDER OUTREACH

As part of the preparation of the Texas Rail Plan, TxDOT provided stakeholders and the public with opportunities to submit comments and suggestions related to the rail plan as well as passenger rail transportation in the state. The first of these opportunities was a Passenger Rail Stakeholder Meeting held by TxDOT in Austin on September 20, 2018. Public comments were received through an online survey regarding the Texas Rail Plan that was posted on TxDOT's website. The online comment period ran from December 11, 2018 through March 1, 2019. After the public comment period closed, a second Passenger Rail Stakeholder Meeting was held on April 30, 2019, using an online Webex format. A complete description of outreach efforts conducted for the development of the Texas Rail Plan can be found in Chapter 6. Specific passenger and commuter rail enhancement projects and suggestions that were received by TxDOT during the public outreach effort are summarized below.

The following long-term passenger and commuter rail improvements were identified during public outreach:

- Establish intercity passenger rail service on the I-20 corridor between Dallas/Fort Worth and Atlanta.

- Continue to make improvements to freight-owned tracks used by passenger trains (additional main track, grade separations, siding extensions or additions, etc.) to enhance passenger-train reliability and on-time performance, and to reduce trip times.
- Introduce additional *Heartland Flyer* frequencies between Fort Worth and Oklahoma City.
- Extend the *Heartland Flyer* service north of Oklahoma City to Newton, Kansas, or Kansas City
- Introduce additional passenger rail service between Austin and San Antonio.
- Develop regional passenger/commuter/transit rail plans focused on corridors with heavy travel demand, either within or between large metropolitan areas.
- Establish commuter rail service linking Dallas-Fort Worth and Collin County.
- Develop robust marketing efforts to publicize existing passenger rail services in the state, such as the *Heartland Flyer.*
- Increase the operation of Amtrak's *Sunset Limited* from triweekly to daily.
- Extend Austin's Capital Metro commuter rail service to the Austin airport.
- Establish commuter rail service in Houston.
- Increase multimodal connections between passenger/commuter rail and other modes (light rail, city bus, intercity bus, air).
- Upgrade heavily used passenger rail stations to attract more riders and improve the travel experience (i.e., San Antonio, Houston).
- Increase contact with local governments, chambers of commerce, and/or convention/visitors bureaus in cities along the routes of existing intercity passenger trains serving Texas.
- Advocate for changes to state laws and policies that will create new funding streams for passenger rail, including mechanisms to encourage private investment and partnerships such as tax incentives.

3.10 FUTURE TASKS

As the above descriptions of potential new services illustrate, additional planning studies and analysis will be needed to fulfill federal planning and environmental requirements for publicly funded passenger rail, incentivize host railroads and other infrastructure owners, and gather detailed information that will help public officials and citizens to make informed decisions about passenger rail. Typical data requirements in the passenger rail implementation process include:

- Detailed ridership forecasts that apply travel demand models to clarify the most promising corridors and outline the revenue implications of shorter trip times made possible by higher speed train services, and also allow station locations and service frequencies to be determined.
- Engineering studies (including train operation models) and environmental analyses to specify intercity corridors capable of accommodating higher speed train services, both along current freight rail corridors or within separate greenfield alignments.

- Cost estimates for capital and operating costs of passenger rail alternatives (different technologies and equipment operating at different speeds on specific corridors) to enable comparisons among alternatives for informed decision-making.
- Risk analyses to analyze passenger rail alternatives and outline risks for project implementation, list escalation factors for cost elements, and test revenue alternatives.

With this information, Texans will be clearly informed about the trade-offs among passenger rail alternatives and be able make smart decisions about passenger rail investments. This kind of detailed study has distinguished states that have received higher amounts of federal funding for passenger and commuter rail projects. These types of studies are required if state or local agencies seek project funding from the federal government for passenger rail improvements.

2019 Texas Rail Plan

Chapter 4

Proposed Freight Rail Improvements and Investments

December 2019

TABLE OF CONTENTS

4.1 INTRODUCTION

The purpose of Chapter 4 of the Texas Rail Plan is to identify the types of improvements and investments made to the Texas railroad network recently by the state's railroads and the State of Texas; recent capital investment trends by the state's railroads, to the extent known through coordination with the railroads and publicly available data; and to describe potential future railroad improvements and investments that could address freight rail needs and opportunities for Texas. Many of these projects focus on the opportunity for enhanced access to the state's rail network for shippers; enhancements to the multimodal connectivity; fixing rail service gaps; options for improvements to infrastructure and the capacity, safety, and efficiency of rail service and operations; and economic development. Capital projects that may provide opportunities for improved coordination, integration, and operations of passenger rail services in the state will also be identified.

Texas railroads and the State of Texas identified the capital projects described in this chapter during outreach activities for the development of this Texas Rail Plan and/or for the recently completed Texas Freight Mobility Plan. Selected projects are included and prioritized for potential implementation on short-term and long-term horizons in the Texas Rail Service and Investment Program, which is the subject of Chapter 5 of the Texas Rail Plan.

4.2 TYPICAL FREIGHT RAIL PROJECT NEEDS AND OPPORTUNITIES

Class I railroads are anticipated to continue to improve and enhance infrastructure on the state rail network in the future, including the need for new intermodal capacity, as the container business continues to expand at Texas' ports. Existing intermodal facilities such as BNSF's intermodal facility in Alliance are being expanded to increase their container handling capacities. Other facilities have been built to increase capacity, such as KCS' Wylie Yard in Wylie, and UP's South Dallas Yard. UP is also currently constructing Brazos Yard in Hearne to markedly increase capacity and improve overall network mobility.

Other key freight rail project needs and opportunities in Texas include:

- Upgrades to Accommodate Heavier Railcars: The ability to handle carloads with a maximum allowable gross weight of 286,000 pounds (lbs.) is important to railroads to increase operational efficiencies, and to railroad shippers to maintain local rail access and the ability to compete effectively in the national and global marketplace. Railroad shippers on short lines that can only accommodate railcars with a maximum allowable gross weight of 263,000 lbs. or 268,000 lbs. must compete with firms served by Class I railroads whose lines have the capacity for 286,000 lb. cars (which is now the common industry standard). These "heavy" railroad-served shippers can load more cargo per car and thus realize a transportation cost savings relative to short line railroad shippers whose serving railroad cannot handle the heavier car weights.
- Enhanced Railroad Access: One potential solution for shippers in Texas to remain competitive in the regional, domestic, and global marketplaces and to spur economic development, employment, and income in the state, is enhanced access to the Texas railroad network. Enhanced railroad access could be provided, for example, through the rehabilitation of existing railroad branch lines; development of improved or new industrial

spurs; optimization of existing access to transload facilities in Texas; and construction of additional transload facilities and intermodal facilities to meet demand for multimodal transportation and to address numerous transportation challenges.

- Reduction of Network Challenges: As rail traffic volumes have grown across Texas, certain locations have exhibited a need for additional rail infrastructure and capacity in order to improve railroad operating safety, capacity, efficiency, and velocity, in addition to overall freight mobility. Typical network challenges in the state include:
    - Insufficient capacity on main tracks and in terminals and rail yards to accommodate present and future train volumes.
    - Interchange of traffic between railroads, transloading of freight between railroads and multimodal ports, and provision of rail switching.
    - Operating delays at railroad junctions, U.S.-Mexico border crossings, and at movable bridge spans over principal navigable waterways.
    - Bridges that constrain vertical and horizontal clearances and restrict the types of rail car equipment and freight that can be accommodated.
    - Potential effects on infrastructure and service for rail lines located in a major floodplain.

Locations where an expansion of network rail capacity would quickly yield operational benefits were identified by the state's railroads and the State of Texas in Chapter 2 and Appendix A of the Texas Rail Plan. These future freight railroad needs were discussed with each of the carriers through the stakeholder outreach process during the development of the recently completed Texas Freight Mobility Plan and this Texas Rail Plan. A general overview of the type of projects that address these needs are listed in Section 4.3.

4.2.1 Class I Railroad Improvements

As private entities, Class I railroad companies in Texas must use private financing to cover the cost of equipment acquisition (e.g., locomotives and railcars) and infrastructure improvements aimed at renewing, upgrading, or expanding the state rail network (e.g., rail, ties, bridges, signal systems). Railroads rely on a regulatory framework that provides sufficient return on investment as a means to accommodate these capital expenditures. Funding levels for capital programs can vary from year to year owing to fluctuations in traffic volumes, overall economic trends, and other considerations. Some programs administered by the State of Texas or the federal government are available to Class I railroads to help fund rail network improvement projects, targeted job creation projects, and more. The potential for this funding and its applicability to Class I railroad improvement projects in Texas is identified in Chapter 5 of this Texas Rail Plan.

Capital investment in rail infrastructure in the state of Texas by the Class I railroads has been generally robust and continuous since the 1970s. Historically, most projects were aimed at developing the capacity necessary to efficiently handle the surge of increased freight imports and exports coming through the Gulf ports in Texas, as well as the movement of consumer-based goods into the state from locations such as the Ports of Los Angeles and Long Beach on the West Coast, along with the development of associated land ports. These efforts spawned full upgrades to and multiple-tracking of existing mainlines, construction of new lines, and expansion of existing or creation of new terminal and yard facilities. Mergers and acquisitions beginning in the 1980s were also a driver for improvements and efficiency enhancements, as newly combined systems updated infrastructure to transform formerly regional rail networks into components of a broader national network. More recently, projects have been carried out to serve the energy sector, which has begun using the technique of hydraulic fracturing ("fracking") to extract oil and gas from Texas and neighboring states. These investments have included line upgrades to handle 286,000 lb. cars, reactivating idle segments of the state's rail network, and the development of new facilities to load and unload drilling equipment, frac sand, and other associated materials.

Funds are budgeted by the Class I railroads each year to facilitate ongoing capital investment in the state's rail network. System-wide capital expenditure budgets are reported by the Class I railroad annually, and may or may not identify specific rail projects by state or their estimated capital cost. Where information was available, state-level investments by Class I railroads are listed in Section 4.3.1.

The Class I railroads have continued to invest heavily in their networks during the last 5 years in order to increase capacity, efficiency, and velocity of the high volumes of through traffic in Texas; to eliminate or mitigate operational chokepoints; to handle various upgrades associated with maintenance and safety (including implementation of federally mandated Positive Train Control (PTC) systems, which reduce the likelihood of train over-speed incidents and collisions between trains); to implement various other technologies that improve the safety, economic efficiency, and environmental sustainability of railroad operations generally; and to accommodate routine infrastructure renewal. The Class I railroads in Texas will also continue to upgrade bridges and other infrastructure on branch lines in the state in order to be able to accommodate railcars with a maximum allowable gross weight of 286,000 lbs.; Class I railroad segments of the Texas rail network incapable of handling these heavier loads, to the extent known through coordination with the state's railroads during the development of the Texas Rail Plan, are identified in Appendix A of the Texas Rail Plan). Some of these projects have been publicized as examples of the railroads' investments in the state and are listed later in this chapter. Class I needs were discussed with each of the carriers during the stakeholder outreach process conducted for the Texas Rail Plan and are summarized in Chapter 5.

4.2.2 Class III Railroads Past and Planned Improvements

Short line, or Class III railroads, face a different set of challenges to meet their needs since they do not usually have the capital and technical resources, operating capacity and flexibility, or modern infrastructure of the larger Class I railroads. Typically, the largest constraints on U.S. short line railroads involve accommodating railcars with a 286,000-lb. maximum gross weight and operational chokepoints caused by insufficient operating capacity.

Railcars with larger loading capacity provide greater operating efficiency by reducing labor, fuel, and maintenance costs while increasing capacity and synergy for rail operations and rail shippers. Most Class III railroads have a legacy infrastructure suited to low-density operations and railcars of lighter weight (263,000-lb. and 268,000-lb. gross weight capacity). In order to accommodate the 286,000-lb. cars, short line railroads must make upgrades to the track structure and substructure (i.e., rail, switches, ties, and ballast section) and bridges to handle the additional stress caused by transporting the heavier cars. Short line railroads that are unable to make the appropriate upgrades might lose business to transportation competitors, namely trucks or other nearby railroads that are capable of handling the 286,000-lb. cars.

Short line railroads were often formed as a result of Class I railroads selling or abandoning low volume lines that did not merit investment in their infrastructure. As such, short line railroad chokepoints are often attributed to this legacy infrastructure tailored to historical railroad practices, which can limit capacity and hamper efficient modern operations. Such factors include yard capacity that is insufficient for building trains, switching and staging cars, and sidings that are of inadequate number, length, or location to accommodate the demands of present-day train operations and schedules. Some short line railroads are further constrained by delays that stem from interchanging railcars with another carrier or in the use of trackage rights to access an isolated segment of their network. These deficiencies not only compromise rail transit times and operations safety and cause mainline and yard congestion, but they have the unintended consequence of affecting the quality of life for adjacent communities. Among other things, this condition can lead to protracted delays for motorists and emergency vehicles at highway-rail grade crossings. Several Class III railroad projects are listed in Chapter 5.

4.2.3 Port-Rail Projects

As the need for port infrastructure in the state continues to grow and expand, so must the associated connecting rail infrastructure, in order to provide the necessary capacity, security, and efficiency required for effective multimodal connectivity. Several port facilities are served by one or more freight railroads that are critical components of their goods movement logistics. Several rail improvements at port facilities are listed in Chapter 5.

4.2.4 Border Crossing Rail Projects

Freight rail crossings at the U.S.-Mexico border are also a focus for future infrastructure improvements. Existing border rail crossings should continue to be improved (via grade separations, capacity enhancements, safety and security improvements, and so on) and potential new rail crossings at the border will be studied and possibly implemented. Several rail improvements at border crossing facilities are listed in Chapter 5.

4.2.5 Other Projects to Improve Multimodal Connections

The rail system in Texas is a component of a comprehensive multimodal transportation network, which includes linkages to highway, water (ocean and river ports), and air modes. The opportunity for enhanced multimodal transportation opportunities could be met through investments targeted to promote interconnectivity, capacity, and environmental sustainability. Such investments could include construction or rehabilitation of existing rail connections between principal railroad lines and river port properties, as well as additional sidings, spurs, or yard tracks for switching, staging, and storing railcars at or near port, transload facilities, or new intermodal facilities.

4.2.6 Highway-Rail Crossing Projects

TxDOT spends approximately $3.5 million per year through the State's Railroad Grade Crossing and Replanking Program on highway-rail crossing improvements for the replacement of rough railroad crossing surfaces on the state highway system. The state also manages its Railroad Signal Maintenance Program, which provides approximately $1.1 million annually for railroad signal maintenance payments to railroads. The Texas Transportation Commission also approves an annual amount of Section 130 funds as part of their approval of the Unified Transportation Program (UTP); Texas receives approximately $20 million in annual Section 130 funding.[1] Additional funding for related safety improvements typically comes from a variety of federal sources. Refer to Chapter 2 for further details about these federal and state funding sources, as well as a rail crossing inventory and safety data for Texas. Several potential improvements at highway-rail grade crossings are listed in Chapter 5.

4.3 PROPOSED FREIGHT RAIL PROJECTS

Over the past several years, specific projects have been proposed to increase rail capacity in the state, or to improve existing infrastructure. These projects can be grouped into the following general categories:

- Class I railroad improvement projects (e.g., capacity, velocity, safety, and security)
- New intermodal terminal/yard projects
- Short line projects
- Port-rail projects
- Border crossing projects
- Highway-rail crossing projects

4.3.1 Class I Railroad Improvement Projects

BNSF Railway

In 2018, BNSF announced it would invest approximately $375 million in capital projects that year in Texas.[2] Approximately 50 percent of this investment went toward track maintenance, with the remainder going toward other expansion projects that are designed to enhance capacity and fluidity along its network. In 2019, BNSF estimates that it will invest approximately $405 million, with more than half allocated for expansion projects to enhance network capacity and fluidity, and the remainder targeted for maintenance and renewal of existing infrastructure.[3] BNSF's 2019 announcement included the following capital expansion projects in Texas:

- Beginning of a new double track project between the Alliance Intermodal Facility in Fort Worth and Cleburne
- Two new siding projects on the Madill Subdivision north of Dallas

[1] U.S. Department Of Transportation - Federal Highway Administration; *Distribution Of Railway-Highway Crossings Program Funds Apportioned For Fiscal Year 2018*; https://www.fhwa.dot.gov/legsregs/directives/notices/n4510824/n4510824_t13.cfm (March 7, 2018)
[2] https://www.bnsf.com/news-media/news-releases/BNSF-plans-$375-million-capital-program-in-Texas-for-2018.html
[3] https://www.bnsf.com/news-media/news-releases/bnsf-capital-program-texas-2019.html

- Installation of Centralized Traffic Control along the same stretch of the Madill Subdivision
- New staging tracks at BNSF"s Eagle Pass Border Gateway to handle growth into Mexico.
- A multi-year facility expansion project slated for the Alliance Intermodal Facility, including the construction of new production tracks and incremental parking stalls, as well as acquiring lift equipment.

Over the past 5 years, BNSF has invested nearly $1.8 billion to expand and maintain its network in Texas.[4]

Kansas City Southern Railway

In 2017, KCS invested nearly $49.3 million in its railroad network within Texas.[5] In 2018, KCS announced it planned to invest approximately $530 million to $550 million in capital expenditures over its total railroad network (figures identifying KCS' anticipated investment within Texas for 2018 were not available). Approximately 50 percent of the 2018 capital program was to be spent on maintenance, 34 percent on growth, 7 percent on positive train control (PTC), and 9 percent on information technology (IT) and other expenditures.[6] KCS announced in 2019 it would construct a new 10,000-foot siding on its Laredo Subdivision at Agua Dulce and lengthen two existing sidings at Robstown and Weatherford.[7]

Union Pacific Railroad

In 2017, UP's capital investment reached $825 million in Texas.[8] In 2018, UP announced it would invest $452 million that year in Texas.[9] Nearly 92 percent of this investment went toward track and bridge maintenance throughout the state. In 2019, UP estimates that it will invest $471.5 million in rail infrastructure and improvements in Texas, including the following capital expansion projects:

- A $17 million new bridge project on the Lufkin Subdivision
- Extension of a yard track at International Yard in El Paso
- Siding extension projects along UP's San Antonio-El Paso route (two locations) and its Fort Worth-El Paso route (four locations)
- A bypass track at Miller Yard near Dallas
- Additional infrastructure to improve operations on UP's Corsicana Subdivision, including a new southwest track at Big Sandy and a yard expansion project at Mineola

Continued investment in Positive Train Control (PTC) is also required in order to meet current federal guidelines by the end of 2018. In February 2018, UP announced its construction on Brazos Yard in Robertson County, Texas. When completed, Brazos Yard will handle an anticipated 1,300 rail cars

[4] https://www.bnsf.com/news-media/news-releases/bnsf-capital-program-texas-2019.html
[5] KCS Fact Sheet; August 2018
[6] https://www.rtands.com/freight/class-1/kcs-reduces-planned-2018-capital-program-around-four-percent/
[7] Progressive Railroading, "2019 MOW Spending: Freight Rail Infrastructure Investments"
[8] https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_nativedocs/pdf_texas_usguide.pdf
[9] https://www.up.com/media/releases/170305-texas-infrastructure.htm

per day making it the largest railroad yard in Texas.[10] This $550 million facility represents the largest capital investment in a single facility to-date for UP and is scheduled for completion in 2020.

In the last 5 years, 2013-2017, UP has invested more than $2.3 billion enhancing its transportation infrastructure within Texas.[11]

4.3.2 Rail Intermodal/Terminal Facility Projects

Since completion of the previous Texas Rail Plan (2016), there have been several intermodal and terminal projects recently constructed or in the process of being constructed. Listed below are a few examples.

Over the past 5 years, KCS has made freight improvements to its Wylie Intermodal Terminal (which opened in 2015) and Kendleton Intermodal and Classification Yard, in addition to improvements to its Laredo Yard and border facility.[12] KCS has plans to expand yard capacity in both Kendleton and Wylie facilities in the future. BNSF plans to expand lift capacity at its Alliance intermodal terminal near Fort Worth.

Beginning in 2018, UP started building Brazos Yard (approximately $550 million) located near Hearne, Texas. Brazos Yard represents UP's largest investment in a single facility during the company's 155-year history.[13] The investment in a large hump yard is based on UP's assessment of carload volumes coming out of the petrochemical complexes along the Gulf Coast and the railroad's overall manifest rail traffic growth in Texas and the region.[14]

In 2016, BNSF opened its Cadet Yard in Von Ormy, Texas (southwest of San Antonio). The $40 million rail yard classifies sand, ethanol, grain, automotive parts, intermodal, and other shipments traveling between Mexico and South Texas, and was built to reduce existing congestion at the BNSF rail yard in Temple, Texas.[15] BNSF has also recently expanded staging, support tracks, and production tracks at its Alliance Intermodal Terminal.

Starting in 2017, the Port of Freeport began building a rail yard (containing 21,000 feet of track) to serve an industrial park adjacent to the port.[16] The rail project's initial phase is scheduled to be completed in 2019, consisting of a 6,000-foot lead track that will connect with UP line and three 5,000-foot ladder tracks. In the future, the Port will add four more 5,500-foot tracks to the yard.

4.4 CONCEPTS FROM STAKEHOLDER OUTREACH

As part of the preparation of the Texas Rail Plan, TxDOT provided stakeholders and the public with opportunities to submit comments and suggestions related to the rail plan as well as freight rail transportation in the state. The first of these opportunities was a Freight Rail Stakeholder Meeting

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[10] https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_nativedocs/pdf_texas_usguide.pdf
[11] https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_nativedocs/pdf_texas_usguide.pdf
[12] KCS Outreach, 2018
[13] http://trn.trains.com/news/news-wire/2018/01/25-union-pacific-to-build-new-hump-yard-in-texas
[14] http://trn.trains.com/news/news-wire/2018/01/25-union-pacific-to-build-new-hump-yard-in-texas
[15] http://trn.trains.com/news/news-wire/2016/09/16-bnsf-opens-new-$40-million-rail-yard-in-south-texas
[16] https://www.joc.com/port-news/us-ports/port-freeport-texas/port-freeport-build-railyard-industrial-park_20170822.html

held by TxDOT in Austin on October 8, 2018. Public comments were received through an online survey regarding the Texas Rail Plan that was posted on TxDOT's website. The online comment period ran from December 11, 2018 through March 1, 2019. After the public comment period closed, a second Freight Rail Stakeholder Meeting was held on April 30, 2019, using an online Webex format. A complete description of outreach efforts conducted for the development of the Texas Rail Plan can be found in Chapter 6. Specific freight rail enhancement projects and suggestions that were received by TxDOT during the public outreach effort are summarized below.

The following long-term freight rail improvements were identified during public outreach:

- Continue investing in highway-rail grade crossing elimination projects, grade crossing improvements, and sealed rail corridors to reduce traffic delays, improve roadway safety, and enhance transportation mobility and efficiency.
- Use decision-making techniques to assist in the prioritization of rail improvements and grade crossing projects, such as computerized modeling to determine alternatives, cost-benefit studies to determine benefits and value, and public involvement opportunities,
- Invest in additional rail capacity on lines in and around Beaumont, including new or expanded freight rail crossings of the Neches River and the Sabine River.
- Provide state funding to support modal conversions from truck to rail and support highway congestion relief.
- Expand single-track rail lines to double-track rail lines to improve operations, reduce grade crossing traffic delays, accommodate projected freight growth, and provide opportunities to shift truck traffic onto rail.
- Provide state funding to maintain and improve shortline freight rail infrastructure to provide rural economic support and freight rail connectivity.
- Establish state policies supporting investment in freight rail infrastructure and create dedicated state funding sources, grant programs, tax credits or other public financing mechanisms for rail freight improvement projects.
- Preserve land adjacent to existing freight rail infrastructure to accommodate future expansion.
- Invest in projects to improve the efficiency of cross-border rail shipments at points of entry.

4.5 FUTURE TASKS

Additional planning studies and analyses should be made at future intervals to gather further information that would aide TxDOT, public officials, and citizens to make informed decisions about future freight rail development in the state. Related recommendations include:

- Enhance communication and coordination with the three Class I railroads operating in the state at regular intervals to better understand their needs and priorities. For example, TxDOT and the Class I railroads could engage in a joint partnering opportunity program to identify intersections between railroad and state agency projects and to establish coordination that provides a basis for more efficient, timely, and cost-effective mutual project development.

"Joint Project Partnership Opportunities" program to better coordinate on projects where state projects and BNSF projects may overlap in the future.

- Develop an enhanced working relationship with the Class III railroads in the state to better understand and prioritize critical freight rail infrastructure needs associated with these smaller operations. An example would be to gain a better understanding of the state of repair on the track, bridges, and other structures of these smaller railroads and potentially develop a funding strategy to assist with the highest priority investments needed.
- Perform engineering studies (including train operations models) and environmental analyses to specify which freight rail lines are essential for use as intercity corridors capable of accommodating higher speed train services, to better understand capacity, geometry, and operating challenges.
- Develop analyses by railroad corridor that consider the potential for economic and industrial development and any public benefits that may result from the shift of freight transportation from the truck mode to the rail mode (e.g., enhanced roadway safety, reduced air emissions, lower transportation costs, and job retention and creation) and related rail access and service requirements.
- Develop cost estimates for capital and operating costs of freight rail alternatives (e.g., different technologies and equipment operating at different speeds on specific corridors) that could identify solutions that would potentially enhance the safety, capacity, velocity, efficiency, and cost-effectiveness of railroad operations and maintenance.
- Develop studies that consider the benefits of rail corridor preservation for future multi-use, multimodal, or alternative transportation use.

2019 Texas Rail Plan

Chapter 5

Texas Rail Service and Investment Program

December 2019

TABLE OF CONTENTS

List of Tables

List of Figures

5.1 INTRODUCTION

The purpose of Chapter 5 of the Texas Rail Plan is to provide Texas' rail vision, goals, and objectives over the next 20 years and describe how these guide TxDOT to collaborate with regional and private stakeholders in future rail projects. The chapter also includes envisioned short- and long-range rail freight and passenger projects.

5.2 TXDOT RAIL VISION AND GOALS

5.2.1 TxDOT Rail Vision

As part of the previous 2016 Texas Rail Plan and this 2019 Texas Rail Plan Update, TxDOT held a series of workshops and invited rail stakeholders to solicit input into the creation of a vision for Texas freight and passenger rail for the future. These rail visions were consolidated into the most essential needs of and opportunities for the state with regard to its rail network, and in consideration that freight and passenger rail improvements in Texas are predominantly a function of private investment to meet market demands. The state lacks available funding and has a limited regulatory role at present.

The consolidated vision for this 2019 Texas Rail Plan as previously stated in Chapter 1 is as follows:

The State of Texas will work with private rail providers to improve the efficiency and connectivity of the rail network to expand the State's economic competitiveness, improve safety and reduce congestion on our roadways. The State supports a multimodal approach to expanding transportation opportunities for the citizens of Texas.

5.2.2 Rail Program Goals and Objectives

As discussed in Chapter 1, this Texas Rail Plan is intended to integrate with and expand upon the Texas Transportation Plan (TTP), and the Texas Freight Mobility Plan (TFMP). The rail program vision encompasses goals and objectives consistent with the TTP and TFMP. These are:

- Safety - which includes the reduction of rail-related fatalities and serious injuries, especially regarding safety at at-grade rail crossings, and the elimination of conflicts between transportation modes wherever possible.
- Asset Management and Preservation – which includes achieving a state of good repair of the rail plant, especially those assets owned by TxDOT.
- Mobility and Reliability – which is aimed at reducing congestion and improving rail system efficiency, capacity, and performance, including rail freight and passenger travel time reliability.
- Multimodal Connectivity – which is aimed at providing both freight and passenger choices by improving the rail system and providing intermodal and multimodal connectivity.
- Economic Competitiveness – which involves selecting projects that strengthen Texas' position as a trade and logistics hub and that support both existing industries and the attraction of new industries.

5.3 PROGRAM COORDINATION WITH OTHER TRANSPORTATION PLANNING EFFORTS

In addition to integrating TxDOT's vision and goal for the 2019 Texas Rail Plan with other state transportation and mobility plans as described in Section 5.2.2, TxDOT also evaluated the state rail plans of surrounding states and published rail development plans in Mexico. TxDOT reviewed these plans to determine whether the policies and plans in these states were in conflict with any of the Texas initiatives included in this Texas Rail Plan, as Texas shares rail corridors and services with other states and Mexico.

The most recent state rail plans available for Oklahoma, Louisiana, and New Mexico were reviewed to ensure consistency of policies and plans among the states in the region. The results of this review found no conflicts with Texas initiatives.

5.3.1 Passenger Rail Planning

The Oklahoma State Rail Plan was supportive of continued improvement of the Amtrak *Heartland Flyer* intercity passenger rail service between Fort Worth and Oklahoma City. The Oklahoma State Rail Plan supported the concept of improving accessibility to the Trinity Railway Express (TRE) commuter rail service at Fort Worth for connection to the Dallas market. Oklahoma also supported continued study of the extension of *Heartland Flyer* intercity passenger rail service south of Fort Worth and north from Oklahoma City to Newton, Kansas, and potentially beyond. The Louisiana State Rail Plan was supportive of the joint planning efforts undertaken by Louisiana, TxDOT, the Northwest Louisiana Council of Governments, and the I-20 Corridor Council to study the feasibility of establishing intercity passenger rail service in the I-20 corridor between Fort Worth and Amtrak's long-distance *Crescent* at Meridian, Mississippi, as well as regional intercity passenger rail service between Fort Worth and Shreveport. The Shreveport-Bossier (Louisiana) Convention & Tourist Bureau and the cities of Bossier City and Ruston, Louisiana, have also voiced their support to TxDOT for the establishment of intercity passenger rail service in the I-20 corridor. To date, studies assessing the implementation of passenger rail service in the I-20 corridor have not been reviewed by the host freight railroads. Any type of service expansion would require agreement by all parties.

Louisiana and New Mexico state rail plans identified that those states supported improvements to the existing Amtrak long-distance *Sunset Limited* service from Los Angeles to New Orleans via El Paso, San Antonio, and Houston.

Mexico has considered the feasibility of a Mexico-U.S. high-speed rail line on a dedicated right-of-way from Monterrey in Nuevo Leon state to San Antonio with the potential to move passengers between the two cities in about 2 hours. TxDOT attended meetings with officials from the USDOT and Mexico that included discussion of this proposed concept.

5.3.2 Texas-Mexico Transportation Border Master Plan

TxDOT is currently developing the Texas-Mexico Transportation Border Master Plan Update (2018) through cooperation with the Border Trade Advisory Committee (BTAC), Federal Highway Administration (FHWA), and public and private sector partnering agencies and stakeholders in Texas and Mexico. The purpose of the plan is to identify and prioritize binational goals for multimodal transportation systems, border crossings, and support facilities and to develop an implementation plan for making multimodal transportation investments during short, medium, and long-term horizons. The master plan will also recommend investment strategies to facilitate the movement of goods and people along the Texas-Mexico border. Stakeholder involvement is a key component of the master plan's preparation, and TxDOT is actively engaging binational stakeholders from the private sector, including the U.S. railroads that access rail border crossings in Texas. The stakeholder outreach and identification of needs and opportunities for the binational multimodal transportation network is in concert with, and can be used to support, rail projects identified and prioritized during the development of the 2019 Texas Rail Plan.

5.3.3 New Mexico Freight Projects

TxDOT has also provided support and information to the New Mexico Border Authority and its partners for the Santa Teresa International Rail Study.[1] The study, released in 2016, by the New Mexico Border Authority in coordination with the State of Chihuahua, evaluated the potential environmental impacts and economic benefits of relocating the existing international rail crossing between El Paso, Texas, and Ciudad Juárez, Chihuahua, Mexico, Texas to a westerly location entering the United States near Santa Teresa, New Mexico. The concept did not include costs or impacts associated with the potential relocation of UP and BNSF facilities in El Paso or potential rail line and facility relocations on the Mexican side of the border.

TxDOT will also continue to work with New Mexico DOT and Union Pacific on improvements to improve operations within and approaching UP's Santa Teresa Intermodal Ramp, located just west of El Paso in Santa Teresa, NM. The terminal opened in 2014 on a 2,200-acre site along UP's Sunset Route linking El Paso and Los Angeles. The $400 million terminal includes a fueling station, crew change buildings, and an intermodal ramp with an annual lift capacity of around 225,000 containers.[2] The run-through fueling facility consolidated three existing fueling terminals in El Paso into one centralized facility, improving train speed and efficiency in the region.

5.3.4 Other Planning Efforts

The 2008 Passenger Rail Investment and Improvement Act (PRIIA) directed the Federal Railroad Administration (FRA) to develop a preliminary National Rail Plan to address rail needs of the U.S. The preliminary plan, published in October 2009,[3] provided the following objectives to better integrate rail in the national transportation system and improve overall system performance:

- Increased passenger and freight rail performance
- Integration of all transportation modes to form a more complementary transportation system
- Identification of projects of national significance
- Providing for increase public awareness

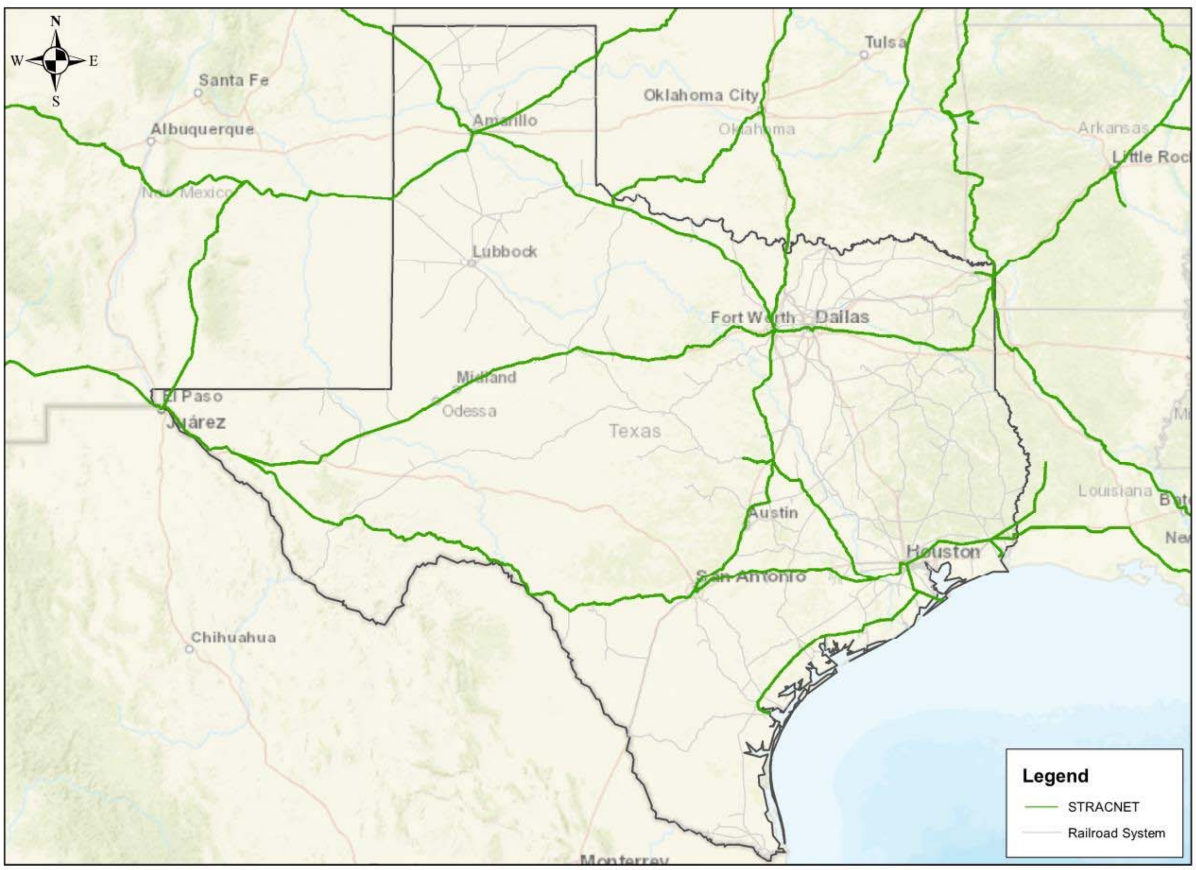
Since 2009, the concept of developing a National Rail Plan has evolved toward capturing the findings of state rail plans, and reflecting the issues and priorities addressed in various state rail plans. An outgrowth of this process is expected to be the development of regional rail plans and

[1] https://www.nmlegis.gov/handouts/NMFA%20081516%20Item%202%20CSR_Feasibility_Final_2016-04-29.pdf
[2] https://www.uprr.com/newsinfo/releases/capital_investment/2014/0528_santateresa.shtml
[3] https://www.apta.com/resources/hottopics/highspeedrail/Documents/Preliminary-National-Rail-Plan.pdf

multi-state corridor plans inclusive of solutions for freight and passenger service issues on a regional basis, rather than a state-by-state basis. TxDOT will work with FRA and other states to ensure that the region's rail perspectives and issues are adequately addressed within the national rail planning process.

Texas also will coordinate as needed with the U.S. Military Surface Deployment and Distribution Command's Transportation Engineering Agency, which oversees the federal National Strategic Rail Corridor Network (STRACNET). STRACNET consists of approximately 32,000 miles of interconnected U.S. rail corridors and associated connector lines deemed most important to national defense. These rail lines provide main line corridor throughput capability as well as access to major defense contractors, logistics sites, and military facilities. Figure 5-1 shows the STRACNET system in Texas.

Figure 5-1. The Strategic Rail Corridor Network in Texas



Source: Federal Railroad Administration and Google Earth

At a regional level, TxDOT has been working with local metropolitan planning organizations (MPOs) to develop regional freight mobility plans that analyze future freight rail, regional passenger rail, and roadway needs, and identify mutually beneficial improvement projects. Section 5.7.3 provides additional information on these studies.

5.4 RAIL AGENCIES

5.4.1 Rail Agencies and Authorities

As noted in Chapter 1, TxDOT's Rail Division was established in December 2009 in response to a renewed and growing interest in rail transportation statewide for both the movement of people and goods. The Rail Division is generally responsible for statewide rail planning, implementing rail-related policies, and administering state and federal funds, when available.

Chapter 1 also identifies other state and local public entities that collaborate with the private sector to carry out, administer, or assist in rail operations planning in the state. These entities include TxDOT's Traffic Operations Division, TxDOT district offices located throughout the state, local transportation authorities that manage regional commuter rail or rail transit systems, Rural Rail Transportation Districts (RRTDs), MPOs, and several local public and private economic development agencies.

This Texas Rail Plan does not recommend any changes to TxDOT's Rail Division, nor does it recommend the creation or dissolution of any other authorities or agencies.

5.4.2 Rural Rail Transportation Districts

5.4.2.1 How Rural Rail Transportation Districts are Formed

First authorized in the 67th Texas Legislature in 1981, Rural Rail Transportation Districts (RRTDs) are formed at the county government level by simple resolution of one or more county commissioners' court(s) under rules outlined in Texas Statutes and the Texas Transportation Code.[4] The creation of an RRTD does not require approval by TxDOT or any other state-level planning authority. RRTDs are considered subdivisions of Texas state government with the:

- power to purchase, operate, and/or build new railroad and intermodal facilities;
- right of eminent domain; and
- ability to issue revenue anticipation bonds.

Even with these legal authorities, RRTDs have not been granted the power to levy taxes to fund their activities.

5.4.2.2 How Rural Rail Transportation Districts are Funded

While a small number of RRTDs have received specific legislative appropriations from state general revenue through TxDOT over the years to preserve vital rail infrastructure or rights-of-way (ROW), most have not received any direct state-level funding support. A much smaller number of RRTDs have been able to generate enough revenue from rail service or other uses of existing assets to hire a third-party rail operator for continued rail service. The only statutory funding source that has been made available to RRTDs, other than receiving occasional donations of cash and/or real property (i.e. grants), has been the authority to issue revenue bonds and the use of anticipation notes. As a result, most RRTDs have had limited success in developing the business capital necessary to

[4] Roop, S., C. Morgan, J. Warner, L. Olson, and L. Higgins. *Texas Rural Rail Transportation Districts: Informational Guidebook for Formation and Evaluation*. TxDOT Research Report 4007-P1. TTI, 2001

prevent abandonment proceedings in the long-term or to develop large-scale economic opportunities that might support continued or expanded rail operations.

5.4.2.3 Number of RRTDs in Texas

As of 2019, the number of known RRTDs in the state is 43. Table 5-1 shows a summary of the type and number of RRTDs in Texas. Of 254 counties in Texas, 95 participate in at least one RRTD. Of the 43 RRTDs in the state, 28 are single-county districts, and 15 include more than one county.

Table 5-1. Number of Rural Rail Transportation Districts in Texas

	Formed Prior to 2002*	Formed Since 2002	Total
Number of Participating Counties	70	25	95
Single County RRTDs	8	20	28
Multi-County RRTDs	12	3	15
Total Number of RRTDs	**20**	**23**	**43**

*Includes RRTDs prior to 2002 as documented in the TxDOT 2002-2003 report series, plus the pre-existent/inactive South Plains and Middle Rio Grande RRTDs.
Source: Texas A&M Transportation Institute, Rural Rail Transportation Districts (RRTDs) Update, June 2013 (Updated 2019)

Prior to 2002, only 20 known RRTDs had been formed in the state. Since 2002, 23 new RRTDs have been formed bringing the total number of known RRTDs to 43. The number of counties participating in an RRTD has also increased since 2002 from 70 to 95. A majority of the RRTDs created since 2002 (20 of the 23) are single-county districts, reflecting growth in single-county RRTDs formation following the 1997 change in the RRTD statutes.

The formation of RRTDs seems to have slowed in the years since the last full report on RRTDs was completed in June 2013.[5] Only one known active RRTD, the Brazoria-Fort Bend Rail District (BFBRD), has been formed since the 2013 report. According to the district's website, the BFBRD was formed in January 2015 to create, finance, maintain, and operate a proposed freight rail connector between Port Freeport and an intermodal rail hub near Rosenberg/Kendleton, Texas. The BFBRD is made up of the two counties that also form the Gulf Link RRTD. Also of note is the activity of the La Entrada al Pacifico RRTD and other rail districts in the Permian Basin that have been busy studying potential new rail routes to add rail capacity in the region for oil exploration and development since the 2013 RRTD study was completed.

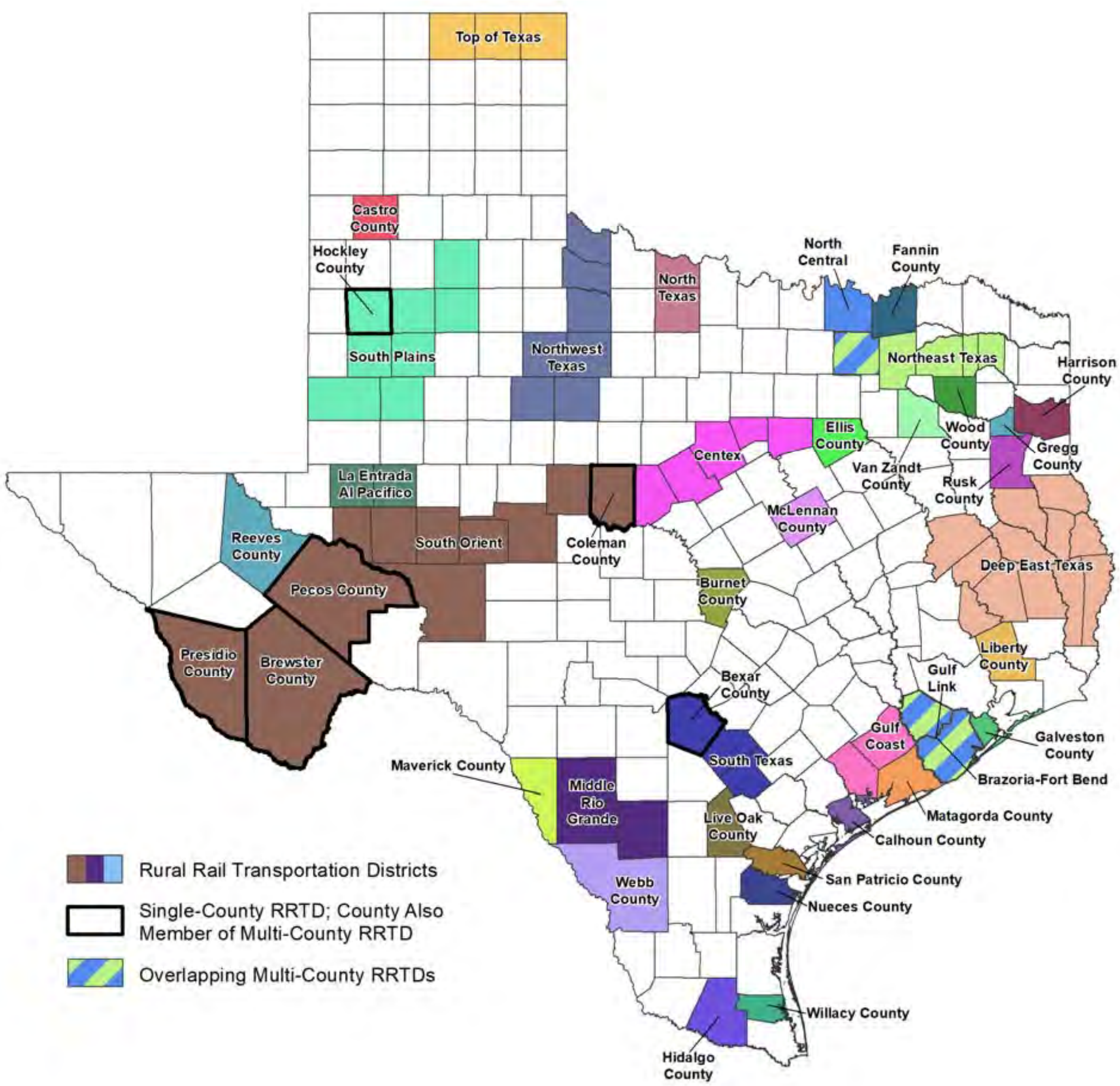
Figure 5-2 displays a map showing the 43 RRTDs known to have been created in Texas since 1981. The distribution of participation among the 95 counties participating in an RRTD is as follows:

- 67 counties participating as members of a multi-county RRTD
- 21 counties participating as a single-county RRTD

[5] Morgan, C., J. Warner, and B. Sperry. A report to Texas Department of Transportation (TxDOT) Rail Division (RRD) submitted by the Texas A&M Transportation Institute, Rural Rail Transportation Districts (RRTD) Update June 2013 (https://ftp.dot.state.tx.us/pub/txdot-info/rail/rural/rrtd-update.pdf)

- 6 counties participating as members of a multi-county RRTD and that also have created a single-county RRTD
- 1 county (Collin County) participating as a member of multiple multi-county RRTDs

Figure 5-2. Map of Rural Rail Transportation Districts Formed in Texas



Source: Texas A&M Transportation Institute, Rural Rail Transportation Districts (RRTDs) (Updated 2019)

5.4.2.4 Primary Motivations for Forming RRTDs in Texas

Counties cited several motivations for the formation of RRTDs, generally falling into the following three categories:

- Rail Preservation/Prevent Abandonment - The RRTD was formed in response to proposed abandonment of a railroad line within the RRTD's jurisdiction, generally for the purpose of opposing rail abandonment/removal and preserving the line for future use.
- Economic Development - The RRTD was formed to promote economic development within the RRTD jurisdiction, including construction of railroad spur lines to single industries, larger multi-parcel industrial parks, or construction of new railroad lines to promote alternative (i.e., "dual") rail service.
- Improved Passenger Rail Service - The RRTD was formed largely to promote establishment of improved passenger rail service along an existing Amtrak route.

Among the 43 known RRTDs identified in the state, 15 (35 percent) were formed primarily in response to the threat of rail line abandonment, 19 (44 percent) were formed to promote economic development, 4 (9 percent) were formed for multiple reasons, and at least one RRTD was created primarily for promoting improved passenger rail service. The primary motivation for RRTD formation was not conclusively identified for three RRTDs in the 2013 report.

5.4.2.5 Activity/Status of Individual RRTD Boards

As part of the 2013 reporting efforts, researchers attempted to ascertain the current activity status of each RRTD and its appointed board of directors. RRTD boards of directors were characterized as active, semi-active, or inactive based upon (1) if the RRTD has an officially appointed board with regular meetings (active), (2) whether a board has officially appointed members but has no regular meetings (semi-active), or (3) has neither active appointees nor meetings (inactive).

Although monthly meetings are required by the RRTD statutes, several of the boards meet on a bi-monthly or quarterly basis when there is little activity. Others, in active pursuit of a project, also reported meeting biweekly or as often as necessary to complete their work. Using these criteria, among the 43 known RRTDs, 13 (30 percent) had an active board of directors, 8 (19 percent) had a semi-active board of directors, and 20 (47 percent) had an inactive board of directors. The status of the board of directors could not be conclusively identified for one RRTD.

5.4.2.6 Substantive Changes to RRTD Statutes and Roles over Time

The statutes governing RRTD formation have changed over time. Between 1981 and 1997, RRTD statutes required that two or more counties cooperate to form a district. During this period, multi-county RRTDs were generally created to prevent loss of rail infrastructure to rail line abandonment or to preserve abandoned rail ROW for redevelopment and possible reinstitution of rail service at some point in the future. In 1997, the 75th Texas Legislature passed several amendments to the RRTD statutes including a provision allowing single counties to form a RRTD.[6] Since that time, there has been renewed interest and a noticeable increase in the number of RRTDs being formed; however, the emphasis in formation of RRTDs has largely changed from multi-county rail corridor preservation

[6] Morgan, C., S. Roop, and J. Warner. *Texas Rural Rail Transportation Districts: New Roles and Relationships*. TxDOT Research Report 4007-2. TTI, 2002

to be more based around single-site, rail-based economic development projects within an individual county creating the district.

Other, more recent legislative actions regarding activities of RRTDs have included:

- HB 2660 of the 80th Legislature, which authorized the Governor's Office to make Texas Enterprise Fund economic development grant funds available to TxDOT to assist RRTDs in rural rail development although no additional money for this purpose was allocated. No grants have been made to RRTDs under this provision.
- SB 18 of the 82nd Legislature, which required all existing state entities with eminent domain power to file with the state comptroller by December 31, 2012, or lose this power effective September 1, 2013. Only six of the existing RRTDs complied with this deadline placing the eminent domain powers originally granted to the remaining, pre-existing RRTDs in legal question; however, any RRTDs newly formed after this effective date were not specifically impacted by this bill's provisions.

5.4.2.7 Primary RRTD Activity Categories

Notable RRTD rail planning and associated activities over the past two decades may generally be grouped within four categories:

- Railroad Right-of-Way/Rail Line Ownership Related Activities - One of the most important powers of an RRTD is the ability to own railroad right-of-way (ROW) and/or infrastructure. Many RRTDs have used this power to purchase railroad ROW and/or infrastructure threatened with abandonment or otherwise preserve rail structures and/or ROW for future use.
- Other Railroad-Related Activities - Railroad-related activities undertaken by RRTDs are not limited to the purchase of railroad infrastructure and ROW or other rail line ownership activities. Many RRTDs have actively pursued other railroad-related projects and proposals.
- Economic Development Activities - Many RRTDs are active in pursuing projects to support economic development activities in the district-forming county (or counties). While many RRTD projects have positive outcomes toward general economic development for the larger countywide area or region, others are specifically focused on economic development activities at specific sites, such as new industrial parks or preservation or construction of rail spurs to single industries.
- Non-Railroad-Related Activities - In addition to railroad-related activities and economic development initiatives, some RRTDs have participated in other non-railroad activities such as construction of hiking/biking/horseback riding trails or purchase of former rail ROW for use as other types of transportation facilities (e.g. toll road, etc.)

RRTDs, as local planning entities exclusively related to rail transportation, have exhibited both success and failure at their two primary missions of preserving rail infrastructure and encouraging rail-based economic development over the 38 years that they have been authorized in state law. The few RRTDs that have been able to garner needed funds through government grants or generate funding directly through rail operations activities have been able to retain rail service where the rail lines would have been otherwise abandoned and removed. As the state becomes more involved in rail planning activities and demand for additional rail service becomes more acute, interested local officials have a continued role to play in protecting rail service and encouraging rail-based economic development.

5.5 PROGRAM EFFECTS

Section 5.8 presents the Texas Rail Plan's Rail Service and Investment Program for the short range (4 years from 2019 to 2022) and for the long range (17 years from 2023 to 2039). Freight rail projects planned and programmed solely by the Class I railroads are generally not included in the investment program, since the Class I railroads are considered capable of funding many of their own projects. However, projects involving Class I railroads that include public-sector financing, are implemented as public-private partnerships, or have been identified by the Class I railroads for inclusion in state and regional mobility plans have also been included in the Texas Rail Service and Investment Program.

The freight and passenger projects presented in the short-range and long-range Texas Rail Service and Investment Program include projects to

- expand capacity and infrastructure;
- maintain a state of good repair; improve operations in high-volume locations;
- expand rail/port connectivity and capabilities;
- enhance efficiency and security at rail border crossings;
- establish or enhance access for rail customers; and
- upgrade Class III railroad infrastructure; and improve safety.

These projects offer significant potential benefits.

As most rail passengers are diverted from automobiles, the service improvements and expansions proposed in the Texas Rail Service and Investment Program will result in a more extensive and diverse passenger rail transportation network; enhanced mobility; increased tourism and access to job opportunities; and increased energy efficiency.

For rail freight improvements, the benefits include increased transportation options and competition resulting in lower costs for shippers, less highway congestion and roadway damage, and reduced environmental and energy impacts. By their nature, grade crossing improvement projects, as well as other rail-related improvements, also increase transportation safety.

5.5.1 Short-Range Rail Freight Program Effects

Even though the proposed short-range program is restricted in size due to funding availability, the projects included provide significant public benefits. These effects include not only the transportation-related economic and socio-environmental benefits involved in providing competitive rail service itself as described in Chapter 2, but also the preservation, protection, and enhancement of state-owned assets; introduction of new competitive alternatives for rail users; more efficient service for rail customers; and increased safety through the reduction of rail-highway interfaces and improvements to existing at-grade crossings.

The proposed improvements to the South Orient Rail Line (SORR) leverage the previous public investments made to improve operating efficiency and attract new traffic. Improvements at the SORR's Presidio border crossing will create additional traffic-handling opportunities and establish competitive access for shippers, which usually results in lower transportation costs, a major factor in attracting additional businesses to the line.

5.5.2 Long-Range Rail Freight Program Effects

The projects included in the Long-Range Rail Freight program are more diversified as to the types of project and larger in scale and cost than most short-range projects. Thus, the expected benefits from these projects would logically be larger and have greater impacts. The range of projects involve mainline capacity expansion through double tracking, improved rail efficiency through the construction of wye tracks, highway-rail grade separation projects, and improved rail operations at the Mexican border. The following is a short discussion of the specific public benefits involved in some of these projects.

The proposed improvements to the SORR and NETEX rail lines serve multiple purposes. As rail lines in which the state has an ownership or security interest, these improvements protect the public investments made in these lines and continue the trend of steadily increasing traffic levels, which result in increased financial viability and the ability to implement additional improvements through increased line revenue and carload fees. In addition, new interchanges will create competitive access to shippers, which usually results in lower transportation costs, a major factor in attracting additional businesses to the line.

The Neches River Rail Crossing and Port Terminal Railway Mainline projects provide critical system capacity for through rail freight service, as well as improved passenger service for the Neches River project. These projects contribute to the state's overall transportation system capacity, reduce reliance on highway travel, and enhance the state's port and intermodal operations.

The Houston West Belt Subdivision sealed corridor project significantly reduces the potential for highway-rail crossing incidents and provides increased travel efficiency for motorists across this busy rail corridor, while the program of at-grade crossing improvements will provide an increased level of safety at those locations. The project will replace at-grade road crossings with grade separations at four locations on a 5.9-mile segment of the West Belt Subdivision between Tower 26 and TNO Junction.

The public benefits associated with grade separation projects are usually significant, and generally include reduced roadway congestion, improved roadway and motorist safety, travel time savings, enhanced transportation mobility, and improved air quality from the reduction in idling motor vehicles.

5.5.3 Passenger and Commuter Rail Program Effects

Implementation of the short-range and long-range projects and services would expand residents' ability to access job markets, other business services, and educational, medical, and other beneficial services. Station locations could serve as economic hubs providing expanded services to downtown areas and new services where stations are created.

The availability of increased rail passenger service in and of itself should reduce the amount of energy consumed, greenhouse gases generated, and highway congestion and delay. The increased level of rail passenger service should also not negatively affect and may benefit the capacity and efficiency of rail freight service as improved capacity and signal/communication systems would be required by the rail line owners, as well as the overseeing federal and state governments.

5.6 RAIL PROJECT IMPACT AND FINANCING ANALYSIS

FRA's 2013 State Rail Plan Guidance requires states to describe how capital projects were analyzed, with regard to their impacts on passenger rail ridership, potential diversion from highway and air to rail, passenger rail revenues and costs, benefits from freight rail projects, etc. States are also required to describe their 4- and 20-year (or more) financing plans for passenger rail capital and operating costs. Discussion of these analytical areas for both passenger and freight rail projects is included in the Texas Rail Service and Investment Program presented in Section 5.8.

5.6.1 Passenger Rail

5.6.1.1 Passenger Rail Project Impact Analysis

The passenger rail projects identified for the short-range and long-range Texas Rail Service and Investment Program consist of:

- Continued state funding for the Amtrak *Heartland Flyer* service between Fort Worth and Oklahoma City, as required under federal law (PRIIA) for intercity passenger rail corridors of 750 miles or less;
- Regional and local projects to expand existing or establish new commuter rail services in Austin, Dallas, Fort Worth, Houston, and South Texas; and
- The investor-driven Texas Central high-speed rail project, which is being privately financed and is not the recipient of state transportation funding.

Texas currently has a limited amount of control over the rail passenger operations within the state. Commuter and rail transit systems are owned, operated, and maintained by regional or city authorities. Amtrak is responsible for the financing and operation of the long-distance passenger rail services in the state. These limitations also reduce the state's ability to significantly affect positive impacts on other modes or influence substantial modal diversions.

As discussed in Chapter 3, TxDOT received federal grant funding under the High-Speed Intercity Passenger Rail (HSIPR) program between 2009 and 2011 to assist FRA and other stakeholders in the development of planning documents for the following two route segments of the federal South Central High-Speed Rail Corridor, linking South Texas and San Antonio with Oklahoma City and Little Rock:

- Texas-Oklahoma Passenger Rail Study
- Dallas-Fort Worth Core Express Alternatives Analysis

The completed studies are summarized in Chapter 3. The North Central Texas Council of Governments (NCTCOG), the public body responsible for the long-range regional planning and programming of federal and state funding within the region for highways and transit, is building on

TxDOT's previous planning efforts by advancing project-specific Tier II environmental evaluations for the following two intercity passenger corridors:

- Fort Worth-Dallas
- Fort Worth-San Antonio

These studies are anticipated to provide the benchmark information to determine whether further analysis and potential investment in these services are merited.

5.6.1.2 Passenger Rail Project Financing Plan

TxDOT does not have a dedicated funding source for passenger rail projects. Funding for support of existing passenger rail services or for additional services must be approved by the Texas Legislature. Any capital investments related to overall corridors must be made at the regional level with concurrence by Amtrak, the rail line owners, and other states as applicable.

Privately funded ventures and regional agencies have begun to take active roles in the efforts to increase intercity passenger rail service within the state. This trend is expected to continue. The private venture Texas Central Partners is pursuing financing on its own for its proposed high-speed rail system between Dallas and Houston without assistance from TxDOT. In May 2017, the Texas State Legislature enacted Senate Bill No. 977 (SB 977), which amended Chapter 199 of the Transportation Code to prohibit the appropriation or use of state funds for the planning, construction, operation, maintenance, or security of any high-speed rail service (above 110 mph) operated by a private entity, except as required by federal law or other state law, including the National Environmental Policy Act of 1969.[7]

As discussed in Chapter 3, the regional planning agency NCTCOG is preparing an inter-local agreement with the cities of Dallas and Fort Worth for the establishment of a local government corporation to manage the design, financing, construction, operation, and maintenance of the Dallas-Fort Worth Core Express Service.[8] TxDOT anticipates that the future development and implementation of other intercity passenger rail services will be carried out by regional or local public agencies.

5.6.1.3 Passenger Rail Operations Financing Plan

State agencies in Texas are appropriated funds by the Texas Legislature on a biennial basis. As a result, TxDOT makes a biennial Legislative Appropriations Request for the upcoming two consecutive fiscal years, requesting the estimated amount of funding TxDOT expects to receive and spend in that timeframe.[9] TxDOT's most recent funding request, the FY 2020-2021 Legislative Appropriations Request, dedicates approximately 88 percent of its funding to the development, delivery and maintenance of state highway projects. TxDOT does not have a funding program specifically dedicated to passenger rail improvements. Under the current uses of transportation funds authorized by the Texas Legislature, passenger rail projects can be funded using the following transportation sources:

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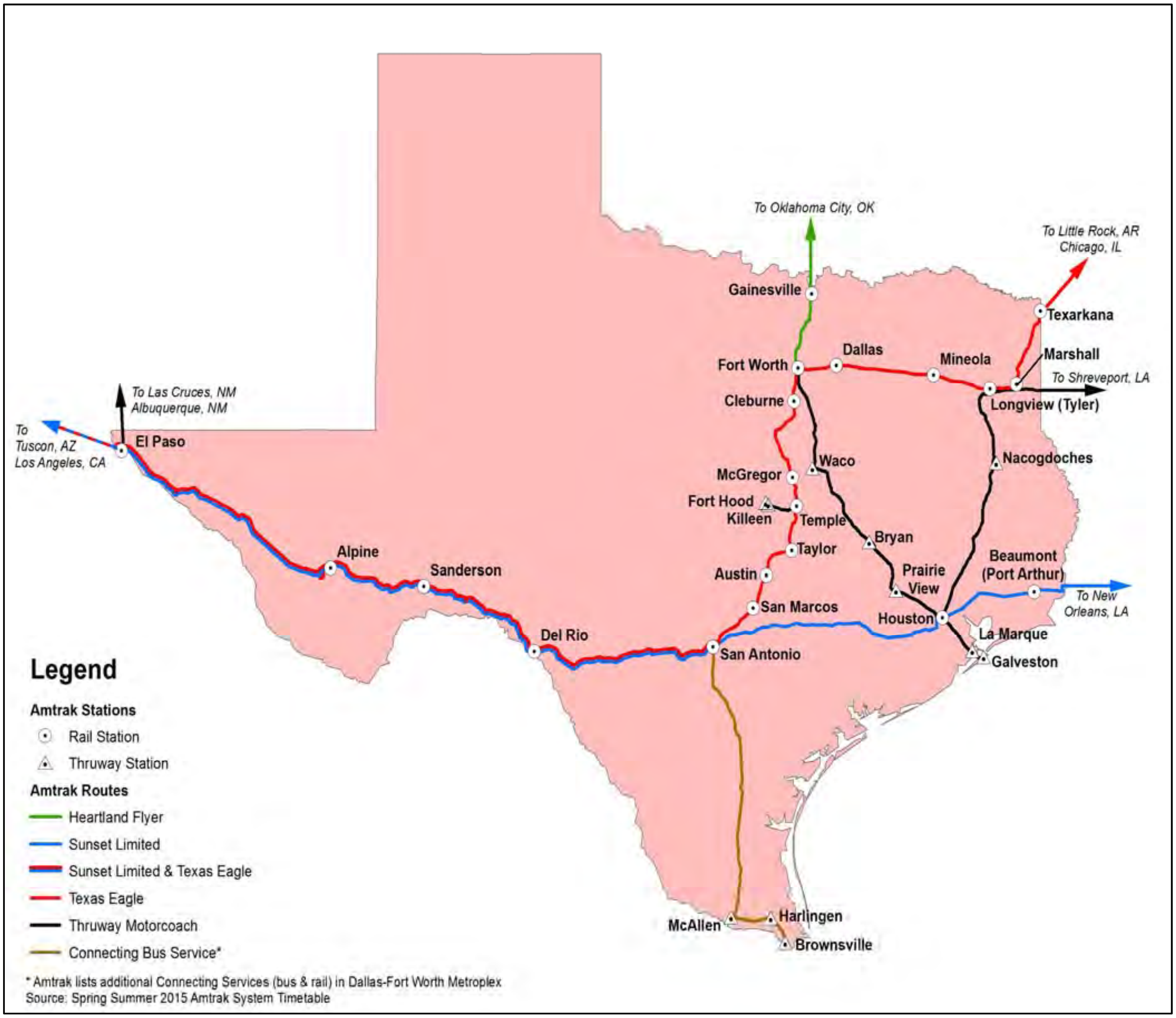
[7] https://capitol.texas.gov/tlodocs/85R/billtext/pdf/SB00977F.pdf#navpanes=0
[8] http://dallascityhall.com/government/Council%20Meeting%20Documents/msis_4_dfw-core-express-update_combined_111317.pdf
[9] https://ftp.dot.state.tx.us/pub/txdot-info/fin/funding-sources.pdf

- **Texas Mobility Fund Revenue.** Article III, Section 49-k of the Texas Constitution created the Texas Mobility Fund within the treasury of the State of Texas.[10] The Mobility Fund is administered by the Texas Transportation Commission as a revolving fund to provide a method of financing for the construction, reconstruction, acquisition and expansion of state highways, including costs of any necessary design and costs of acquisition of ROW, as determined by the Commission in accordance with standards and procedures established by law. The Mobility Fund may also be used to provide state participation in the payment of a portion of the costs of constructing and providing publicly owned toll roads and other public transportation projects—including passenger rail projects—in accordance with procedures, standards, and limitations established by law. Fund revenue sources may include proceeds of sale of obligations, appropriations, other money not dedicated by the constitution, and money received from a regional mobility authority.[11]
- **Texas Mobility Fund Bond Proceeds.** The creation of the Mobility Fund allowed TxDOT to issue bonds secured by future revenue. This bond revenue allowed the acceleration of mobility projects throughout the state.
- **State Highway Fund – Non-Dedicated.** A limited amount of State Highway Fund money is available under "State Highway Fund—Non-Dedicated" funding. An annual transfer of approximately $150 million goes to the Texas Emissions Reduction Program (TERP) Fund.
- **Regional Subaccounts.** Regional Subaccount funds may only be used for transportation, highway, and air quality projects as defined by Section 228.001 of the Transportation Code in the region where the project from which those funds were derived is located. The revenues are deposited into the State Highway Fund but are not dedicated by the Texas Constitution.

TxDOT's appropriations request also included a budget request for exceptional items in FY 2020-2021 to be funded with state general revenue, supplementing the limited Non-Dedicated State Highway Fund amounts to pay for other types of transportation projects and services. Among the exceptional items, TxDOT has requested $2.5 million in state general revenue for both FY 2020 and FY 2021 to provide a continued subsidy of Amtrak's *Heartland Flyer* passenger train between Fort Worth and Oklahoma City. This passenger service has been jointly funded by TxDOT and the Oklahoma Department of Transportation since 2009. Amtrak has sole responsibility for funding the operation of the two long-distance trains serving Texas, the *Texas Eagle* and *Sunset Limited*. **Figure 5-3** shows the existing Amtrak routes in Texas, which require operational and maintenance improvements over time.

[10] https://www.txdot.gov/inside-txdot/division/debt/mobility-fund.html
[11] https://fmcpa.cpa.state.tx.us/fiscalmoa/fund.jsp?num=0365

Figure 5-3. Existing Amtrak Routes in Texas



Source: Texas A&M Transportation Institute

According to the TTP, commuter rail and rail transit operators in Texas can be grouped into two different categories for the purposes of project funding: agencies that receive funding directly from the FTA for capital and operating expenses, and agencies that are sub-recipients of funding through TxDOT. Larger metropolitan and urban transit agencies are typically direct funding recipients, whereas smaller urban or rural transit agencies tend to be sub-recipients.

As noted in the TTP 2040, due to the nature of funding sources for existing, planned, and programmed intercity passenger rail services, the future condition of this mode in Texas is largely dependent on appropriations from the United States Congress through FRA funding and various federal grant programs, and, in the case of high-speed rail, private funding sources and investors. Private investors have been pursuing the development of high-speed rail in Texas, while local and regional agencies have been responsible for the development of commuter rail services with financial contributions from FTA, other federal grant and loan programs, and TxDOT. The establishment of new corridor services without federal financial assistance would require Texas not only to provide financing for the capital improvements needed to upgrade rail lines to passenger service standards, but also to bear the responsibility for service operating losses in accordance with PRIIA legislation.

Considering rising costs for state-supported passenger rail services, and uncertainties with regard to prospective federal rail funding of long-distance passenger rail services, decisions to expand the state's passenger rail program should be supported by a comprehensive planning effort. The more detailed studies of expanded commuter and intercity passenger rail will include a comprehensive examination of all potential funding sources and alternatives.

5.6.1.4 Passenger Rail Economic Benefits

Most significant rail intercity or commuter rail projects have a positive impact on overall rail passenger ridership, rail passenger miles traveled, modal diversion from highway and air, and increased rail passenger revenues and/or reduced costs. Section 5.5.3 also discusses benefits and program effects of passenger rail investment.

5.6.2 Freight Rail

5.6.2.1 Freight Rail Project Impact Analysis

The freight rail projects identified for the short-range and long-range Texas Rail Service and Investment Program consist of improvements to freight railroad infrastructure in Texas and safety improvements to grade crossings. Whereas large Class I railroads generally have the means to fund their own capital projects, such self-funding is more of a challenge for Class II and Class III railroads, which have smaller physical plants and fewer shippers, severely limiting opportunities to generate revenue. Class III railroads typically earn a fee for providing first-mile/last-mile pick-up and delivery services between freight rail customers and a Class I railroad connection. Some Class III railroads in Texas such as the Texas & New Mexico or the Pecos Valley Southern have only one connecting Class I railroad. Accordingly, the internal cash flow for a Class III is often insufficient to enhance yard and line capacity. These enhancements are needed to accommodate safer and more efficient train operations; to provide improved rail access via enhanced or new transload facilities or industrial trackage; or to upgrade legacy track and bridges to handle heavier loaded car weights of 286,000 pounds, which has become the standard for the national rail system.

Many states, including Texas, have recognized the important transportation and economic development benefits a Class III railroad can provide, and accordingly provide support to Class III railroads for infrastructure upgrades using state and federal funding mechanisms. Such investments ensure that smaller railroads can continue to serve their shippers, in turn helping to maintain shipper employment and prevent the diversion of traffic from rail to truck and the consequent maintenance impacts to the state highway system.

Another key area for state investment is at-grade crossing safety. Improvements include upgrades to warning devices and crossing surfaces, as well as grade crossing closures or grade separations where applicable. The impacts of these investments are demonstrated by the resulting reductions in accidental deaths and injuries at highway-rail crossings.

5.6.2.2 Freight Rail Project Financing Plan

As discussed in Chapter 2, Texas has a constitutional limitation that prohibits most direct state transportation fund expenditures from being used for rail projects. TxDOT's financial strategy to support freight and passenger rail projects recognizes the restricted role the state could play in improving rail transportation options and emphasizes the need for careful planning, accessing federal funds, and reliance on public-private partnerships. TxDOT relies on intermittent budget appropriations and revenue initiatives such as carload taxes on its state-owned SORR to develop rail improvement projects, often with federal, state, and local partners.

The main financing mechanisms for state investments in rail lines and in crossing safety were identified in Chapter 2 of the Texas Rail Plan. These include:

- TxDOT Highway-Railroad Grade Crossing Safety Program
- Rail Relocation and Improvement Fund
- Texas State Infrastructure Bank
- Texas Emissions Reduction Program
- Texas Economic Development Bank
- Transportation Reinvestment Zones
- Railroad Grade Crossing and Replanking Program
- Railroad Signal Maintenance Program
- Railroad Grade Separation Program

All of these mechanisms, as well as various federal programs and local contributions, can potentially support the planned investments in the state rail network noted in Section 5.8 of this chapter.

5.6.2.4 Freight Rail Economic Benefits

The state of Texas recognizes the public value of a viable short line network, and acting by and through TxDOT, has purchased several rail lines in the state over which railroads operate, including:

- The SORR, which extends approximately 391 miles from San Angelo Junction (in Coleman County, five miles southwest of Coleman) through San Angelo to Presidio at the Texas-Mexico border, and is leased to a private operator, Texas Pacifico.
- Bonham Subdivision, located in Lamar and Fannin counties and extending approximately 33.5 miles.
- A railroad line linking Sulphur Springs and Greenville that has been acquired by the Northeast Texas Rural Rail Transportation District (NETEX), which established an operating lease with Blacklands Railroad for providing freight rail service.

The public benefits of state investment in the Texas short line network include the transportation-related economic and socio-environmental benefits involved in providing competitive rail service itself, as well as the preservation and protection of irreplaceable rail assets. These rail lines have also steadily produced increased traffic levels, which have resulted in former and new shippers receiving cost-efficient service.

In January 2015, TxDOT completed a Benefit Cost Analysis for its recent and planned capital investments in the SORR.[12] Key findings from the Benefit Cost Analysis supporting the investments included:

- $823 million in emissions, safety, and pavement maintenance cost savings over 20-year period from current conditions, Benefit Cost Ratio = 5.58
- $1,794 million in emissions, safety, and pavement maintenance cost savings over 20-year period from improving the entire line including international gateway, Benefit Cost Ratio = 5.54

As most of proposed projects in the long-range rail state investment program have yet to be analyzed with regard to their economic feasibility, it is premature to identify any correlation between the level of public investment and benefits.

5.6.3 Rail Program Impacts Summary

As noted in Chapter 2 of the Texas Rail Plan, the impacts of freight and passenger rail services in Texas provide sizable impacts in terms of cost savings and employment. Palpable benefits of rail improvements include lower transportation costs, enhanced mobility, and multimodal connectivity. The proposed short- and long-range rail investment plans presented in this chapter are intended to have a high correlation between the public funding provided and their intended benefits.

The state's proposed short- and long-range projects are based primarily on:

- preserving and increasing the efficiency and capacity of freight rail operations in Texas;
- enhancing rail access and expanding or constructing multimodal facilities for handling freight more economically and efficiently;
- improving railroad crossings of the international border with Mexico;
- enhancing safety at highway-rail grade crossings; and
- improving and expanding regional commuter rail services.

Typical benefits from increasing freight rail capacity and upgrading short line railroads are increased operating efficiency and expanded access. Both have positive impacts on the financial health of both the railroad and the shippers being served. New or improved passenger rail operations provide more cost-effective travel alternatives for travelers.

In general, any improvements in operating efficiency and access to rail service for either rail passengers or freight users achieved through continued investment in the rail network would enhance the existing economic and socio-environmental impacts of the state's freight and passenger services.

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[12] http://ftp.dot.state.tx.us/pub/txdot-info/rail/south_orient/benefit-cost-analysis.pdf

5.7 RAIL STUDIES AND REPORTS

Analysis of the Texas rail network, along with and comments provided at the 2019 Texas Rail Plan Update outreach meetings, and TxDOT's own communication with freight and passenger-carrying railroads have resulted in several recommendations for studies to determine the feasibility of future projects or state-sponsored services to improve rail operations and services in the state. Potential rail studies that could be considered in the future, pending the available staff and/or financial assets required, center on the following areas:

- Enhancement of existing passenger rail services and facilities and development of new intercity passenger rail corridors and services
- Enhancement of existing commuter rail services and facilities and development of new regional commuter rail corridors and services
- Freight rail studies, including evaluations of the rail network within specific regions that could enable prioritized investments in additional rail capacity to enhance freight and passenger operations and in facilities that provide rail access
- Safety enhancements at highway-rail crossings

These are discussed in more detail below.

5.7.1 Intercity Passenger Rail Studies

Chapter 3 contains detailed discussions of the planning efforts undertaken to date by state, local, and private entities to expand intercity passenger rail service in the state and continue efforts to develop the South Central High-Speed Rail Corridor. TxDOT anticipates that the future development and implementation of this corridor, as well as other new services, will be carried out by regional or local public agencies, or private entities. Current efforts include the following:

- As discussed in Chapter 3, Texas Central Partners is continuing to advance its efforts to establish a privately financed high-speed rail system between Dallas and Houston.
- FRA and NCTCOG are jointly working on the preparation of a Tier 2 EIS and conceptual engineering for the Dallas-Fort Worth Core Express. In addition to conventional rail options recommended in the Core Express alternatives analysis, the Tier 2 EIS will also include evaluation of a hyperloop alternative between the two cities.[13]
- NCTCOG and five other MPOs will fund an upcoming transportation study to recommend specific alignments and technology options for the Fort Worth-Waco-Temple-Austin-San Antonio-Laredo corridor. The recommendations from the study will carried forward for evaluation in future service level (Tier 2) NEPA documents.

5.7.2 Commuter Rail Studies

All four of the existing commuter rail agencies in Texas—in Austin, Fort Worth, Dallas, and Denton County—are studying initiatives to extend or enhance existing routes and services or add new routes and services. Several additional areas of Texas that currently do not have commuter rail have studied potential new services, as well, such as Houston/Galveston and Hidalgo County. The findings of these studies were detailed in Chapter 3 of the Texas Rail Plan. Work on advancing new or

[13] https://hyperloop-one.com/texas-officials-confirm-hyperloop-technology-option-dallas-arlington-ft-worth-high-speed-corridor

expanded commuter rail services in Texas is ongoing. Specific studies contained in the Texas Rail Service and Investment Program to expand commuter rail include:

- Denton County Transportation Authority – A-Train Southbound Extension Study: Develop an initial evaluation of extending the A-Train corridor south to downtown Carrollton; $200,000, in DCTA's 2019 Operating Plan and Capital Budget.[14]
- Dallas Area Rapid Transit – The agency's FY2019 Annual Budget and Twenty-Year Financial Plan supports efforts to conduct Regional Corridor Analysis studies on potential new commuter/regional rail lines.[15] Specific routes identified for regional corridor analysis in the DART 2040 Transit System Plan include:
    - Irving-Frisco Corridor
    - Midlothian Corridor
    - McKinney Corridor
    - East-Mesquite Corridor
    - Waxahachie Corridor

These routes are among the regional passenger rail corridors proposed for implementation in NCTCOG's Mobility 2045 regional transportation plan, discussed in Chapter 3. To support the regional objective to expand opportunities for transit services outside the DART Service Area, DART negotiated an umbrella agreement for access funding with NCTCOG. In addition, under Policy III.07, DART is in the process of conducting or preparing to conduct studies with non-DART communities to develop service plan opportunities in an effort to expand regional transit. Studies with the City of Arlington and City of Mesquite were completed in FY 2017. Cities in Collin County will follow during FY 2018. Proposals for future transit services for Mesquite were presented to the DART Board of Directors during the third quarter of FY 2018. These efforts are the subsequent steps to fulfill objectives established in DART's 2040 Transit System Plan[16], which called for performing Regional Corridor Analysis studies on potential new commuter/regional rail lines to identify regional expansion opportunities.

5.7.3 Regional Freight Mobility Studies

TxDOT has begun a multi-year initiative conducting evaluations of the freight and passenger rail transportation networks in specific metropolitan regions of Texas to identify mutually beneficial mobility improvements. These evaluations build on previous regional freight studies conducted in the previous decade that identified infrastructure improvements such as highway-rail grade separation projects and closures. However, conditions have changed over the past 10 years. Both freight and passenger rail volumes have increased, while many communities in the regions have continued to grow resulting in changing land use and traffic patterns. The new regional freight mobility studies will provide a comprehensive analysis of the freight transportation network in a specific region to identify mutually beneficial mobility improvements. The study will establish a program of projects to address freight and passenger rail mobility needs within the specific regions analyzed.

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[14] https://www.dcta.net/sites/default/files/Finance/DCTA-FY19%20Adopted%20Budget.pdf
[15] https://www.dart.org/ShareRoot/debtdocuments/FY19BusinessPlan.pdf?nocache=1
[16] https://www.dart.org/about/expansion/transitsystemplan.asp

TxDOT is already working with NCTCOG on preparing the Metroplex Freight Mobility Study, which will analyze all freight and passenger rail lines that form the freight transportation network in the 16-county Dallas/Fort Worth Metroplex region to identify mobility needs, performance concerns, and mutually beneficial mobility improvements.[17] TxDOT commissioned this study of the freight rail network in the Metroplex in response to industry input received during the state multimodal freight planning process. The study has been divided into two phases. Phase 1 (the Metroplex Freight and Passenger Rail Integration Study) evaluates the capacity needs for future regional passenger and freight demand over the publicly owned DART and TRE rail networks. Phase 2 (the Metroplex Freight Study) evaluates the entire rail network in the region and identifies opportunities for infrastructure to increase the fluidity of surface traffic movement through the construction of grade separations and the closing of at-grade crossings. Projects that receive regional funding will be placed on NCTCOG's Transportation Improvement Program (TIP), and projects that receive state or federal funding will be placed on TxDOT's Statewide Transportation Improvement Program (STIP). Phase 1 of the study has been completed, and the resulting projects identified for passenger and freight rail growth on the publicly owned network, along with associated improvements on the BNSF freight rail network, are identified in the project tables in Section 5.8.

In spring 2019, TxDOT launched a similar regional study for Houston, in cooperation with the Houston-Galveston Area Council. The study will encompass the entire region, including Beaumont and Galveston, and will be carried out with the involvement of Texas' three Class I railroads.

5.7.4 Safety Enhancements at Crossings Studies

Lastly, the potential for implementation of additional safety enhancements at highway-rail crossings is another important topic for further study in the short- and long-term planning horizon. TxDOT has a robust rail safety program, the details of which are outlined in Section 2.1.6.1 of Chapter 2.

TxDOT uses a federally-required priority index to select candidates for at-grade crossing improvements, which considers:

- Average daily vehicle traffic
- Average daily school bus traffic
- Average daily train traffic
- Maximum speed of trains
- Existing type of warning device
- Past 5-year history of auto/train accidents

Upon identification of candidate projects based on the results of the priority index above, TxDOT will program crossing improvements, using one or more of the following strategies to improve crossing safety at the site:

- Crossing surface improvements
- Installation of highway median barriers
- Grade crossing consolidation/closure

[17] https://www.txdot.gov/inside-txdot/projects/studies/statewide/metroplex-freight-study.html

- Grade crossing signal upgrades
- Upgrading crossing sign reflector systems

5.8 TEXAS'S POTENTIAL SHORT- AND LONG-RANGE RAIL PROJECTS

This section presents potential railroad projects that support the vision and goals set forth by TxDOT in Chapter 1 of this Texas Rail Plan. Texas' short- and long-range rail project lists differ with respect to the estimated period of implementation and other factors as explained below. The projects shown in the following tables describe the potential projects as to location, project details, and estimated costs. The tables also identify the rail transportation need that the project is intended to address. Figures 5-4 and 5-5 shows the location of the short- and long-range freight and passenger rail projects listed in the tables that follow.

Figure 5-4. Location of Short-Range Freight and Passenger Rail Projects

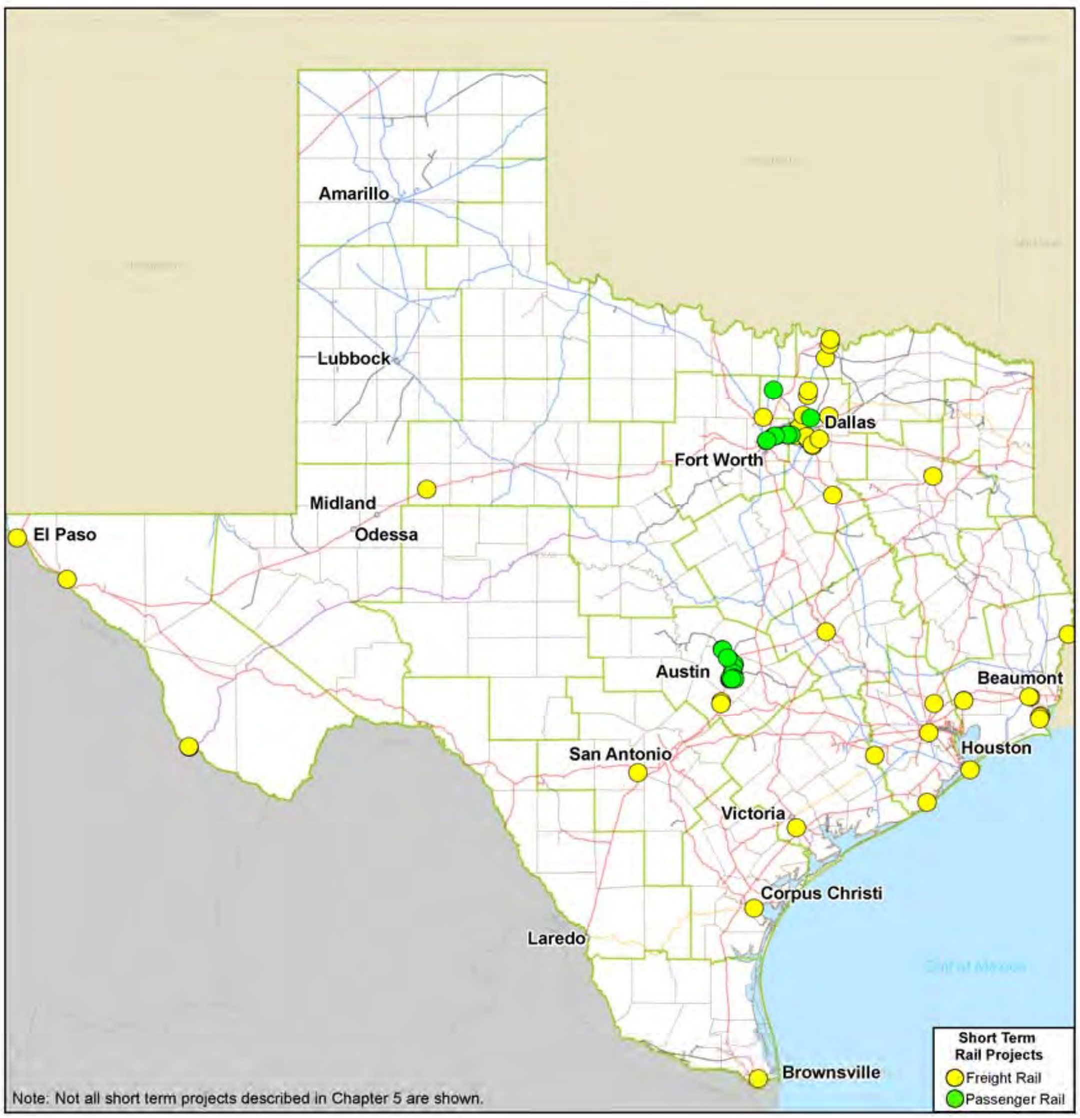
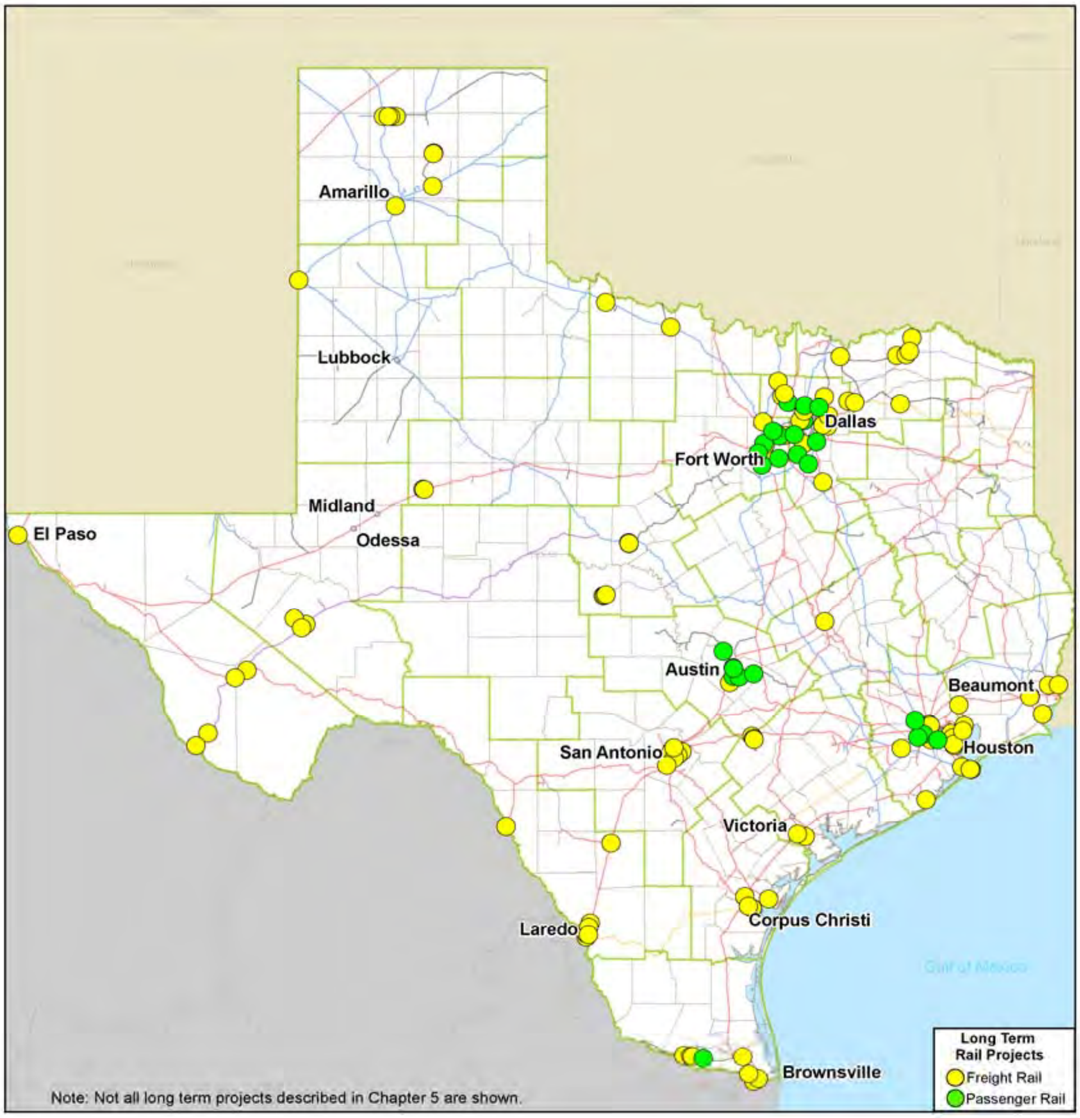


Figure 5-5. Location of Long-Range Freight and Passenger Rail Projects



5.8.1 Class I Railroad Short-Range Rail Freight Improvement Projects

The TxDOT Short-Range Program of Rail Freight Projects is shown in Table 5-2. The short-range program consists of projects that could be implemented within 4 years (2019-2022). The list includes projects identified and described by Texas railroads and the State of Texas in the outreach activities conducted during the development of the recently completed Texas Freight Mobility Plan and this Texas Rail Plan. The list is subdivided by:

- Class I Railroad Improvements
- Rail Intermodal/Terminal Facility Projects
- Class III Railroad Improvements
- Freight Rail/Port Projects

- Freight Rail/Border Crossing Projects
- Highway-Rail Crossing Projects
- State-Owned Rail Line Projects
- Other Projects

The table displays the proposed project's TxDOT district location, name and description, estimated cost, project sponsor or source, and project need. Railroads that will benefit from each project are denoted in parentheses within the project description. It should be noted that although the following projects could be implemented within a 4-year timeframe, there are currently no public sector funding sources available to progress these projects.

Table 5-2. TxDOT Short-Range Program of Rail Freight Projects (2019-2022)

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
CLASS I RAILROAD IMPROVEMENTS						
Overall	286K Upgrades	Track upgrades to accommodate heavier, industry standard freight railcars (286,000 pounds) and enhanced railroad access			Infrastructure Improvement	
Overall	BNSF Capital Projects	Capacity expansion, track and bridge maintenance, Positive Train Control, and Information Technology projects on BNSF Railway lines in Texas		BNSF	Class I Capacity/ Infrastructure Improvement	Funded internally by Class I railroad
Overall	KCS Capital Projects	Capacity expansion, track and bridge maintenance, Positive Train Control, and Information Technology projects on Kansas City Southern lines in Texas		KCS	Class I Capacity/ Infrastructure Improvement	Funded internally by Class I railroad
Overall	UP Capital Projects	Capacity expansion, track and bridge maintenance, Positive Train Control, and Information Technology projects on Union Pacific lines in Texas		UP	Class I Capacity/ Infrastructure Improvement	Funded internally by Class I railroad
Abilene/ Brownwood /Fort Worth	UP Siding Improvements, Fort Worth-El Paso	Extend sidings on UP's Fort Worth-El Paso route at Eastland/Eskota, Iona, and Big Spring		UP	Class I Capacity	Funded internally by Class I railroad
Dallas	UP Miller Yard Bypass	Construct mainline bypass track at Miller Yard near Dallas		UP	Class I Capacity	Funded internally by Class I railroad
Dallas	Madill Subdivision Irving Depot Siding Extension	Extend current Irving Depot siding to 10,000 feet on the DART/FWTA-owned portion of the Madill Sub to allow longer trains and support future Cotton Belt and Frisco Corridor passenger rail service. Use as an alternate track off main for crew changes at Irving.	TBD	NCTCOG	Enhance mobility for passenger and freight rail operations	Metroplex Freight Mobility Study Phase I
Dallas	Madill Subdivision CTC from Irving to Carrollton plus speed increases	Install centralized traffic control (CTC) signaling on the DART/FWTA and City of Dallas-owned portion of the Madill Sub between Irving and Carrollton to support future Cotton Belt and Frisco Corridor passenger rail service on existing freight rail line. Project includes turnout improvements on Irving Wye to increase speed to 30 mph.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Dallas	Madill Subdivision New Gribble Siding	Construct new 10,000 foot siding at Gribble on the Dallas-owned portion of Madill Sub; bridges at Elm Fork and M&M; accommodates longer aggregate trains to support freight and passenger rail expansion.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I
Dallas	Madill Subdivision Hebron Siding Extension	Extend current Hebron siding to 10,000 feet on the BNSF-owned portion of Madill Sub for meet and pass conflict resolution to support freight and passenger rail expansion.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I
Dallas	Madill Subdivision Double Track/CTC, Irving to Prosper	Install double track, CTC signaling, and crossovers at 5-6 mile intervals on the BNSF Madill Sub, Irving to Prosper, to support freight and passenger rail expansion.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	See Note 1. Metroplex Freight Mobility Study Phase I
Dallas	Madill Subdivision CTC North of Prosper	Upgrade BNSF Madill Subdivision between Prosper, TX and Staley, OK from Track Warrant Control to CTC signaling to support freight and passenger rail expansion.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I
Dallas	Madill Subdivision New Sherman Siding	Construct a new 10,000-foot siding at Sherman for meet and pass conflict resolution on BNSF Madill Sub to support freight and passenger rail expansion.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I
Dallas	Madill Subdivision New Clark Siding	Construct a new 10,000-foot siding at Clark, OK for meet and pass conflict resolution on BNSF Madill Sub to support freight and passenger rail expansion.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I
Dallas	Madill Subdivision New Madill Siding	Construct a new 10,000-foot siding at Madill, OK for meet and pass conflict resolution on BNSF Madill Sub to support freight and passenger rail expansion.	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I
Dallas	BNSF DFW Subdivision Speed Increases	Increase track speed from 25 to 40 mph on BNSF DFW Sub from MP 769.3 to MP 770.4 near Forest Avenue in Dallas through MP 779.5 near Lancaster to support freight and passenger rail expansion	TBD	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I
Dallas	TRE Double Track Union Station	Construct approximately 0.45 miles of new second main track on Trinity Railway Express corridor from North Junction (MP 643.9) to Union Station in Dallas (MP 214.2) to support freight and passenger rail expansion.	$20.00M	NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I. (An unselected MOVES grant application requested $3.05M for project design)
Dallas	TRE Double Track from Medical Market Center to Stemmons Freeway Bridge	Construct approximately 1.4 miles of second main track on Trinity Railway Express corridor from East Mockingbird (MP 640.9) near the Medical Market Center to the Stemmons Freeway Bridge (MP 639.5) in Dallas to	$8.50M	DART/ NCTCOG	Enhance mobility for passenger and freight operations	Metroplex Freight Mobility Study Phase I.

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
		support freight and passenger rail expansion. Includes Stemmons Freeway bridge replacement.				
El Paso	UP Valentine Sub Tie Replacement	Replace ties on UP's Valentine Subdivision between Sierra Blanca and Socorro		UP	Class I Infrastructure Improvement	Funded internally by Class I railroad
Houston	Dayton Wye Connection	Construction of a new wye track connection between UP Baytown and Lafayette subdivisions west of Dayton, including a new grade separation for US Hwy 90.	TBD	BNSF/ UP/ Houston-Galveston Area Council (HGAC)	Class I Capacity	Related project to Dayton US 90 grade separation
Houston	UP Lufkin Sub Bridge	Construct a new bridge on UP's Lufkin Subdivision near Humble		UP	Class I Capacity/ Infrastructure Improvement	Funded internally by Class I railroad
Laredo	UP San Antonio-El Paso Siding Improvements	Extend sidings on UP's San Antonio-El Paso route at Noonan and Hacienda		UP	Class I Capacity	Funded internally by Class I railroad
Tyler	UP Tyler Yard Expansion and Big Sandy Connection	Construct Southwest connection track at Big Sandy between UP's Mineola Sub and Corsicana Sub, and expand Tyler Yard capacity		UP	Class I Capacity	Funded internally by Class I railroad
RAIL INTERMODAL/TERMINAL FACILITY PROJECTS						
Bryan	UP Brazos Yard	Design and construction of new freight classification yard (UP).		UP	Class I Infrastructure Improvement/ Intermodal	Funded internally by Class I railroad
Dallas	KCS Wylie Facility Expansion	Expand capacity at Kansas City Southern's Wylie Intermodal Terminal near Dallas by adding unloading tracks		KCS	Class I Capacity	Funded internally by Class I railroad
El Paso	UP International Yard Expansion	Extend Track 100 at UP's International Yard in El Paso		UP	Class I Capacity	Funded internally by Class I railroad
Fort Worth	BNSF Alliance Facility Expansion	Expand BNSF Railway's Alliance, TX intermodal container transfer facility lift capacity, including acquisition of lift equipment and construction of incremental parking stalls		BNSF	Class I Capacity	Funded internally by Class I railroad
Houston	KCS Kendleton Facility Expansion	Expand Kansas City Southern's Kendleton, TX intermodal terminal by adding tracks and additional parking to support intermodal operations		KCS	Class I Capacity	Funded internally by Class I railroad
CLASS III RAILROAD IMPROVEMENTS						
Beaumont	Sabine River Bridge Replacement	Replace the flood-damaged bridge crossing the Sabine River on the Timber Rock Railroad	$1.50M	TxDOT Rail Division	Short Line Infrastructure Improvement	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
FREIGHT RAIL/PORT PROJECTS (port location in first column)						
Beaumont	Buford Rail Yard Interchange Track	Expansion of on-port rail to accommodate two additional unit trains; includes approximately 16,000 feet of new track and upgrades to 4,200 feet of existing track.	$13.14M	2020-2021 Texas Ports Capital Program	Port Related	
Beaumont	Siding Track Parallel to UP Main Line	Siding track parallel to UP main line to allow oil trains to get off the main line.	$15.60M	Texas Ports 2015-2016 Capital Program	Class I Capacity/Port Related	
Brownsville	Multimodal Dock and Rail Spur	Construct 2 miles of new rail on property to link to a new 112,500-square-foot multimodal dock, includes road construction, addition of a rail spur at the Palo Alto yard.	$32.43M	Texas Ports 2017-2018 Capital Program	Port Related	
Corpus Christi	Al Speight Yard Expansion	Construct two 2,500-foot rail storage tracks with yard improvements at Al Speight Yard.	$1.50M	Texas Ports 2017-2018 Capital Program	Port Related	
Freeport	Parcel 14 Stabilization	Construct a fully operational multimodal facility. Currently 21,000 feet of track under construction at Parcel 4.	$60.00M (total)	2020-2021 Texas Port Capital Program	Port Related	Cost of project's rail portion TBD
Galveston	Pier 37 Repairs	Repair damaged pier elements of Pier 37 at the Port of Galveston and refurbish the on-dock rail.	$9.20M (total)	2020-2021 Texas Port Capital Program	Port Related	Cost of project's rail portion TBD
Port Arthur	Berth 6 Cargo Dock – Phase 1	Berth 6 General Cargo Dock Facility - Phase 1 – construction of a 600-foot by 61.5-foot cargo deck extension. The project will also extend and improve three sets of on-dock rail by 2,100 feet.	$35.00M	Texas Ports 2017-2018 Capital Program	Port Related	
Port Arthur	Berth 6 Expansion – Phase 2	Phase 2 On-Dock Rail Berth 6 Expansion – construction of a 600-foot by 100-foot cargo deck extension adjacent to Berth 6.	$5.00M	Texas Ports 2017-2018 Capital Program	Port Related	
Port Arthur	Berth 6 Rail Reliever Expansion	On-Dock Rail Berth 6 Expansion – improvements to rail reliever area, including 1,750 feet of track, crossovers, and switches.	$4.29M	Texas Ports 2017-2018 Capital Program	Port Related	Cost of project's rail portion TBD
Victoria	Rail Extension to UP	Victoria County Navigation District South Industrial Site Development Project – Includes proposed rail extension to UP industrial lead	$16.45M (total)	2020-2021 Texas Port Capital Program	Port Related	Cost of project's rail portion TBD
FREIGHT RAIL/BORDER CROSSING PROJECTS						
El Paso	SORR Rehabilitation and Presidio-Ojinaga International Bridge Reconstruction Project	Reconstruction of international rail bridge (privately funded).	$10.00M	TxDOT Rail Division	Short Line Infrastructure Improvement/ Border Crossing	
El Paso	Presidio South Orient Inspection Station	Development of international rail customs and border patrol inspection station at Presidio. The reconstruction of the international rail bridge at Presidio will be complete in 2019. The rail inspection facility and supporting infrastructure must be constructed before rail freight can move across the border. The U.S. Department of Homeland Security does not provide those facilities and they must be funded and	$20.00M	TxDOT Unified Transportation Plan	Border Crossing	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
		constructed before the Presidio rail gateway can be reactivated.				
HIGHWAY-RAIL CROSSING PROJECTS						
Overall	Grade Crossing/ Replanking Program	Highway-rail grade crossing improvement projects programmed in the State's annual Railroad Grade Crossing and Replanking Program	TBD	TxDOT	Road Congestion Reduction/ Safety	
Austin	Kohlers Grade Separation	Grade-separate Kohlers Crossing and UP Austin Subdivision at-grade crossing (DOT# 447648S) in Kyle with a highway overpass	$20.00M	Capital Area Metropolitan Planning Organization (CAMPO)/ TxDOT	Road Congestion Reduction/ Safety	
Austin	Kyle Siding Relocation	Relocate Kyle siding on UP Austin Subdivision after Kohlers Crossing closure	$20.00M	CAMPO/ TxDOT	Road Congestion Reduction/ Safety	
Dallas	Linfield Road Crossing Closure	Close the at-grade crossing at Linfield Drive in Dallas (DOT# 763440X) and build a pedestrian overpass (UP Ennis Sub).	$7.56M	North Central Texas Council of Governments (NCTCOG)	Road Congestion Reduction / Safety	
Dallas	Prairie Creek Road Grade Separation and Crossing Closure	Grade separation of North Prairie Creek Road crossing (DOT# 794833R) and crossing closure at Sam Houston Road (DOT# 794832J) in Dallas along UP Mineola Sub.	$6.87M	NCTCOG	Road Congestion Reduction / Safety	
Houston	US 90 Grade Separation at Dayton Yard	Eliminate rail-related traffic delays on US 90 by constructing a road bridge to grade-separate the crossing of US 90 and the Baytown Sub tracks in Dayton (DOT# 762790L), and relocate rail connection at north end of Dayton/Robinson Yard (BNSF and UP).	$300.00M	HGAC	Road Congestion Reduction / Safety	
Houston	Griggs & Long Grade Separation	BNSF Mykawa Subdivision, MP 19.35. Grade separate crossings at Griggs Road and Long Drive (DOT# 023214G and 023215N), and UP Crossings (DOT# 755628E and 755627X).	TBD	HGAC/ Gulf Coast Rail District (GCRD)	Road Congestion Reduction / Safety	
STATE-OWNED RAIL LINE PROJECTS						
		See Long-Range Investment Program				
OTHER PROJECTS						
Dallas/ Fort Worth	TRE - Rehabilitate and Double Track West Fork Trinity River Bridge	Rehabilitate existing Trinity Railway Express bridge across West Fork Trinity River and add a second bridge and approximately 0.7 miles of second main track to support freight and passenger rail expansion (TRE, BNSF, UP).	$3.00M	NCTCOG	Enhance mobility for passenger and freight operations	
Note 1: MP 711 to MP 704 will essentially be double-tracked with the Irving and Gribble projects, leaving MP 704 to MP 680 as the remaining section to double track. At $4M to 5M/mile that would be $96M to 120M (no signals) but no specific cost estimate exists yet for this project.						

Source: TxDOT; Texas Freight Mobility Plan (2017); Class I Railroad Outreach; Short Line Railroad Outreach (2018); Texas Port Access Study; Texas Ports 2017-2018 Capital Program; 2020-2021 Texas Port Capital Program; Texas Ports; 2019 Texas Unified Transportation Program (UTP).

5.8.2 Long-Range Freight Railroad Improvement Projects

Texas' Long-Range Rail Investment Program is comprised of projects that have been identified by its railroads and other rail stakeholders to address rail freight needs. These projects, however, are not expected to be implemented within the next 4 years and, in many cases, neither the justification for funding nor the funding itself have been identified.

These projects may be subject to additional feasibility analysis and evaluation of potential public and private benefits. Upon completion of these analyses, the Long-Range Investment Program will be modified over time to consist of projects deemed a high priority for the designated long-range period. Upon the availability of state or federal funding resources, projects selected for implementation could be moved to the Short-Range Rail Investment Program.

The TxDOT Long-Range Program of Freight Rail Projects is shown in Table 5-3. The list is subdivided by:

- Class I Railroad Improvements
- Rail Intermodal/Terminal Facility Projects
- Class III Railroad Improvements
- Freight Rail/Port Projects
- Freight Rail/Border Crossing Projects
- Highway-Rail Crossing Projects
- State-Owned Rail Line Projects
- Other Projects

The table displays the proposed project's TxDOT district location, name and description, estimated cost, project sponsor or source, and project need. A funding source has not been identified for these projects.

Table 5-3. TxDOT Long-Range Program of Rail Freight Projects (2023-2039)

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
CLASS I RAILROAD IMPROVEMENTS						
Overall	286K Upgrades	Track upgrades to accommodate heavier, industry standard freight railcars (286,000 pounds) and enhanced railroad access			Infrastructure Improvement	
Overall	Capital Projects	Capacity expansion and track maintenance projects on Class I railroad lines in Texas for enhanced railroad access			Class I Capacity/ Infrastructure Improvement	Funded internally by Class I railroads
Beaumont	Neches River Rail Crossing	Construction of a second bridge for a rail crossing of the Neches River at Beaumont; the existing single track lift bridge is a significant capacity constraint on a major intercontinental rail line between Los Angeles and New Orleans. More than 30 trains per day cross the existing bridge at reduced speeds and are often delayed by	$120.00M	TxDOT Rail Division	Class I Capacity/ Port Related	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
		trains entering/leaving the Port of Beaumont, which is adjacent to the existing lift bridge, and by watercraft moving along the Neches, requiring the bridge to lift (BNSF, KCS, UP).				
Corpus Christi	Sinton Grade Crossing Relief	Create northbound wye connection toward Houston from Gregory to support the Port of Corpus Christi's expansion out of Sinton (UP).	$10.00M	TxDOT Rail Division/ CCMPO	Class I Capacity	
Corpus Christi	Odem Wye connection on northeast quadrant	Streamlines train movements through Odem (UP).	$10.00M	CCMPO	Class I Capacity	
Dallas	Denton Maintenance-of-Way Rail Relocation	Relocation of the UP Maintenance-of-Way track and stub track in Downtown Denton.	$5.00M	NCTCOG	Class I Capacity	
Dallas	Ennis Sealed Corridor	Enhance two UP Bridges at Belknap Street (DOT# 765536U) and Baylor Street (DOT# 765535M) and close crossings at Milam Road (DOT# 765528C), Brown Road (DOT# 765531K), and Tyler Street (DOT# 765540J).	$25.00M	NCTCOG	Class I Capacity/ Safety	
Dallas/ Fort Worth	TRE - Double Track rail corridor	Construct a second mainline track on the TRE rail corridor between Union Station in Dallas and Tower 55 in Fort Worth to enhance passenger operations. Project also includes evaluation of operational protocols to maximize freight movement across the DFW Metroplex (BNSF, TRE, UP).	$98.06M	NCTCOG	Enhance mobility for passenger and freight rail operations	Related project in Long Term Passenger Projects table
El Paso	Interstate 10 Expansion and Lordsburg Subdivision Rationalization	Future Interstate 10 expansion may require UP right-of-way that requires track relocation (UP).	TBD	TxDOT/ El Paso MPO	Class I Capacity	May advance to short-term
Houston	Second Main Line Construction (Houston)	Construction of a second mainline track in Houston from the GH&H Junction to Strang on the Port Terminal Railway Association track: This project would eliminate more than 2.5 hours of train delay daily, which is caused by this single-track constraint that connects to double track in both directions. Supports port and chemical industry expansion (BNSF, KCS, PTRA, and UP).	$130.00M	HGAC/Port of Houston/ Gulf Coast Rail District (GCRD)	Class I Capacity	
Houston	Houston Subdivision Second Main Line Construction	Construction of a second mainline track on the Houston Sub from Dawes to Dayton (this is a BNSF-UP 50/50 Line).	$100.00M	HGAC/ GCRD	Class I Capacity	
Laredo	Eagle Pass Rail Improvements	Potential improvements could include double-tracking segments between BNSF and UP sidings and between UP siding and tracks at Eagle Pass in the vicinity of the bridge to Piedras Negras, an intermodal facility with laydown pad for container movements, and improvements to assist U.S. Customs and Border Protection in conducting border security measures.	TBD	TxDOT Rail Division	Class I Capacity/ Port Needs	
Laredo	Laredo Bridge Double Track	Double track bridge at Laredo to improve rail traffic flows to/from Mexico (KCS and UP).	TBD	TxDOT Rail Division	Class I Capacity	
Laredo	Second Main Line from Laredo Bridge to Port Laredo	Second main line from Laredo rail bridge to Port Laredo to facilitate additional movements to and from the border (UP).	$0.07M	TxDOT Rail Division	Class I Capacity/Port Needs	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
RAIL INTERMODAL/TERMINAL FACILITY PROJECTS						
Brownwood	Brownwood & Camp Bowie Industrial Park Rail-Served Improvement	Add additional tracks at Camp Bowie Industrial Park to provide incremental storage and switching capabilities along with improved rail service (TXR).	$2.39M	Texas Rockcrusher Railway Co. (TXR)	Short Line Infrastructure Improvement/ Intermodal	
Brownwood	TXR Camp Bowie Industrial Park Track Lead Upgrades	Upgrade the main lead serving Camp Bowie Industrial Park to heavier rail to accommodate increased car volume (TXR).	$3.50M	Texas Rockcrusher Railway Co. (TXR)	Short Line Infrastructure Improvement/ Intermodal	
Corpus Christi	Bulk Terminal Crude Oil Transfer Station	Crude-by-rail transfer point consisting of 4,000-foot rail siding, supply pipelines, rail car loading station (Port of Corpus Christi).	$15.00M	Texas Ports 2017-2018 Capital Program	Port Related	
Dallas	AGCR Transload Facility and Rail Improvements	New Rail Loop, Yard, and Transloading Facility– Colin County, Texas, just east of Farmersville (AGCR).	$10.00M	Alamo Gulf Coast Railroad (AGCR)	Short Line Infrastructure Improvement/ Intermodal	
CLASS III RAILROAD IMPROVEMENTS						
Abilene	East Leg of the Wye and Interchange Tracks	Required unit-train interchange between UP and BSR capable of progressive moves to/from the east. Additional interchange is required to handle the demand for increased rail business into the City of Big Spring, Texas-owned industrial park.	$13.90M	Texas Short Line Rail Road Association (TSLRRA)/ Big Spring Rail System (BSR)	Short Line Infrastructure Improvement	
Abilene	Replace Worn 90 lb/yd Rail	Replace inadequate 90 lb/yd rail produced in the 1920s with new 112 lb/yd rail for 1.7 miles of main lead track.	$3.80M	TSLRRA/ BSR	Short Line Infrastructure Improvement	
Amarillo	TXNW /BNSF Interchange	Construction of 11,000 feet of track.	$5.60M	TSLRRA/ TNW	Class I Capacity/ Short Line Infrastructure Improvement	
Amarillo	Priority 2 Bridge Repairs	Repair priority defects on bridges.	$0.18M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Amarillo	System Crossing Replacement	Replace priority at grade crossing surfaces.	$0.22M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Amarillo	Borger Yard - Remove 75 lb/yd rail	Relay 75 lb/yd rail with rail removed from other locations in yard.	$3.76M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Amarillo	West leg Rail Relay and Panhandle Wye	Relay rail on West Leg and Panhandle Wye.	$4.31M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Amarillo	Mainline Tie and Surface (McBride and Abell Yards included)	Install cross ties and surface railroad.	$5.79M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Amarillo	TXNW Rail Improvements	Rail tie replacement, switch point replacements, install two rail lubricators, and install turnout to connect scale track back to the lead of the east end.	$0.55M	Texas North Western Railway (TXNW)	Short Line Infrastructure Improvement	
Amarillo	TXNW Track Rehabilitation	Rehab eight additional classification tracks in Zone 100 to increase railcar classification ability.	$2.50M	Texas North Western Railway (TXNW)	Short Line Infrastructure Improvement	
Amarillo	TXNW Bridge Repairs	Upgrade bridge planks on 3 bridges along main lead.	$0.10M	Texas North Western	Short Line Infrastructure Improvement	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
				Railway (TXNW)		
Amarillo	TXNW Bridge Upgrade to 286k	Upgrade one bridge to handle 286k (or 286,000 lbs.) carloads.	$0.12M	Texas North Western Railway (TXNW)	Short Line Infrastructure Improvement	
Atlanta/ Paris	TNER Sherman Subdivision Bridge Repairs	Repair timber bridges on the Sherman Subdivision; Bridges 145.2, 145.7, 147.3, 675.5, and 695.24.	TBD	Texas Northeastern Railroad (TNER)	Short Line Infrastructure Improvement	
Atlanta/ Paris	TNER Various Bridge Repairs and Strengthening	Timber bridge repairs and strengthening at various bridges	$0.50M	Texas Northeastern Railroad (TNER)	Short Line Infrastructure Improvement	
Austin	Austin Western Railroad Central Corridor Double Track	Potential improvement that would enhance capacity in a shared-use fright and commuter rail corridor in the Austin area	$60.00M	CMTA	Short Line/ Commuter Rail Shared-Use Corridor Improvement	
Beaumont	SNR Tie Program	Tie Replacement (6,000 ties).	$0.35M	Sabine River & Northern Railroad (SRN)	Short Line Infrastructure Improvement	
Beaumont	SNR Mulford Yard - Switch Replacement	Mulford Yard – switch replacement.	$0.45M	Sabine River & Northern Railroad (SRN)	Short Line Infrastructure Improvement	
Brownwood	286k Upgrade	Upgrade all bridges to 286k capacities.	$3.80M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Brownwood	Priority 2 Bridge Repairs	Repair priority defects on bridges.	$5.67M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Brownwood	Radio Towers	Install communications for operational safety.	$0.15M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement/ Safety	
Brownwood	Class 2 Tie and Surface	Upgrade track from FRA Track Class 1 to FRA Track Class 2.	$7.40M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Brownwood	Class 1 Tie and Surface	Upgrade track from FRA Excepted Track to FRA Track Class 1.	$8.19M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Brownwood	TXR Tie Program	Rail tie replacement, infrastructure improvement, and install one rail lubricator.	$0.29M	Texas Rockcrusher Railway Co. (TXR)	Short Line Infrastructure Improvement	
Brownwood	TXR Track Rehabilitation	Rehab track to handle loaded hazmat cars.	$1.70M	Texas Rockcrusher Railway Co. (TXR)	Short Line Infrastructure Improvement	
Dallas	McKinney Subdivision Rehabilitation	Raise rail line capacity to handle 286k-capacity cars and increase velocity.	$8.50M	TSLRRA/ TNW	Short Line Infrastructure Improvement	
Dallas/ Paris	DGNO Garland Subdivision Bridge Repairs	Repair three timber bridges on the Garland Subdivision; Bridges 744.46, 725.74, and 748.17.	TBD	Dallas, Garland, & Northeastern Railroad (DGNO)	Short Line Infrastructure Improvement	
Dallas/ Paris	DGNO Various Bridge Repairs and Strengthening	Timber bridge repairs and strengthening at various bridges	$1.34M	Dallas, Garland, & Northeastern	Short Line Infrastructure Improvement	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
				Railroad (DGNO)		
Houston	Provide rail infrastructure to accommodate new traffic and new connection with UP and BNSF	New interchange tracks with two Class I railroads, public rail team, and storage tracks.	$51.00M	TSLRRA/ SJTC	Class I Capacity/ Short Line Infrastructure Improvement	
Houston	GVSR Track Surfacing	5 miles of surfacing at the Port in the CHS facility	$0.09M	Galveston Railroad (GVSR)	Short Line Infrastructure Improvement	
Laredo	GDR Yard Improvements	Additional classification tracks and lead expansion.	$2.50M	Gardendale Railroad	Short Line Infrastructure Improvement	
Paris	KRR Bridge Repairs	Repairs to KRR bridges at MP 576.6 and MP 578.2	TBD	Kiamichi Railroad (KRR)	Short Line Infrastructure Improvement	
Paris	KRR Paris Subdivision Bridge Repairs	KRR Paris Subdivision Bridge Repairs	$0.20M	Kiamichi Railroad (KRR)	Short Line Infrastructure Improvement	
Paris	KRR J. Skinner Rail Spur	Put J. Skinner Rail Spur back into service	TBD	Kiamichi Railroad (KRR)	Short Line Infrastructure Improvement	
Pharr	Priority 2 Repairs Br Hwy 48, 2.7 & 5.90	Repair priority defects on bridges.	$0.53M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Pharr	System Crossing Replacement	Replace at grade crossing surface.	$1.13M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Pharr	Unit Train Siding Palo Alto	Construct unit train siding.	$4.30M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Pharr	Upgrade Rail	Upgrade rail and replace turnouts.	$1.24M	TSLRRA/ OmniTRAX	Short Line Infrastructure Improvement	
Pharr	Mission Wye Project	Build an east leg connection to the Mission Rail Park. Includes the installation of two turnouts, construction of 858 feet of track, and realignment of 1,100 feet of track.	$0.30M	TSLRRA/ Ironhorse	Short Line Infrastructure Improvement	
Pharr	RVSC Customer Track Expansion	Additional customer track for increased business.	$0.30M	Rio Valley Switching Company (RVSC)	Short Line Infrastructure Improvement	
Pharr	RVSC Tie Program	Tie Program (7,000 Ties).	$0.49M	RVSC	Short Line Infrastructure Improvement	
Yoakum	TXGN/UP interchange	Construction of 8,000 feet of track.	$3.30M	TSLRRA/ Texas, Gonzales & Northern Railway (TXGN)	Class I Capacity/ Short Line Infrastructure Improvement	
Yoakum	TXGN Rail Improvements	Rail tie replacement, switch point replacements, switch stand upgrade, install two rail lubricators, and rehabilitate 11 tracks in Zone 100 to increase railcar storage and to enhance the handling of load hazardous material cars.	$0.55M	Texas, Gonzales & Northern Railway (TXGN)	Short Line Infrastructure Improvement	
Yoakum	TXGN Harwood Storage Track Improvements	Upgrade 6,206 feet of storage tracks in Harwood, Texas to reduce interchange congestion.	$3.30M	Texas, Gonzales & Northern	Short Line Infrastructure Improvement	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
				Railway (TXGN)		
Yoakum	TXGN Storage Track Surfacing	Ballast and surface 46,123 feet of existing storage yard tracks to facilitate loaded hazmat railcars.	$0.92M	Texas, Gonzales & Northern Railway (TXGN)	Short Line Infrastructure Improvement	
FREIGHT RAIL/PORT PROJECTS (port location in first column)						
Beaumont	Low Line Track Grade Separation	Rail-to-rail grade separation on the Low Line Track.	$6.00M	Port Access Study (Rail)	Port Related	
Brownsville	Palo Alto Yard Siding	Brownsville Subdivision – new siding near Olmito, Texas at Palo Alto Yard next to FM 511 (110-car capacity).	$5.00M	Port Access Study (Rail)	Port Related	
Calhoun	Calhoun Rail Addition	Rail addition – add working and storage tracks to accommodate crude growth.	TBD	Port Access Study (Rail)	Port Related	
Corpus Christi	Ship Channel Double Track Extension	Ship channel – extend double track from bulk terminal to east end of the inner harbor.	TBD	Port Access Study (Rail)	Port Related	
Freeport	Velasco Terminal On-Dock	Velasco – extend rail to provide on-dock rail service to Velasco Terminal, 4 tracks 2,000 feet each.	$12.00M		Port-Related	
Galveston	Slips 37/38 On-Dock Rail	Restore on-dock rail to Slips 37/38	$3.00M	Port Access Study (Rail)	Port-Related	
Galveston	Pelican Island Bridge	Pelican Island Bridge – construct new rail bridge to serve future terminal.	TBD	Port Access Study (Rail)	Port Related	
Harlingen	New Rail Spur	Construction of new rail spur.	$2.50M	Port of Harlingen	Port Related	
Houston	New Single Track, At-Grade Crossings, and Signalization (SH 146 and Old SH 146)	State Highway (SH) 146 and Old SH 146 – construct approximately 6,500 linear feet of new single-track rail line from near the intersection of the existing UP right-of-way at Red Bluff Road to the proposed warehouse development. The project will include three at-grade crossings with signalization at SH 146 and Old SH 146, plus modification to switches and turnouts for tying into the existing mainline, and for future expansion. The project may also include approximately 1,200 linear feet of sound wall.	$13.60M	Port of Houston	Port Related	
Houston	Second Track to Future Bayport Container Terminal	Port Terminal Railroad Association (PTRA) Track SH 225 to Red Bluff Road) –construct second rail track allowing PTRA access from SH 225 to Red Bluff Road to connect with crossing at Red Bluff Road, connection to future Bayport Container Terminal.	$78.32M	Port of Houston	Port Related	
Houston	Red Bluff Area Double Track and Run Around Track	SH 146 and Red Bluff Area – construct double track and a run-around track from Red Bluff Road/SH 146 road crossing to future container terminal development.	$10.12M	Port of Houston	Port Related	
Port Arthur	Rail Extension and KCS Tie-In	Rail extension – construct approximately 4,000 feet of rail that includes tie-in to KCS and added spur to the existing port track. Project includes track extension and relocated switch, stabilizing 6 acres of laydown yard which is capped with roller compacted concrete (RCC) or a flexible base.	$4.50M	Port of Port Arthur	Port Related	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Port Arthur	Ransom Howard Street Grade Separation	Grade separation of Rev. Doctor Ransom Howard Street (DOT# 329559B) in Port Arthur from KCS main line and yard access.	$15.00M	TxDOT Rail Division/KCS	Class I Capacity/ Port Related/ Safety	
Victoria	Bloomington (UP) Rail Lift Bridge Replacement	Bloomington (UP) – replace rail lift bridge over the channel at Bloomington (UP/Port).	$30.00M	Port Access Study (Rail)	Class I Capacity/ Port Related	
FREIGHT RAIL/BORDER CROSSING PROJECTS						
Laredo	Laredo Bridge Double Track	Double track the bridge at Laredo to improve rail traffic flows to/from Mexico.	TBD	TxDOT Rail Division	Class I Capacity/ Border Crossing	
Laredo	Second Main Line from Laredo Bridge to Port Laredo	Second main line from Laredo rail bridge to Port Laredo to facilitate additional movements to and from the border.	$0.07M	TxDOT Rail Division	Class I Capacity/ Border Crossing	
HIGHWAY-RAIL CROSSING PROJECTS						
Amarillo	Farmers Avenue Grade Separation	BNSF Hereford Subdivision, MP 558.36. Road crosses four tracks (DOT# 014695D).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
Brownwood	System Crossing Replacement	Replaces at grade crossing surface (CTXR).	$0.46M	TSLRRA/ OmniTRAX	Road Congestion Reduction /Safety	
Bryan	Hearne Area Crossing Mitigation	Grade crossing closures or separations to improve vehicular fluidity and improve safety of the Hearne Terminal area (UP).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety/ Port Related	
Dallas	Grade Crossing Rationalization	Consider grade separations and closures to mitigate 15 crossings in approximately 2 miles (BNSF).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
Dallas	Trinity Mills Grade Separation	Trinity Mills Road grade separations in Carrollton on BNSF Madill Subdivision (DOT# 669376V and 675114C).	TBD	NCTCOG	Road Congestion Reduction / Safety	
Dallas	Ennis Avenue Grade Separation	Grade separation of Ennis Avenue and UP (DOT# 765532S).	$37.97M	NCTCOG	Road Congestion Reduction / Safety	
Fort Worth	Sycamore School Road Grade Separation	BNSF Fort Worth Subdivision, MP 337.6. Sycamore School Road grade separation (DOT# 020469T).	TBD	NCTCOG	Road Congestion Reduction / Safety	
Fort Worth	Blue Mound Road Grade Separation	BNSF Wichita Falls Subdivision, MP 7.6. Blue Mound Road grade separation (DOT# 274640G).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
Fort Worth	Hemphill Street Grade Separation	BNSF Fort Worth Subdivision, MP 343.5. Hemphill Street grade separation provides opportunity to extend Tower 55 tracks to Birds sidings (DOT# 020486J).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
Houston	FM 565 Grade Separation	Grade separation of FM 565 and UP tracks (DOT# 762810V) in Baytown to support industrial growth in Chambers County.	TBD	Houston-Gulf Advisory Council (HGAC)/	Road Congestion Reduction / Safety	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
				Gulf Coast Rail District (GCRD)		
Houston	FM 1405 Grade Separation	Grade separation of FM 1405 and UP tracks (DOT# 762944U) in Baytown to support industrial growth in Chambers County.	TBD	HGAC/GCRD	Road Congestion Reduction / Safety	
Houston	Royal Lakes Blvd Grade Separation	BNSF Galveston Subdivision, MP 55.87. Road crosses main and siding track and experiences regular switching operations to serve Houston Power & Light Plant (DOT# 022673Y).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
Houston	Alameda- Genoa Road Grade Separation	BNSF Mykawa Subdivision, MP 14.06. Crosses three tracks at end of BNSF yard (DOT# 023207W).	TBD	HGAC	Road Congestion Reduction / Safety	
Houston	West Belt Grade Separation – York St.	Construct road overpass at York Street and close at-grade crossings at Sampson (DOT# 288229E), McKinney (DOT# 288227R), York (DOT# 288228X), and Milby (DOT# 288226J) streets	$36.00M	HGAC/TxDOT/ Houston Belt & Terminal Railroad (HBT)	Road Congestion Reduction/ Safety	
Houston	West Belt Grade Separation – Commerce/Navigation	Construct road overpass at Navigation Boulevard and Commerce Street, and close at-grade crossing at Hutchins and Commerce street intersection (DOT# 288129A)	$36.00M	HGAC/TxDOT/ HBT	Road Congestion Reduction/ Safety	
Houston	West Belt Grade Separation – Nance St.	Construct grade separation at Nance Street and close at-grade crossing (DOT# 288098D)	$36.00M	HGAC/TxDOT/ HBT	Road Congestion Reduction/ Safety	
Houston	West Belt Grade Separation – Lyons Ave.	Construct grade separation at Lyons Avenue (DOT# 288095H) and close three at-grade crossings on West Street (DOT# 758284D and 748688W).	$36.00M	HGAC/ TxDOT/HBT	Road Congestion Reduction / Safety	
Laredo	Laredo Grade Separations	Relieve congestion in downtown Laredo caused by the 14 at-grade crossings along the existing Texas-Mexico approach to the existing Laredo rail bridge (KCS and UP).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety/ Port Related	
Lubbock	US 70/US 84 Grade Separation	BNSF Hereford Subdivision, MP 757.27. Construct grade crossing at the BNSF Transcon main lines from Slaton Subdivision. Approximately 60% of project is in Texas and 40% in New Mexico (DOT# 014787R).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
Paris	Grade Crossing Rationalization	Consider grade separations and closures to mitigate 18 crossings in approximately 5 miles (BNSF).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
San Antonio	Grade Separation	Grade separate Sunset Road (DOT# 432501X), Jones Maltsberger Road (DOT# 432502E), and Basse Road (DOT# 432503L) on the UP Austin Subdivision Main Track #1 in San Antonio.	TBD	Alamo Area Metropolitan Planning Organization (AAMPO)	Road Congestion Reduction / Safety	
San Antonio	Grade Separation	Grade separate Rittiman Road (DOT# 764362W) and Walzem Road (DOT# 764980W) on the UP Glidden Sub to create a 10,000-foot siding just east of Kirby yard.	$70.00M	AAMPO	Road Congestion Reduction / Safety	
San Antonio	Grade Separation	Grade separate Binz-Engleman Road (DOT# 415621U) on the UP Austin Sub	TBD	AAMPO	Road Congestion Reduction/	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
					Safety	
San Antonio	Grade Separation	Grade separate East Houston Street (DOT #415625W) on the UP Austin Sub	TBD	AAMPO	Road Congestion Reduction/ Safety	
San Antonio	Grade Separation	Grade separate Frio City Road/South Zarzamora Street intersection and at-grade crossing of UP Laredo Sub (DOT# 432573B) in a manner that allows for the closure of three Tier 1s in San Antonio between Tower 105 and SoSan yard: Harriman Place (DOT# 432572U), Drake Avenue (DOT# 432568E), and Cumberland Road (DOT# 432567X).	TBD	AAMPO	Road Congestion Reduction / Safety	
San Antonio	Grade Separation	Grade separate Broadway Street (DOT# 848306A) and Wetmore Road on the UP Austin Subdivision in San Antonio and extend existing siding to improve downtown vehicular mobility near Tower 105.	$22.00M	AAMPO	Road Congestion Reduction / Safety	
Wichita Falls	US 283 Grade Separation	BNSF Red River Valley Subdivision, MP 163.35. Road crosses three tracks (DOT# 274661A).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
Wichita Falls	7th Street Grade Separation	BNSF Wichita Falls Subdivision, MP 114.1. Road crosses nine tracks in middle of BNSF's rail yard (DOT# 274983N).	TBD	TxDOT Rail Division	Road Congestion Reduction / Safety	
STATE-OWNED RAIL LINE PROJECTS						
Atlanta/ Paris	Rehabilitate NETEX Rail Line, Greenville to Mount Pleasant	Rehabilitate the Northeast Texas Rural Rail Transportation District (NETEX) rail line from Greenville to Mount Pleasant (66 miles). TxDOT owns the 31 miles of the NETEX right-of-way and has a security interest in the infrastructure from a Grant Funding Agreement in 1996. Track speeds on the NETEX line are limited to 10 mph due to defective crossties and bridge deficiencies. The rail line must be rehabilitated to continue providing service to existing customers and attract new business to the line and the region. TxDOT would seek additional ownership in the line and infrastructure as a condition to rehabilitating the line.	$30.00M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	
Dallas/ Fort Worth	Reconstruct NETEX Rail Corridor, Greenville to Wylie	Reconstruct an abandoned rail corridor owned by the NETEX rail line from Greenville to Wylie (23.2 miles) to provide additional rail capacity into the Dallas-Fort Worth Metroplex. TxDOT funded the purchase of this right-of-way by NETEX.	$12.00M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	
El Paso	SORR Fastlane Rehab	Rehabilitation of the South Orient Rail Line (SORR) (FASTLANE Grant).	$7.00M	TxDOT Rail Division	State of Good Repair/ Short Line Infrastructure	
El Paso	SORR 25-mph Rehab	Rehabilitation of SORR MP 957 - 1029 to 25-mph track speeds in support of international traffic through Presidio (FY19).	$7.00M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
El Paso	SORR Alpine Interchange Rehab	Rehabilitate line between Belding and Alpine to open the interchange with UP at Alpine. Rehabilitation is essential to enable shipments to/from the border at Presidio and to provide interchange capability with UP and foster competition for SORR freight between BNSF and UP. It would also allow crude oil shipments west to California across UP's Sunset Route.	$33.00M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	
El Paso	Rehabilitate SORR Line, Paisano Jct. to Presidio	Rehabilitate the SORR line between Paisano Junction and Presidio in support of the reconstruction of the international rail bridge. TxDOT received a $7 million FRA grant for the rehabilitation of the line within these limits. Most of those funds are being used for other critical bridge repairs. An additional $3 million is needed to address drainage and some tie replacements.	$4.70M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	
El Paso/ Odessa	Rehabilitate SORR Line, Sulphur Junction to Fort Stockton	Rehabilitate the SORR line between Sulphur Junction and Fort Stockton (13.6 miles). The rail was manufactured in 1912, is substandard for today's loadings, and is expected to become inoperable due to infrastructure deficiencies within 5 years. The existing 70-pound rail will be replaced with 115-pound continuously welded rail. Rehabilitation is essential to provide service to existing customers and attract new businesses to the area.	$12.80M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	
Odessa	SORR Infrastructure Railbed Rehabilitation	Infrastructure Railbed Rehab to Replace Jointed Rail, Replace Ties, Ballast, Reconstruct Grade	$3.42M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	
Odessa	Rehabilitate SORR Line, Crockett/Pecos County Lines to Sulphur Junction	Rehabilitate the SORR line between Crockett/Pecos County lines and Sulphur Junction (22.1 miles). The rail is in generally good condition, but needs major tie replacements with grade crossing reconstructions during tie replacements. Rehabilitation is essential to provide service to existing customers and attract new businesses to the area.	$7.00M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	
Odessa	Rehabilitate SORR Line, Fort Stockton to Belding	Rehabilitate the SORR line between Fort Stockton and Belding (10 miles). The rail line was manufactured in1912 and is substandard for today's loadings. This section of the rail line must be rehabilitated to continue to provide safe and efficient service to the customer facilities that are served within the project limits	$8.00M	TxDOT Unified Transportation Plan	State of Good Repair/ Short Line Infrastructure	

Source: TxDOT; Texas Freight Mobility Plan (2017); Class I Railroad Outreach; Short Line Railroad Outreach (2018); Texas Port Access Study; Texas Ports 2017-2018 Capital Program; Texas Ports; 2019 Texas Unified Transportation Program (UTP); and Draft 2020 UTP

5.8.3 Short-Range Program of Rail Passenger Projects

The short-range program consists of projects that could be implemented within 4 years (2019-2022). The TxDOT Short-Range Program of Rail Passenger Projects is shown in Table 5-4. The individual service proposals, their sponsors, descriptions, and a summary of the transportation need that the project fills are shown in the table.

Table 5-4. TxDOT Short-Range Program of Rail Passenger Projects in Texas (2019-2022)

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Overall (Fort Worth/ Wichita Falls)	Heartland Flyer Funding	Continued funding with ODOT of Amtrak state-supported Heartland Flyer service (4 years, at $2.5 million per year)	$10.00M	TxDOT	Maintain Amtrak state-supported passenger service	State support required for Amtrak routes of 750 or less, under PRIIA
Private	Texas Central Railway	Construct and implement high-speed (200-mph) passenger rail service on a new, dedicated corridor between Dallas and Houston	$15,000M to $18,000M	Texas Central Partners	Enhance regional mobility	Privately financed venture
Austin	Red Line Positive Train Control	Complete installation of Positive Train Control safety system on 32-mile Austin MetroRail Red Line corridor between Austin and Leander	$25.10M	CMTA	Enhance safety on shared freight/ passenger rail corridor	Must be completed by federal deadline of December 31, 2020
Austin	Red Line Positive Train Control IT Support	Information Technology support for the Positive Train Control safety system to be installed on the MetroRail Red Line corridor	$0.50M	CMTA	Enhance safety on Red Line corridor	
Austin	Red Line Passing Sidings	Construct passing sidings on MetroRail trackage in the vicinity of the Lakeline, Howard, and Crestview stations and Austin Junction; realign the track at WYE (Austin Junction); and super-elevate selected curves	$23.40M	CMTA	Enhance mobility for passenger and freight rail operations	Includes components partly funded by $11.3M federal TIGER V grant, with construction underway
Austin	Red Line Platform Extensions	Extend platforms at eight MetroRail Red Line rail stations to accommodate longer 2-car trains	$18.00M	CMTA	Enhance mobility and capacity for passenger operations	
Austin	Downtown Station Improvements	Construct new MetroRail Downtown Station platform and facility in downtown in Austin	$30.00M	CMTA	Enhance mobility, reliability, and resiliency for passenger operations	Funded by TxDOT
Austin	Downtown Station Double Tracking	Construct a second main track to serve the MetroRail Downtown Station in Austin	$4.50M	CMTA	Enhance mobility, reliability, and resiliency	
Austin	Downtown Station Stormwater Improvements	Construct stormwater improvements to the MetroRail Downtown Station in Austin	$5.30M	CMTA	Enhance safety, reliability, and resiliency	
Austin	Downtown Station Pedestrian Crossings	Construct pedestrian crossings and access to the to the MetroRail Downtown Station in Austin	$0.50M	CMTA	Enhance safety and mobility	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Austin	Kramer Station Relocation	Relocate MetroRail Red Line Kramer Station to the IBM Broadmoor Campus site	$13.40M	CMTA	Enhance mobility and ridership	Additional funding to be provided by private site developer and employer
Austin	Plaza Saltillo Station Revitalization-Engineering	Engineering for facility and access improvements at the MetroRail Red Line Plaza Saltillo Station to accommodate additional riders from new mixed-use development	$0.06M	CMTA	Enhance mobility and ridership	
Austin	Plaza Saltillo Station Revitalization-Construction	Construct facility and access improvements at the MetroRail Red Line Plaza Saltillo Station to accommodate additional riders from new mixed-use development	$0.06M	CMTA	Enhance mobility and ridership	
Austin	Plaza Saltillo Double Track	Construct a second main track in the vicinity of the MetroRail Red Line Plaza Saltillo Station	$3.60M	CMTA	Enhance mobility and ridership	
Austin	North Ops Rail Maintenance of Way Storage	Improve storage capacity at the Capital Metro North Operations and Maintenance Facility	$2.70M	CMTA	Enhance safety, reliability, and resiliency	
Austin	North Ops Rail Maintenance of Way Building Drainage	Improve drainage system at the Capital Metro Red North Operations and Maintenance Facility Building	$0.08M	CMTA	Enhance safety, reliability, and resiliency	
Austin	CapMetro Red Line Crossing Improvements	Construct improvements at highway-rail grade crossings along the Capital Metro Red Line rail corridor	$1.30M	CMTA	Enhance safety and reliability	Reimbursed by TxDOT
Austin	CapMetro Freight Track Crossing Improvements	Construct improvements at highway-rail grade crossings along Capital Metro East Corridor freight trackage	$1.70M	CMTA	Enhance safety and reliability	Reimbursed by TxDOT
Austin	CapMetro Bridge Replacement	Upgrade bridges along Capital Metro freight trackage to Condition 3 status (Fair or Better)	$2.00M	CMTA	Enhance State of Good Repair	
Austin	CapMetro East Subdivision Quiet Zone	Upgrade grade crossing installations on the Capital Metro East Corridor freight trackage to enable establishment of a quiet zone	$0.20M	CMTA	Enhance safety and reliability	
Austin	CapMetro Leander Quiet Zones	Upgrade grade crossing installations on the Capital Metro West Corridor in Leander to enable establishment of quiet zones	$1.00M	CMTA	Enhance safety and reliability for freight and passenger operations	
Austin	New Passing Siding Between Leander/Lakeline	Construct new passing siding on the MetroRail Red Line corridor between the Leander and Lakeline stations	$0.45M	CMTA	Enhance mobility for freight and passenger operations	
Austin	Rail Vehicle Engineering Support	Modify MetroRail's fleet of DMU vehicles to meet FRA requirements for alternate compliance, which would eliminate the need for a temporal separation for passenger and freight operations	$1.30M	CMTA	Enhance mobility for freight and passenger operations	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Austin	Safety Upgrades to Existing Railcars	Upgrade interior features on MetroRail's fleet of DMU vehicles	$0.30M	CMTA	Enhance safety and reliability	
Austin	Commuter Rail Vehicle Maintenance Diagnostic Equipment	Acquire diagnostic equipment to more efficiently carry out maintenance on MetroRail's fleet of DMU vehicles	$0.20M	CMTA	Enhance reliability for passenger operations	
Austin	Bridge Replacement Survey	Perform survey to support Capital Metro railroad bridge replacement program	$0.45M	CMTA	Enhance reliability and state of good repair	
Austin	G4 DMU Special Tools and Capital Spares	Acquire special tools and spare equipment for MetroRail	$0.45M	CMTA	Enhance reliability and state of good repair	
Austin	Fleet Replacement	Planning and development of replacement program for MetroRail DMU vehicle fleet	$0.45M	CMTA	Enhance reliability and state of good repair	
Austin	Signal System Replacement	Planning and development of replacement program for MetroRail signal system	$0.45M	CMTA	Enhance reliability and state of good repair	
Austin	Crossing System Replacement	Planning and development of replacement program for grade crossings along Capital Metro rail corridors	$0.45M	CMTA	Enhance reliability and state of good repair	
Austin	Gate Mechanism Change Out	Replace Capital Metro gate mechanism	$0.45M	CMTA	Enhance reliability and state of good repair	
Dallas	Cotton Belt Corridor	Construct and implement regional commuter rail operation on 26 miles of the Cotton Belt Corridor between DFW Airport and Shiloh Road in Plano	$1,135.0M	DART	Enhance passenger mobility	
Dallas	A-Train Southbound Extension Study	Develop an initial evaluation of extending A-Train corridor south to downtown Carrollton	$0.20M	DCTA	Enhance ridership, mobility, and connectivity	
Dallas	TRE Bridge Replacement and Double Tracking for Obsession, Inwood, and Knights Branch Bridges	Replace three single-track bridges that are past their useful lives on the Trinity Railway Express corridor with new double-track structures	$15.00M	DART/NCTCOG	Enhance mobility and state of good repair for passenger and freight operations/ Class I capacity	
Dallas/ Fort Worth	TRE Positive Train Control	Complete installation of Positive Train Control safety system on 34-mile Trinity Railway Express corridor between Dallas and Fort Worth	$34.80M	DART	Enhance safety on shared freight/ passenger rail corridor	Must be completed by federal deadline of December 31, 2020
Dallas/ Fort Worth	TRE Locomotive Purchase	Acquire one new commuter rail locomotive for Trinity Railway Express	$8.00M	DART	Enhance mobility and reliability for passenger operations	

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Dallas/ Fort Worth	TRE Locomotive Overhauls	Overhaul 2 Trinity Railway Express F59 locomotives for continued commuter rail operations	$5.30M	DART	Enhance reliability and state of good repair for passenger operations	
Dallas/ Fort Worth	TRE Car Overhauls	Perform mid-life overhauls of Trinity Railway Express commuter rail equipment, including 6 bi-level coaches and 2 bi-level cab cars	$16.1M	DART	Enhance reliability and state of good repair for passenger operations	
Fort Worth	TRE Double Track West of CentrePort Station	Construct approximately 1.1 miles of second main track on the Trinity Railway Express corridor from just east of Tarrant Main Street (MP 627.2) to CentrePort Station (MP 628.3). Replace and upgrade single-track bridge to double-track bridge over State Highway 360	$16.00M	FWTA	Enhance mobility for passenger and freight rail operations	
Fort Worth	TRE New Station at Trinity Lakes	Replace existing Trinity Railway Express Richland Hills station with a new station at Trinity Lakes serving a Transit-Oriented Development	$8.00M	FWTA/Private	Accommodate new transit riders who live at and near a mixed-use development	Capital cost of station will be shared 50/50 between FWTA and private TOD developer
Fort Worth	TRE Double Track near Trinity Lakes Station	Construct approximately 1.3 miles of new second main track on the Trinity Railway Express corridor between the existing TRE Richland Hill station (MP 618.7) to just east of the proposed Trinity Lakes station (MP 620.0)	$10.00M	FTWA	Enhance mobility for passenger and freight rail operations	
Fort Worth	TRE Double Track and Rehabilitate 15-Year-Old Bridge Over the Trinity River	Rehabilitate the existing, historic Trinity River Bridge on the Trinity Railway Express corridor in Fort Worth, and construct approximately 0.75 miles of new second main track between I-35W and Sylvania Avenue, including new bridges	$33.60M	FWTA	Enhance mobility and state of good repair for passenger and freight rail operations	Construction began in October 2018, with an anticipated completion in Summer 2020

5.8.4 Long-Range Program of Rail Passenger Projects

Chapter 3 describes several potential intercity passenger and commuter rail initiatives being advanced by the private sector or by the public sector at the local and regional level. Due primarily to the fact that no specific funding source is available for the short-range implementation of new rail passenger projects in the state, all passenger projects that would implement new services have been included in the Long-Range Program, with the exception of DART's Cotton Belt Corridor, where funding is already programmed. The TxDOT Long-Range Program of Rail Passenger Projects is shown in Table 5-5. The individual service proposals, their sponsors, descriptions, and a summary of the transportation need that the project fills are shown in the table. A funding source has not been identified for some of these projects. State funding is unavailable; TxDOT intends to serve as a facilitator for private and local public investment.

Table 5-5. TxDOT Long-Range Program of Rail Passenger Projects in Texas (2023-2039)

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Overall (Fort Worth/ Wichita Falls)	Heartland Flyer Funding	Continued funding with ODOT of Amtrak state-supported Heartland Flyer service (16 years, at $2.5 million per year)	$40.00M	TxDOT	Maintain Amtrak state-supported passenger service	State support required for Amtrak routes of 750 or less, under PRIIA
Austin	Double Track Red Line, New Vehicle Acquisition	Construct a second main track for the entire length of the 32-mile MetroRail Red Line corridor; acquire 4 new DMU rail vehicles for increased service	$116.00M	CMTA	Enhance mobility, reliability, and state of good repair for passenger operations	Project Connect
Austin	MetroRail Vehicle Maintenance Facility Expansion	Construct a new MetroRail vehicle maintenance facility in Leander	$40.00M	CMTA	Enhance mobility, reliability, and state of good repair for passenger operations	Project Connect
Austin	MetroRail Replacement Red Line Vehicles	Acquire new DMU rail vehicles to replace existing MetroRail Red Line fleet at the end of their useful lives	$106.50M	CMTA	Enhance reliability and state of good repair for passenger operations	Project Connect
Austin	Green Line Austin to Manor	Construct track and signal improvements and acquire rail vehicles to establish service on the proposed MetroRail Green Line between Austin and Manor	$264.00M	CMTA	Enhance regional mobility	Project Connect
Austin	Green Line Extension Manor to Elgin	Construct track and signal improvements and acquire rail vehicles to establish service on the proposed MetroRail Green Line extension between Manor and Elgin	$98.00M	CMTA	Enhance regional mobility	Project Connect
Austin	McKalla Place Station	Construct new MetroRail Red Line station in North Austin at McKalla Place, near proposed soccer stadium and mixed-use developments	$13.00M	CMTA	Enhance ridership and mobility	
Dallas	Cotton Belt Corridor Double Track	Construct a second mainline track on the Cotton Belt Corridor to allow for additional train frequencies and improved operations	TBD	DART	Enhance mobility and reliability for passenger and freight operations	DART 2040 TSP
Dallas	A-Train Corinth Station	Construct a new A-Train station near North Central Texas College in Corinth	TBD	DCTA	Enhance regional mobility and ridership	
Dallas	A-Train North Extension	Extend A-Train corridor north from Denton to Pilot Point	$331.60M	DCTA	Enhance regional mobility and ridership	
Dallas	A-Train South Extension	Extend A-Train corridor approximately 2 miles south from Trinity Mills to Downtown Carrollton, and establish connections with the	$125.00M	DCTA/ NCTCOG	Enhance regional mobility, ridership, and connectivity	NCTCOG Mobility 2045

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
		Cotton Belt Corridor and planned Frisco Corridor commuter rail lines				
Dallas	Frisco Line	Establish a new commuter rail service on the Frisco Line between Downtown Carrollton (Belt Line Road) and Celina	$377.70M	NCTCOG	Enhance regional mobility, ridership, and connectivity	NCTCOG Mobility 2045
Dallas	Irving-Frisco Corridor Regional Corridor Analysis	Future commuter rail corridor study for the Irving-Frisco Regional Rail Corridor (29 miles), linking South Irving, Carrollton, Plano, and Frisco	$1,271.0M	DART/ NCTCOG	Connect Frisco and surrounding communities to the regional network and major employment centers	DART 2040 TSP
Dallas	Midlothian Corridor Regional Corridor Analysis	Future commuter rail corridor study for the Midlothian Regional Rail Corridor (14 miles), linking Westmoreland, Midlothian, and DeSoto	TBD	DART/ NCTCOG	Connect Southwest communities to the regional network and major employment centers	DART 2040 TSP
Dallas	McKinney Corridor Regional Corridor Analysis	Future commuter rail corridor study for the McKinney Regional Rail Corridor (18 miles), linking Irving, Carrollton, Plano, and Prosper	TBD	DART/ NCTCOG	Connect Collin County communities to the regional network and major employment centers	DART 2040 TSP
Dallas	East Scyene/East Mesquite Regional Corridor Analysis	Study to analyze future service options for an East Scyene LRT extension or East-Mesquite Rail Corridor commuter rail service	TBD	DART/ NCTCOG	Connect eastern communities to the regional network and major employment centers	DART 2040 TSP
Dallas	Waxahachie Corridor Regional Corridor Analysis	Future commuter rail corridor study for the Waxahachie Regional Rail Corridor (31 miles), linking Dallas, Waxahachie, and Wilmer	TBD	DART/ NCTCOG	Connect communities south of Dallas and the Inland Port area to the regional network	DART 2040 TSP
Dallas	Cotton Belt East Extension Regional Corridor Analysis	Future commuter rail corridor study for an extension of the Cotton Belt Corridor east to Wylie	TBD	DART/ NCTCOG	Connect communities northeast of Dallas to the regional network	DART 2040 TSP
Dallas	Cotton Belt East Extension Regional Rail Corridor	Establish commuter rail service on the Cotton Belt East extension between Shiloh and Wylie (9 miles)	$908.00M	DART/ NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas	Frisco Line Regional Rail Corridor	Establish commuter rail service on the Frisco Line between South Irving Transit Center and Frisco (29 miles)	$1,271.0M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
Dallas	McKinney Line Regional Rail Corridor	Establish commuter rail service on the McKinney Line between Plano and McKinney (18 miles)	$1,817.0M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas	Midlothian Line Regional Rail Corridor	Establish commuter rail service on the Midlothian Line between Westmoreland and Midlothian (18 miles)	$1,817.0M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas	Scyene Line Regional Rail Corridor	Establish commuter rail service on the Scyene Line between Lawnview and Masters (4 miles)	$404.00M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas	Scyene Line East Extension Regional Rail Corridor	Establish commuter rail service on the Scyene Line East Extension between Masters and Lawson Road (8 miles)	$807.00M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas	Waxahachie Line Regional Rail Corridor	Establish commuter rail service on the Waxahachie Line between Dallas and Waxahachie (31 miles)	$1,788.0M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas	Mansfield Line Regional Rail Corridor	Establish commuter rail service on the Mansfield Line between Fort Worth and Midlothian (30 miles)	$1,730.0M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas	Cleburne Line Regional Rail Corridor	Establish commuter rail service on the Cleburne Line between Fort Worth and Cleburne (30 miles)	$1,730.0M	NCTCOG	Enhance regional mobility	NCTCOG Mobility 2045
Dallas/ Fort Worth	Trinity Railway Express Corridor Double Track	Construct additional sections of second main track along the Trinity Railway Express corridor to establish a fully double-tracked commuter rail corridor between Dallas and Fort Worth to allow for additional train frequencies and improved passenger and freight operations	TBD	DART/FWTA	Enhance mobility for passenger and freight operations	DART 2040 TSP; related NCTCOG freight component in Long Term Freight Projects table
Dallas/ Fort Worth	Trinity Railway Express Fleet/Operating Facility Expansion	Increase the fleet size and expand storage and maintenance facilities to enhance service frequencies on the Trinity Railway Express corridor	TBD	DART/FWTA	Enhance mobility, ridership, and state of good repair for passenger operations	DART 2040 TSP
Fort Worth	TEXRail Southwest Extension to Summer Creek	Extend TEXRail commuter rail service southwest from Fort Worth to Summer Creek	$500.00M	FWTA	Enhance regional mobility, ridership, and connectivity	Initially planned as part of original corridor; NCTCOG Mobility 2045
Fort Worth	TEXRail Southwest Extension to McPherson	Continue TEXRail Southwest Extension from Summer Creek to Sycamore School Road in southwest Fort Worth near McPherson	$600.00M	FWTA	Enhance regional mobility and ridership	NCTCOG Mobility 2045
Fort Worth	TEXRail corridor Double Track	Construct a second mainline track on the TEXRail corridor to allow for additional train frequencies and improved operations	TBD	FWTA	Enhance mobility and reliability for passenger and freight operations	
Houston	US 90A/ Southwest Commuter Rail Corridor -Phase 1	Implement Phase 1 of the US 90A/ Southwest Rail Corridor commuter rail project, extending 8 miles between Houston METRO's Fannin	$400.00M	Houston METRO/ HGAC/ GCRD	Enhance regional mobility and connectivity	H-GAC RTP 2040

TxDOT District	Project Name	Project Description	Estimated Cost (Millions)	Source/ Sponsor	Project Need	Notes
		South Park and Ride and the Harris County Line				
Houston	US 90A/ Southwest Commuter Rail Corridor-Phase 2	Implement Phase 2 of the US 90A/ Southwest Rail Corridor commuter rail project, extending 23 miles from the Harris County Line to Rosenberg	$345.00M	HGAC/ GCRD	Enhance regional mobility	H-GAC RTP 2040
Houston	Hempstead/US 290 Commuter Rail Corridor	Establish commuter rail service on the Hempstead/US 290 commuter rail corridor extending 24 miles between Houston METRO's Northwest Transit Center and Waller	$1,080.8M	HGAC/ GCRD	Enhance regional mobility and connectivity	H-GAC RTP 2040
Houston	Galveston SH3 Commuter Rail	Establish commuter rail service on a 50-mile corridor along State Highway 3 between Houston and Galveston	$200.00M	HGAC/ GCRD	Enhance regional mobility	H-GAC RTP 2040
Pharr	Hidalgo County Commuter Rail	Establish commuter rail service in Hidalgo and Cameron counties connecting Mission, McAllen, Pharr, and Mercedes.	$310.00M	HCRD	Enhance regional mobility	

2019 Texas Rail Plan

Chapter 6

Coordination and Review

December 2019

Table of Contents

List of Tables

List of Figures

Appendices

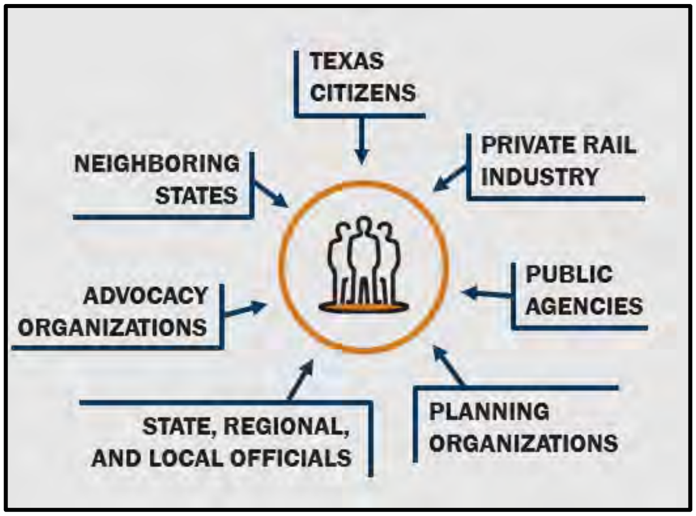
6.1 INTRODUCTION

As part of the preparation of the 2019 Texas Rail Plan Update (TRP), Texas Department of Transportation (TxDOT) engaged stakeholders and the public to provide them with information about the statewide transportation planning process for rail infrastructure and to provide an opportunity for persons interested in rail activity to help guide the future needs of passenger and freight rail service in the state. This chapter contains a compendium of outreach activities that were conducted during the preparation of the Texas Rail Plan. TxDOT actively engaged stakeholders at the earliest stages of the TRP update and continued throughout its development; ultimately leading to a draft version of the TRP. Once the Draft TRP was completed, it was posted on TxDOT's website, providing stakeholders with an opportunity to review the document prior to releasing the final version.

6.1.1 Texas Rail Plan Stakeholders

As defined by the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), stakeholders must include all freight and passenger rail (intercity and commuter) carriers and transit authorities operating in, or affected by rail operations within, the state, units of local government, and metropolitan areas (*State Rail Plan Guidance*, FRA, September 2013).

Figure 6-1: Texas Rail Plan Stakeholders



Stakeholders are individuals, organizations, and groups either affected by or who have an interest in particular passenger and freight rail projects or actions. For the Texas Rail Plan, stakeholders include private rail industry representatives, public agencies, advocacy organizations, neighboring states, regional and local city government agencies, current and potential rail passenger users, various industrial and manufacturing sectors, elected and appointed public officials, economic development and business interests, special interest and advocacy groups, visitors, and the general public (Figure 6-1).

Stakeholders represent audiences who are integral to assuring the TRP meets its objectives and goals as presented in Chapter 1. These audiences offered TxDOT an understanding of what existing and future rail and freight movement looks like throughout the state; and provided an understanding of critical issues and challenges facing these stakeholders.

Stakeholder involvement included participation in the following planning activities, which were instrumental in the preparation of the TRP:

- Defining the existing rail network (passenger rail and freight rail) including rail infrastructure, transportation network, multimodal connections, and operations.

- Communicating the role of rail as part of the overall statewide transportation system, and presenting rail benefits and the role that rail plays throughout the state.
- Helping to define policies and performance metrics for rail to ensure improved rail service into the future.
- Identifying current issues and infrastructure needs.
- Gaining insight and guidance relative to the development of future rail priorities.
- Identifying potential rail improvement projects and investments (short-term and long term) consistent with rail priorities and goals.

6.1.2 Stakeholder Outreach Opportunities

An overview of the series of meetings that were conducted to inform and solicit input from stakeholders about key features associated with the rail network in Texas and decision points throughout the project are summarized herein. These meetings included an initial series of stakeholder meetings during the fall of 2018, followed by a combined public meeting/online meeting in winter of 2018, concluding with a second series of stakeholder meetings that were held in spring 2019. Table 6-1 summarizes the public engagement opportunities and series of meetings that were held throughout the duration of the rail plan development.

Texas Rail Plan Schedule and Stakeholder Involvement Opportunities

Table 6-1: Summary of Texas Rail Plan Public Engagement Opportunities

Public Engagement Opportunity	Date
Stakeholder Meeting No. 1	
Passenger Rail Stakeholder Meeting	September 20, 2018
Freight Rail Stakeholder Meeting	October 8, 2018
Initial Outreach with Class I and Class III Railroads	August 2018 – November 2018
Public Meeting	
In-Person Public Meeting	December 11, 2018
Online Public Meeting and Comment Period	December 11, 2018 – March 1, 2019
Stakeholder Meeting No. 2	
Passenger Rail Stakeholder Meeting	April 30, 2019
Freight Rail Stakeholder Meeting	April 30, 2019

6.2 STAKEHOLDER COMMITTEE MEETING NO. 1

TxDOT facilitated specific, targeted outreach efforts including participation from key rail and freight stakeholder groups. Outreach efforts included the creation of a Stakeholder Committee, which was formed early on in the project through invitation by TxDOT. The committee was organized to help identify rail and freight goals and objectives, strategies for improvements, and location-specific improvement projects. For the first series of stakeholder meetings, separate meetings were held with passenger rail and freight rail representatives as further described below. However, while separate meetings were conducted, the purpose of the initial stakeholders meetings, which was common to both, consisted of:

- Introduce the Texas Rail Plan purpose, approach and schedule.
- Present the Goal and Objectives of the Texas Rail Plan.
- Capture Stakeholder input on current and future challenges, opportunities and priorities for rail service in Texas.
- Discuss Stakeholder roles in the TRP development process.

6.2.1 Passenger Rail Stakeholder Meeting No. 1

TxDOT engaged passenger rail service providers, passenger planning agencies, and advocates with an opportunity to participate in the development of the passenger rail component of the Texas Rail Plan. The first of these opportunities was the initial Passenger Rail Stakeholder Meeting held in Austin on September 20, 2018 from 1:30 to 3:30 p.m. All outreach material, meeting minutes and PowerPoint presentation for the initial Passenger Rail Stakeholder meeting are included in Appendix E-1.

6.2.1.1 Passenger Rail Meeting No. 1 Notification

Passenger Rail Stakeholders received an initial invitation/Save the Date notice via email on August 1, 2018 to attend the passenger rail stakeholder meeting which was originally scheduled to take place on August 21, 2018. Due to schedule conflicts, TxDOT then sent a Change the Date notice on August 7, 2018 informing passenger rail stakeholders of the new meeting date on September 20, 2018. The purpose of the meeting was provided to stakeholders in advance of the meeting as part of the meeting invitation.

Emails to stakeholder members were distributed via MailChimp, which served to manage the stakeholder email database; provide automatic response options to accept or decline the meeting invitation; and improve email delivery options by minimizing the chance that email messages would be filtered into spam.

6.2.1.2 Passenger Rail Stakeholder Committee Members

Members of the Passenger Rail Stakeholder Committee included representatives from passenger rail service operators, transit authorities, metropolitan planning organizations (MPOs), transportation planning organizations, local government, and special interest groups. Table 6-2 summarizes the Passenger Rail Stakeholder Committee members who were invited to the meeting; committee member attendance at the September 20, 2018 is also noted.

A project mailing list was established and used to store stakeholder information for the distribution of project information and meeting notices. The mailing list was also used as the stakeholder e-mail distribution list. The purpose of maintaining the mailing list was to have an ongoing mechanism for providing project information to all parties who expressed an interest in the project or who were otherwise identified for inclusion in the mailing list.

Table 6-2: Summary of Passenger Rail Stakeholder Committee Members and Meeting No. 1 Attendance

Passenger Rail Stakeholder Committee Member	Role / Passenger Rail Service	Meeting Attendance
Amtrak	Long-Distance and Intercity Passenger Rail	√
Capital Metropolitan Transportation Authority (Austin – Capital Metro)	Commuter Rail / Light Rail	-
Dallas Area Rapid Transit (DART)	Commuter Rail/ Light Rail Transit / Streetcar / Trolley	√
Gulf Coast Rail District (Harris County, City of Houston, Fort Bend County)	Potential Commuter Rail System in Houston; Advocate for Freight and Passenger Rail	-
Houston-Galveston Area Council (H-GAC)	Houston Area MPO	√
I-20 Corridor Council	Rail Advocate for Long-Distance Passenger Service	√
Metropolitan Transit Authority of Harris County (Houston Metro)	Light Rail Transit	-
Sun Metro (El Paso)	Streetcar	-
Trinity Metro (Fort Worth)	Commuter Rail	√
Texas Association of Railroad Passengers	Rail Advocate	√
Texas Central Railway	Future Proposed High-Speed Rail Provider	√
Texas Rail Advocates	Rail Advocate	√

6.2.1.3 Passenger Rail Stakeholder Meeting No. 1 Agenda and Collaboration Activities

Passenger Rail Meeting Agenda

TxDOT sought input on strategies to maintain and improve effective and efficient passenger rail services, and to obtain information on future passenger rail initiatives in Texas. Meeting agenda items, topics of discussion, and outcomes of the meeting are summarized below. Collaborative activities were conducted that focused on:

- Texas Rail Plan Overview, Purpose and Approach.
- Review of the Statewide Existing and Proposed Passenger Rail Project map.
- Review of TRP Goals and Objectives.
- Identification of Project Needs and Priorities.

The meeting concluded with on overview of Stakeholder Roles and Responsibilities and Next Steps.

Activity 1: Statewide Passenger Rail Map Review

As part of this activity, a statewide passenger rail map was displayed as part of the stakeholder meeting PowerPoint presentation (Appendix E-1). The statewide passenger rail map displayed the existing passenger rail systems located within the metropolitan areas of Dallas, Fort Worth, Austin, San Antonio, Houston/Gulf Coast region, and El Paso. Existing and proposed intercity passenger rail systems were also listed including Amtrak, Texas Central Railway and Texas-Oklahoma Passenger Rail System (TOPRS). The passenger rail network map allowed participants to visualize locations of discussions. Participants were encouraged to confirm current passenger rail service and to identify projects that are underway, have been recently completed, or need to be added to the plan to ensure that the TRP captures the latest updates.

Activity 2: Project Needs Identification

To facilitate the discussion regarding strategies for improvements and location-specific investment projects, TxDOT presented a series of PowerPoint presentation slides specific to the Project Needs Identification topic. The slides were generally posed as questions to stakeholders with the intent of capturing input on major factors that should be considered as part of the state passenger rail network. Each of the Project Needs Identification slides that are focused on passenger rail are presented below. As part of this activity, stakeholders were asked to provide input on short-term and long-term project needs, with short-term projects defined as those, which could be implemented in less than 5 years, and long-term projects defined as those that would take greater than 5 years to implement.

Passenger Rail Project Needs Identification Slide No. 1 (slide 1 in the series of 8)

- What investments could be made in Texas to improve passenger rail access and promote travel mobility and economic development?
  1. *New or enhanced passenger rail facilities*
  2. *New or enhanced multimodal connections*
  3. *New or enhanced federal, state, local, and public-private partnership funding options*
  4. *New station locations*
  5. *Other options*

Passenger Rail Project Needs Identification Slide No. 2

- What investments could be made to enhance the efficiency, velocity, capacity and safety on the Texas state rail network?
  1. *Grade crossing improvements (upgrades to grade crossing signals and surfaces, grade separation, etc.)*
  2. *New or enhanced stations and terminals*
  3. *Infrastructure investment (extend or construct new sidings and multiple main tracks, track and bridge upgrades, wayside signal system upgrades)*
  4. *Investments targeting state of good repair*
  5. *Advanced technology and innovation*
  6. *Other options*

Passenger Rail Project Needs Identification Slide No. 3

- What are the bottlenecks and chokepoints on the Texas state rail network?
  1. *Congestion in urban terminal areas*
  2. *Constrained capacity on principal rail corridors*
  3. *Constrained capacity on shared-use passenger and freight rail corridors*
  4. *Other*

Passenger Rail Project Needs Identification Slide No. 4

- Which environmental efforts could yield significant economic benefit to Texas?
  1. *Transportation technology advances*
  2. *Fuel efficiency improvements*
  3. *Greenhouse gas emission reduction*
  4. *Community enhancements*
  5. *Other*

Passenger Rail Project Needs Identification Slide No. 5

- What are the most important aspects of a passenger rail service to you?
  1. *Travel speed/time*
  2. *Travel reliability*
  3. *Amenities and comfort (including technology)*
  4. *Frequency of service*
  5. *Other*

Passenger Rail Project Needs Identification Slide No. 6

- What should passenger rail accomplish in Texas?
  1. *Opportunities for intra-state trips that stop in more communities and travel at conventional speeds*
  2. *Opportunities for intra-state trips with fewer stops and higher speeds*
  3. *Opportunities for longer trips, interstate*
  4. *Opportunities for commuting to and from work*
  5. *Connections to other modes (airports, transit hubs)*
  6. *Other*

Passenger Rail Project Needs Identification Slide No. 7

- How should Texas prioritize future passenger rail service decisions?
  1. *More frequencies on existing routes*
  2. *Same frequencies but improved amenities/performance*
  3. *More stations on existing routes*
  4. *New routes, even if frequencies on existing routes must be reduced*
  5. *New routes, with frequencies on existing routes maintained*
  6. *Same frequencies but improved station services*
  7. *More transit connections*

Passenger Rail Project Needs Identification Slide No. 8

- What are the most important aspects of a passenger station to you?
  1. *Enclosed, climate-controlled waiting room*
  2. *Restroom/water fountain availability*
  3. *Staffed ticket office*
  4. *Checked baggage service/luggage storage*
  5. *Good transit connections (bus, airport, rail)*
  6. *Bicycle racks*
  7. *Food service option*
  8. *Wi-Fi*
  9. *Other*

6.2.1.4 Passenger Rail Stakeholder Meeting No. 1 Input Summary

The Project Needs Identification activity provided stakeholders with background information so that they could identify and describe existing and future passenger rail issues, needs, and opportunities. Stakeholder members had various recommendations including increasing service frequency, route extensions, multimodal infrastructure improvements, passenger amenities, and in general, suggestions on how to improve overall capacity, efficiency and access. Grouped by passenger rail service providers, followed by general topics, a brief summary of the input received from passenger rail stakeholders is presented below. A full account of the meeting record is contained in Appendix E-1.

Amtrak: Short-Term Needs and Projects

- Increased service frequency and proposed restructuring to provide daily service on the Sunset Limited from Los Angeles to New Orleans is being considered.
- San Antonio Amtrak Station: Station expansion is needed to better accommodate passengers. Amtrak is working with the City of San Antonio and San Antonio's transit agency, VIA Metropolitan Transit.

- Houston Amtrak Station: Upgrades to the Houston Station are necessary to accommodate existing and future passenger service including station infrastructure to improve operations as well as passenger amenities.
- A new station in Flatonia is being considered.
- A new station along the I-20 corridor is being considered.
- Amtrak is exploring options for joint-use stations in the Dallas - Fort Worth area in coordination with Texas Central Railway (TCR).

Amtrak: Long-Term Needs and Projects

- Extension of the Heartland Flyer: Continued state funding to maintain service between Texas and Oklahoma is needed.
- While Amtrak is the service provider, it is critical for the State to take the lead and let Amtrak know what the State wants to do for intercity passenger rail.
- There are many infrastructure needs, and the State will need to be a partner from a funding perspective. For grants, Amtrak would need a 50 percent or better match and the Class I railroads are another potential funding partner.

Trinity Metro Commuter Rail: Short-Term Needs and Projects

- TEXRail is Trinity Metro's new 27-mile commuter rail line with service from downtown Fort Worth to DFW Airport. Short-term need is its completion (anticipated opening January/February 2019).
- Currently, Trinity Metro has eight train sets and may increase headways to provide more frequent service.

Trinity Metro Commuter Rail: Long-Term Needs and Projects

- Trinity Railway Express (TRE) is the 34-mile commuter rail line jointly operated by Trinity Metro and Dallas Area Rapid Transit (DART). They are looking at opportunities on shared assets for the TRE corridor including double tracking some of the corridor segments between Dallas and Fort Worth. Some of this work is on-going which involves capacity expansion improvements consisting of double tracking, bridge upgrades and signal enhancements. They are also trying to get to the Cotton Belt connection.
- Phase 2 expansion of the TEXRail commuter rail line is proposed which consists of the southwest extension to Arlington.

Dallas Area Rapid Transit: Short-Term Needs and Projects

- Cotton Belt Project: 26-mile commuter rail with 9 stations between DFW Airport and Plano. The project is estimated at $1.1 billion and is anticipated that the system would be operational by December 2022. DART owns all of the right-of-way along the corridor. The environmental impact statement (EIS) is being finalized. There is an opportunity for cross-corridor service between Trinity Metro and DART.

- Light Rail Transit (LRT) - D2 Subway Second CBD Alignment: 2.4-mile route including 1 mile of tunnel under downtown Dallas. The cost is estimated at over $1 billion. The environmental document is underway and should be complete in 2 years. Anticipate that the system could be operational by December 2024.
- Light Rail Transit: Proposed platform extensions for both the Red Line LRT and Blue Line LRT to accommodate 3-car trains; 28 stations in total.

<u>Dallas Area Rapid Transit: Long-Term Needs and Projects</u>

- Cotton Belt Corridor East Extension: Collin County is one of the fastest-growing counties in the region and rail service there would be helpful.
- Downtown Dallas Streetcar is proposed to link with the historic McKinney Avenue Trolley.

<u>North Central Texas Council of Governments (NCTCOG): Long-Term Needs and Projects</u>

- The NCTCOG Long Range Transportation Plan (LRTP) includes several passenger rail projects identified for future passenger service that should be included in the Texas Rail Plan.

<u>Houston/Gulf Coast Area General Overview Only</u>

- There is a lot of discussion of rail options for the Houston/Gulf Coast area.
- There are plans in place with connections to potential high-speed rail service.

<u>El Paso – General Overview Only</u>

- The El Paso Streetcar system is proposed to open for service soon (November 2018).

<u>I-20 Corridor Council: Short-Term and Long-Term Needs and Projects</u>

- The priority for short-term needs is to implement passenger rail service on the Interstate 20 (I-20) corridor between Dallas/DFW Airport and Atlanta. Amtrak is currently studying fares and internal resources.
- The long-term need would be to double-track the corridor.

<u>Texas Central Railway (TCR): General Overview</u>

- A draft EIS for proposed Texas Bullet Train/high-speed rail project was published in December 2018; the final EIS and record of decision (ROD) is anticipated to be complete in 2019 with construction starting soon afterwards.
- About 30 percent of the right-of-way needed for the project has been purchased and TCR is continuing to make offers.
- After financial close, it is estimated that it will take approximately 5 years to build and test the system, prior to the anticipated opening.
- TCR is working with Amtrak on potential joint use stations. The Bryan/College Station will have direct rail service.

- TCR is working with DART in Dallas on pedestrian and vehicular access to stations.

Lone Star Rail District Commuter Rail General Overview

- Judge Anderson noted that in San Antonio, UP pulled out of Lone Star Rail effort and there is no planned resurrection of that system. (Note for clarification: In September 2018, the Capital Area Metro Planning Organization (CAMPO) Board voted to eliminate the Lone Star Commuter Rail project, between San Antonio and Georgetown, from its 2040 long-range transportation plan after the UP ended negotiations over the use commuter trains on its existing freight line).

Key Concepts and Stakeholder Input Associated with Passenger Rail Service and Needs

- Passenger rail is a catalyst for economic development.
- Amtrak has found that when a municipality invests in a rail station, it is not just a transit station, it is an economic development opportunity. Local investment in a rail station is a definite benefit.
- Passenger rail is important to rural areas to provide transportation options to connect to major urban centers and to improve mobility to residents.
- Financing and potential tax incentives for rail interests should be evaluated.
- Funding through TxDOT should be available for passenger rail initiatives; although this would require legislative action. Other forms of transportation (highways and other) are funded through the State.
- Rail infrastructure and facilities need to be in place to support future growth and economic development.

6.2.2 Freight Rail Stakeholder Meeting No. 1

TxDOT engaged freight rail service providers, freight planning agencies, and advocates with an opportunity to participate in the development of the freight rail component of the Texas Rail Plan. The first of these opportunities was the initial Freight Rail Stakeholder Meeting held in Austin on October 8, 2018 from 9:00 to 11:00 a.m. All outreach material, meeting minutes and PowerPoint presentation for the initial Freight Rail Stakeholder meeting are included in Appendix E-2.

6.2.2.1 Freight Rail Meeting No. 1 Notification

Freight Rail Stakeholders received an initial invitation/Save the Date notice via email on August 1, 2018 to attend the freight rail stakeholder meeting which was originally scheduled to take place on August 21, 2018. The freight and passenger rail stakeholder meetings were originally envisioned to take place on the same day, but at different times. Due to schedule conflicts, TxDOT then sent out Change the Date notices informing freight rail stakeholders of the new meeting date on October 8, 2018. As a final reminder of the meeting, on October 2, 2018 representatives from the TxDOT project public outreach team called freight rail stakeholder committee members who had not yet accepted the meeting invitation to confirm attendance. The purpose of the meeting was provided to stakeholders in advance of the meeting as part of the meeting invitation.

6.2.2.2 Freight Rail Stakeholder Committee Members

The Freight Rail Stakeholder Committee meeting included representatives from Class I and Class III railroads, MPOs, port authorities, industries related to freight rail transportation, local government, and special interest groups. Table 6-3 summarizes the Freight Rail Stakeholder Committee members that were invited to the meeting; committee member attendance at the October 8, 2018 meeting is also noted.

Table 6-3: Summary of Freight Rail Stakeholder Committee Members and Meeting No. 1 Attendance

Freight Rail Stakeholder Committee Member	Role / Freight Rail Service	Meeting Attendance
Burlington Northern Santa Fe Railroad (BNSF)	Class I Railroad	√
Union Pacific Railroad (UP)	Class I Railroad	√
Kansas City Southern (KCS)	Class I Railroad	-
Genesee & Wyoming Railroad	Class III / Shortline Railroad	√
TNW Corporation	Class III / Shortline Railroad	√
Watco Companies	Class III / Shortline Railroad	√
Gulf Coast Rail District (Harris County, City of Houston, Fort Bend County)	Potential Commuter Rail System in Houston; Advocate for Freight and Passenger Rail	√
Alamo Area MPO (AAMPO)	San Antonio MPO	√
Brownsville MPO (BMPO)	Brownsville MPO	√
Capital Area MPO (CAMPO)	Austin Area MPO	√
El Paso MPO	El Paso MPO	√
Houston-Galveston Area Council (H-GAC)	Houston Area MPO	√
Laredo MPO	Laredo MPO	√
North Central Texas Council of Governments (NCTCOG)	Dallas/Fort Worth Area MPO	√
Port of Houston	Multimodal	√
Harris County Judge's Office	Rail Advocate	√
Texas Shortline Railroad Association	Rail Advocate	-
Texas Rail Advocates	Rail Advocate	√
Texas Association of Railroad Passengers	Rail Advocate	-

6.2.2.3 Freight Rail Stakeholder Meeting No. 1 Agenda and Collaboration Activities

TxDOT sought input on strategies to maintain and improve effective and efficient freight rail service, and to obtain information on future freight rail initiatives in Texas. Meeting agenda items, topics of discussion, and outcomes of the meeting are summarized below. Collaborative activities were conducted that focused on:

- Texas Rail Plan Overview, Purpose and Approach
- Review of the Statewide Proposed and Existing Freight Rail Project map.
- Review of TRP Goals and Objectives.
- Project Needs and Priorities.

The meeting concluded with on overview of Stakeholder Roles and Responsibilities and Next Steps.

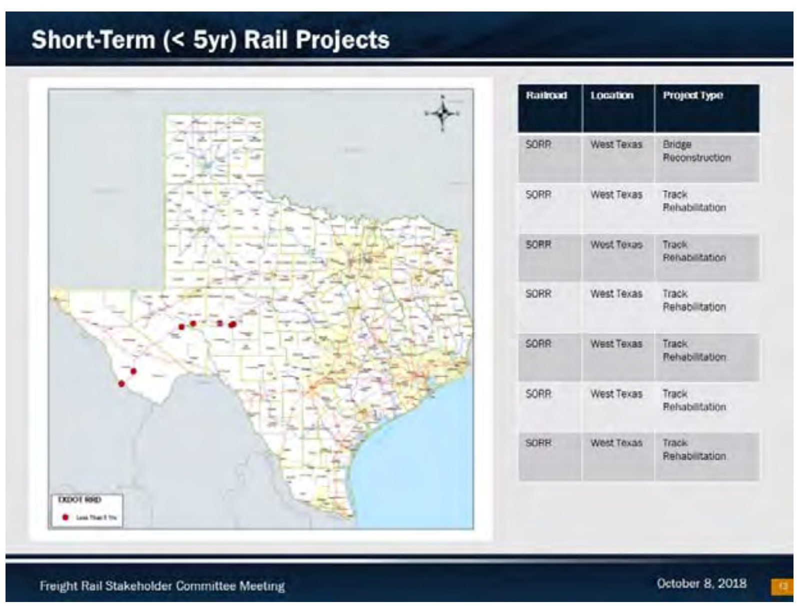
Activity 1: Statewide Freight Rail Map Review

As part of this activity, a series of statewide freight rail maps were displayed as part of the stakeholder meeting PowerPoint presentation (Appendix E-2). The statewide rail map displayed the freight rail network and projects as identified in the previous Texas Rail Plan, in addition to known freight rail projects that were identified as part of the 2017 Texas Freight Mobility Plan (Figure 6-2). The list of projects is considered a draft list for the 2019 Texas Rail Plan and input from stakeholders is essential to revisit these projects to see if they are still relevant, if they should be kept, or if additional projects should be included. The goal is to produce a strategic list of projects for inclusion in the TRP with anticipated construction costs. TxDOT emphasized the importance of updating the TRP because the federal requirement provides a vehicle for TxDOT to help allocate funding for freight projects.

Short-Term Rail Projects: Slide No. 13

The short-term rail projects presented, which would be implemented in less than 5 years, are all associated with the South Orient Rail Line (SORR). TxDOT noted that most of these projects are funded and in progress.

Figure 6-2: Short-Term Rail Projects

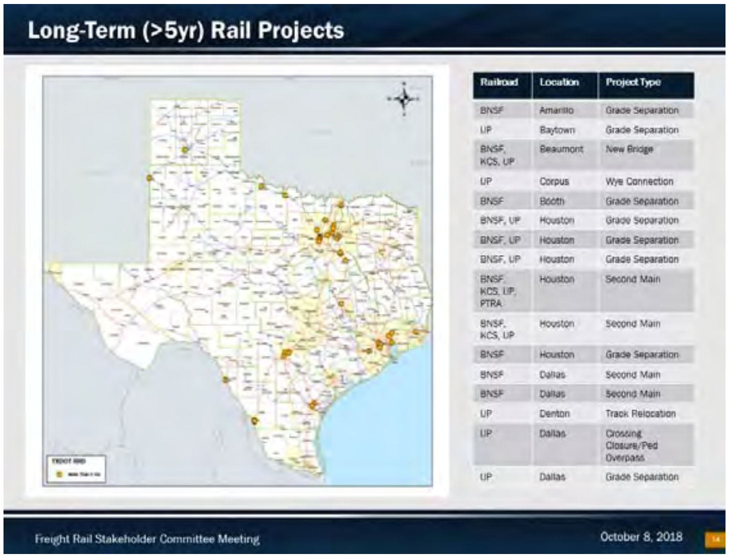


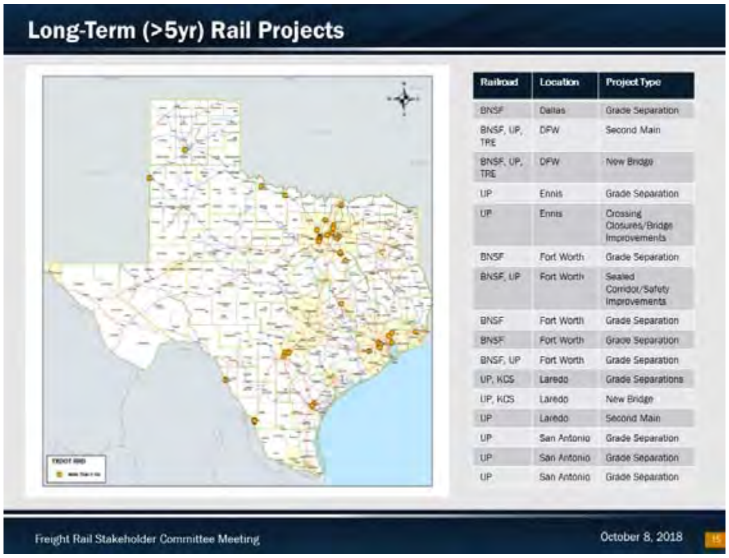
Long-Term Rail Projects: Slide Nos. 14-16

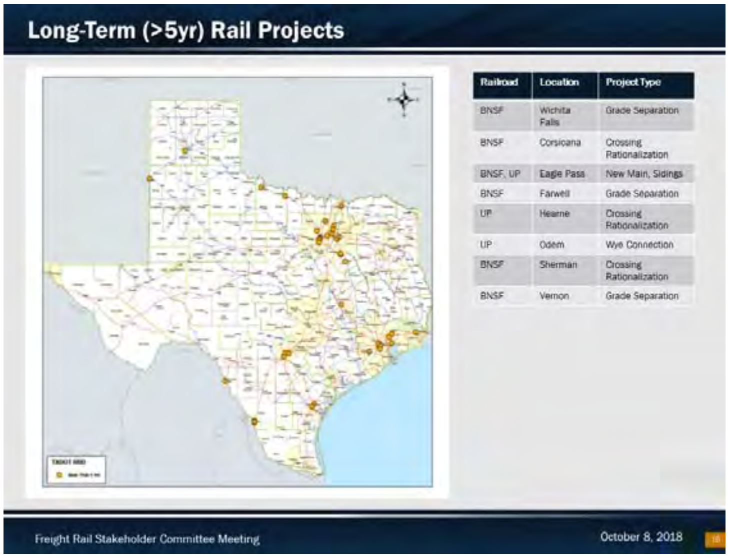
The projects listed in **Figure 6-3** are those that are currently shown in the Texas Freight Mobility Plan. About 50 percent of the projects are associated with Class I railroads. A general description of the long-term rail projects, which would be implemented in greater than 5 years, follows:

- Grade separations (in/around, and east of Houston), wye connections
- New bridge in Beaumont
- Second mainline construction in/around Houston
- Dallas-Fort Worth metroplex (BNSF)
- Grade separations in/around the Dallas area
- Double track on TRE line
- Sealed corridors – primarily dealing with grade separations and crossing improvements north/south of Dallas
- Laredo area
  - New bridge
  - Double track
  - Series of improvements with crossings in Laredo area
- San Antonio
  - Three projects listed from Freight Mobility Plan, all are grade separations on UP
- Others
  - Eagle Pass – numerous projects
  - Crossing improvements in Hearne and Sherman

Figure 6-3: Long-Term Rail Projects



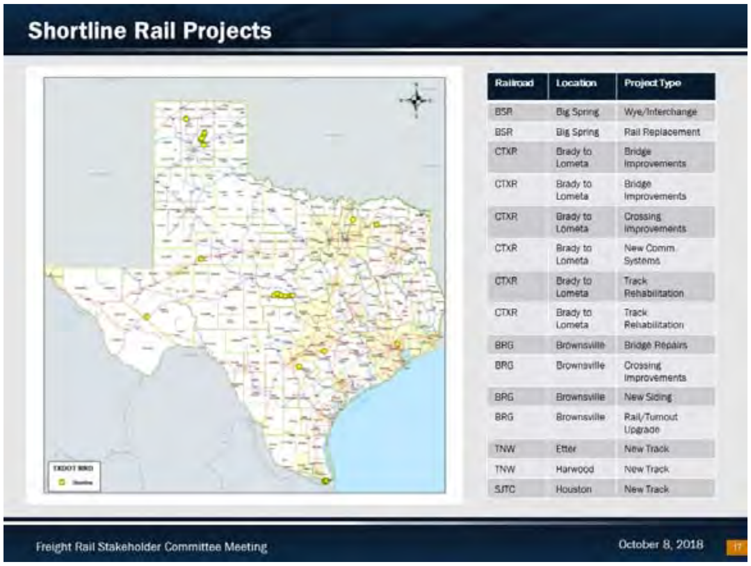


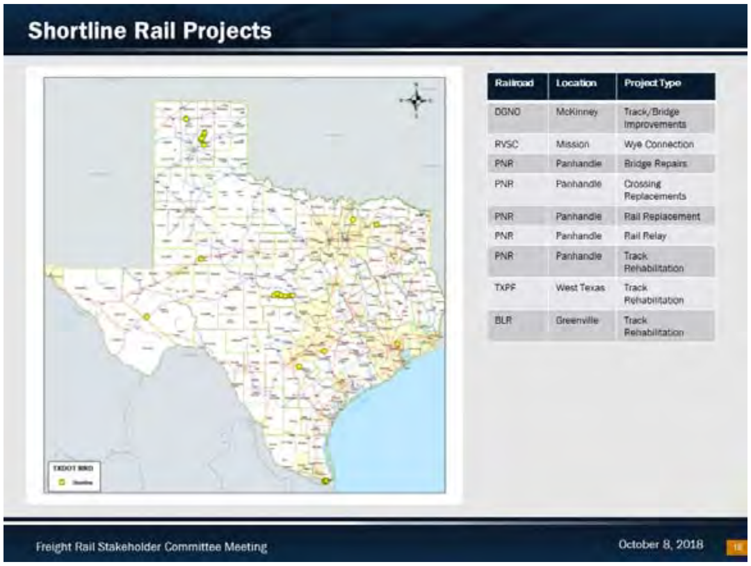


The long-term projects currently on the long-term list have been vetted and reviewed by the Freight Advisory Committee. In addition, various agencies are sponsoring or supporting the project for future implementation because the projects have quantifiable public and private benefits. It is TxDOT's goal to make sure the list is inclusive and updated if there have been any changes. It is very important that there is consistency among the Texas Rail Plan, Freight Mobility Plan, regional plan rail studies, and MPOs' studies. The job of the TRP project team is to make sure everything is synced and matches and all input is included from stakeholders including a strategic list with better estimates on anticipated implementation costs. Regional freight rail studies and projects currently underway with TxDOT, in cooperation with the Class I railroads and MPOs will likely identify additional rail projects with both public and private benefits. These projects could then be included in an updated list of projects as part of the Texas Rail Plan.

Short line Rail Projects: Slide Nos. 17-18

Figure 6-4: Short Line Rail Projects





The Class III/short line rail projects listed in Figure 6-4 are long-term projects included in the Texas Freight Mobility Plan. Changes in the status of these projects in the last 12 to 18 months since the Freight Mobility Plan was completed should be included in the TRP. Short lines need to identify the best projects with the greatest impact. Key items that the short lines need to consider are:

1. What are the needs/ priorities/challenges?
2. What projects can TxDOT support you with?
3. Project review process factors:
   - Is there public benefit? A public partner? Prior review status?
   - Does the project involve an MPO/ municipality?

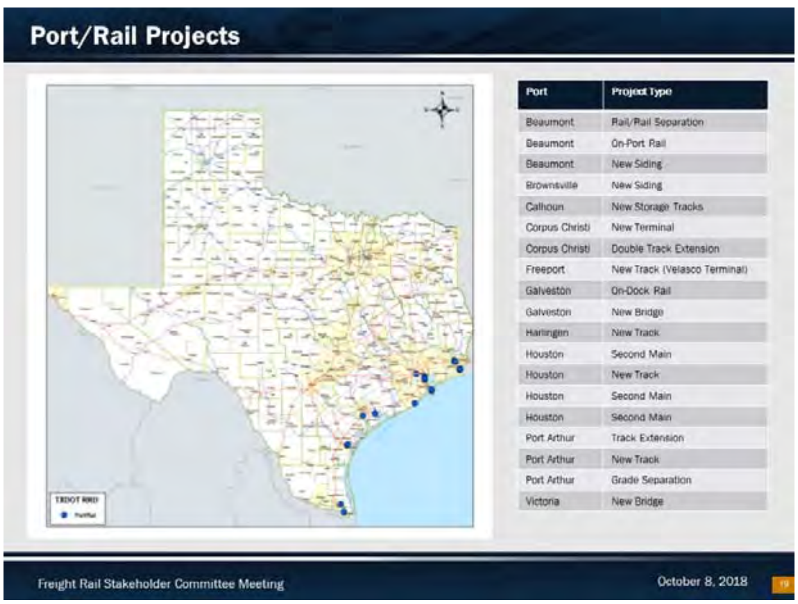
During the meeting, short line railroad representatives indicated that they had little time to thoroughly evaluate their projects that were included within the Freight Mobility Plan, however moving forward, the short lines need to establish a solid vetting process for project inclusion within the Texas Rail Plan. The short line project list is imperative within the TRP should funding become available directed to short line railroads for infrastructure improvements. TxDOT does not make decisions on what is funded; however, they can at least open the door and identify the needs. All projects should have public benefit and be implementable. In addition to being able to handle carloads with a maximum allowable gross weight of 286,000 lbs, individual short line projects should reflect what is needed.

TxDOT will follow-up with the short line railroads and send a data request to make sure the TRP has the information and project information included that the short lines will need when applying for grants; see Section 6.3.

Port/Rail Projects: Slide No. 19

Several ports along the Texas Gulf Coast have identified freight rail infrastructure needs to increase capacity and improve multimodal operations including new sidings, rail extensions, parallel main line tracks, and grade-separations as presented in **Figure 6-5**. The port/rail project list should include additional projects that may be identified from other port-related studies. It was noted that Houston has several freight rail/port projects and the Port of Houston is working on its own regional freight rail study and that the results of that study would need to be captured in the TRP.

Figure 6-5: Port/Rail Projects



Projects included in the Texas Rail Plan should include both public and private ports.

Activity 2: Project Needs Identification Activity

Similar to the passenger rail stakeholder meeting, Project Needs Identification slides were presented so that freight rail stakeholders could provide input on major factors that should be considered as part of the state rail network. To facilitate the discussion regarding strategies for improvements and location-specific investment projects, TxDOT presented a series of PowerPoint presentation slides specific to the Project Needs Identification topic. The slides were generally posed as questions to stakeholders with the intent of capturing input on major factors that should be considered as part of the state freight rail network. Each of the freight rail Project Needs Identification slides are presented below.

Freight Rail Project Needs Identification Slide No. 1 (slide 1 in the series of 5)

- *What investments could be made in Texas to improve freight rail access, promote economic development, and enhance the state's competitiveness in national markets and the global marketplace?*
  1. *New or enhanced intermodal facilities*
  2. *New or enhanced industrial track access*
  3. *New or enhanced multimodal connections*
  4. *New or enhanced federal, state, local, and public-private partnership funding options*
  5. *Other options*

Freight Rail Project Needs Identification Slide No. 2

- What investments could be made to enhance the efficiency, velocity, capacity and safety on the Texas state rail network?
  1. *Grade crossing improvements (upgrades to grade crossing signals and surfaces, grade separation, etc.)*
  2. *New or enhanced rail yards and terminals*
  3. *Infrastructure investment (extend or construct new sidings and multiple main tracks, track and bridge upgrades to accommodate 286K cars, wayside signal system upgrades)*
  4. *Investments targeting state of good repair*
  5. *Advanced technology and innovation*
  6. *Other options*

Freight Rail Project Needs Identification Slide No. 3

- What are opportunities for improvement on the Texas state rail network?
  1. *Urban terminal areas*
  2. *Capacity on principal rail corridors*
  3. *Capacity on existing shared-use passenger and freight rail corridors*
  4. *Other*

Freight Rail Project Needs Identification Slide No. 4

- Which environmental efforts could yield significant economic benefit to Texas?
  1. *Transportation technology advances*
  2. *Fuel efficiency improvements*
  3. *Greenhouse gas emission reduction*
  4. *Community enhancements*
  5. *Other*

Freight Rail Project Needs Identification Slide No. 5

- How should Texas prioritize future freight rail service decisions?
  1. *Increased speed/reliability to existing distributors*
  2. *Increased access to new distributors*
  3. *Improve network*
  4. *Expanded incentive programs*
  5. *Construction of new routes to accommodate economic growth*

6.2.1.4 Freight Rail Stakeholder Meeting No. 1 Input Summary

The Project Needs Identification activity provided stakeholders with background information so that they could identify and describe existing and future freight rail issues, needs, and opportunities. Stakeholder members had various comments including compatibility among various freight studies and plans, concern for a lack of funding for short line railroad improvements, and queries on how other states fund freight rail projects. A brief summary of the general input received from freight rail stakeholders is presented below. The meeting record is contained in Appendix E-2.

- H-GAC stated an interest in road/railroad interface projects; would like freight modeling to compare alternatives
- AAMPO requested that staff and stakeholders be provided opportunities to be involved during the planning and project prioritization process for the Texas Rail Plan.
- AAMPO would appreciate advance findings of the Central Texas Grade Crossing study and other projects to study public benefits of rail and rail-highway grade crossing projects.
- The Port of Houston noted that the State lacks a program to invest in the rail network and called for improved decision making for transportation investments. Invest in projects that provide economic impact and that promote modal conversion.
- UP stated that there is a clear focus from TxDOT on congestion/clear lanes, but a lack of investment in freight rail projects to help minimize congestion. Better benefit measurements of improvements to freight rail would clear a path to fund some of these projects.
- BNSF is interested in the Metroplex Freight Mobility Study, the Houston Freight Rail Study, the Border Trade Advisory Committee, and the process of optimizing efficiencies at the border.
- Texas Rail Advocates supports a new advocacy effort to secure more non-highway transportation funding for rail; the State needs dedicated funding for non-highway projects.
- TNW discussed the economic importance of how short lines provide rural connectivity; 286,000 lbs issues; the importance of the rail network; and that short line railroads need to work with Class I rail partners to improve funding options.
- GWR mentioned that Texas is in the minority for funding short line railroad improvements, and TxDOT needs to initiate or help implement a model for this, whether it is grants or tax incentives.
- Watco expressed the need for a policy statement for Texas to invest in freight rail infrastructure and implementation. Would like to see an overview of what other states are doing with specific amounts. It was emphasized that while the past state plans have narrowed lists of projects, the short line railroads want all of their projects listed so funding agencies and the legislature can see all the infrastructure needs.
- NCTCOG noted the need to preserve land near freight infrastructure and along future growth corridors to ensure that railways have adequate right-of-way.
- NCTCOG stated that freight funding is critical (and lacking) to short lines operating in the state.
- NCTCOG stated that capacity constraints exist in strategic locations in North Central Texas.
- Gulf Coast Rail District suggested that TxDOT adopt a multimodal development process.

- CAMPO stated a need to identify priorities and advance projects, such as those identified in the Central Texas Freight Rail Crossing Study.
- Harris County stated that moving freight is multimodal and there is a need to make roadways work together and interact with freight activities. There is also a need to evaluate ways to remove freight off the road and put it on rail to be more efficient.

6.3 INITIAL OUTREACH AND COORDINATION WITH FREIGHT RAILROADS

At the onset of the project and extending beyond the first freight rail stakeholder meeting, TxDOT sought input from Class I and Class III railroads through the distribution of a formal rail network data request letter. To complete relevant chapters of the TRP, an inventory and description of the assets of all classes of railroads and for each railroad owner was necessary. The content of the data request letter, with accompanying form, allowed railroads to provide background information and details about the physical and operating characteristics of each railroad and rail line segment/ subdivision in the state. This data was used to understand potential freight capacity and service velocity needs, and to assess what types of business and levels of service are being accommodated over each line segment. The inventory was also used to identify future rail infrastructure improvements by each railroad. The data request queried railroads on funded capital projects and future planned investments. The future investment projects are intended to minimize bottlenecks and operating and safety conflicts, expand capacity, promote rail access, enhance connectivity between railroads and other transportation modes, and encourage growth in the railroad sector. The initial coordination with freight railroads occurred between August and November 2018. Table 6-4 summarizes the content of the freight network data request form; see also Appendix E-3. The information provided by the three Class I and 46 Class III railroads operating in Texas is summarized in Appendix A.

Table 6-4: Freight Rail Network Data Inventory Form

Data Input Parameter	Description of Requested Rail Data
RAILROAD DESCRIPTION	Alpha Code/Reporting Mark; Operator; Parent Company/Owner; Contact Information (phone, email); Company Website
SERVICE AREA	Counties in Texas; Principal Stations in Texas
RAIL TRAFFIC	Principal Commodities; Annual Carloadings in Texas (for 2016 and/or 2017, if available)
RAILROAD ROUTE MILES IN TEXAS	For each Subdivision or Line Segment - Identify Limits; Length (Miles); Operated (Miles); Out of Service (Miles); Owned (Miles); Leased (Miles); Trackage Rights (Miles); Average Number of Trains per Day
TRACK CHARACTERISTICS	For each Line Segment - Identify FRA Track Class; Operating Speed; Wayside Signal System; Line Density (2016 and/or 2017, if available); Rail Car Weight Limits; Vertical Clearance and Restrictions: FRA Excepted Track
INTERCHANGE POINTS	Existing Location and Railroad
FACILITIES	Type and Location including Classification Yards, Transload Facility, Intermodal Facility, and Mechanical Facility

Data Input Parameter	Description of Requested Rail Data
BRIDGES	Number of Bridges on the Railroad in Texas; Number of Bridges in Need of Repair; Number of Bridges in Need of Upgrade to Handle 286K Rail Car Loads; Other Bridge Comments, if applicable
PRESENT CAPACITY CONSTRAINTS AND OPERATIONAL BOTTLENECKS	Location and Description
FUNDED CAPITAL PROJECTS	For Infrastructure and Other Improvements - Identification and Brief Description of Project (including location); Estimated Cost, if known
FUTURE PLANNED IMPROVEMENTS	For Infrastructure and Other improvements - Identification and Brief Description of Project (including location); Estimated Cost , if known
OTHER IMPROVEMENT AND INFRASTRUCTURE NEEDS	Describe not yet funded or planned improvements, including rehabilitation or construction of spur tracks for increased or renewed use by rail shippers, multi-modal transportation enhancements, etc.
OTHER COMMENTS AND INFORMATION	Information to be provided at railroad's discretion

6.4 2019 TEXAS RAIL PLAN PUBLIC MEETING

Public and agency coordination continued as part of the development of the Texas Rail Plan with a simultaneous in-person public meeting and a webinar-based online meeting on December 11, 2018. For those unable to attend either TRP engagement event on December 11, 2018, TxDOT provided additional opportunity for public input by hosting an online public meeting that was initially scheduled between December 11, 2018 and January 8, 2019. The comment period was extended to March 1, 2019 to provide additional time for the public to learn more about the TRP and to submit comments. The in-person public meeting was held at TxDOT's office in downtown Austin, which is a well-known, centralized location. The meeting venue is wheelchair accessible in accordance with the Americans with Disabilities Act of 1990 and its location is easily accessible via public transit. Appendix E-4 contains all collateral material associated with the TRP public meeting.

6.4.1 Public Meeting Overview

Public Meeting Purpose. The purpose of the public meeting was to introduce the 2019 Texas Rail Plan, to learn about the statewide rail system and participate in the passenger and freight rail planning process, and to learn about how the plan supports the passenger and freight rail system throughout the state. The meeting allowed the public to identify key issues, needs and potential investments for rail to ensure improved passenger and freight service in the future. Table 6-5 summarizes the public meeting schedule.

Public Meeting Schedule. As noted above, TxDOT hosted simultaneous in-person and online meetings on December 11, 2018. Directly following the meeting, the recorded online webinar was made available between December 11, 2018 and March 1, 2019 as shown in Table 6-5.

Table 6-5: Public Meeting Schedule – Meeting Format and Dates

Public Outreach Event - Format and Location	Public Meeting Date
In-Person Public Meeting TxDOT Headquarters 200 E. Riverside Drive, Room 1A-1 Austin, TX 78704	Tuesday, December 11, 2018; 4-6 p. m.
Webinar Online Meeting Host Room ID: 737 631 929 Password: MxB5WXC6 Call-in toll free number: 1-855-437-3563	Tuesday, December 11, 2018; Presentation: 4 p.m. Q&A Session: 4:30 p.m.
Online Public Meeting Hosted on TxDOT website	December 11, 2018 – March 1, 2019

TxDOT Website and Other Forms of Public Involvement. TxDOT urged the public to "Stay Informed and Get Involved." TxDOT set up a project webpage (Texas Rail Plan) on the TxDOT website (www.txdot.gov) to serve as an online information resource for the project. The webpage featured relevant project content and was updated as new project information became available, and at key milestones in the TRP development process. The TxDOT Rail Division also provided alternative methods for stakeholder input for the receipt of public comments and to answer questions, including an email address (RRD_RailPlan@txdot.gov), physical address and multiple phone numbers (TxDOT Rail Division and TxDOT Media Relations).

6.4.2 Public Meeting Outreach and Notification

A mix of communications tools and strategies were used to garner and maintain public and stakeholder involvement in alignment with TxDOT protocols. This included notification of the in-person and online public meetings. A brief discussion of the individual tools and strategies follows.

TxDOT Website Content and New Releases. Two weeks prior to the December 11, 2018 public meeting, a notice of the public meeting was posted on the TxDOT website. The notice provided information on: the date, location and purpose of the public meeting; an overall description of the Texas Rail Plan; how to join the WebEx portion of the meeting; and ways for the public to submit comments. The notice included a telephone number to receive requests for special accommodations; however, there were no requests made. The TxDOT website is https://www.txdot.gov/inside-txdot/projects/studies/statewide/texas-rail-plan-2019.htm

TxDOT Social Media Notices. Public meeting notifications were also posted on TxDOT social media sites Facebook and Twitter. The messages were simultaneously posted on each social media site on the same day and time leading up to, and continuing after, the in-person public meeting. To further solicit public participation following the in-person public meeting, continuous social media messages were posted to encourage interested citizens to join the online meeting.

Stakeholder Committee Notification. The public meeting notice was sent to the passenger and freight rail stakeholder committee members via email. The project email list for both stakeholder committees was updated after the initial September and October 2018 stakeholder meetings to include additional personnel from member organizations.

Media Outlet Notification. TxDOT issued press releases and media advisories regarding the online public meeting to news outlets including major network television stations and local radio stations. These outlets provided links on their stations for the public to learn more about the Texas Rail Plan and to join the online meeting. Online versions of the public meeting notice were published in an industry magazine (Progressive Railroading) and newspaper (The Woodlands). These media outlets provided links within their online articles for the public to learn more about the Texas Rail Plan and to join the online meeting.

Table 6-6 summarizes the public meeting notices including notification type, posting/publication date and a general description of each meeting notification. Copies of the notices are included in Appendix E-4.

Table 6-6: Public Meeting Notices and Media Announcements

Meeting Notification Date	Meeting Notice General Content
TxDOT Website Content and New Releases	
November 27, 2018 Public Meeting Notice posted on TxDOT website under the *Hearings, Meetings and Notices page*	**Public Meeting - 2019 Texas Rail Plan.** Notice Included Information On: Where, When, Purpose, Description, How to Join/Attend Online, Special Accommodation Requirements, and Public Comment/Survey Forms (public comments due by January 8, 2019 to be a part of the record).
December 11, 2018 Public Meeting Notice posted on TxDOT website under the *Hearings, Meetings and Notices page*	**Public Meeting - 2019 Texas Rail Plan.** Notice Included Information On: Where, When, Purpose, Description, How to Join/Attend Online, Special Accommodation Requirements, and Public Comment/Survey Forms (public comments due by March 1, 2019 to be a part of the record).
December 6, 2018 New Release Issued by TxDOT Media Relations	**TxDOT To Host Public Meeting on 2019 Texas Rail Plan.** News Release Included Information On: Where, When, Purpose, Description, How to Join/Attend Online, and Comment Methods.
December 20, 2018 New Release Issued by TxDOT Media Relations	**TxDOT Seeking Public Input on Future of Rail in Texas.** News Release Included Information On: Purpose, Description, How to Join/Attend Online Meeting and Comment Methods.
TxDOT Social Media: Facebook Posts and Twitter Posts (simultaneous posts on both)	
November 30, 2018 **12 p.m.**	**We Want To Hear From You!** Online and In-Person Meeting to Comment on Existing and Future Passenger and Freight Rail Service in Texas; with a link to the Texas Rail Plan project website.
December 6, 2018 **11 a.m.**	**Learn More About The Texas Rail Plan!** Who, What, When; with a link to the Texas Rail Plan website.
December 11, 2018 **4 p.m.**	**Happening Now!** Join Us at Our Public Meeting…What, When; with a link to the Texas Rail Plan project website.

Meeting Notification Date	Meeting Notice General Content
December 14, 2018 11 a.m.	**Missed the 2019 Texas Rail Plan Meeting? Don't Fret.** Check out the Online Meeting…What, When, How; with a link to the online meeting.
January 3, 2019 12 p.m.	**Don't Wait Until It's Too Late.** Visit the Online Meeting and Submit Comments; with a link to the online meeting.
Other Media Notifications	
KVUE, ABC News - Austin December 21, 2018; 8:40 a.m.	**TxDOT Wants Your Input on Texas' Rail Plan.** TV News Coverage of the Online Public Meeting; with a link to the online version of the news video and TxDOT links.
KSST Radio - Austin December 21, 2018	**TxDOT Seeks Public Input on Texas Rail Plan.** Radio News Coverage of the Online Public Meeting; with a link to the online print version of the radio spot and TxDOT links.
Progressive Railroading December 27, 2018	**Texas DOT Solicits Public Feedback on Updated Rail Plan.** Digital News Coverage of the Online Public Meeting; with a link to the News Article and TxDOT links.
Woodlands Online December 20, 2018	**Texas DOT Seeking Public Input on Future of Rail in Texas.** Digital News Coverage of the Online Public Meeting; with a link to the News Article and TxDOT links.

6.4.3 Public Meeting Collateral Material – Project Display Boards

At the in-person public meeting, TxDOT presented a series of display boards for attendees to view. Table 6-7 summarizes the public meeting display boards including their general content. After attendees signed in for the meeting, they were invited by the project team to review the display boards. Copies of the display boards are included in Appendix E-4.

Table 6-7: Public Meeting Display Boards

PowerPoint Slide	General Description of Presentation Slide
Sign-in Table	Team representatives at the sign-in table welcomed attendees and asked that they sign in. Attendees were provided a comment form and survey form. Attendees were then provided information about the meeting format and were invited to review the project display boards.
Welcome!	Why Am I Here? • To learn about the 2019 Texas Rail Plan • Provide input and establish goals
Who is TxDOT Rail Division?	An overview of TxDOT Rail Division functions, oversight responsibilities and FRA liaison.
What is the Texas Rail Plan?	An overview of what the rail plan does, how it is integrated with other TxDOT plans and a history of prior rail plan documents.
Why Update the Texas Rail Plan?	Overview of federal requirements for state rail plans and the need for inclusion of projects for funding consideration.
Texas Rail Plan Goals and Objectives	Safety, Asset Management, Mobility & Reliability, Multimodal Connectivity and Economic Competitiveness.

PowerPoint Slide	General Description of Presentation Slide
Texas Rail Plan Stakeholders	List of stakeholders that contribute to the Texas Rail Plan.
Definitions	List of definitions integral to the Texas Rail Plan.
FRA Guidance Format	Overview of the chapters included in the Texas Rail Plan.
Statewide Proposed and Existing Passenger Rail Projects	Texas and metropolitan area maps depicting and listing passenger rail service.
Statewide Proposed Freight Rail Projects	Texas map depicting short-term and long-term freight rail projects.
Texas Rail Plan Schedule	Schedule depicting the duration of the 2019 Texas Rail Plan from inception (Summer 2018) to the final report (Summer 2019), including stakeholder outreach opportunities.
How Can I Stay Informed and Get Involved?	TxDOT commitment to engage all stakeholders including multiple ways to contact TxDOT to submit questions and comments.

Approximately 16 individuals attended the in-person public meeting, which included residents, stakeholders, and members of the Project Team. See Appendix E-4 for copies of the sign-in sheets.

6.4.4 Public Meeting Collateral Material - Project Presentation

The content of the Texas Rail Plan project presentation for the simultaneous in-person and online web-based public meeting (December 11, 2018) and the online meeting (December 11, 2018 to March 1, 2019) was similar in nature to the initial stakeholder meeting PowerPoint presentation. In addition, the display boards presented at the public meeting were developed from the PowerPoint presentation, thus establishing consistency among collateral material for public review. A general overview of the presentation is described in Table 6-8; also see Appendix E-4.

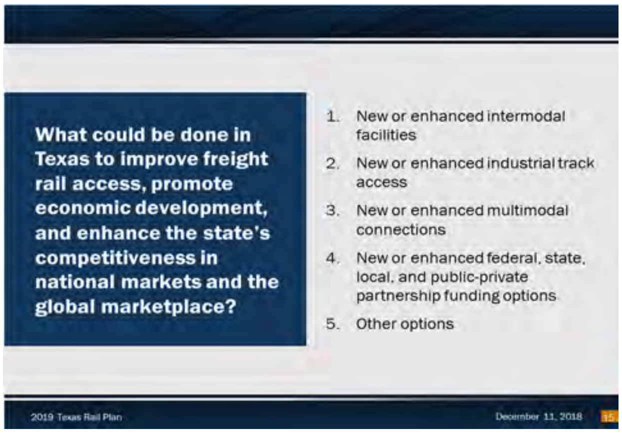
Table 6-8: Public Meeting Presentation Content

Presentation Slide	General Description of Presentation Slide
Welcome!	Why Am I Here? • To learn about the 2019 Texas Rail Plan • Provide input and establish goals
Who is TxDOT Rail Division?	An overview of TxDOT Rail Division functions, oversight responsibilities and FRA liaison.
What is the Texas Rail Plan?	An overview of what the rail plan does, how it is integrated with other TxDOT plans, and a history of prior rail plan documents.
Why Update the Texas Rail Plan?	Overview of federal requirements for state rail plans and the need for inclusion of projects for funding consideration.
Texas Rail Plan Goals and Objectives	Safety, Asset Management, Mobility & Reliability, Multimodal Connectivity and Economic Competitiveness.
Texas Rail Plan Stakeholders	List of stakeholders that contribute to the Texas Rail Plan.
Definitions	List of definitions integral to the Texas Rail Plan.

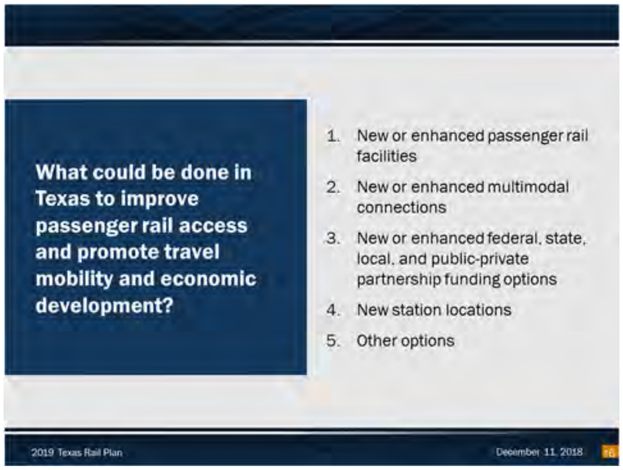
Presentation Slide	General Description of Presentation Slide
FRA Guidance Format	Overview of the Chapters included in the Texas Rail Plan.
Statewide Proposed and Existing Passenger Rail Projects	Texas and metropolitan area maps depicting and listing passenger rail service.
Statewide Proposed Freight Rail Projects	Texas map depicting short-term and long-term freight rail projects.
Project Needs Identification (see additional detail below)	A series of slides posed as questions with the intent of obtaining input on major factors that should be considered as part of the state freight rail network.
Texas Rail Plan Schedule	Schedule depicting the duration of the 2019 Texas Rail Plan from inception (Summer 2018) to the final report (Summer 2019), including stakeholder outreach opportunities.
How Can I Stay Informed and Get Involved?	TxDOT commitment to engage all stakeholders including multiple ways to contact TxDOT to submit questions and comments.

Project Needs Identification Slides Similar to the material presented at the stakeholder committee meetings in October and September 2018, Project Needs Identification slides were presented. Posed as questions, the slides were intended to facilitate input on the needs of passenger and freight rail including strategies for improvements and investments. The Project Needs Identification slides are shown below.

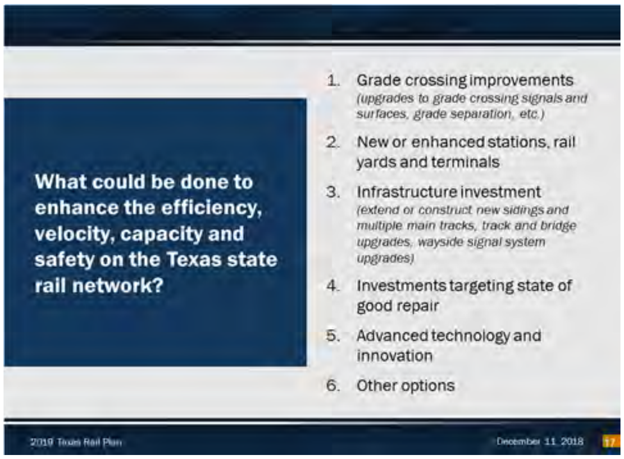
- **What could be done in Texas to improve freight rail access, promote economic development, and enhance the state's competitiveness in national markets and the global marketplace?**



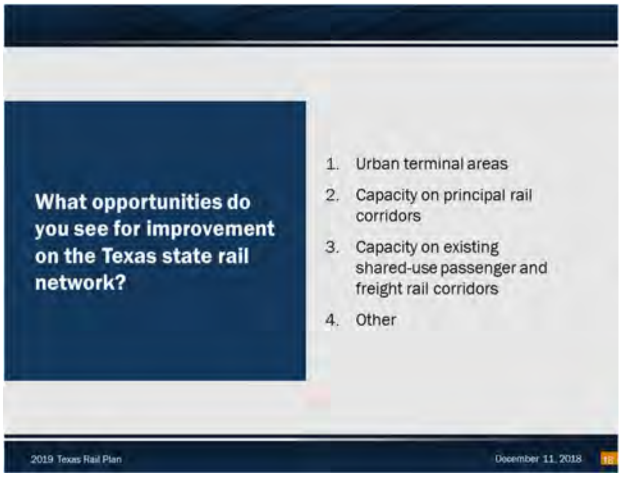
- ➢ **What could be done in Texas to improve passenger rail access and promote travel mobility and economic development?**



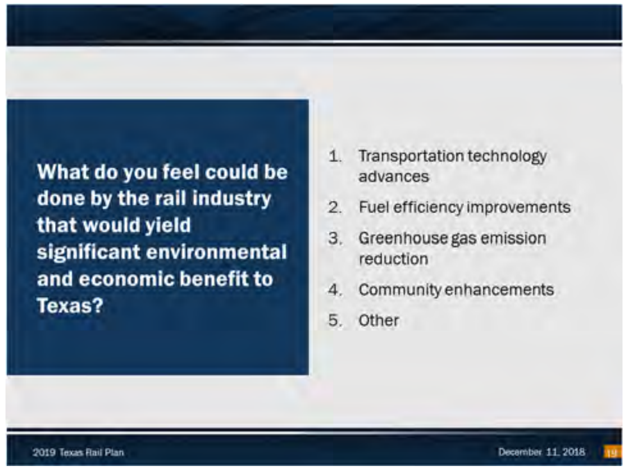
- ➢ **What could be done to enhance the efficiency, velocity, capacity, and safety on the Texas state rail network?**



- ➢ **What opportunities do you see for improvement on the Texas state rail network?**

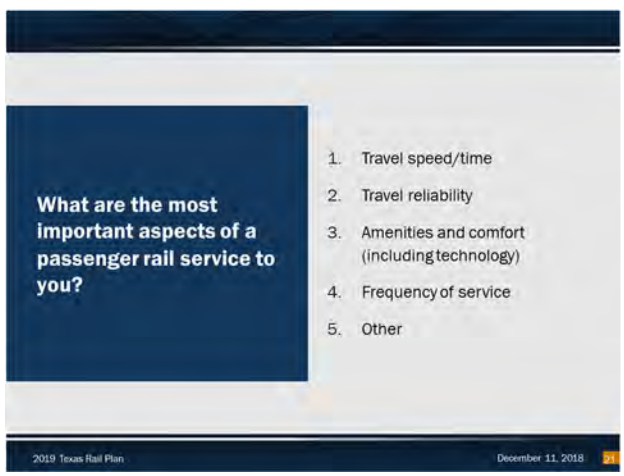


- What do you feel could be done by the rail industry that would yield significant environmental and economic benefit to Texas?



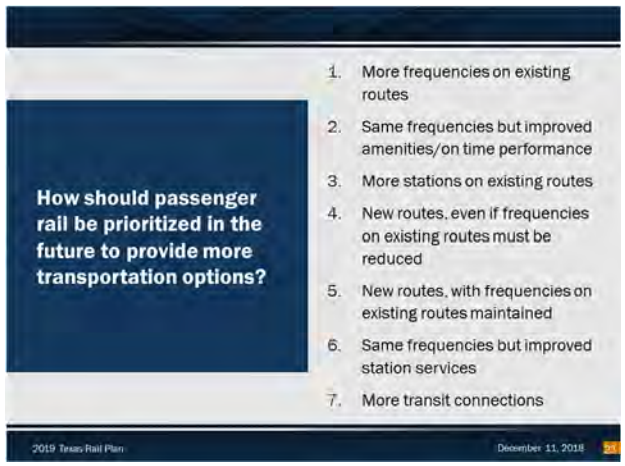
- How should future freight rail service decisions in Texas be prioritized?

- What are the most important aspects of passenger rail service to you?



- What should be the goal of passenger rail service in Texas?

- How should passenger rail service be prioritized in the future to provide more transportation options?



- What are the most important aspects of a passenger station to you?

6.4.5 Public Online Survey and Results

TxDOT prepared an online survey to query the public about important issues relating to existing passenger and freight rail service, in addition to future rail needs and improvements. The survey consisted of a series of 10 questions that were similar to the Project Needs Identification slides that were part of the public and online meeting PowerPoint presentation.

The survey instrument did not have any limitations, either for which questions each respondent decided to answer or the number of times someone could take the survey. The project team did not want to limit the IP addresses in case someone took the survey at a public computer. Conversely, if someone wanted to take the survey multiple times, he or she could. Respondents were allowed to choose multiple answers and had the option to skip a question. Overall, there were a total of 3,664 survey respondents, and for any one question, there were 3,550 to 3,650 respondents.

In developing this type of survey, it is typical to see a greater response rate when it comes to surveys over written comments because they tend to be shorter, quicker to take, and are anonymous. Because of the anonymity factor, the survey cannot be considered as official comments. With this in mind, it is important to review and understand the results of the survey, and know that people were interested in sharing feedback. The questions that comprised the survey are listed below, with the most frequent response highlighted; also see Appendix E-4 for the complete results of the online survey.

Question 1. What could be done in Texas to improve freight rail access, promote economic development, and enhance the state's competitiveness in national markets and the global marketplace?

- ☐ *New or enhanced intermodal facilities*
- ☐ *New or enhanced industrial track access*
- ☐ ***New or enhanced multimodal connections*** *Most frequent answer from 3,560 respondents*
- ☐ *New or enhanced federal, state, local, and public-private partnership funding options*
- ☐ *Other (please specify)*

Question 2. What could be done in Texas to improve passenger rail access and promote travel mobility and economic development?

- ☐ ***New or enhanced passenger rail facilities*** *Most frequent answer from 3,639 respondents*
- ☐ *New or enhanced multimodal connections*
- ☐ *New or enhanced federal, state, local, and public-private partnership funding options*
- ☐ *New station locations*
- ☐ *Other (please specify)*

Question 3. What could be done to enhance the efficiency, velocity, capacity and safety on the Texas state rail network?

- ☐ *Grade crossing improvements (upgrades to grade crossing signals and surfaces, grade separation, etc.)*
- ☐ *New or enhanced rail yards and terminals*

- ☐ ***Infrastructure investment (extend or construct new sidings and multiple main tracks, track and bridge upgrades, wayside signal system upgrades)*** *Most frequent answer from 3,623 respondents*
- ☐ *Investments targeting state of good repair*
- ☐ *Advanced technology and innovation*
- ☐ *Other (please specify)*

Question 4. What opportunities do you see for improvement on the Texas state rail network?

- ☐ ***Urban terminal areas*** *Most frequent answer from 3,622 respondents*
- ☐ *Capacity on principal rail corridors*
- ☐ *Capacity on existing shared-use passenger and freight rail corridors*
- ☐ *Other (please specify)*

Question 5. What do you feel could be done by the rail industry that would yield significant environmental and economic benefit to Texas?

- ☐ ***Transportation technology advances*** *Most frequent answer from 3,626 respondents*
- ☐ *Fuel efficiency improvements*
- ☐ *Greenhouse gas emission reduction*
- ☐ *Community enhancements*
- ☐ *Other (please specify)*

Question 6. How should future freight rail service decisions in Texas be prioritized?

- ☐ *Increased speed/reliability to existing distributors*
- ☐ *Increased access to new distributors*
- ☐ *Improve network*
- ☐ *Improve safety and help in congestion reduction*
- ☐ ***Construction of new routes to accommodate economic growth*** *Most frequent answer from 3,590 respondents*

Question 7. What are the most important aspects of a passenger rail service to you?

- ☐ ***Travel speed/time*** *Most frequent answer from 3,648 respondents*
- ☐ *Travel reliability*
- ☐ *Amenities and comfort (including technology)*
- ☐ *Frequency of service*
- ☐ *Other (please specify)*

Question 8. What should be the goal of passenger rail service in Texas?

- ☐ *Opportunities for intra-state trips that stop in more communities and travel at conventional speeds*
- ☐ ***Opportunities for intra-state trips with fewer stops and higher speeds*** *Most frequent answer from 3,648 respondents*
- ☐ *Opportunities for longer trips, interstate*
- ☐ *Opportunities for commuting to and from work*
- ☐ *Connections to other modes (airports, transit hubs)*
- ☐ *Other (please specify)*

Question 9. How should passenger rail be prioritized in the future to provide more transportation options?

- *More frequencies on existing routes*
- *Same frequencies but improved amenities/on time performance*
- *More stations on existing routes*
- *New routes, even if frequencies on existing routes must be reduced*
- ***New routes, with frequencies on existing routes maintained*** *Most frequent answer from 3,605 respondents*
- *Same frequencies but improved station services*
- *More transit connections*

Question 10. What are the most important aspects of a passenger station to you?

- *Enclosed, climate-controlled waiting room*
- *Restroom/water fountain availability*
- *Staffed ticket office*
- *Checked baggage service/luggage storage*
- *Good transit connections (bus, airport, rail)* *Most frequent answer from 3,645 respondents*
- *Bicycle racks*
- *Food service option*
- *Wi-Fi*
- *Other (please specify)*

6.4.6 Public Meeting Comments and Summary

The public comment period for the project was from December 11, 2018 to March 1, 2019. As indicated in Section 6.4, the public comment period was extended by almost 2 months to allow additional time for the public to participate in the online meeting and to provide comments. Public comments were received in three ways – through online web comment forms, e-mail and letters. The online comment form was created using the Google Forms web survey application. Google Forms is a way to capture individual survey questions (comments) online; the survey information is then collected and automatically connected to a spreadsheet. The spreadsheet is then populated with the survey responses. In this case, the survey was set up to collect commenter information (name, email address, physical address, and organization) as well as the actual comment.

A few individuals submitted comments in all three ways. In these instances, once all of the comments were reviewed, they were then combined in the comment summary spreadsheet to reflect a single-named commenter. Almost 30 commenters submitted duplicate comments online, which could have simply been a user computer problem; the duplicate comments were removed. Under the "organization" survey field in the web comment form, comments were received from private citizens, business owners, landowners, rail advocates and opponents, elected officials, and the public. Grouped by similar theme, the overall type and number of comments received (341 in total) are shown in Table 6-9. The comments received via email and letters, and the comment summary spreadsheet appears in Appendix E-4.

Table 6-9: Number of Public Comments Associated with Overall Themes

Overall Theme of Comment	Number of Similar Comments	Percent of Similar Comments
Supports Passenger Rail	57	17%
Opposes High-Speed Rail	257	75%
Opposes Other Passenger Rail	5	1%
Freight Rail Comment Only	5	1%
Joint Freight and Passenger Rail Comment	5	1%
Other	12	4%
Total	341	100%

Comment Summary. The following is a summary of the comments and themes received during the public comment period outreach process regarding existing rail issues at the local, regional, and/or state levels. Suggestions, potential benefits and/or actions that could potentially be undertaken in the future as part of capital investments were identified and organized into the following themes:

- Passenger rail service
- Freight rail service
- Economic development
- Funding and financial components
- Legality and opposition to high-speed rail

Passenger Rail Service. Comments related to passenger rail service in the state included:

- The opportunity for passenger rail to relieve traffic congestion on metropolitan area roadways and interstate corridors.
- The need to double track freight and passenger rail corridors to improve efficiency, add capacity and improve safety, including the TRE corridor.
- Highway-rail at-grade crossing improvements.
- Passenger rail is good for the environment.
- Need passenger rail because 1) do not own a car or 2) do not use air for travel.
- The need for passenger rail service for the following city pairs: Dallas-Fort Worth, Dallas-Houston, Dallas-Austin, Dallas-Austin-Waco, Dallas/Fort Worth-Meridian, MS., New Orleans-Dallas-Denver, Houston-Austin-San Antonio, and the Houston metropolitan area in general.
- Amtrak improvements to routes and infrastructure: maintain and improve routes in general, provide secure long-term parking at stations, platform extensions at stations, install trailblazer signs to direct motorist to stations, and add a passenger station in Marfa, Texas.
- Amtrak service improvements: need to increase frequency of passenger rail service for the *Texas Eagle*, *Heartland Flyer* (2 to 3 round trips per day), and *Sunset Limited* (daily service).
- High-Speed Rail/Texas Central Railway: participants stated approval of, and opposition to the project. Extend the *Heartland Flyer* to Kansas.
- Capital Metro: extend service from downtown or the east side of Austin to the airport.

- Texas-Oklahoma Passenger Service: continue planning for future service/Phase 2 study.
- Obtain and preserve sufficient right-of-way to accommodate joint highway and rail transportation modes.

Freight Rail Service. Comments related to freight rail service in the state included:

- The need to double track freight corridors to improve efficiency, velocity, capacity, and safety.
- More and longer rail sidings.
- Highway-rail at-grade crossing improvements.
- The opportunity to relieve bottlenecks and chokepoints through bridge upgrades including the Sabine River Bridge in Beaumont and the Neches River Bridge in Beaumont.
- Dennison Industrial Lead at the G&W/BNSF interchange.
- US Highway 90 grade separation in Dayton, Texas to relieve traffic congestion.

Economic Development. Comments identified opportunities for economic development:

- Passenger rail can serve as a catalyst for economic development.
- Opportunities for economic development with the *Texas Eagle* route extension.
- Opportunities for economic development with the *Heartland Flyer* route extension.
- High-Speed Rail/Texas Central Railway would provide opportunities for economic development:

Funding and Financial Components. Stakeholder comments consisted of suggested ways to fund rail projects and financial impacts of rail:

- Support for private funding of passenger rail including public-private partnerships (P3).
- There should be dedicated state funding for both passenger and freight rail infrastructure.
- Need to subsidize rail funding similar to highways and air.
- There is a benefit to passenger rail service for low-income families that cannot afford a car or car insurance, or for people that do not own a car at all.
- High-Speed Rail/Texas Central Railway: ridership numbers, revenue and capital costs do not appear to be correct or are questionable and taxpayers will end up paying for the project when it becomes financially unfeasible.

Legality and Opposition to High-Speed Rail. Over 75 percent of the comments received were opposed to high-speed rail.

- The primary reasons cited for opposition were residential and business impacts, land acquisition especially family farms, the taking of land by a private entity through eminent domain, decrease in land value, and environmental impacts.
- Many comments reflected that the inclusion of the high-speed rail project in the Texas Rail Plan was in violation of Senate Bill 977. Since there were so many of these comments, TxDOT's response to this comment follows:

TxDOT Response: The Texas Rail Plan is being developed following the guidance developed by the Federal Railroad Administration for State Rail Plan preparation, as established by the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). Under these requirements, TxDOT must describe all passenger rail proposals under consideration, including new services, whether publicly or privately funded, and whether they are improvements or new additions to the existing rail network in the State. During the 2017 legislative session, Texas Senate Bill 312, Section 201.6013, was enacted requiring the Long Term Plan for Statewide Passenger Rail to include a description of existing and proposed passenger rail systems. To fulfill federal requirements, the proposed Texas Bullet Train project is discussed in Chapter 3 of the Texas Rail Plan. Mention of the Texas Bullet Train in the Texas Rail Plan does not constitute endorsement or support by TxDOT of the proposed project, and is not in violation of Texas Senate Bill 977, which states that no state money can be used for the cost of planning, facility construction or maintenance, or security for, promotion of, or operation of, high-speed rail operated by a private entity.

6.5 STAKEHOLDER COMMITTEE MEETING NO. 2

TxDOT hosted a second round of passenger and freight stakeholder committee meetings on April 30, 2019 at 11:00 am and 1:30 pm, respectively to present a draft list of passenger and freight rail projects to be included in the Texas Rail Plan. The purpose of the meeting was to obtain stakeholder comments and additional input on the projects prior to finalizing the TRP.

6.5.1 Passenger Rail Stakeholder Meeting No. 2

6.5.1.1 Passenger Rail Meeting No. 2 Notification

TxDOT hosted an online webinar rather than an in-person meeting. Passenger Rail Stakeholders were emailed a Save the Date meeting notice on April 12, 2019, which was followed by a reminder that was emailed on April 29, 2019. Collateral material for the second passenger rail stakeholder committee meeting is included in Appendix E-5.

6.5.1.2 Passenger Rail Stakeholder Committee Members

Committee members that attended the second stakeholder meeting included representatives of Union Pacific, Amtrak, Alamo Area MPO, NCTCOG, Texas Central Rail, the I-20 Corridor Council, and Texas Rail Advocates. Table 6-2 previously presented a list of the Passenger Rail Stakeholder Committee members.

6.5.1.3 Passenger Rail Stakeholder Meeting No. 2 Agenda and Collaboration Activities

The purpose of the passenger rail stakeholder committee meeting was to discuss Chapter 5 of the TRP, the State's Rail Service and Investment Program, and to obtain comments on missing projects; to ensure that projects are correctly categorized; and to identify projects that have been completed and need to be removed. Short-term projects include those that could be implemented or built in the next three to four years (2019-2022), while long-term projects have a 20-year implementation horizon (2023-2039). A draft list of the short-term and long-term passenger rail projects were summarized in the following PowerPoint presentation slides.

TEXAS DEPARTMENT OF TRANSPORTATION

PASSENGER & COMMUTER RAIL SERVICE INVESTMENT PLAN

2019 Texas Rail Plan

April 30, 2019

Short-Term Investment Plan

2019-2022

Intercity Passenger Rail

- Continued Funding with ODOT of Amtrak State-Supported Heartland Flyer Service
- Texas Central Railway

2019 Texas Rail Plan April 30, 2019

Short-Term Investment Plan

2019-2022

Commuter Rail – Existing Services

TRE:
- Positive Train Control Installation
- Double Track Capacity Expansion
  - Stemmons Freeway
  - Union Station
- Bridge Rehabilitation/ Replacement Programs *(4 projects)*

Cap Metro:
- Positive Train Control Installation
- Additional Red Line Passing Sidings
- Red Line Platform Extensions *(8 projects)*
- Railcar Upgrades
- Station Upgrades *(2 projects)*
- New McKalla Place Station
- Kramer Station Relocation
- Various Additional Projects

2019 Texas Rail Plan April 30, 2019

Short-Term Investment Plan

2019-2022

Commuter Rail – Planned Services

DART:
- Cotton Belt Corridor

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Intercity Passenger Rail

- Continued Funding with ODOT of Amtrak State-Supported Heartland Flyer Service

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Commuter Rail – Existing Services

TRE:
- Double Track Capacity Expansion

DCTA:
- A-Train Northward Extension to Pilot Point
- New A-Train North Central Texas College Station
- A-Train Southward Extension to Downtown Carrollton

TEXRail:
- Southwest Extension to Summer Creek
- Double Track Capacity Expansion

Capital Metro:
- Double Track Capacity Expansion
- New Leander Maintenance Facility
- Additional Trainset Acquisitions

2019 Texas Rail Plan April 30, 2019

6.5.1.4 Passenger Rail Stakeholder Meeting No. 2 Input Summary

The short-term and long-term investment plan passenger rail project presentation slides provided stakeholders with another opportunity to provide comments on missing projects, to ensure that projects are correctly categorized, and to identify projects that have been complete or may need to be removed. A brief summary of the input received from passenger rail stakeholders is presented below. A copy of the meeting minutes and PowerPoint presentation is contained in Appendix E-5.

- The Interstate 20 (I-20) Corridor passenger rail was backed by an Amtrak study in 2015 and a TxDOT capacity study in 2017; the 2017 study determined that the project would be financially feasible. UP stated there has to be significant discussions about these prior studies and its investment and capacity requirements that would be required of UP; these items have not been evaluated by UP to determine its feasibility. Louisiana and Mississippi have not requested the I-20 passenger service at this point because their attention is currently on resuming passenger service between New Orleans and Mobile. A discussion of the I-20 Corridor project is included in Chapter 3 of the TRP. For inclusion on the short-term or long-term project list, a project must be feasible and provide benefits. Funding for the $84 million has not been identified. Any capital investments related to overall corridors must be made at the regional level with concurrence by Amtrak, the rail line owners, and other states as applicable.
- A general discussion ensued regarding the continued annual funding for the *Heartland Flyer* route extension northward to Newton, as well as additional service to include a second or third daily frequency. Chapter 5 identifies the continued funding for the *Heartland Flyer* in both the short-term and a long-term project lists.
- Passenger rail service is needed in the Austin-San Antonio corridor.
- DCTA commuter rail service extension going into downtown Carrollton is included in the TRP as an agency-led evaluation study known as the A-Train Southbound Extension Study.
- Dallas-Fort Worth to Meridian to Atlanta extension of Amtrak into the national system is extremely important.

Committee members were asked to submit any additional comments on the website or in writing. These additional projects are noted in the meeting minutes found in Appendix E-6.

6.5.2 Freight Rail Stakeholder Meeting No. 2

6.5.2.1 Freight Rail Meeting No. 2 Notification

TxDOT hosted an online webinar rather than an in-person meeting. Freight Rail Stakeholders were emailed a Save the Date meeting notice on April 12, 2019, which was followed by a reminder that was emailed on April 29, 2019. Collateral material for the second freight rail stakeholder committee meeting is included in Appendix E-6.

6.5.2.2 Freight Rail Stakeholder Committee Members

Committee members that attended the second stakeholder meeting included representatives of UP, BNSF, KCS, Austin Western Railroad, Gulf Coast Rail District, Alamo Area MPO, H-GAC, NCTCOG, CAMPO, El Paso MPO, and Texas Rail Advocates. Table 6-3 previously presented a list of the Freight Rail Stakeholder Committee members.

6.5.2.3 Freight Rail Stakeholder Meeting No. 2 Agenda and Collaboration Activities

The purpose of the freight rail stakeholder committee meeting was to discuss Chapter 5 of the TRP, the State's Rail Service and Investment Program, and to obtain comments on missing projects; to ensure that projects are correctly categorized; and to identify projects that have been completed and need to be removed. Short-term projects include those that could be implemented or built in the next three to four years (2019-2022), while long-term projects have a 20-year implementation horizon (2023-2039).

A draft list of the short-term and long-term freight rail projects were summarized in the following PowerPoint presentation slides.

Short-Term Investment Plan

2019-2022

Freight Rail/Port Projects

Beaumont:
- Buford Rail Yard Interchange Track
- Siding Track Parallel to UP Main Line

Brownsville:
- New Rail (2 mi) to Link to a New Multimodal Dock and Rail Spur to Palo Alto Yard

Corpus Christi:
- Al Speight Yard Expansion: Storage Tracks with Yard improvements

Freeport:
- Parcel 14 Stabilization: Fully Operational Multi-Modal Facility

Galveston:
- Pier 37 Repairs: Repair Pier and Refurbish On-Dock Rail

Port Arthur:
- Berth 6 General Cargo Dock Facility - Phase 1 Construction
- Phase 2 On-Dock Rail Berth 6 Expansion
- Rail Reliever: On-Dock Rail Berth 6 Expansion

Victoria:
- Victoria County Navigation District South Industrial Site Development: Rail extension to UP Industrial Lead

2019 Texas Rail Plan April 30, 2019

Short-Term Investment Plan

2019-2022

Freight Rail/Border Crossing Projects

- SORR Rehabilitation and Presidio-Ojinaga International Bridge Reconstruction Project
- New International Rail Customs and Border Patrol Inspection Station at Presidio

2019 Texas Rail Plan April 30, 2019

Short-Term Investment Plan

2019-2022

Highway – Rail Crossing Projects

- State's Annual Railroad Grade Crossing and Replanking Program
- See long-term investment plan

State-Owned Lines

- See long-term investment plan

Other Projects

- NCTCOG
  - Gribble Siding
  - Madill Subdivision Double Track
  - Irving Depot Siding Extension
  - CTC Madill Subdivision North of Prosper

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Class I Railroad Improvements

- Upgrades to Accommodate Heavier Railcars (286,000 lbs)
- Enhanced Railroad Access
- Neches River Rail Crossing in Beaumont

TxDOT:
- Eagle Pass Rail Improvements – Double Tracking, Sidings, and Border Security
- Laredo Bridge Double Track
- Second Main Line from Laredo Bridge to Port Laredo

TxDOT/El Paso MPO:
- Interstate 10 Expansion and Lordsburg Subdivision Rationalization

TxDOT/CCMPO:
- Sinton Grade Crossing Relief in LaQuinta (UP)

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Class I Railroad Improvements *(continued)*

CCMPO:
- Wye connection on N. East quadrant through Odem (UP)

NCTCOG:
- Downtown Denton Maintenance-of-Way Rail Relocation
- Ennis Sealed Corridor; Upgrade UP Bridges (2) and At-Grade Crossing closures (4)
- Double Track Rail on TRE in Dallas; Tower 55 to Dallas Union Station
- TRE - Rehabilitate and Double Track West Fork Trinity River Bridge

HGAC/Port of Houston/Gulf Coast Rail District:
- Second Main Line Construction in Houston

HGAC/Gulf Coast Rail District:
- Houston Subdivision Second Main Line Construction; Dawes to Dayton

Austin Western Railroad:
- Double Track Central Corridor in Austin

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Rail Intermodal/Terminal Facility Projects

TXR:
- Brownwood & Camp Bowie Industrial Park Rail Improvements
- Camp Bowie Industrial Park Track Lead Upgrades in Brownwood

UP Brazos Yard:
- New Intermodal Classification Yard in Bryan

Port of Corpus Christi:
- Bulk Terminal Crude Oil Transfer Station

AGCR:
- Transload Facility and Rail Improvements in Collin County

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Class III Railroad Improvements

TSLRRA/BSR:
- East Leg of the Wye and Interchange Tracks in Big Spring
- Replace Worn 90 lb Rail; 1.7 miles of Main Lead Track in Abilene

TSLRRA/TNW:
- TXNW/BNSF Interchange Tracks in Amarillo
- McKinney Subdivision Rehabilitation in Dallas

TSLRRA/Ironhorse:
- Mission Rail Park Wye Connection in Pharr

TSLRRA/SJTC:
- New Interchange Tracks with UP and BNSF in Houston

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Class III Railroad Improvements *(continued)*

TSLRRA/OmniTRAX:
- Priority 2 Bridge Repairs in Amarillo
- System Crossing Replacement in Amarillo
- Borger Yard – Remove and Relay 75 lb Rail in Amarillo
- Relay Rail on West Leg and Panhandle Wye in Amarillo
- Mainline Tie and Surface Upgrades (McBride & Abell Yards) in Amarillo
- 286,000 lb Upgrades in Brownwood
- Priority 2 Bridge Repairs in Brownwood
- Radio Tower Installation in Brownwood
- Class 2 Tie and Surface Upgrades in Brownwood
- Class 1 Tie and Surface Upgrades in Brownwood
- Priority 2 Bridge Repairs on Highway 48 (2) in Pharr
- System At-Grade Crossing Surface Replacement in Pharr
- Unit Train Siding - Palo Alto in Pharr
- Upgrade Rail and Replace Turnouts in Pharr

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Class III Railroad Improvements *(continued)*

TXNW:
- Rail Improvements in Amarillo
- Track Rehabilitation in Amarillo
- Bridge Repairs (3) Along Main Lead in Amarillo
- Bridge Upgrade (1) to 286,000 lbs in Amarillo

TNER:
- Sherman Subdivision Timber Bridge Repairs (5) in Atlanta/Paris
- Various Bridge Repairs and Strengthening in Atlanta/Paris

SRN:
- Tie Program Replacement in Beaumont
- Mulford Yard Switch Replacement in Beaumont

TXR:
- Tie Replacement Program in Brownwood
- Track Rehabilitation in Brownwood

DGNO:
- Garland Subdivision Timber Bridge Repairs (3) in Dallas/Paris
- Various Bridge Repairs and Strengthening in Dallas/Paris

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Class III Railroad Improvements *(continued)*

GVSR:
- Track Surfacing (5 miles); CHS Facility in Houston

GDR:
- Yard Improvements in Laredo

KRR:
- KRR Bridge Repairs in Paris
- Paris Subdivision Bridge Repairs in Paris
- J. Skinner Rail Spur Installation in Paris

RVSC:
- Customer Service Track Expansion in Pharr
- Tie Program Replacement in Pharr

TXGN:
- TXGN/UP Interchange Track in Yoakum
- Rail Improvements in Yoakum
- Harwood Storage Track Improvements in Yoakum
- Storage Track Surfacing in Yoakum

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Border Crossing – Rail Projects

- Eagle Pass Rail Improvements: Double Track Segments of Rail between BNSF and UP Sidings in Laredo
- Laredo Bridge Double Track
- Second Main Line from Laredo Bridge to Port Laredo

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Freight Rail/Port Projects

Beaumont:
- Rail-to-Rail Grade Separation on the Low Line Track

Brownsville:
- New Siding near Olmito at Palo Alto Yard next to FM 511

Calhoun:
- Add Working and Storage Tracks to Accommodate Crude Oil Growth

Corpus Christi:
- Extend Double Track from Bulk Terminal to East End of Inner Harbor

Freeport:
- Extend Rail to Provide On-Dock Rail Service to Velasco Terminal

Galveston:
- Restore On-Dock Rail to Slips 37/38
- Pelican Island Rail Bridge to Serve Future Terminal

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Freight Rail/Port Projects

Harlingen:
- Construct New Rail Spur

Houston:
- New Single Track, At-Grade Crossings and Signalization (SH 146 & Old SH 146)
- Second Rail Track (SH 225 to Red Bluff Road) to Future Bayport Container Terminal
- SH 146 and Red Bluff Area: Double Track and Run-Around Track to Future Container Terminal Development

Port Arthur:
- Rail Extension and Tie into KCS
- Grade Separation of Rev. Doctor Ransom Howard Street and KCS Main Line

Victoria:
- Bloomington (UP) Replace Rail Lift Bridge over the Channel at Bloomington

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Highway – Rail Crossing Projects *(*location noted refers to TxDOT District)*

TxDOT:
- Farmers Ave Grade Separation in Amarillo*
- Hearner Terminal Area Crossing Mitigation in Bryan*
- Grade Crossing Rationalization (BNSF) in Dallas*
- Blue Mound Road Grade Separation (BNSF) in Fort Worth*
- Hemphill Street Grade Separation (BNSF) in Fort Worth*
- Royal Lakes Blvd Grade Separation (BNSF) in Houston*
- Laredo Grade Separations (KCS & UP) in Laredo*
- US 70/US 84 Grade Separation (BNSF) in Lubbock*
- Grade Crossing Rationalization: 18 Crossings – 5 miles (BNSF) in Paris*
- US 283 Grade Separation (BNSF) in Wichita Falls*
- 7th Street Grade Separation (BNSF) in Wichita Falls*

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Highway – Rail Crossing Projects *(*location noted refers to TxDOT District)*

TSLRRA/OmniTRAX:
- System Crossing Replacement in Brownwood*

HGAC/Gulf Coast Rail District:
- FM 565 Grade Separation in Chambers County
- FM 1405 Grade Separation in Chambers County

PTRA/TxDOT:
- West Belt Subdivision Improvements/ Grade Separation in Houston*

NCTCOG:
- Linfield Road Crossing Closure (UP) in Dallas*
- Prairie Creek Road Grade Separation and Crossing Closure (UP) in Dallas*
- Trinity Mills Grade Separation (BNSF) in Dallas*
- Ennis Avenue Grade Separation (UP) in Dallas*
- Sycamore School Road Grade Separation (BNSF) in Fort Worth*

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

Highway – Rail Crossing Projects *(*location noted refers to TxDOT District)*

HGAC:
- Alameda-Genoa Road Grade Separation (BNSF) in Houston*
- Griggs & Long Grade Separation (BNSF & UP) in Houston*
- US 90 Grade Separation at Dayton Yard (BNSF & UP) in Houston*

HGAC/Gulf Coast Rail District:
- West Belt Grade Separation (Phase 2) in Houston*

AAMPO:
- Grade Separate Sunset Road, Jones Maltsberger Road, and Basse Road (UP Austin Subdivision Main Track) in San Antonio*
- Grade Separate Rittiman and Walzem Road on UP Glidden in San Antonio*
- Grade Separate Frio City Road/Zarzamora Street Intersection in San Antonio*
- Grade Separate Broadway and Bitters Road (UP Austin Subdivision) in San Antonio*

2019 Texas Rail Plan April 30, 2019

Long-Term Investment Plan

2023-2039

State-Owned Lines

NETEX:
- Rehabilitate the NETEX Rail Line: Greenville to Mount Pleasant (66 miles)
- Reconstruct an Abandoned Rail Corridor Owned by the NETEX: Greenville to Wylie (23.2 miles)

SORR:
- Rehabilitate SORR using a FASTLANE Grant
- Rehabilitate SORR Tracks to 25-mph Track Speeds in Support of International Traffic through Presidio: MP 957–1029
- Rehabilitate Rail Line to Open the Interchange with UP at Alpine; Belding to Alpine
- Rehabilitate the SORR Line and Reconstruct International Rail Bridge: Paisano Junction to Presidio
- Rehabilitate the SORR Line: Sulphur Junction to Fort Stockton (13.6 miles)
- Infrastructure Railbed Rehabilitation - Replace Rail, Ties, and Ballast
- Rehabilitate the SORR line: Crockett/Pecos County Lines to Sulphur Junction (22.1 miles)
- Rehabilitate Substandard Rail Line that was Constructed in 1912: Fort Stockton to Belding (10 miles)

2019 Texas Rail Plan April 30, 2019

6.5.2.4 Freight Rail Stakeholder Meeting No. 2 Input Summary

The short-term and long-term investment plan passenger rail project presentation slides provided stakeholders with another opportunity to provide comments on missing projects, to ensure that projects are correctly categorized, and to identify projects that have been complete or may need to be removed. A brief summary of the input received from passenger rail stakeholders is presented below. A copy of the meeting minutes and PowerPoint presentation is contained in Appendix E-6.

- On the Timber Rock Railroad, the bridge crossing the Sabine River must be repaired due to flooding; it is estimated to cost $1.5 million.
- El Paso MPO's I-10 project is a major expansion project that would add capacity and frontage roads to a portion of I-10. The project would affect one of UP's subdivisions with some of the concepts evaluated. It is an important project locally and the MPO would like to see if it can be moved up from a long-term project to a short-term one
- There is a proposed north/south rail bypass project to move rail infrastructure to the west of El Paso and Ciudad Juarez in New Mexico to increase capacity. The project is sponsored by the state of New Mexico. Because the project does affect Texas crossings, it will be mentioned in the TRP. UP noted that there is considerable time and effort from a rail perspective to do a separate bypass, since UP is already continuing to work with TxDOT to build capacity at the border in El Paso.
- There were 10 freight rail exception items by the Texas Commission for the 2015 legislative session, however the projects did not get any movement in the session. The projects included the South Orient, second bridge across the Neches River in Beaumont and Houston West Belt.
- UP provided comments on several suggested changes to both the short-term and long-term project lists.
- KCS provided information regarding two rail capacity expansion projects in Kendleton and Wylie.
- Additional information regarding the Dayton Wye project was provided. The project consists of the US Highway 90 grade separation west of Dayton sponsored by H-GAC. A portion of the project ($46 million) has been approved by the H-GAC and another $60 million is potentially obligated towards the project by the State's Transportation and Freight Committee.
- Gulf Coast Rail Division provided a list of recommended passenger rail and freight rail projects that should be included within the Texas Rail Plan; the majority of which are already included in the plan.

Following the stakeholder meeting, additional coordination with UP, BNSF and KCS occurred to ensure the appropriate projects for inclusion in the TRP including Class I capacity and maintenance projects, MPO sponsored projects, grade separation and port related projects, and confirmation of some project descriptions and costs.

6.6 COORDINATION WITH NEIGHBORING STATES

TxDOT routinely interacts with the neighboring states through involvement in national and regional transportation organizations and to address specific transportation service and facility issues and planning initiatives. TxDOT also routinely coordinates with neighboring states Oklahoma, Louisiana, and New Mexico to discuss rail opportunities and issues as these matters arise. For the TRP, TxDOT evaluated the most recent state rail plans of surrounding states and published rail development plans in Mexico. TxDOT reviewed these plans to determine whether the policies and plans in these states were in conflict with any of the Texas initiatives included in the Texas Rail Plan, as Texas shares rail corridors and services with other states and Mexico.

The most recent state rail plans available for Oklahoma, Louisiana, and New Mexico were reviewed to ensure consistency of policies and plans among the states in the region. The results of this review found no conflicts with Texas initiatives; a brief overview follows:

- The Oklahoma State Rail Plan was supportive of continued improvement of the Amtrak *Heartland Flyer* intercity passenger rail service between Fort Worth and Oklahoma City.
- The Oklahoma State Rail Plan supported the concept of improving accessibility to the Trinity Railway Express (TRE) commuter rail service at Fort Worth for connection to the Dallas market.
- Oklahoma also supported continued study of the extension of *Heartland Flyer* intercity passenger rail service south of Fort Worth and north from Oklahoma City to Newton, Kansas, and potentially beyond.
- The Louisiana State Rail Plan was supportive of the joint planning efforts undertaken by Louisiana, TxDOT, the Northwest Louisiana Council of Governments, and the I-20 Corridor Council to study the feasibility of establishing intercity passenger rail service in the I-20 corridor between Fort Worth and Amtrak's long-distance *Crescent* at Meridian, Mississippi, as well as regional intercity passenger rail service between Fort Worth and Shreveport.
- The Louisiana and New Mexico state rail plans identified that those states supported improvements to the existing Amtrak long-distance *Sunset Limited* service from Los Angeles to New Orleans via El Paso, San Antonio, and Houston.
- TxDOT is currently developing the Texas-Mexico Transportation Border Master Plan Update through cooperation with the Border Trade Advisory Committee (BTAC), Federal Highway Administration (FHWA), and public and private sector partnering agencies in Texas and Mexico. The purpose of the plan is to identify and prioritize binational goals for multimodal transportation systems, border crossings, and support facilities and to develop an implementation plan for making multimodal transportation investments.
- TxDOT will also continue to work with New Mexico DOT and Union Pacific on upgrades to improve operations within and approaching UP's Santa Teresa Intermodal Ramp located just west of El Paso in Santa Teresa, New Mexico.

6.7 ADDITIONAL COMMENTS ON THE TEXAS RAIL PLAN

Several comments were received after the April 30, 2019 stakeholder meetings but before release of the Draft Texas Rail Plan. Those comments are compiled in Appendix E-7.

The Draft 2019 Texas Rail Plan and appendices were posted on TxDOT's website for review from November 12, 2019 through December 6, 2019. The comment summary/response matrix is included in Appendix E-8.

2019 Texas Rail Plan

List of Acronyms

December 2019

Acronyms

A

AAMPO	Alamo Area Metropolitan Planning Organization
AAR	Association of American Railroads
ABIA	Austin-Bergstrom International Airport
ADA	Americans with Disabilities Act of 1990
APT	Amtrak Performance Tracking
ARRA	American Recovery and Reinvestment Act
ASDP	Accessible Stations Development Program

B

BEDCO	Bonham Economic Development Corporation
BFBRD	Brazoria-Fort Bend Rail District
BMPO	Brownsville Metropolitan Planning Organization
BNSF	Burlington Northern Santa Fe Railway
BRT	Bus Rapid Transit
BTAC	Border Trade Advisory Committee
BUILD	Better Utilizing Investments to Leverage Development

C

CAMPO	Capital Area Metropolitan Planning Organization
CMAQ	Congestion Mitigation and Air Quality
CN	Canadian National Railway
COFC	container on flatcar
CRI&P	Chicago, Rock Island & Pacific Railroad
CRISI	Consolidated Rail Infrastructure and Safety Improvements Program
CRRMA	Camino Real Regional Mobility Authority
CTC	centralized traffic control
CTR	Center for Transportation Research
CSI	Customer Satisfaction Indicator
CSXT	CSX Transportation

D

DART	Dallas Area Rapid Transit
DCTA	Denton County Transportation Authority
DEIS	Draft Environmental Impact Statement
DFW	Dallas/Fort Worth International Airport
DMU	Diesel Multiple Unit
DOT	U.S. Department of Transportation

E

EDA	Economic Development Administration
EIA	U.S. Energy Information Administration
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency

F

FAA	Federal Aviation Administration
FAF	Freight Analysis Framework
FAST	Fixing America's Surface Transportation Act
FASTLANE	Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency

FHWA	Federal Highway Administration
FLIRT	Fast Light Innovative Regional Train
FRA	Federal Railroad Administration
FRRTD	Fannin County Rural Rail Transportation District
FTA	Federal Transit Administration
FWTA	Fort Worth Transportation Authority
FY	Fiscal Year

G

GCRD	Gulf Coast Rail District

H

HB	House Bill
HDR	HDR Engineering, Inc.
H-GAC	Houston-Galveston Area Council
HSC	Houston Ship Channel
HSIP	Highway Safety Improvement Program
HSIPR	High Speed Intercity Passenger Rail

I

IT	information technology
ITC	Intermodal Transportation Center
ITS	Intelligent Transportation Systems

J

JBIC	Japan Bank for International Cooperation
JOIN	Japan Overseas Infrastructure Investment Corporation for Transport and Urban Development

K

KCS	Kansas City Southern

L

lbs	pounds
LPA	Locally Preferred Alternative
LRT	Light Rail Transit
LRTP	Long Range Transportation Plan

M

MATA	McKinney Avenue Transportation Authority
METRO	Metropolitan Transit Authority of Harris County
MKT	Missouri, Kansas & Texas Railway
MP	Mile Post
MP	Missouri Pacific Railroad
MPO	Metropolitan Planning Organization
MTA	Metropolitan Transit Authority

N

NAFTA	North American Free Trade Agreement
NCTCOG	North Central Texas Council of Governments
NEPA	National Environmental Policy Act
NETEX	Northeast Texas Rural Rail Transportation District
NS	Norfolk Southern Railway
NHS	National Highway System

O

ODOT	Oklahoma Department of Transportation
OTP	On-Time Performance

P

PADD	Petroleum Administration for Defense Districts
PCC	Presidents' Conference Committee
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIDS	Passenger Information Display Systems
POE	Port of Entry
PRIIA	Passenger Rail Investment and Improvement Act of 2008
PTC	Positive Train Control
PTRA	Port Terminal Railroad Association

R

RCC	roller compacted concrete
RDC	Rail Diesel Car
ROD	Record of Decision
ROW	Right-of-Way
RRIF	Rail Rehabilitation and Improvement Financing
RRTD	Rural Rail Transportation District
RTP	Regional Transportation Plan
RTRFI	Regional Toll Revenue Funding Initiative

S

SAIPRC	State-Amtrak Intercity Passenger Rail Committee
SB	Senate Bill
SDP	Service Development Plans
SERC	State Emergency Response Commission/Emergency Management Council of Texas
SH	State Highway
SLRV	Super Light Rail Vehicles
SORR	South Orient Railroad/Rail Line
SP	Southern Pacific
SRP	State Rail Plan
SSO	State Safety Oversight
STB	Surface Transportation Board
STCC	Standard Transportation Commodity Codes
STIP	Statewide Transportation Improvement Program
STRACNET	Strategic Rail Corridor Network

T

TCEQ	Texas Commission on Environmental Quality
TCR	Texas Central Railway
TEMPO	Texas Eagle Marketing and Performance Organization
TERP	Texas Emissions Reduction Program
TEU	Twenty-foot Equivalent Units
TFMP	Texas Freight Mobility Plan
THSRA	Texas High Speed Rail Authority
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Transportation Investment Generating Economic Recovery (grant program)
TIP	Transportation Improvement Program
TMC	Texas Medical Center
TNER	Texas Northeastern Railroad
TNW	TNW Corporation (short line railroad parent company)
TOD	Transit-Oriented Development
TOFC	truck trailer on a flat car
TOPRS	Texas-Oklahoma Passenger Rail System
TRE	Trinity Railway Express

TSA	Transportation Security Administration
TSLRRA	Texas Short Line Rail Road Association
TTC	Texas Transportation Commission
TTI	Texas A&M Transportation Institute
TTP	Texas Transportation Plan
TxDOT	Texas Department of Transportation

U

UP	Union Pacific Railroad
USC	U.S. Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
UT	University of Texas
UTMB	University of Texas Medical Branch
UTP	Unified Transportation Program

V

VMT	vehicle-miles traveled

W

WTPS	Watco's Terminal and Port Services