TEXAS DEPARTMENT OF TRANSPORTATION

Texas Statewide Long-Range Transportation Plan 2035
Executive Summary

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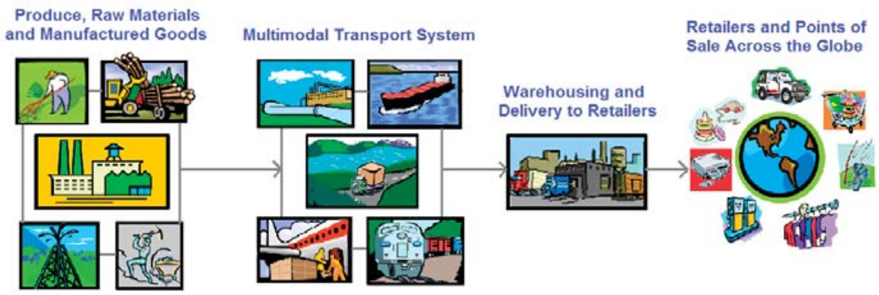
Introduction and Overview

Our Transportation System and Its Importance to our Future

Transportation empowers us all and affects every aspect of our daily lives. Most people must travel to school, to work, to obtain necessities or medical care, and for social reasons. Whether you own a vehicle, use transit, fly on an airplane, ride a bicycle, or walk, transportation gives you the freedom to move about and makes the life you enjoy possible. The goods we consume are transported from a farm, a manufacturer, a refinery, or a warehouse—often using more than one mode of transportation.



As our population and economy grow, our transportation system needs a plan for how best to meet these challenges. Transportation planning allows us to look ahead to determine the future demands on our transportation systems, and to establish goals and strategies that allow us to overcome the challenges.

Our mission at TxDOT is to provide safe and efficient movement of people and goods, enhance economic viability, and improve the quality of life for the people that travel in the state of Texas by maintaining existing roadways and collaborating with private and local entities to plan, design, build, and maintain expanded transportation infrastructure. As we plan, we have emphasized cooperation, accountability, and transparency. Our outreach has promoted widespread, meaningful participation in planning the future of Texas' transportation from our transportation partners, elected officials, industry stakeholders and the public. The analysis we have conducted will help Texas plan for improved connectivity between modes and between communities, and enable our multimodal system to operate more efficiently. We want to provide the best value for every transportation dollar spent. We appreciate the perspectives and suggestions that you have provided and that will help guide future decisions.

Amadeo Saenz, Jr., P.E.
Executive Director, TxDOT

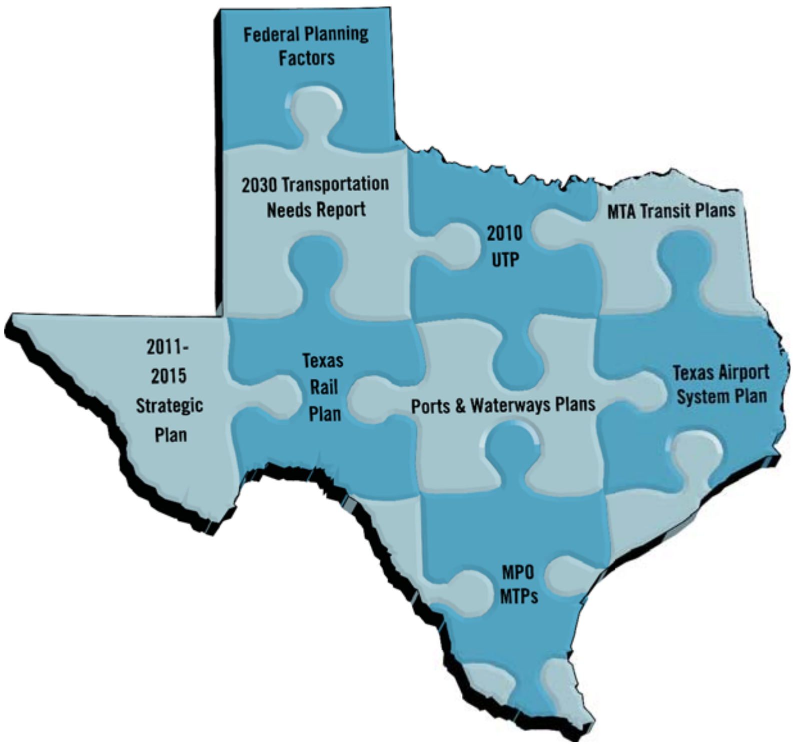
Texas, with a diverse population, dynamic economy, and vast geographic area has an equally vast, diverse, and dynamic, transportation system. This complex transportation network moves people and goods between destinations and markets, delivering almost every product or service we use and enabling our movement to school, to work, and to play.

Over the next 24 years, the population and the economy of Texas will experience significant change. That change will put increasing demands on our transportation system, whether it is the ports, rails, or highways that deliver goods to market or the roads, sidewalks, or buses that deliver us to our homes, work, or school.

These demands will create challenges to this complex system. To understand these challenges and help plan for a vibrant future, the Texas Department of Transportation (TxDOT) has collaborated with the owners, operators, and users of this system to develop this Statewide Long-Range Transportation Plan 2035 (SLRTP). This plan will provide a framework and guidance for meeting the challenges ahead.

What is the Statewide Long-Range Transportation Plan?

This plan is the 24-year blueprint for the transportation planning process that will guide the collaborative efforts between TxDOT, local and regional decision-makers, and all transportation stakeholders to reach a consensus on needed transportation projects and services. Every transportation mode is an interdependent component of the overall transportation system. This plan provides an inventory and addresses the need for improvements to the state's transportation system-roadways, pedestrian and bicycle facilities, transit, freight and passenger rail, airports, waterways and ports, pipelines, and intelligent transportation systems (ITS).



How was the Statewide Long-Range Transportation Plan Developed?

Transportation planning is an ongoing effort at all levels of government. TxDOT and the Metropolitan Planning Organizations (MPOs) develop various transportation-related plans (goals, strategies, and policies) and programs (funding mechanisms and sources) in conjunction with other transportation agencies.

This statewide long-range plan builds on these ongoing planning efforts. Individual plans prepared by TxDOT such as the Texas Rail Plan, the Texas Airport System Plan, Regional Coordinated Public Transportation planning, and the TxDOT Strategic Plan were incorporated into the Statewide Long-Range Transportation Plan effort.

Stakeholder meetings were held around the state, which included various state and MPO officials, local transportation providers, elected officials, and representatives of airports, railroads, seaports and the trucking industry. Two rounds of public meetings were held in each of TxDOT's 25 Districts. Collectively, this work effort, technical analysis, review of other plans, and stakeholder and public input shaped the Statewide Long-Range Transportation Plan.

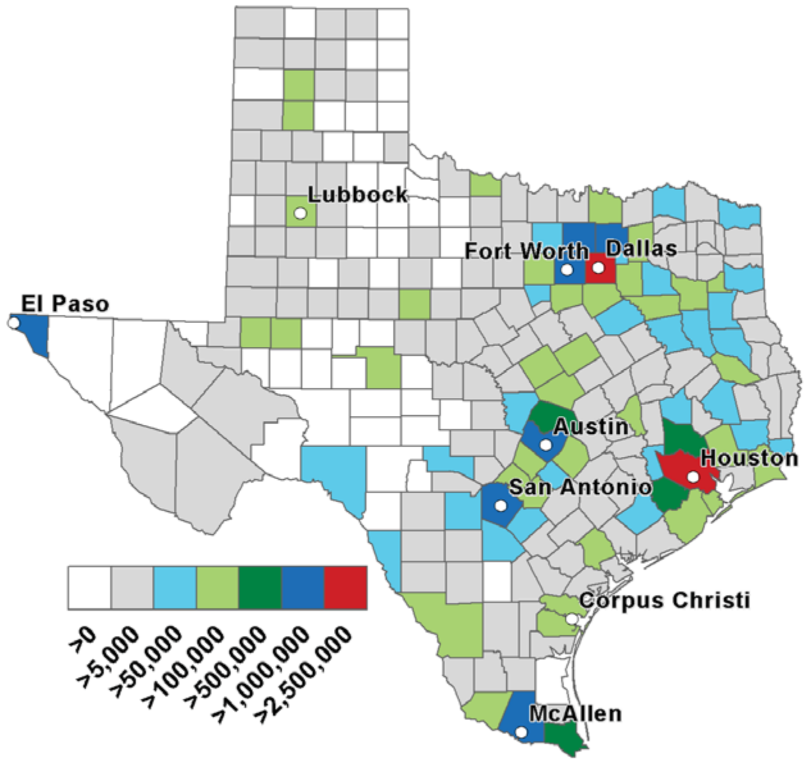
Future Trends and Challenges (2010–2035)

How Are We Changing and What Will Be Our Future?

Demographic and Economic Changes

Over the past 25 years, Texas has experienced growth in population, employment and changes in where people live and work. This growth, combined with evolving trends in technology and the choices Texans make about transportation will have a profound impact and demand on our transportation system.

- ★ Between 1990 and 2008 the population of Texas increased by 39 percent or more than 6½ million persons. By 2035 the population of Texas is projected to increase by 43 percent, exceeding 33 million and outpacing the nation.
- ★ Over the next 24 years, the entire baby-boom generation enters the 65+ age group. The transportation needs of this age group will be different.
- ★ Currently greater than 50 percent of the workers who live in suburban counties travel to a neighboring county to work.
- ★ The Texas economy has grown faster, on average than the U.S. economy as a whole since 1990.



Texas Forecast 2035 Population

Urban Livability and Sustainability Trends Will Influence Transportation

Livability and sustainability are concepts that are likely to be central to future surface transportation legislation. Impacts could include an increased focus on transit and rail services, transit-oriented development, smaller personal vehicles, and increased use of human powered modes, such as bicycle or walking. This trend includes:

- ★ A revival of downtown and inner-city residential development and infill of central metropolitan regions,
- ★ Development of urban rail and streetcar systems,
- ★ An increasing desire for more bicycle and pedestrian opportunities

Freight changes

In 2008 the total amount of freight shipped to, from, and within Texas was greater than 2.389 billion tons. By 2035, the total tons and value of goods shipped by freight is expected to increase by approximately 82 percent and 166 percent, respectively.

With the opening of the Panama Canal expansion project in 2014, the dynamic of freight movement into and out of Texas ports is likely to change impacting port activity, and rail and truck freight demand.

Infrastructure Maintenance Needs Are Growing

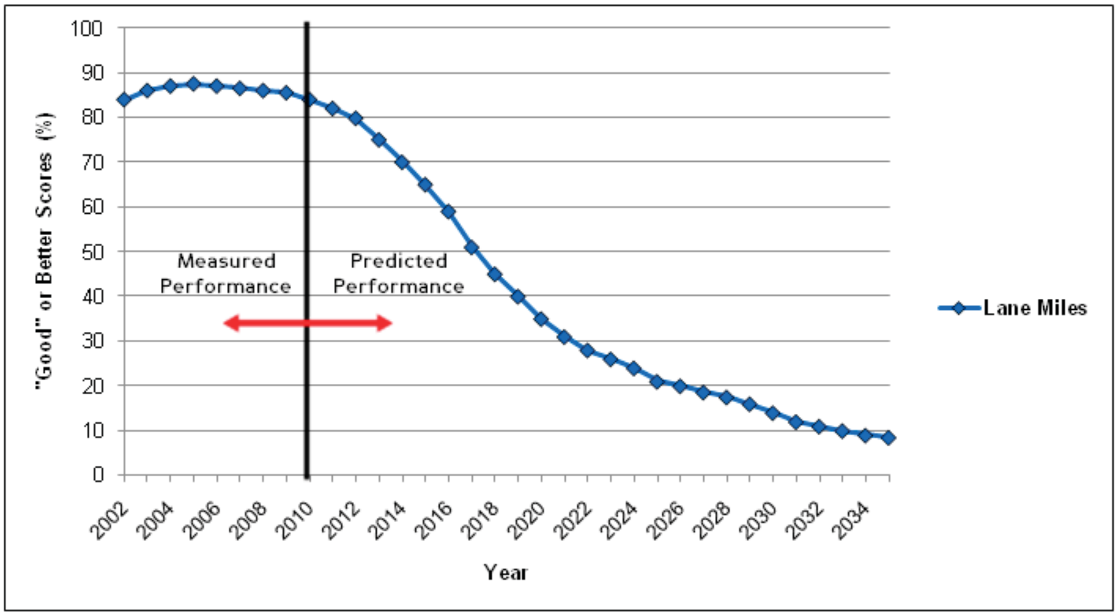
Modal fleets and infrastructure in the US are aging-many reaching their intended lifespan-requiring additional maintenance and reconstruction. Inventories of modal systems are provided in the SLRTP. Highways, bridges and pavements represent the largest state investment.

Texas has more than 51,000 bridges, which require significant resources to maintain, rehabilitate, or replace. The correlation between the age of bridges and their need for special maintenance predicts the need for resources to support bridge replacement and rehabilitation.

The Texas Transportation Commission established the goal of achieving 80 percent of the bridges rated in good or better condition by September 2011. While there has been a decrease in the number of deficient bridges, there are a substantial number of the structures in the system that will reach their predicted lifespan during the time frame of this plan.

The thousands of miles of Texas highways and other public roads require large investments to maintain the traveling surface. As demand increases, particularly truck traffic, the wear and tear on Texas' highways increases. A significant difference exists between TxDOT's projected maintenance funding for 2010–2035 and the pavement maintenance funding needs recently identified by The University of Texas Center for Transportation Research.

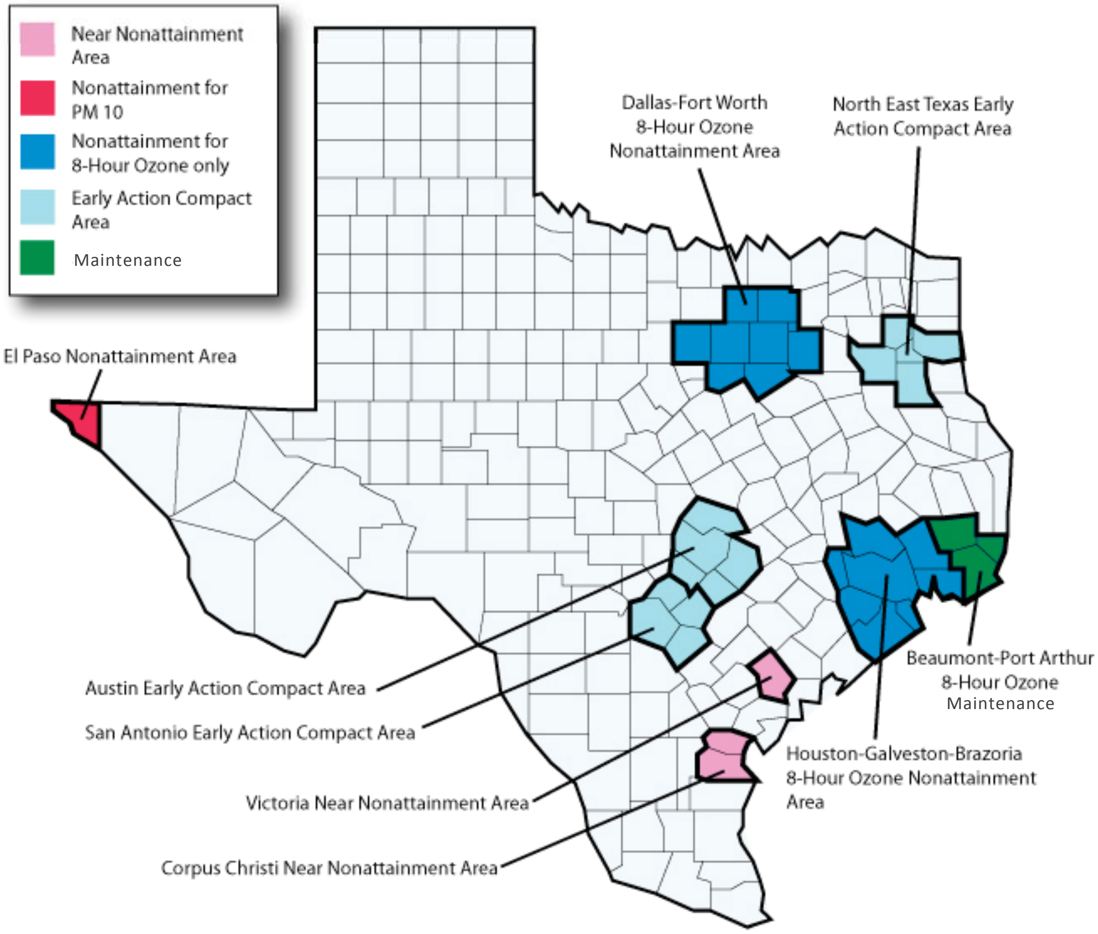
Although TxDOT is close to meeting its goal of 90 percent of pavements rated as good or better, current trends in funding may lead to a rapid decline in overall average statewide pavement rating. This decline, given current funding trends, will cause Texas' pavement scores to average less than 10 percent good or better by 2035.



Projected Percentage of Lane Miles with Good or Better Pavement

The Environment

Currently, there are three areas in Texas that do not meet air quality standards (nonattainment) as established by the Environmental Protection Agency. There are three other near-nonattainment areas and one maintenance area of the state that are in risk of violating current standards. As a result, these metropolitan areas will be faced with challenges as they look for transportation solutions while trying to improve the air quality in their region.



Texas Nonattainment and Near-nonattainment Counties

Where we choose to live and work, particularly in areas of rapid growth, will also have an impact on our ability to find solutions to transportation needs while minimizing the impact that they have on our environment. Reliance on single-occupant vehicles (SOVs), suburban sprawl, and the lack of transportation choices contribute to increased congestion and air quality challenges.

In addition, climate change may have several important implications for the Texas transportation system by the end of the century. While these are beyond the time frame for this plan, it is nonetheless timely to consider possible impacts of climate change.

Technology Changes

The future of transportation technology is increasingly about the integration of transportation with telecommunications. Most people now travel with one or more personal communication devices. These devices are being integrated with cars and trucks. One-quarter of Americans already have a GPS device.

The freight industry is becoming increasingly reliant on these technologies. Many trucks already use fleet management systems to track and manage goods movement—these usually include a GPS system along with some form of wireless communication. Railroads and some intermodal shippers also make use of transponders (similar to the devices used for electronic toll collection) to monitor the location of containers and rail cars.

Changing energy sources will influence transportation. Regardless of the exact timing, petroleum-related fuel prices are expected to rise significantly, unless fuel efficiency improves and/or global demand for oil decreases by at least the same rate as the decline in production. As a result, future travel patterns may shift from historic trends, unless alternate sources of transportation energy are brought online.

Our Transportation System – Now and in the Future

What Makes Up Our System and What Are the Future Demands?

Moving People

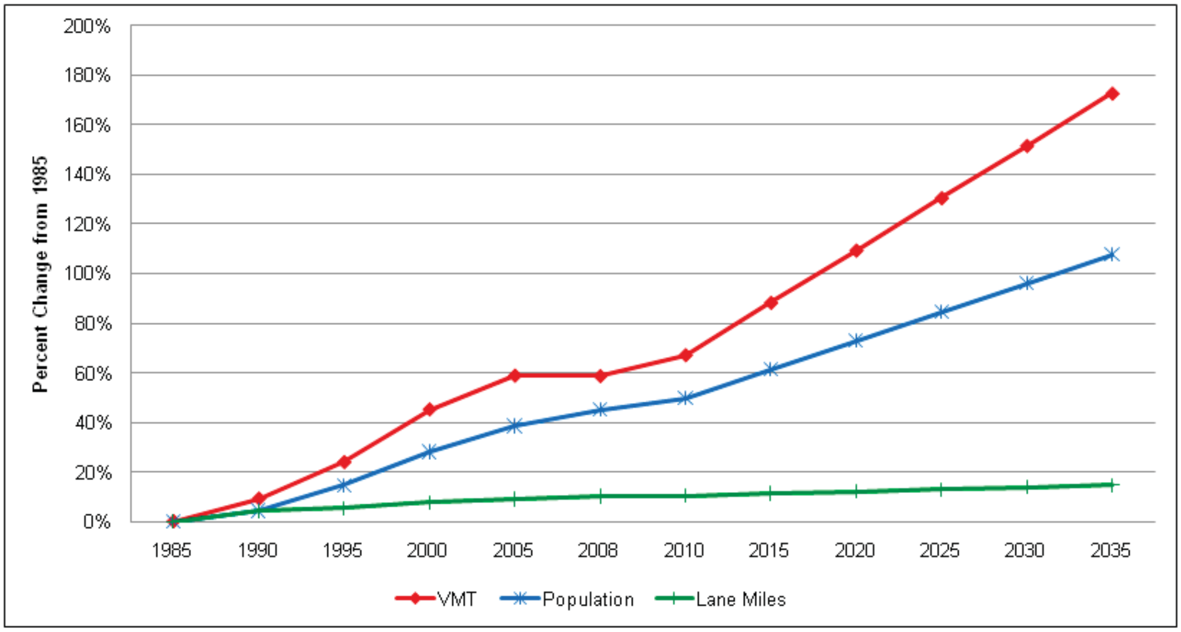
The Texas transportation system is made up of networks of various modes, sizes, and ownership. Each contributes to the economic vitality of Texas by moving people and moving goods into, out of, and across the state.

The Texas highway system is made up of over 80,000 centerline miles of roadway. The interstate system in Texas is 9.7 percent of the total U.S. interstate system. In Texas, U.S. highways, state highways, business routes and farm-to-market type roads make up most of the system.

Growth in Travel

Demand for roads is typically measured in Vehicle Miles of Travel (VMT). VMT is the total daily vehicles that use a road multiplied by the length of the roadway. One car travelling 1 mile equals one VMT. Two cars travelling for 2 miles are four VMT, and so on.

VMT is currently outpacing population growth in Texas. This trend is predicted to continue at an accelerated pace. From the measured 2008 levels, VMT is predicted to increase 72 percent, while population will grow by 43 percent by 2035.



VMT, Population, and Lane Miles, 1985–2035

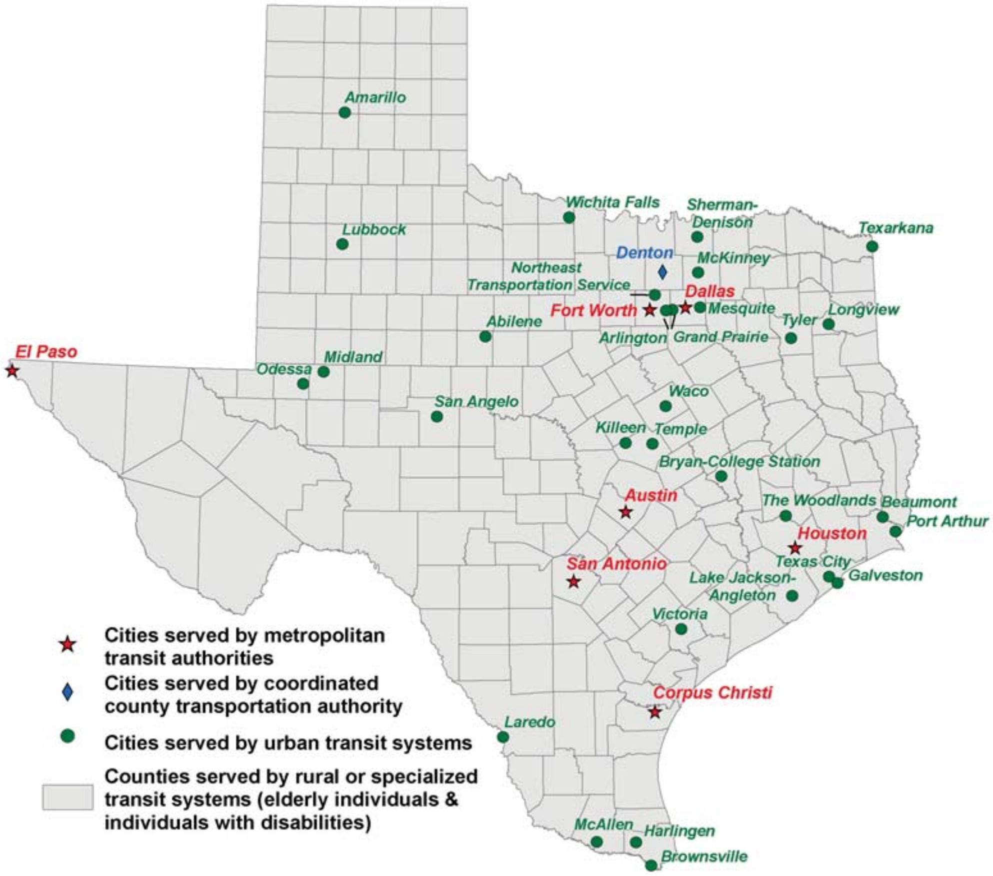
Total VMT is made up of both personal autos and trucks. While auto VMT is expected to increase by 66 percent from 2008 to 2035, truck VMT is expected to grow by 123 percent.

Congestion in Texas is getting worse, as population grows and VMT outpaces construction of new capacity. While 67 percent of freeway travel in urban-metro counties is currently occurring in heavy or worse congestion, this is expected to grow to over 80 percent of travel by 2035.

Public Transportation

Public transportation is an integral part of the Texas transportation system. It not only provides an alternative means of travel in both urban and rural areas, but also provides vital services for the elderly and persons with disabilities.

Public transportation in Texas includes both urban transit systems and rural transit services. Urban transit systems are multifaceted and include fixed-route and demand-response bus systems, trolley systems, and urban rail systems. Rural systems provide services in small cities and rural areas, providing transportation to the general public, elderly, and persons with disabilities.



Public Transportation Systems

Within Texas, urban and/or commuter rail systems currently exist within the Dallas-Fort Worth metroplex area (Dallas Area Rapid Transit [DART], the Trinity Railway Express [TRE], and McKinney Avenue Transit Authority [MATA]), Houston (MetroRail), and Austin (Capital MetroRail). In addition, the cities of Dallas, Fort Worth, and Austin have initiated studies for the planning and design or expansion of urban streetcar systems to complement regional rail.

Intercity Passenger Rail and Bus

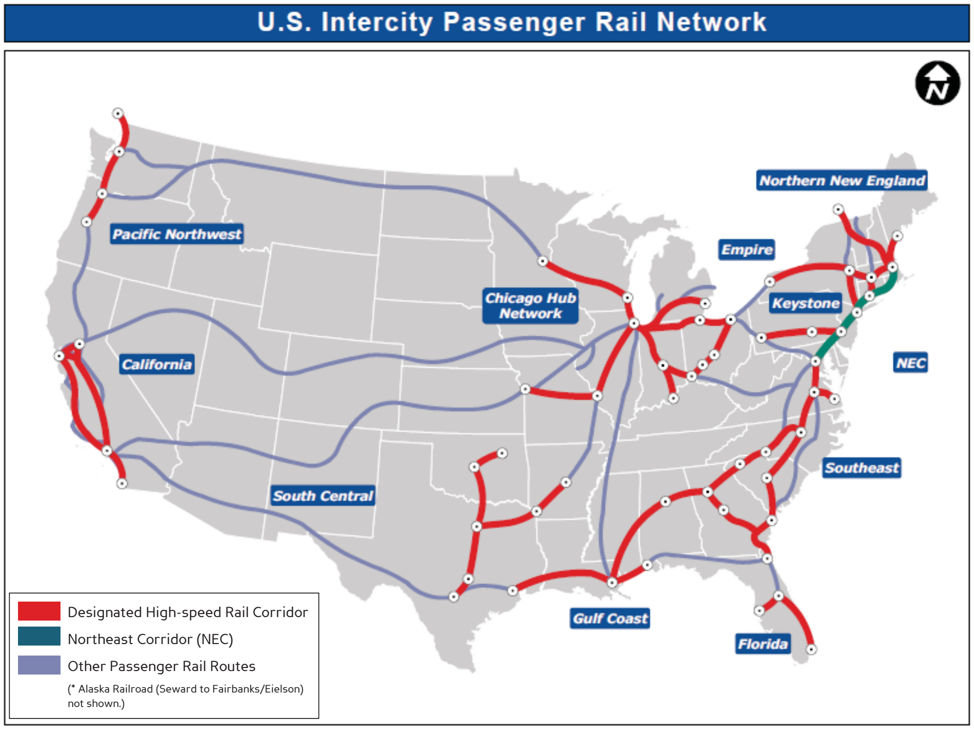
For many Texans intercity travel in Texas is by auto. However, there are important alternatives to the automobile. Intercity passenger rail service in Texas is provided by Amtrak. Amtrak routes in Texas in 2010 include:

- The Texas Eagle: Chicago to San Antonio, via St. Louis, Little Rock, Texarkana, Dallas, Fort Worth, and Austin,
- The Sunset Limited: New Orleans to Los Angeles, via Houston, San Antonio, Alpine, and El Paso, and
- The Heartland Flyer: Daily round trip between Oklahoma City, Oklahoma and Fort Worth, Texas.

The largest intercity bus systems are Greyhound Lines and the Trailways system. Other systems in Texas include Kerrville Bus Company, Americanos, Valley Transit Company, and others.

High-Speed Rail Planning in Texas

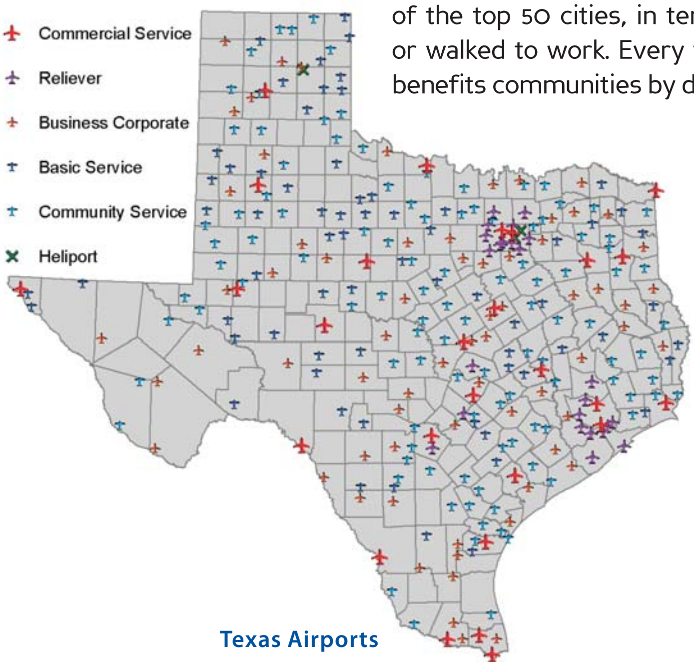
As the U.S. and Texas grow and as expressed at public and stakeholder meetings, there is increasing interest in high-speed rail systems. The distance between large metropolitan regions in Texas is well suited to service by high-speed rail. In April 2009, The Federal Railroad Administration of the USDOT released a strategic planning document outlining the administration's vision for high-speed rail systems development.



High-Speed Rail Map from the Federal Railroad Administration

Bicycles and Pedestrians

Bicycle and pedestrian travel are increasingly important parts of the Texas transportation system. Between 1990 and 2007 Texas experienced a 38% increase in commuters who biked to work. Between 2000 and 2007 people walking to work increased by 9 percent. In 2010, Texas had seven of the top 50 cities, in terms of percent of commuters who bicycled or walked to work. Every trip taken by bicycle or on foot immediately benefits communities by decreasing traffic and air pollution.



Texas Airports

Aviation

Texas is home to one of the most robust and active state airport systems in the nation. There are 27 commercial service airports and 265 general aviation airports in Texas, with large clusters of airports close to population centers in Dallas-Fort Worth and Houston. The importance of aviation to Texas is highlighted by the fact that three of the world's largest commercial airlines (American, Continental, and Southwest) maintain headquarters in the state and conduct major operations from Texas airports.

Moving Goods

Including all modes of freight movement, Texas moves more freight than any other state. Texas is unique having 27 border crossings on its large international boundary with Mexico. These handle the most international truck, rail, and personal vehicle crossings of any state. Texas seaports are of national importance. Millions of gallons of petroleum products and tons of manufactured goods and other freight are moved into and out of Texas, and between the global marketplace and the rest of the U.S. Additionally, the ports serve a key role in military deployment.

Truck Freight

Trucks are vital to freight transportation because they usually provide the first and last step in the supply chain for goods movement. Whether hauling raw materials prior to production or refinement, finished goods after manufacturing, or delivering goods directly to consumers, trucks are part of Texas' economic lifeline.

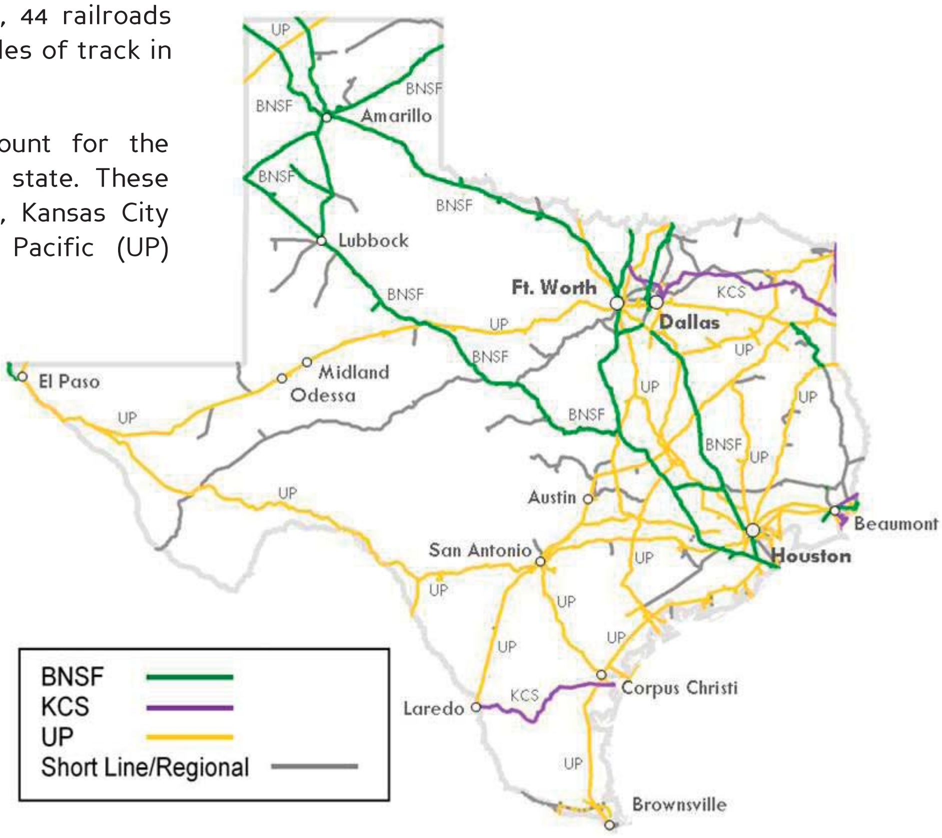
In terms of gross tonnage, trucks are expected to carry the majority of most commodities with the exception of raw materials and chemical/petroleum commodities in Texas. It is expected that from 2008 to 2035 the value of goods shipped by truck within, from, and to the state will grow by 176 percent.

The Texas Freight Rail System

Texas has the largest freight rail network in the country handling 8 percent of all freight moved in the state. According to the Association of American Railroads (AAR), 44 railroads operate more than 10,000 miles of track in Texas.

Three Class I railroads account for the majority of rail miles in the state. These include BNSF Railway (BNSF), Kansas City Southern (KCS), and Union Pacific (UP) railroads.

According to statistics published as part of the FHWA's Freight Analysis Framework, it is expected that from 2008 to 2035 the value of goods shipped by rail within, from, and to the state will grow by 77 percent. This equates to approximately 546 million tons of goods with a combined value of more than $136 billion by 2035.



The Texas Freight Rail Network

Texas Ports and Waterways

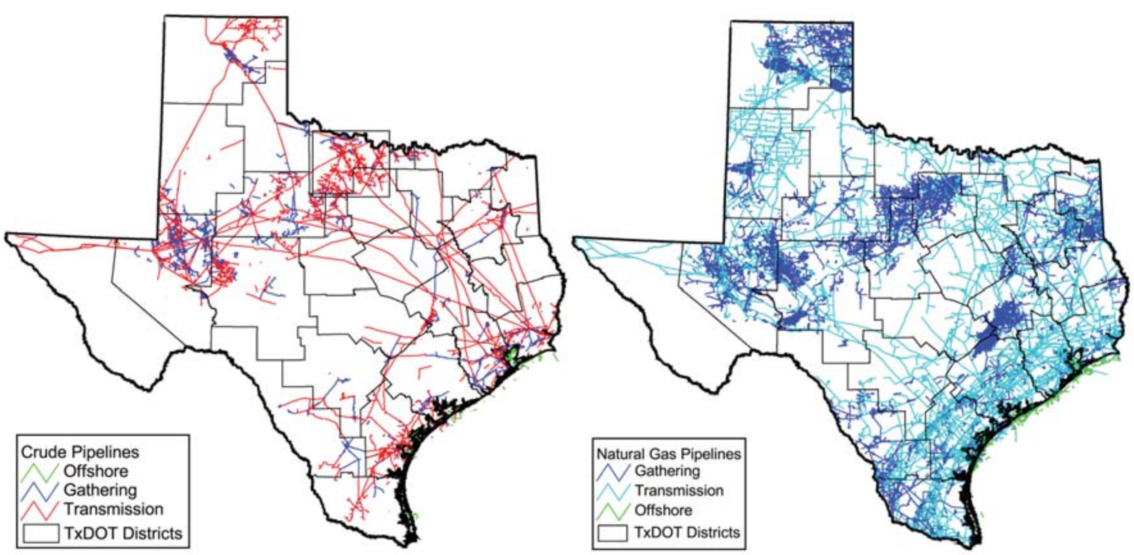
The state has almost 300 miles of deep draft channels along with 12 deep draft public ports. There are also over 700 miles of shallow draft channels along with multiple shallow draft public ports. TxDOT recently estimated that Texas waterways are expected to move over 700 million tons of freight by 2030.

The primary shallow draft waterway in Texas is the 1,300-mile Gulf Intracoastal Waterway (GIWW), which stretches from Brownsville, on the Mexican border to St. Marks, Florida. The GIWW is the nation's third busiest waterway with the 423-mile Texas portion handling more than 58 percent of its traffic.

Ports, Waterways, and Navigation Channels along the Texas Gulf Coast

Texas Pipelines

Pipelines are a major mode of transportation of crude oil and natural gas in Texas, which help in economic and efficient movement of these commodities. Natural gas and crude oil are the major commodities transported by pipelines—these together constitute 67 percent of the 222,285 pipeline miles in Texas. Although oil production in the state is in decline, natural gas production in the state continues to increase rapidly due to an increased production from unconventional sources in northeast Texas.



Crude Petroleum and Natural Gas Pipelines in Texas

Our Future Needs and Finances

What Is Needed and How Will We Pay For It?

Who Owns, Builds, and Operates the Transportation System?

Highways: TxDOT manages funds to build and maintain the state highway system (farm-to-market/ranch-to-market, state highway, U.S. highway, and interstate). Counties and cities may execute pass-through finance agreements with TxDOT to develop on-system projects by using local funds to pay for construction with TxDOT reimbursing the local government out of future highway funding over an agreed upon timeframe. Regional Mobility Authorities and toll authorities also own, build, and operate highways.

Transit: There are seven Metropolitan Transportation Authorities (MTAs) located in the largest Texas cities and one coordinated county transit authority. There are 30 urban systems operating in cities between 50,000 and 200,000 in population. Rural public transportation is provided by 38 entities (local governments, public agencies or rural transit districts) that provide service in rural areas and towns outside of urban districts or MTA systems. Transit providers finance the construction, operation, and maintenance of transit systems from different sources—including federal and state grants, loans, bonds, local sales taxes, passenger fares, and advertising fees.

Rail: Texas has three Class 1 railroads—BNSF, UP, and KCS—that own, maintain, and operate rail infrastructure. Most short-line railroads are owned by a number of privately held freight rail companies. Each of these private firms uses revenues from shipping fees to make improvements to the rail infrastructure. The state owns rail infrastructure in west Texas, from Presidio to northeast of San Angelo, and leases it to a privately held company. In addition, the state owns or has a security interest in the Bonham Subdivision between Paris and Bonham and the Northeast Texas Rural Rail Transportation District between Mount Pleasant and west of Greenville. Public and private funds have been used for improving this rail line to allow higher operating speeds.

The National Railroad Passenger Corporation, Inc. (Amtrak) is the sole provider of intercity passenger rail service in Texas. Amtrak trains run on freight rail infrastructure under operating agreements with each track owner. States provide financial assistance to Amtrak to retain non-long distance rail service.

Airports: Airports in Texas are owned by the cities or counties in which they operate—although many of the large commercial airports are operated by financially independent authorities. At many commercial airports, airlines have developed complex contractual arrangements that determine the use of and payment for airfield and terminal facilities. Commercial airports use a combination of federal grants and local funding to make improvements. TxDOT administers public funds for grants to general aviation airports throughout Texas.

Ports: Ports in Texas are owned and operated by port authorities, which are subdivisions of the State of Texas, municipalities, and private entities. Most have a board that directs the policies of the port and answers to local area constituents in their respective navigation district. Federal funding is available on a competitive basis for dredging, harbor maintenance and port security.

Pipelines: Natural gas and oil pipeline systems are owned, operated, and maintained by several different private companies. Expansion and maintenance are funded through service charges.

Texas Transportation Needs

Highways: Travel needs in urban areas were estimated based on traffic forecasts of urban mobility needs from studies carried out by the Texas Transportation Institute (TTI). The needs were based on a calculation of the amount of highway capacity needed to satisfy projected demand in 2035, or "lane mile equivalents." However, the actual solution to satisfy the need is decided at the local level in each metropolitan area and can be highways, public transportation, other modes, or a combination of modes.

Travel needs in rural areas were estimated on the same lane mile equivalent concept. Traffic volumes were forecast to 2035 and the number of lane mile equivalents needed to avoid severe congestion was calculated.

Travel needs, based on highway capacity costs, pavement rehabilitation, and bridge maintenance, inspection and replacement costs, total $370 billion—measured in 2010 dollars. The needs exceed the current forecast of funds that TxDOT has available.

Summary of Highway Needs through 2035 ($ millions, 2010)

Highway	2035 needs ($ millions)
Metro/Urban needs from TTI	$242,046
Urban needs based on new MPO boundaries	$1,047
Routine Pavement Maintenance	$7,540
Preventive / Rehabilitative Maintenance	$83,244
Rural Capacity Needs	$3,529
Total Highways	**$ 337,406**
Bridges	
Replacement Cost (on-system)	$22,389
Replacement Cost (off-system)	$8,042
Maintenance Cost	$1,162
Inspection Cost	$548
Total Bridges	**$32,141**
Grand Total	**$369,547**

Public Transportation: The needs for public transportation are growing but are difficult to quantify. Many transit agencies have plans and programs for improvements based on anticipated funding. Many transit agencies are focusing on less costly, more efficient alternatives that incrementally increase ridership, such as Bus Rapid Transit (BRT) as an interim step towards a light rail or streetcar system.

The vast majority of transit service and funding in Texas is in urban areas with populations greater than 200,000, most of which have locally dedicated funding sources. According to the American Association of State Highway and Transportation Officials , the average state funding for transit in 2008 was $42.50 per person, while state transit funding in Texas was $1.18 per person. The anticipated public transportation capital investment needed between 2006 and 2035 is $40.2 billion, with 95 percent estimated for metropolitan areas and 5 percent for small urban and rural transit operators. The estimated operating funds need (state funds only) for small urban and rural operators is $3.2 billion.

As Texas' urban areas become more densely populated, transit needs are expected to grow. The growing elderly population will create additional specialized and rural transit requirements. In 2010, total federal funding was $610 million for all Texas public transportation. This included $320 million for annual programs and $290 million for specific project awards. The forecast for annual funding in 2035 is in excess of $700 million.

Estimated Requirements to Support Public Transportation in Texas (2006-2035)

Expense Category	Total Funds Required (2006-2035) ($ millions)
Metropolitan Urban Capital Requirements	$38,309
Small Urban Fleet Replacement/Expansion	$333
Rural Fleet Replacement/Expansion	$696
Small Urban/Rural Major Capital Facilities	$769
Small Urban Passenger Facilities	$27
Rural Passenger Facilities	$35
Capital Subtotal	**$ 40,169**
Small Urban and Rural Operating (State Funds)	$3,174
Grand Total	**$43,343**

Bicycles and Pedestrians: As previously noted, bicycling and walking to work are growing as a percentage of commuters. In Texas, it is estimated that 0.8 percent of federal transportation funds are spent on bicycle and pedestrian facilities. Between 2010 and 2020, it is anticipated that Texas will spend $15 million per year for the Curb Ramp Program. In 2009, $54 million was spent on Safe Routes to School Program.

Rail: The Texas Rail Plan highlights critical issues:

1. **Freight Bottlenecks** – Rail bottlenecks, such as Tower 55, are hindering efficient movement of freight.
2. **Grade Crossings** – Safety at rail grade crossings is major concern.
3. **Rail Yard Capacity** – Increasing amounts of freight are straining capacity at rail yards.
4. **Border Rail Operational Issues** – Limited rail infrastructure contributes to delays in trains crossing between the U.S. and Mexico.
5. **Sidings** – Sidings are needed to accommodate longer and heavier trains.

Identified Freight Rail Improvements Costs (2030) ($ millions)

Crossing Closure	Crossing Closure and Pedestrian Bridge	Grade Separation	New Rail Connections	Total
$18.6	$7.0	$2,506.6	$5,227.7	$7,759.9

Intercity Rail: Nationally, intercity passenger rail has experienced historic growth in ridership over the last several years. The greatest increase has occurred in regional corridor routes that connect major population centers separated by distances similar to those between Dallas-Fort Worth, Houston, and San Antonio. Conventional diesel-powered trains operating on tracks shared with freight trains maintain a central role in intercity passenger rail, but newer, more advanced rail technologies capable of operating at significantly faster speeds are becoming the intercity passenger rail investment of choice. Historically, Texas has assumed little or no initiative in planning or funding intercity passenger rail. However, with the mobility challenges confronting Texas, intercity passenger rail would complement the state's long-term mobility strategy. While construction needs for high speed intercity passenger rail have not been identified, the Texas Rail Plan identifies the needed studies to determine location and/or improvement to existing routes.

Airports: Passenger travel demand at commercial airports is monitored continuously and airport development projects are initiated when demand drives the need for additional or expanded facilities. Needs at commercial airports are estimated to be several billion dollars. Needs at general aviation airports total nearly $1.1 billion for the next 5 years.

Ports: Texas port infrastructure has not kept pace with growth and will be greatly strained with the forecasted increases in freight traffic, which could be amplified by the widening of the Panama Canal. Many of the channels have not been maintained at their authorized width and depth and locks are in need of repair. It is estimated that $5.75 billion is needed for maintenance and operations for the ports and waterway through 2035.

Funding Forecast

The Texas transportation network is large and complex, and the financing needs are equally so. Revenues are generated by a combination of:

- Direct user fees (highway tolls, transit fares, and payments to move freight);
- Indirect user fees (motor fuel taxes and registration fees, for example, fees that do not reflect use of a specific facility but are paid by firms and individuals that use the transport network);
- General taxes (dedicated sales taxes to support transit, for example);
- Federal funds (much of this comes from indirect user fees including federal taxes on motor fuel); and
- Bonds (with repayment backed by future direct or indirect user fees or general revenues).

Chapter 3 of the SLRTP contains more information on these sources of funding for the various modes.

TxDOT manages expenditures to build, maintain, and operate the state highway network as well as support for certain transit, airport, rail, and marine facilities. While vital for the state's economic and social well being, highway funds support only a portion of the state's total transportation system.

Currently, TxDOT estimates $58 billion in available funds for highways.

Future Funds for Highway Projects ($ millions)

Category	FY 2010–FY 2020	FY 2021–FY 2035
Preventive Maintenance and Rehabilitation	$10,724	$11,630
Metropolitan Area Corridor Projects	$1,963	$0
Urban Area Corridor Projects	$282	$0
Statewide Connectivity Corridor Projects	$70	$0
Congestion Mitigation and Air Quality improvement	$1,246	$2,230
Structures	$2,813	$3,750
Metropolitan Mobility/Rehabilitation	$2,106	$3,140
Safety	$1,444	$1,950
Transportation Enhancements	$676	$900
Supplemental Transportation Projects	$818	$490
District Discretionary	$728	$940
Strategic Priority	$178	$0
CATEGORY SUBTOTAL	**$23,048**	**$25,030**
Program		
Prop 12	$2,000	
Prop 14	$818	
Prop 14 Safety Bond	$423	
Concessions and Toll Revenue Agreements	$2,431	
Federal Earmarks	$625	
Pass through Finance	$749	
ARRA	$1,247	
Contracted Routine Maintenance	$2,054	
PROGRAM SUBTOTAL	**$10,347**	
GRAND TOTAL	**$58,425**	

Source: Texas 2010 UTP and Minute Orders 112048 and 112049 approved by TxDOT in November 2009

Public transportation in Texas is a responsibility of local government, but funding for public transportation comes from federal, state, and local resources. Federal transit funding is allocated annually. The federal apportionment to Texas for FY 2010 was $610,331,010. Because this funding is determined annually, there is no reliable way for recipients to forecast future funding streams.

The largest transit agencies are funded with a dedicated local sales tax and apply directly to Federal Transit Administration for federal funds for capital improvements. State and federal transit funds are distributed by TxDOT to small urban and rural transit providers.

Texans Speak

How You Feel about Transportation and Solving the Challenges

Public Outreach Effort

A Public Outreach Plan was developed and implemented during the development of the Statewide Long-Range Transportation Plan 2035. During the outreach effort, a number of tools were used to ensure the public was informed of the status and findings throughout the planning process.

Newsletters

TxDOT issued three newsletters to federal, state and local elected officials, transportation stakeholders and the public.

Stakeholder & Public Meetings

Two rounds of stakeholder and public meetings were held in April and July to show the status and findings of this planning process.

Stakeholder meetings were held in each of the 4 TxDOT regions, while public meetings occurred in each of the 25 districts.

Stakeholders are those individuals, associations, and businesses that have an interest in the SLRTP. Included are elected officials, transportation staff members, civic and community leaders, state transportation groups, Indian tribal government representatives, business and economic interest groups, industry representatives for each mode and public agency representatives. TXDOT Districts and the Government and Public Affairs (GPA) Division keep updated lists.

Questionnaire

An optional, informal questionnaire was made available to the public during the initial round of statewide public meetings. Respondents were able to complete it on-line, at the TxDOT District offices, at the public meetings, or complete and mail/fax it in.

Webpage/Social Networking Tools/Telephone Line

TxDOT created a webpage at http://www.txdot.gov/public_involvement/transportation_plan/default.htm.

This website provides information regarding the status of the project. Social media sites such as, Facebook, Twitter, and YouTube were also used. A toll free telephone number and voice mailbox was designed for the public to leave input, feedback or general comments. It will remain operational until November 1, 2010.

Public Hearing

One formal public hearing will be held in Austin, Texas, scheduled for October 1, 2010, to solicit public input on the draft SLRTP before presenting it to the TxDOT Commission for adoption.

What We Heard from the Stakeholders

Stakeholder meetings were held in four regions.

Region	General Stakeholder Comments
East	★ Freight should not focus on merely trucks but short-line rail and the use of barges in the GIWW. ★ Interconnectivity at the Port of Houston will help handle the increase of container traffic predicted from the expansion of the Panama Canal and other trade possibilities. ★ Better multi-modal coordination is needed between pipelines and other modes, as natural gas is one of the biggest commodities. ★ High-speed rail will alleviate congestion concerns. ★ Financial needs numbers should reflect all modes because of intermodal connectivity. ★ Innovative financing is needed to bridge the gap.
North	★ Freight movement by rail needs to be expanded and include rural rail lines. ★ Representatives from rail providers discussed support of innovative financing. ★ There was a desire to include bike lanes in highway projects. ★ There was a discussion to increase overall funding for TxDOT.
South	★ Port representatives discussed increases in rail and barge loads to accommodate port growth. ★ Traffic management via ITS through signs and smart phones could assist with congestion. ★ Innovative financing away from gas tax could help funding concerns and commuter rail/ expansion of other modes could assist higher demand on highways. ★ The need for a social/cultural change away from personal vehicles could help the demand on current transportation. ★ Suggestions were made to shift funding from highways to bicycle/pedestrian facilities as a way to encourage this change. ★ To solve the difference between limited funding and large needs will take both a technological and cultural change.
West	★ Focus on rural needs and lack of available state funding to rural communities. ★ Transportation can enhance economic development. ★ The growing elderly population and the need to increase rural public transportation funding. ★ Innovative financing by the use of tolls and the development of impact fees.

What We Heard from the Public

The public involvement component of the SLRTP consisted of two rounds of public meetings. The first round was held in early May, 2010 and the second round was held in early August, 2010. Each of the twenty-five TxDOT districts held at least one meeting for each of the two rounds of public involvement. A complete summary of public comments can be found in the final SLRTP report, after all comments have been received and the public comment period has ended.

Addressing the Challenges

Setting Goals and Strategies

Goals

The SLRTP is built around the six TxDOT Strategic Plan goals.

1. Develop an organizational structure and strategies designed to address the future multimodal transportation needs of all Texans;
2. Enhance safety for all Texas transportation system users;
3. Maintain the existing Texas transportation system;
4. Promote congestion relief strategies;
5. Enhance system connectivity; and
6. Facilitate the development and exchange of comprehensive multimodal transportation funding strategies with transportation program and project partners.

Meeting the Challenge…Moving Texas

Strategy Options and Recommendations

In order to meet the challenge of limited funding, growing demand, and very large transportation needs in the SLRTP, three strategies are proposed to address the transportation needs and funding differences identified in the SLRTP. These strategies represent a complementary, multi-pronged approach designed to

1. Focus available transportation funds on the most cost-effective investments,
2. Manage our transportation system in ways that encourage cost-effective shifts in how we travel, and
3. Develop partnerships for providing transportation improvements

The first strategy aims to maintain the current system and expand it where possible; the second seeks to manage the system in ways that reduce peak-period demand; and the third would provide funding to help carry out the first two approaches.

Even an aggressive application of these strategies will not close the funding difference between our identified needs and the projected available funding, but they do offer an opportunity to meet the state's most important economic and social transportation needs. Each strategy includes a series of recommendations.

Transportation needs are a result of successful economic growth. Conversely, transportation investment is one of several major drivers of the economy. Not meeting the predicted needs for transportation can have a negative impact on the quality of the state's transportation service and a negative impact on the state's economy. It is predicted that Texans will be faced with a lower level of performance of the transportation system. This lower level of performance can mean increased congestion, decreased reliability, and reduced economic productivity.

Strategy 1 – Maximize Available Resources

TxDOT, along with most other state and local transportation agencies, is experiencing a shrinking amount of revenues from traditional sources. These trends are likely to continue for the foreseeable future. At the same time, the demand for travel continues to grow. The current imbalance between demand for transportation and available resources creates significant risks about sustainability of past trends in economic growth.

This combination of limited funds and increasing demand makes it essential to use available funds in ways that maximize the return on these resources. This calls for operating the transportation system as efficiently as possible. For example:

★ What can be done to maximize existing roadway capacity in the most congested areas?
★ What can be done to ensure a safe and reliable multimodal statewide transportation network?
★ How can Texas take advantage of the strengths offered by non-highway modes of travel?
★ How can Texas take advantage of new technologies to achieve more efficient and coordinated use of all modes of transportation?

The focus of this strategy is to make the most of available transportation funds by targeting transportation investments that offer the greatest return for Texans, regardless of mode, type of investment, or location.

Recommendation A. TxDOT should refine current project selection procedures to investigate comprehensive multimodal options.

This recommendation recognizes the vital need for TxDOT to allocate limited resources as effectively as possible. This refinement would provide a comprehensive supplement to TxDOT's current decision-making process and would assist the Transportation Commission in making its decisions.

The traditional benefit-cost technique offers an opportunity to illustrate how such a project decision process might work. A benefit-cost ratio measures the dollar value of benefits generated by a project for every dollar spent on that project—the higher the ratio the greater the return on investment. For example, benefits for a highway project typically include some combination of travel time savings, reduced operating costs (such as fuel saved), and improvements in safety (such as fewer fatalities). When calculated on a consistent basis, the benefit-cost ratio offers one way to rank projects, making it easier to identify the most attractive investments.

In addition to measures of cost effectiveness, the decision process should also consider qualitative impacts, perhaps using cost-effectiveness rankings. Since quantitative benefits are based on forecasts of future traffic flows that are subject to uncertainty, the process should include a risk analysis. Qualitative benefits should also be considered, particularly as part of multimodal alternatives analysis. Any decision process should consider the six SLRTP goals.

Recommendation B. MPOs should implement similar project selection procedures to improve consistency in the overall statewide planning process. While TxDOT can refine its own project selection procedures, the process effectiveness will be enhanced if other transportation agencies have similar processes. Some MPOs already have a robust process in place, but this is not consistent across the state. This would make it possible to adopt a broad, inclusive approach to transportation investment decisions for all modes, congruent to the six SLRTP goals.

Recommendation C. Increase investment in technology that improves system efficiency.

Texas has already made significant investments in intelligent transportation systems (ITS), particularly in large metro areas. Evidence from across the nation suggests that a high rate of return can be achieved by investing in relatively low cost measures such as traffic signal coordination, ramp metering, access management, and signal preemption for buses.

Strategy 2. Manage Demand

This strategy considers ways to meet transportation needs through managing demand, with an emphasis on reducing demand on highway assets during peak periods and on enhancing highway management and operations.

A trend already exists in Texas towards travel other than a single occupant vehicle. More than 20 percent of urban work trips are by other modes (with carpools accounting for most of this travel—between 11 and 13 percent of work trips). About 400,000 workers work at home in Texas. This equates to 3.6 percent of commuting trips—more than double transit's share.

Recommendation A. Encourage shifts in mode, departure times, and/or route.

This recommendation seeks to encourage individual Texans to adjust their personal travel behavior. There is a desire, and often an unavoidable need, for single-occupant driving in metropolitan areas where people do not live near where they work—indeed 23 percent of Texans live in one county and work in another. This behavior is often the only choice in order to meet work schedules and family responsibilities. However, this behavior comes with a high cost in the form of traffic congestion.

During peak periods (in some urban areas, these include midday peak periods and weekends, not just the traditional morning and afternoon rush hour), increased use of transit, carpools, vanpools, biking, and walking will reduce the number of SOVs. Telecommuting can have a similar effect by eliminating work trips. Alternate work locations that provide high-speed internet and high definition video conferencing can help people relocate travel to locations or times of day with less traffic congestion.

Recommendation B. Consider capital investments that support modal shifts during peak hours.

This recommendation seeks to implement innovative approaches to encourage Texans to adjust their personal travel behaviors. One approach involves public-private partnerships that invest in telecommuting centers (offices where space is unassigned, but available on an hourly/daily basis with shared resources such as reproduction services and high quality tele/video-conferencing). Such centers could be co-located at transit hubs.

Another innovation is to adopt a corridor level approach to planning for bicycling routes and facilities. Typically bike trails are developed in a piecemeal fashion, with little regard to trip making patterns, signage, bicycle priority at traffic signals, continuous dedicated bike trails/lanes that avoid traffic congestion entirely, and bike parking.

Recommendation C. Implement active traffic management to smooth traffic flow and add to effective capacity.

Active traffic management is a relatively new operational concept that holds the promise of greater efficiencies and throughput on congested facilities via a host of real-time, dynamic traffic management techniques. International experience has found that these methods can increase capacity by proactively managing shoulders as peak running lanes, and smooth traffic flow by using variable speed limits.

Recommendation D. Coordinate with local communities to develop land use plans that support existing and future sustainable transportation systems.

TXDOT should work with local communities to identify and encourage more sustainable approaches to development that are consistent with the existing or planned transportation system.

Recommendation E. Explore real-time location information to assist with traveler decisions.

The recent expansion of personal and fleet-owned devices with GPS capability has resulted in an explosion of real time location information, including speed data. Several private sector companies have begun to use these data to develop commercial traffic information systems, including travel time predictions.

Recommendation F. Explore and encourage demand-based pricing that improves the level of performance for travelers.

One of the most powerful mechanisms for influencing travel behavior is to charge for using it at a level that is consistent with its scarcity. This is the business model that is seen in most commercial businesses. Transportation stands out as an exception in that anyone in Texas can use most of the state's highway system for the same cost at all times. In return, travelers receive no assurance about expected travel time and reliability.

Many rail and transit systems charge higher fares for traveling at peak times. Most airlines charge more to travel when there are only a few seats available. Delivery companies charge more to deliver urgent packages than those that are not time-sensitive. Apart from a few toll roads and some High Occupancy Toll (HOT) lanes, most of the Texas highway system is available to anyone to use at anytime. In practice the only “charge” for using the highway system at peak times is traffic congestion and uncertainty about when one will reach their destination.

Strategy 3 – Leverage Partnerships

TxDOT faces severe financial constraints, along with most state and local transportation agencies as well as the USDOT. Regardless of the growth in future demand for new transportation system capacity and for preserving transportation assets, transportation funds are trending downward. Long-term there is a downward trend in transportation revenues. State and federal fuel taxes are a fixed amount per gallon. As a result, as vehicles become more fuel-efficient, less revenue is raised per mile driven. In addition, fuel taxes are not indexed to the rate of inflation; therefore, fuel-related transportation revenues lose value over time relative to the cost of preserving, enhancing, or expanding the transportation system.

Transportation investments provide tangible benefits to local communities, individual travelers, and businesses. There are several active programs that attempt to leverage these benefits as ways to help generate additional funds. Examples include:

- Pass-through financing is a technique where TxDOT provides repayment of a portion of facility cost incurred by local or regional entities (including toll roads) or private firms based on usage.
- The Texas State Infrastructure Bank (SIB) provides loans and loan guarantees to local or regional entities and private firms, repaid in full with interest.
- The private sector funds freight rail, pipelines and many port facilities and represents another source of capital.
- Regional Mobility Authorities (RMAs) are independent agencies formed to finance, design, construct, operate, maintain, and expand the full range of transportation facilities, including roads, airports, intermodal facilities, etc.
- Local tolling authorities have been established as financially independent bodies, such as the North Texas Toll Authority, while others are formed by counties, such as Harris County Toll Road Authority and Fort Bend County Toll Road Authority.
- Private Activity Bonds (PABs) provide private developers and operators of transportation facilities access to tax-exempt interest rates.
- The Buy America Bonds (BABs) program is designed to provide a Federal subsidy of 35 percent of the interest payment for state and local governments. BABs can be issued through the end of December 2010.
- A Transportation Reinvestment Zone (TRZ) provides a way to capture a portion of property taxes from increased value in real estate resulting from a highway improvement. In Texas, this mechanism is only available to municipalities and counties that are planning to execute a pass through finance agreement to fund a highway project.

Implementing the Plan: Performance Measures

Performance measures are indicators that enable decision makers to monitor changes in system condition and performance against established visions, goals, and objectives. These serve as a measure of the progress of the implementation of TxDOT's future improvements to the system to ensure the most productive and beneficial use of available transportation funding and provide TxDOT with the means to update the SLRTP for all modes to meet the challenges ahead.

TxDOT's Mission and Vision as established in the Strategic Plan have two elements. One shows how TxDOT will act as an agency, and the other shows how the state's transportation system will function. Both components are relevant to this plan—the first because it relates to how the plan will be implemented, and the second because it characterizes how the transportation system will eventually look and function.

TxDOT 2011–2015 Strategic Plan Mission and Vision

Source	TxDOT	Transportation System
Mission	...maintaining existing roadways and collaborating with private and local entities to plan, design, build, and maintain expanded transportation infrastructure.	... safe and efficient movement of people and goods, enhance economic viability, and improve the quality of life for the people that travel in the state of Texas
Vision	To be a trusted performance-driven organization committed to collaborating with internal and external partners...	... modern, interconnected, and multimodal transportation system that enhances the quality of life for Texas citizens and increases the competitive position for Texas industry.

The six goals established for the Statewide Long-Range Transportation Plan are consistent with federal requirements for long range planning, TxDOT's 2010 Unified Transportation Program, and earlier work undertaken by the 2030 Committee. These other efforts also highlight increasing economic growth which will be an outcome of congestion relief and system connectivity.

The list of performance measures below focus on a core group of measures that reflect TxDOT's priorities for the transportation system and which offer the greatest value to Texans and Texas businesses. Candidate performance measures for inclusion in the core group are shown below.

Performance Measures

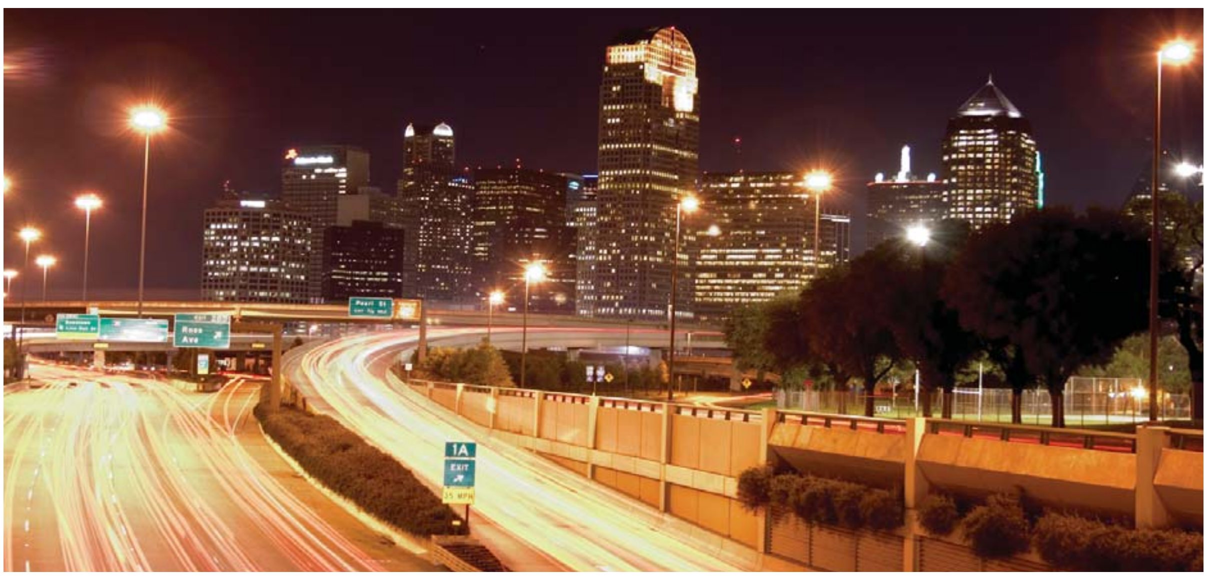
Goal	Performance Measures
Develop an organizational structure and strategies designed to address the future multimodal transportation needs of all Texans	★ Percentage of projects let on time and completed within budget ★ Overall customer satisfaction rate (external customers & partners) ★ Number of projects let to construction with more than one mode of transportation
Enhance safety for all Texas transportation system users	★ Injuries and fatalities (number and rate) ★ Percentage of two-lane highways with improved shoulders ★ Reduction of work zone incidents ★ Percentage of general aviation airports with safety improvements ★ Percentage of railroad crossings with signalization
Maintain the existing Texas transportation system	★ Percent of transportation facilities in good or better condition, or Texas Condition Assessment Program (TxCAP) score ★ Percentage of targets met in 4-year pavement management plans ★ Fraction of work trips that use single occupancy vehicles
Promote congestion relief strategies	★ Reduction in large and small urban area congestion (total travel delay, travel delay per commuter, and congestion costs) ★ Effectiveness of multimodal congestion management projects and strategies in large urban areas ★ Progress on top 100 most congested roadway segments
Enhance system connectivity	★ Satisfaction rates on industry access to international markets and gateways via the Texas transportation system ★ Percentage of Texas population within a 30 minute drive of an airport supporting business jet aircraft ★ Percent of Texas communities of 50,000 or more with public transportation services ★ Percent of Texas population with access to rural public transportation services ★ Reduction in the number of bottlenecks on economically critical road and freight corridors ★ Percentage of high volume rural roads with super-2 or 4-lane divided facilities
Facilitate the development and exchange of comprehensive multimodal transportation funding strategies with transportation program and project partners	★ Percentage of projects and programs using alternative financing

Conclusions

Texas, like the rest of our nation, faces many challenges in addressing the transportation needs of our state. There are no easy solutions for meeting these transportation needs of the traveling public and Texas' businesses. The SLRTP identifies the challenges presented by our stakeholders, quantifies the infrastructure and funding needs, suggests consideration of some new processes for making transportation investment decisions, and describes the ideas and solutions presented by the users of our state's transportation systems. The SLRTP planning and public outreach efforts indicate that:

1) Difficult decisions will need to be made to prioritize the spending of the limited dollars available for transportation.
2) Partnerships must be encouraged and facilitated between providers and users of the various modes to ensure that projects are planned cooperatively to provide a safe, seamless and efficient transportation system.
3) Based on projected revenues and the growing need for additional infrastructure and rehabilitation, effective management practices will be crucial to offset, to the extent possible, a decline in the performance of the Texas transportation system.

TxDOT will continue to work with our transportation partners, stakeholders, elected officials, and the public to pursue opportunities to meet Texas' transportation needs while working to enhance our system and expand the transportation choices available in the future.



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TxDOT, Texas-Mexico Border Crossings Study - Crossings, http://www.dot.state.tx.us/project_information/projects/border_crossing/crossings.htm

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Texas Transportation Commission Minute Order 108608, August 30, 2001

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MPOs

MPO	Website
Abilene MPO	www.abilenempo.org
Amarillo MPO	www.amarillompo.org
Austin - Capital Area MPO (CAMPO)	www.campotexas.org
Beaumont-Port Arthur MPO	www.setrpc.org
Brownsville	www.cob.us
Bryan/College Station	www.bcsmpo.com
Corpus Christi MPO	www.corpuschristi-mpo.org
Dallas-Fort Worth MPO (NCTCOG)	www.nctcog.dst.tx.us
El Paso MPO	www.elpasompo.org
Harlingen/San Benito MPO	hsbmpo.com
Hidalgo County MPO	www.hcmpo.org
Houston MPO (H-GAC)	www.h-gac.com/home
Killeen-Temple MPO	www.ktmpo.org
Laredo MPO	www.ci.laredo.tx.us/city-planning/Departments/MPO/index.html
Longview MPO	www.ci.longview.tx.us/services/metropolitan_planning_organization_mpo.html
Lubbock MPO	www.lubbockmpo.org
Midland-Odessa MPO (MOTOR)	www.motormpo.com
San Angelo MPO	www.sanangelompo.org
San Antonio-Bexar County MPO	www.sametroplan.org
Sherman-Denison MPO	www.sdmpo.org
Texarkana MPO	www.texarkanampo.org
Tyler MPO	www.cityoftyler.org
Victoria MPO	www.victoriampo.org
Waco MPO	www.waco-texas.com/MPO/
Wichita Falls MPO	www.wfmpo.com

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TEXAS DEPARTMENT OF TRANSPORTATION

Texas Statewide Long-Range Transportation Plan 2035

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Appendix: Public Involvement

Table of Acronyms

AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACP	Asphaltic concrete pavement
ADA	Americans with Disabilities Act of 1990, as Amended
ADT	Average Daily Traffic
AFB	Air Force Base
AIP	Airport Improvement Program
APC	Automatic Passenger Counters
APTS	Advanced Public Transportation Systems
ARRA	American Recovery and Reinvestment Act
ASTM	American Society for Testing and Materials
ATD	advanced transportation district
AUS	Austin-San Marcos
Authority	Port of Houston Authority
AVI	Automatic Vehicle Identification
AVL	Automatic Vehicle Location
BAB	Buy America Bonds
BLM	Bureau of Land Management
BOTA	Bridge of the Americas
BPA	Beaumont-Port Arthur
BRINSAP	Bridge Inventory, Inspection and Appraisal Program
BRT	Bus Rapid Transit
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAMPO	Capital Area Metropolitan Planning Organization
Capital MetroRail	Austin commuter rail system under the authority of CMTA
CapMetro or CMTA	Capital Metropolitan Transportation Authority
CBD	Central Business District

Table of Acronyms, cont'd.

CBP	Customs Border Protection
CBRNE	Chemical, Biological, Radiological, Nuclear, Explosive
CCTV	Closed-Circuit Television
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Commodity Flow Survey
CIP	Capital Improvement Program
CO	Carbon Monoxide
COG	Council of Government
CRCP	Continuously reinforced concrete pavement
CSI	Container Security Initiative
CTA	county transit authority
CTD	city transit department
CTR	Center for Transportation Research
DART	Dallas Area Rapid Transit
DCTA	Denton County Transportation Authority
DFW	Dallas-Fort Worth International Airport
DMS	Dynamic Message Signs
DPS	Texas Department of Public Safety
EA	Environmental Assessment
EAC	Early Action Compact
EIS	Environmental Impact Statement
EJ	Environmental justice
ENV	TxDOT's Department of Environmental Affairs
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ETC	Electronic Toll Collection

Table of Acronyms, cont'd.

EZ Rider	Midland-Odessa Urban Transit District
FAA	Federal Aviation Administration
FAF^2	FHWA's Freight Analysis Framework^2 database
FAR	floor area ratios
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FM	farm-to-market roads
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	fiscal year
GA	general aviation
GAN	Grant Anticipation Note
GARVEE	Grant Anticipation Revenue Vehicles
GDP	gross domestic product
GF	General Fund
GHG	greenhouse gas
GIS	Geographic Information System
GIWW	Gulf Intracoastal Waterway
GO	General Obligation
GPA	TxDOT Government and Public Affairs Division
GPS	Global Positioning Systems
GSP	gross state product
HAR	Highway Advisory Radio
HCI	Highway Cost Index
HCP	habitat conservation plans
H-GAC	Houston-Galveston Area Council
HGB	Houston-Galveston-Brazoria

Table of Acronyms, cont'd.

HMT	Harbor Maintenance Tax
HMTF	Harbor Maintenance Trust Fund
HOT	high occupancy toll
HOV	high-occupancy vehicle
HSR	high-speed rail
I-40	Interstate Highway 40
IAH	George Bush Intercontinental Airport
ICE	U.S. Immigration and Customs Enforcement
ICM	Integrated Corridor Management
IED	improvised explosive device
ISA	Intelligent Speed Assistance
ISTEA	Intermodal Surface Transportation Efficiency Act
ITC	Intermodal Transportation Center
ITS	Intelligent Transportation Systems
IWTF	Inland Waterway Trust Fund
JARC	Job Access Reverse Commute
JCP	jointed concrete pavement
KCS	Kansas City Southern
LBB	Legislative Budget Board
LCS	Lane Control Signals
LPG	liquefied petroleum gas
LRGV	Lower Rio Grande Valley
LRT	light rail transit
LSTAR	Lone Star Rail District
MARAD	USDOT's Maritime Administration
MATA	McKinney Avenue Transit Authority
ME	McAllen Express
METRO	Houston Metropolitan Transit Authority of Harris County
MetroRail	Houston light rail system

Table of Acronyms, cont'd.

MOTOR	Midland-Odessa MPO
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MTA	Metropolitan Transit Authority
MTSA	Maritime Transportation Security Act
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NCTCOG	North Central Texas Council of Governments
NEPA	National Environmental Policy Act of 1969
NETS	City of North Richland Hills Northeast Transportation Service
NF	New Freedom
NLE 09	National Level Exercise of 2009
NTE	North Tarrant Express
NTTA	North Texas Tollway Authority
O_3	ozone
PAB	Private Activity Bond
PFC	Passenger Facility Charges
PGSP	Port Security Grant Program
PHMSA	USDOT's Pipeline Hazardous Materials Safety Administration
PMIS	Pavement Management Information System
ppb	parts per billion
PPP	Public Private Partnership
PSP	Private Sector Participation
RFGS	Rail Fixed-Guideway Systems
RFID	radio frequency identification
RHiNO	Roadway Highway Inventory Network
RM/PRM	Routine Maintenance/Preventative/Rehabilitative Maintenance
RMA	Regional Mobility Authority
RR/GT/PF Rail Link	Round Rock, Georgetown, and Pflugerville commuter rail

Table of Acronyms, cont'd.

RRC	Texas Railroad Commission
RTA	Corpus Christi Regional Transportation Authority
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SH	State Highway
SHF	State Highway Fund
SHSP	Strategic Highway Safety Plan
SIB	State Infrastructure Banks
SIP	State Implementation Plan
SLRTP	Statewide Long-Range Transportation Plan
SSO	State Safety Oversight
STB	Surface Transportation Board
STIP	Statewide Transportation Improvement Program
TAC	Texas Administrative Code
TAF	Terminal Area Forecast
TASP	Texas Airport System Plan
TCEQ	Texas Commission on Environmental Quality
TCM	transportation control measure
TDM	Travel Demand Management
TEA-21	Transportation Equity Act for the 21st Century
TEU	20-foot Equivalent Unit
THC	Texas Historical Commission
The Fort Worth T or The T	Fort Worth Bus System
THTP	Texas Heritage Trails Program
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Program
T-Line	Texarkana's bus transit agency

Table of Acronyms, cont'd.

TMA	Transportation Management Area
TMC	Traffic Management Centers
TMF	Texas Mobility Fund
TOD	transit-oriented development
TPP	Transportation Planning and Programming
TPWD	Texas Parks and Wildlife Department
TRE	Trinity Railway Express
TRZ	Transportation Reinvestment Zone
TSP	Traffic Signal Priority
TTI	Texas Transportation Institute
TTSP	Texas Traffic Safety Program
TWIC	Transportation Worker Identification Credential
TxDOT	Texas Department of Transportation
TxMAP	TxDOT's geospatial information system
UPRR	Union Pacific Railroad
US	U.S. highways
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDOT	U.S. States Department of Transportation
USFWS	U.S. Fish and Wildlife Service
UT	University of Texas
UTP	Unified Transportation Program
UZA	Urbanized Area
VIA Metropolitan Transit or VIA	San Antonio Bus System
VIA Primo	Bus Transit Service provided by Via Metropolitan Transit in San Antonio, Texas
VMT	vehicle miles of travel

1.0 Introduction to Transportation Planning

"A good plan is like a road map: it shows the final destination and usually the best way to get there." H. Stanley Judd

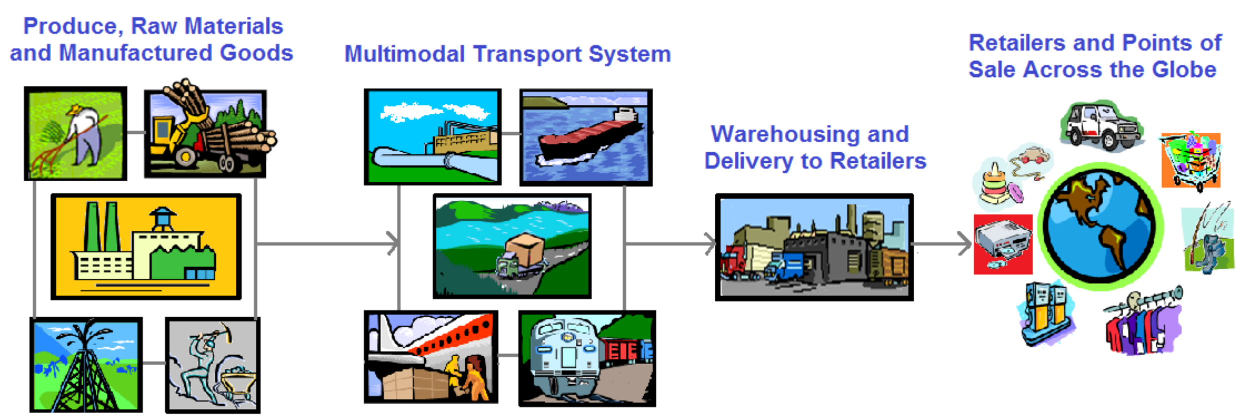
1.1 Purpose – Why is Transportation Planning Important?

Transportation empowers us all and affects every aspect of our daily lives. Most people must travel to school, to work, to obtain necessities or medical care, and for social reasons. Whether you own a vehicle, use transit, fly on an airplane, ride a bicycle, or walk, transportation gives you the freedom to move about and makes the life you enjoy possible.

The multimodal transportation system in Texas serves the growing needs of an ever-changing and increasingly diverse traveling public. Our growing business sector demands increasing levels of road, rail, ports and waterways and aviation services to remain competitive in today's global marketplace. Our growing population demands choices in transportation beyond the personal automobile, whether walking, cycling, or traveling by public transportation.

The goods we all consume are transported from a farm, a manufacturer, a refinery, or a warehouse—usually via several modes of transport—to retailers (i.e., points of sale) where you make your purchases (Figure 1-1).

Figure 1-1: Freight Supply Chain



Multimodal transportation planning is an integral part of the Texas Department of Transportation's (TxDOT) mission and vision.[1] In conjunction, they describe how TxDOT will conduct its business and define the performance and expectations for the multimodal transportation system in Texas.

Mission – Provide safe and efficient movement of people and goods, enhance economic viability, and improve the quality of life for the people that travel in the state of Texas by maintaining existing roadways and collaborating with private and local entities to plan, design, build and maintain expanded transportation infrastructure.

Vision – To be a trusted, performance-driven organization committed to collaborating with internal and external partners to deliver a modern, interconnected, and multimodal transportation system that enhances the quality of life for Texas citizens and increases the competitive position for Texas industry.

TxDOT does not have direct influence over the operation and the performance of several modes that comprise the multimodal statewide transportation system that it does not manage, but is committed to working collaboratively with its local and regional multimodal partners to enhance the transportation system as a whole.

The challenge facing TxDOT is balancing the ability to respond to the needs of Texas' residents and businesses with ever-shrinking transportation funding resources.

1.2 The Transportation Planning Process

The transportation planning process enables decision-makers and users of the transportation system to cooperatively make well-considered decisions regarding transportation investments. Simply put, there are a few basic steps to any planning process:

Step 1: Identify Needs and Opportunities.

Step 2: Collect Information about those Needs and Opportunities.

Step 3: Compare and consider all of the alternatives that will enable you to meet those Needs and take advantage of Opportunities.

Step 4: Develop a Plan that sets Goals based on Steps 1, 2, and 3.

Step 5: Monitor the progress of your Plan and amend it as necessary to meet the stated Goals.

[1] TxDOT 2011–2015 Strategic Plan.

Setting realistic, attainable goals and providing the best value for every transportation dollar spent is accomplished through a (3-C) planning process—one that is **comprehensive**, **cooperative**, and **continuing**. The process must be thoroughly transparent and inclusive of all transportation stakeholders.

1.3 Factors that Influence the Transportation Planning Process

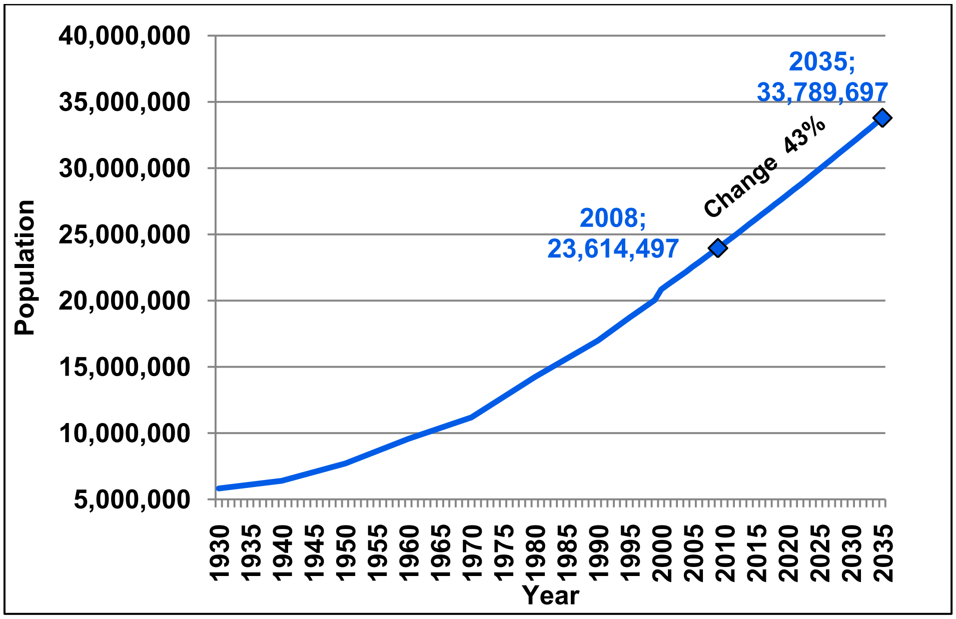
Effectively meeting the transportation needs of the state requires consideration of changes in population, employment, and economic trends. This section provides a brief overview of factors that will be discussed in more detail in later chapters.

1.3.1 Population

Of the many factors driving and shaping growth in transportation demand, population is one of the largest. The Texas State Data Center estimates from 1990 to 2008, the population of Texas increased by an estimated 6,627,987 persons (i.e., a 39.0 percent increase). From 2008, Texas' population is forecast to grow an additional 10,175,200 persons by 2035, or a 43.1 percent increase over the estimated 2008 levels (Figure 1-2).[2] This population growth is nearly equivalent to adding three cities the size of Houston to the state. The vast majority of growth will occur in urban areas.

[2] "Historical population data (1930–2007) is based on actual U.S. Bureau of the Census population decennial population counts and interim estimates. Population projections from 2008–2035 are based on the Texas State Data Center's (TSDC) *2008 Population Projections, The One-Half 1990–2000 Migration (0.5) Scenario* (which is the TSDC's recommended scenario) . In January 2010 additional estimates were published by the Texas State Data Center for July 2008. These estimates vary from the projections presented in this plan and indicate that the July 2008 population of Texas was 24,326,974 or 712,477 persons greater than their estimate under *The One-Half 1990-2000 Migration (0.5) Scenario.* Additionally, the U.S. Census periodically releases its own population estimates and these also vary from both the TSDC's estimates projections. See *2008 Total Population Estimates for Texas Counties, Comparisons to U.S. Census Bureau Estimates*, available at http://txsdc.utsa.edu/tpepp/2008_txpopest_county.php, for a discussion of how estimates may vary."

Figure 1-2: Texas Historical and Forecast Population Growth, 1930 to 2035[3]



Additionally, the overall population of the United States (U.S.) and Texas is aging, as the baby-boom generation enters the 65+ age group. Between 2008 and 2035, Texas will add an additional 3.4 million persons in the 65+ age group, a 144 percent increase. Texas will go from having 10 percent of its population in this age group to over 17 percent.

1.3.2 Employment Growth

Between 2000 and 2008, employment in Texas grew by 13 percent from 9,951,010 jobs to 11,200,334. Most importantly to transportation, the location of jobs relative to housing has an impact on the ability of businesses to access labor markets and to individuals needing to access jobs. The American Community Survey annual sample of U.S. households contains the basic journey-to-work information from the U.S. Census. Based on this information, twenty-five Texas counties had greater than 50 percent of their residents work in, and therefore commute to, adjacent counties.

1.3.3 Economic Trends

While there have been four recessions in the U.S. over the past 30 years (i.e., 1981–82, 1990–91, 2001, and 2007–09) it is generally accepted that the most recent economic recession was the worst since the Great Depression of the 1920s and 1930s. While

[3] Ibid

slowed by the current recession, the Texas economy has remained stronger than that of the U.S. as a whole.

Forecasts from the Texas Comptroller of Public Accounts predict that the U.S. and Texas economies will rebound from the current recession (in terms of gross state product [GSP] and gross domestic product [GDP]), and grow at 2.6 percent and 3.37 percent respectively, on average, per year between 2010 and 2035.[4] An efficient and well-maintained transportation system is vital to the state's ability to remain economically competitive at home and abroad.

1.4 Regulatory Framework for the Development of the Statewide Long-Range Transportation Plan

Title 23 of the U.S. Code, Section 135 and Title 23 Code of Federal Regulations (CFR), Part 450.214, and Title 43 of the Texas Administrative Code (TAC), Part 1, Chapter 15, Subchapter A (43 TAC §15.6) define the basic federal and state regulatory framework for the development of the Texas Statewide Long-Range Transportation Plan (SLRTP). In short, as noted in 23 CFR, the state must develop a plan with:

> "…a minimum 20-year forecast period at the time of adoption, that provides for the development and implementation of the multimodal transportation system for the State. The long-range statewide transportation plan shall consider and include, as applicable, elements and connections between public transportation, nonmotorized modes, rail, commercial motor vehicle, waterway, and aviation facilities, particularly with respect to intercity travel."

The SLRTP must also:

- Include capital, operations and management strategies, investments, procedures, and other measures to ensure the preservation and most efficient use of the existing transportation system;
- Reference other transportation plans, programs, studies and policies that were relevant to the development of the SLRTP;
- Include safety and security elements;
- Be developed in cooperation and consultation with Metropolitan Planning Organizations (MPOs) and nonmetropolitan officials responsible for transportation, and State, Tribal, and local agencies responsible for land use

[4] Texas Comptroller of Public Accounts and HIS Global Insight, Inc. Data are historical through 2007. Numbers are in 2000 dollars.

management, natural resources, environmental protection, conservation, and historic preservation;

- Include a discussion of potential environmental mitigation activities; and
- Have been made available for public review to provide citizens, affected public agencies, representatives of public transportation employees, freight shippers, private providers of transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, providers of freight transportation services, and other interested parties with a reasonable opportunity to comment on the SLRTP.

Eight federal planning factors (23 CFR 450.206) must be considered and addressed during the development of the SLRTP:

- Support the economic vitality of the United States, the States, nonmetropolitan areas, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety of the transportation system for motorized and nonmotorized users;
- Increase the security of the transportation system for motorized and nonmotorized users;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- Promote efficient system management and operation; and
- Emphasize the preservation of the existing transportation system.

1.5 What Information is Included in the SLRTP?

Every transportation mode is an interdependent component of the overall transportation system. This plan provides an inventory of the state's transportation system and addresses the need for improvements to roadways, pedestrian and bicycle facilities, transit, freight and passenger rail, airports, water ports, pipelines, and Intelligent Transportation Systems (ITS). This inventory, along with identified needs, addresses connectivity between modes and between communities to enable our multimodal system to operate more efficiently.

The SLRTP is not a list of projects, but rather the 24-year "blueprint" for the planning process that will guide the collaborative efforts between the department, local and regional decision-makers, and all transportation stakeholders to reach a consensus on needed transportation projects and services. The MPOs undertake a similar planning process at the local or regional level to identify needed transportation improvements and services within the metropolitan area boundaries.

TxDOT and the MPOs take into account the individual needs of cities and counties, as well as the needs of private railroads, the trucking industry, airports, water ports, bicyclists and pedestrians. The projects and services identified through the cooperative planning processes are then included in Metropolitan Planning Organization (MPO) Metropolitan Transportation Plans (MTPs) and Transportation Improvement Programs (TIPs); and in TxDOT's Unified Transportation Program (UTP) and Statewide TIP (STIP). These documents are briefly described in Table 1-1.

Table 1-1: Texas Transportation Plans and Programs

Plan/Program	Who Develops?	Who Approves?	Time Period	Content	Update Cycle
Statewide Long-Range Transportation Plan (SLRTP)	TxDOT	Texas Transportation Commission	24 Years	Future goals, strategies, and performance measures	Every 4 Years
TxDOT Strategic Plan	TxDOT	Texas Transportation Commission	5 Years	TxDOT's operational goals and strategies	Every 2 Years
Statewide TIP	TxDOT	USDOT	4 Years	Transportation investments	Every 2 years
Unified Transportation Program (UTP)	TxDOT	Texas Transportation Commission	Current Year + 10 Years	Projects to be funded/ built in a 10-year period	Annual
Metropolitan Transportation Plan (MTP)	Metropolitan Planning Organization	MPO	20 + Years	Future goals, strategies, and projects	Every 5 Years (Every 4 Years in Air Quality Non-Attainment Area)
Transportation Improvement Programs (TIPs)	MPO-TxDOT Districts	Governor*/MPOs	4 Years	Transportation investments (projects)	Every 2 Years
Corridor Studies (e.g., MY-35)	TxDOT	Texas Transportation Commission	N/A	Benefit cost analysis and feasibility	As Needed
Texas Rail Plan	TxDOT	Texas Transportation Commission	5 and 20 Years	Future goals and strategies	Every 5 Years
Texas Airport System Plan	TxDOT	Texas Transportation Commission	5, 10, and 20 Years	Focus on general aviation needs	Annual
Texas Port 2010-2011 Capital Plan	Port Authority Advisory Committee	Texas Transportation Commission	2 Years	Goals, objectives, and projects	Annual
Texas Transit Statistics	TxDOT	TxDOT	1 Year	Public Transportation Operation Statistics	Annual

*Governor delegates his authority to TxDOT

The SLRTP integrates relevant information from the above mentioned state and local plans to form a single, statewide, multimodal plan.

1.6 Defining the Goals of the SLRTP

The SLRTP is built around the six TxDOT Strategic Plan goals (Figure 1-3).

1. Develop an organizational structure and strategies designed to address the future multimodal transportation needs of all Texans;
2. Enhance safety for all Texas transportation system users;
3. Maintain the existing Texas transportation system;
4. Promote congestion relief strategies;
5. Enhance system connectivity; and
6. Facilitate the development and exchange of comprehensive multimodal transportation funding strategies with transportation program and project partners.

Figure 1-3: SLRTP Goals

2.0 Economics, Demographics, Freight, and the Multimodal Transportation System – Conditions and Trends

2.1 Introduction

Texas is the second most populated state in the nation and contains the nation's largest highway network, has the largest interstate network, and has the second highest volume of traffic. Texas ports handle 19.1 percent of the nation's total domestic and foreign maritime cargo. Additionally, Texas has the largest freight rail network in the country carrying 8 percent of all freight moved by rail. There are 29 urban transit providers in Texas that account for 3 percent of the nation's urban transit ridership.[5] Finally, two of the nation's top 10 busiest commercial airports (Dallas-Fort Worth International Airport [DFW] [4] and George Bush Intercontinental Airport [IAH] [8]) are located in Texas.[6]

Population and interrelated economic activity drive demand for transportation facilities and services. This chapter identifies Texas' existing and projected demographic and economic conditions, the existing multi-modal transportation system and the potential effects of population and economic growth on that system. The future transportation needs of Texas are projected to be greater than in past years while future funding sources and levels are uncertain.

Environmental concerns related to transportation are becoming more prevalent and the planning process must evolve to address these concerns. These topics will be discussed in depth in Chapter 8.

What makes Texas transportation unique?

- ★ Texas is a large state that has a lot of roadway mileage. It takes 13 hours at the posted speed limits to cross the state at its widest point.
- ★ It has a large international boundary with Mexico with 27 border crossings that handle the most truck, rail, and personal vehicle crossings of any state.

[5] Sources: U. S. Census Bureau, The 2010 Statistical Abstract of the United States, Tables 12, 1053, and 1054. Available at http://www.census.gov/compendia/statab/. Bureau of Transportation Statistics, State Transportation Statistics 2009, Tables 1-14, 3-24, 3-4, 4-4, 5-3, available at http://www.bts.gov/publications/state_transportation_statistics/state_transportation_statistics_2009/index.html

[6] Federal Aviation Administration 2008 passenger boarding statistics

- Its seaports are of national importance. Millions of gallons of petroleum products, manufactured goods, military deployments, and other freight are moved into and out of Texas, and between the global marketplace and the rest of the U.S.
- The vital routes of Interstate Highway 40 (I-40), I-30, I-20, and I-10 through Texas connect the western U.S. to the southern and eastern U.S.
- Texas is demographically diverse, with large expanses of rural areas, and distinct north, south, east, and western Texas regions.
- Texas is geographically diverse, with many ecological regions, from the western Chihuahuan deserts to the eastern forests as well as the central plains and mountains of El Paso and the Big Bend.
- Texas has several of the largest metropolitan urban areas in the U.S.—Houston-Galveston, Dallas-Fort Worth, Austin and San Antonio, the Lower Rio Grande Valley, and El Paso—as well as many large cities. Connectivity between these urban areas is a vital part of the economy.

2.2 Texas Economic, Population, and Employment Trends

2.2.1 The Texas Economy

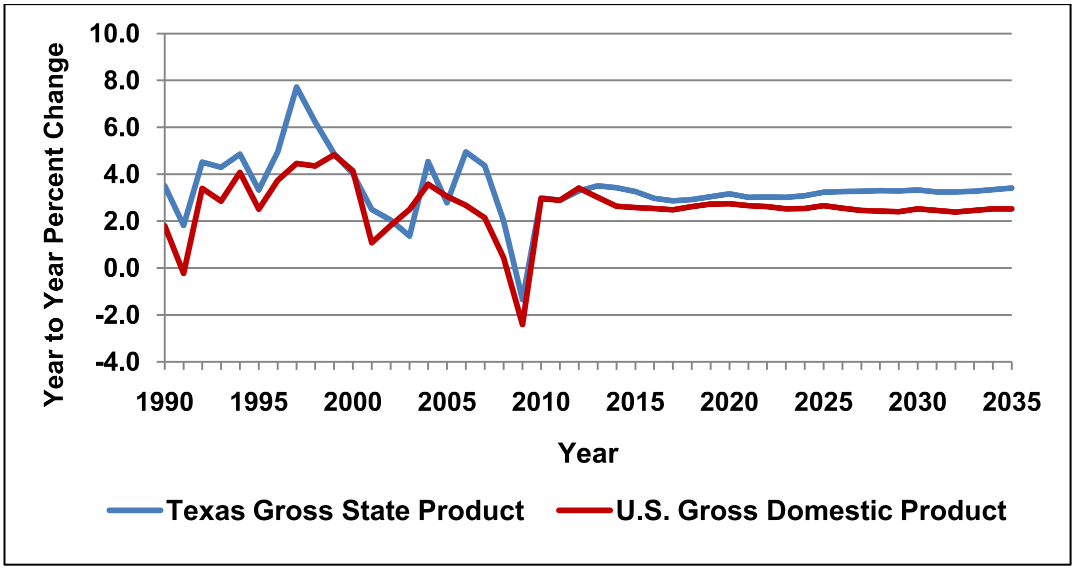
While there have been four recessions in the U.S. over the past 30 years (i.e., 1981–1982, 1990–1991, 2001, and 2007–2009) it is generally accepted that the most recent economic recession was the worst since the Great Depression of the 1920s and 1930s. The ongoing high levels of unemployment continue to affect transportation in two major ways: reduced levels of travel and reduced tax revenues. However, several Texas metropolitan areas are experiencing population growth because of net in-migration (international and from other states). While slowed by the current recession, the Texas economy has remained stronger than that of the U.S. as a whole.

The Texas economy has also grown faster, on average than the U.S. economy as a whole since 1990. Historical data on GDP and gross state product (GSP) show that the average increases per year between 1990 and 2007 were 2.89 percent for the U.S. GDP and 4.04 percent for Texas GSP.

Forecasts from the Texas Comptroller of Public Accounts predict that the U.S. and Texas economies will rebound from the current recession (in terms of GSP and GDP), and grow at 2.6 percent and 3.37 percent, respectively, on average, per year between

2010 and 2035 (Figure 2-1).[7] An efficient and well-maintained transportation system is vital to the state's ability to remain economically competitive at home and abroad.

Figure 2-1: Comparative Annual Economic Growth, 1990 to 2035



2.2.2 Texas Population Forecasts

Of the many forces driving and shaping growth in transportation demand, population is the largest. For the SLRTP, the recommended Texas population forecast scenario is the "0.5" scenario. Migration scenarios offered by the State Demographer are described below:

Scenario 0.0 (Zero Migration): This scenario assumes that the forecast net migration is zero resulting in growth only through natural increase (the excess or deficit of births relative to deaths).

Scenario 0.5 (One-Half 1990–2000 Migration): The SLRTP uses this scenario, which has been prepared as an approximate average of the zero (0.0) and 1990–2000 (1.0) scenarios. It assumes rates of net migration one-half of those of the 1990s.

Scenario 1.0 (1990–2000 Migration): The "1.0" scenario assumes that the net migration rates of the 1990s will characterize those occurring in the future of Texas. The 1990s was a period characterized by rapid growth.

[7] Texas Comptroller of Public Accounts and HIS Global Insight, Inc. Data are historical through 2007. Numbers are in 2000 dollars.

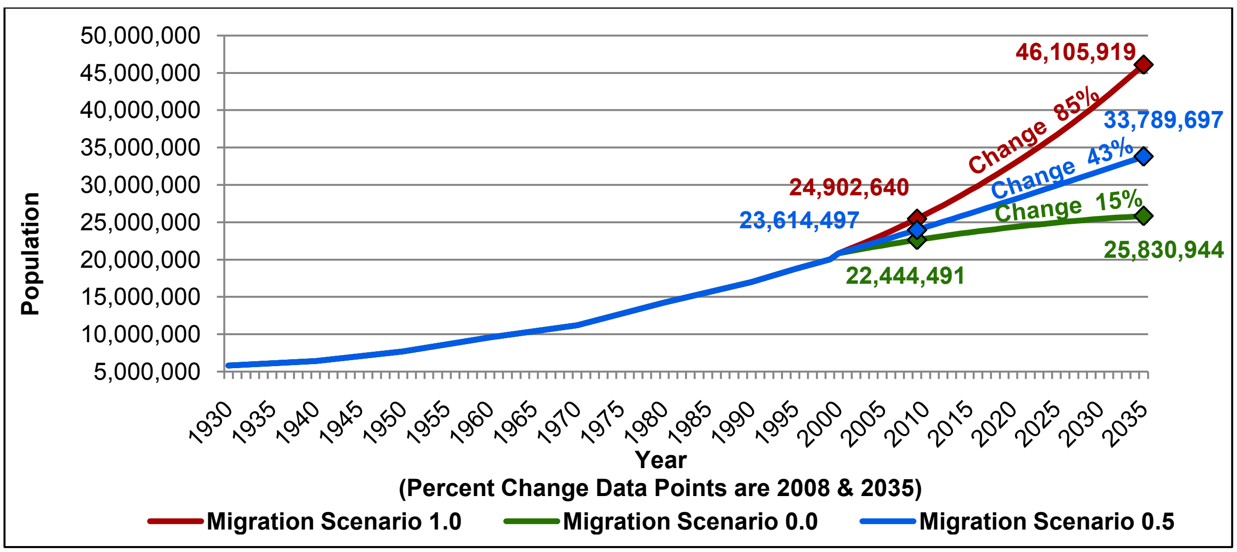
The Texas State Demographer suggests that the 0.5 scenario continues to be the most appropriate scenario for most counties for use in long-term planning. The 2008 and 2035 population projections for each scenario are compared in Table 2-1.

Table 2-1: Texas Population, 2008 and 2035 by Migration Scenario[8]

Scenario	2008 Population	2035 Population	Change	Percent
Scenario 0.0	22,444,491	25,830,944	3,386,453	15.1
Scenario 0.5	23,614,497	33,789,697	10,175,200	43.1
Scenario 1.0	24,902,640	46,105,919	21,203,279	85.1

Based on the "0.5" scenario the population of Texas increased by an estimated 6,627,987 persons (i.e., a 39.0 percent increase) since 1990.[9] From 2008, Texas' population is forecast to grow an additional 10,175,200 persons by 2035. Figure 2-2 shows Texas' population growth, a 43.1 percent increase over the estimated 2008 levels and a forecast average annual percent per year increase of 1.6 percent, or 376,859 persons per year. Figure 2-3 illustrates the geographic distribution of Texas' 2035 forecast population and percent change in population from 2008 to 2035 by county.

Figure 2-2: Texas Historical and Forecast Population Growth, 1930 to 2035[10]

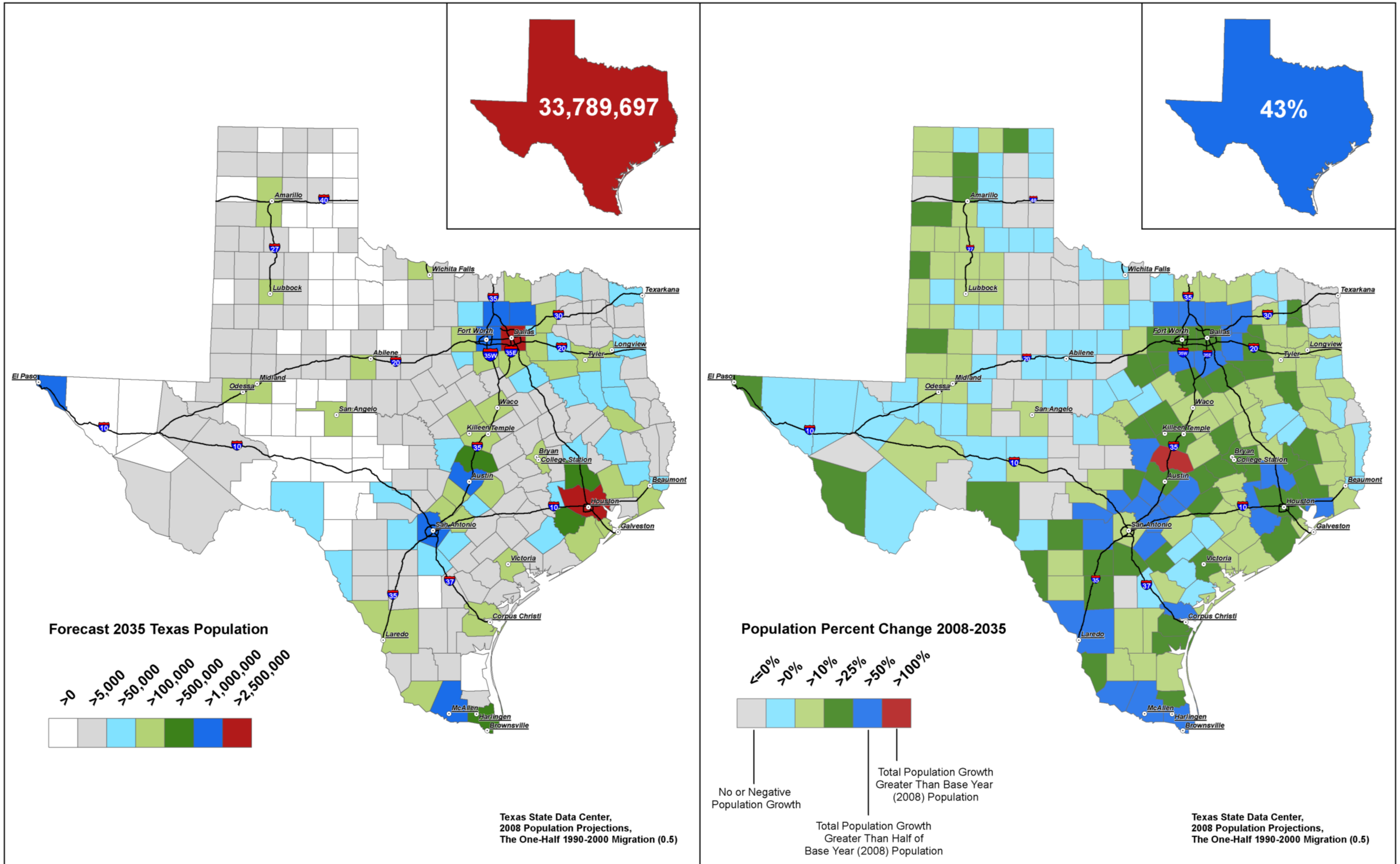


8 Texas State Data Center (TSDC), *2008 Population Projections*

9 Historical: U.S. Bureau of the Census. Texas Population of Counties by Decennial Census: 1900 to 1990. March 27, 1995. Available at http://www.census.gov/population/www/censusdata/cencounts/index.html

10 "Historical population data (1930–2007) is based on actual U.S. Bureau of the Census population decennial population counts and interim estimates. Population projections from 2008–2035 are based on the TSDC's *2008 Population Projections, The One-Half 1990–2000 Migration (0.5) Scenario* (which is the TSDC's recommended scenario).

Figure 2-3: 2035 Texas Population and Population Change 2008-2035



2.2.2.1 Geographic Distribution of Texas Population

In order to study the statewide geographic distribution of population and population growth and their impact to transportation, a classification scheme was developed at the county level for the SLRTP. Each county was assigned a type based on:

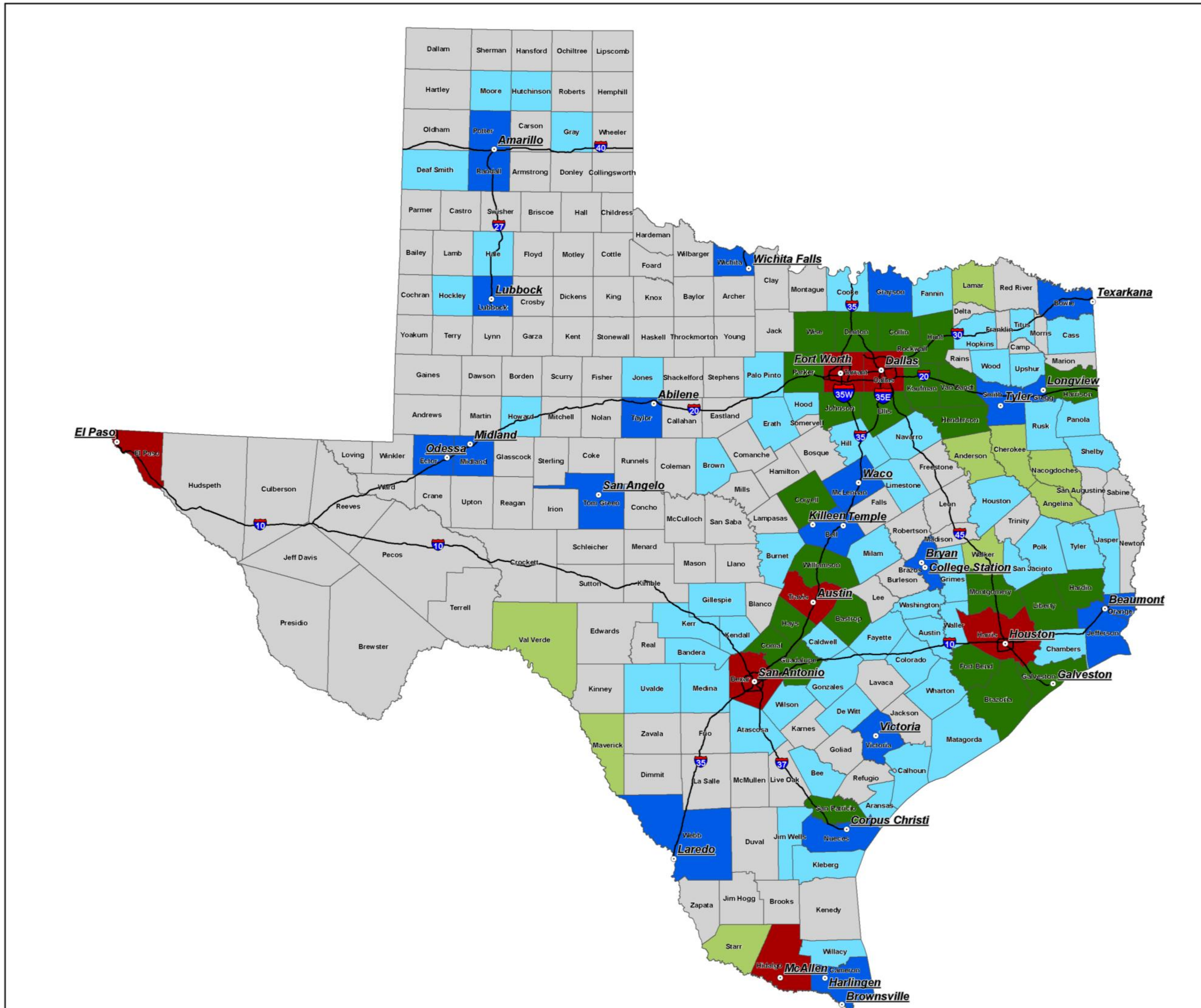
- Its estimated total county 2008 population,
- The population of the largest city within the county in 2008,
- Whether or not the county contained an urbanized area classified as an MPO,
- The proximity of the county to other counties with large populations or MPOs, and
- The commuting characteristics of the resident population.

The county types defined in the SLRTP are as follows:

- Urban-metro County = 2008 population greater than 500,000 and the county is a core MPO county (Example: Harris County, containing the city of Houston)
- Large County = 2008 population greater than 50,000 but less than 500,000 and the county is a core MPO county (Example: Tom Green County, containing the city of San Angelo)
- Suburban County = 2008 population greater than 50,000 AND; is contained within an MPO boundary or the county borders an MPO core county, AND has out-worker flows **GREATER THAN** 30 percent (Example: Collin County, with multiple cities)
- Medium County = 2008 population greater than 50k AND; is not an MPO County, or it borders a MPO County AND but has worker outflows **LESS THAN** 30 percent (example Val Verde County)
- Small County = 2008 population greater than 20,000 but less than 50,000 (Example: Titus County, containing the town of Mt. Pleasant)
- Rural County = 2008 population less than 20,000 (Example: Loving County, Population 65)

The county types were used to analyze both 2008 and 2035 population growth and other measures in a consistent manner. Each county type and county name is provided on Figure 2-4.

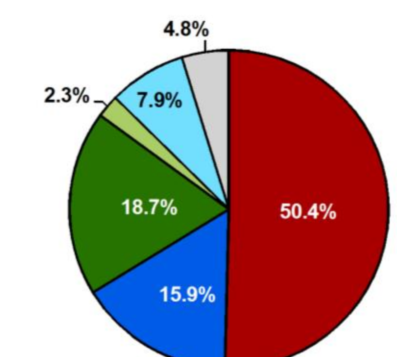
Figure 2-4: SLRTP County Types



SLRTP County Types

Urban-Metro = 2008 population greater than 500,000 and the county is a core Metropolitan Planning Organization (MPO) county (Example: Harris County, containing the city of Houston)	
Large = 2008 population greater than 50,000 but less than 500,000 and the county is a core MPO county (Example: Tom Green County, containing the city of San Angelo)	
Suburban County = 2008 population greater than 50,000 AND; is contained within an MPO boundary or the county borders an MPO core county, AND has out-worker flows **GREATER THAN** 30 percent (Example: Collin County, with multiple cities)	
• Medium County = 2008 population greater than 50k AND; is not an MPO County, or it borders a MPO County AND but has worker outflows **LESS THAN** 30% (example Val Verde County)	
Small = 2008 population greater than 20,000 but less than 50,000 (Example: Titus County, containing the town of Mt. Pleasant)	
Rural = 2008 population less than 20,000 (Example: Loving County, Population 65)	

SLRTP County Types, Percent of Forecast 2008 Population Total*



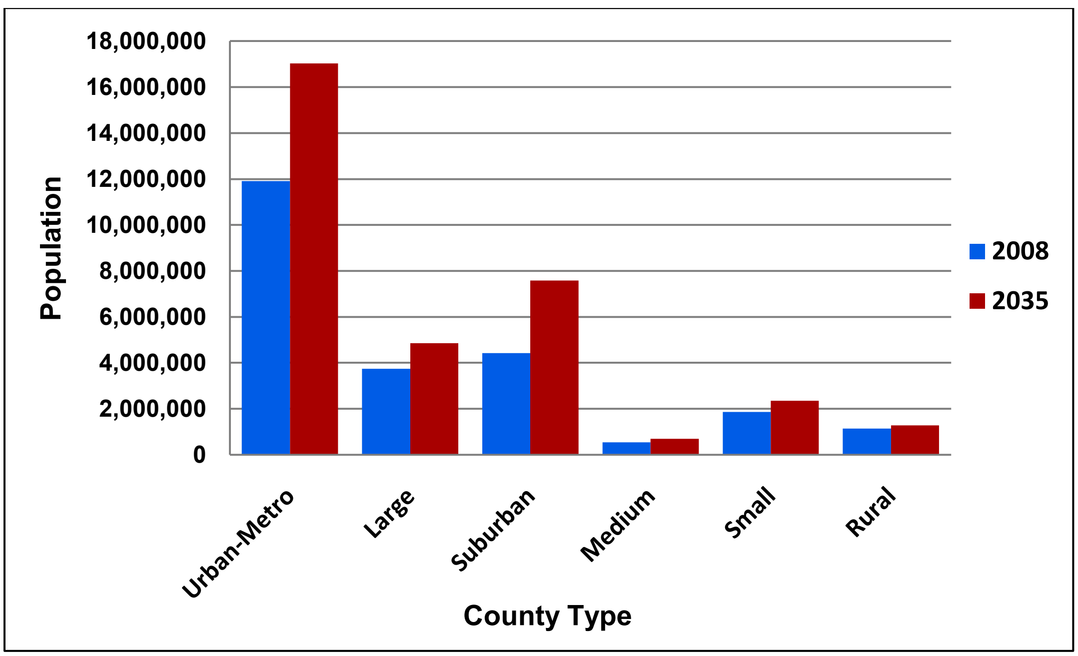
*Texas State Data Center, 2008 Population Projections, The One-Half 1990-2000 Migration (0.5)

As shown in Table 2-2 and illustrated on Figure 2-5, the vast majority of population growth will occur in urban-metro, suburban, and large counties. Combined, these counties will account for 92 percent of the growth, over 9.3 million persons by 2035.

Table 2-2: 2000, 2008, and Forecast 2035 Population by County Type

County Type	2000	2008	2035	Growth 2008-2035	% Change 2008–2035
Urban-Metro	10,519,992	11,903,007	17,028,201	5,125,194	**43.1**
Large	3,412,833	3,747,564	4,852,359	1,104,795	**29.5**
Suburban	3,647,447	4,427,349	7,583,884	3,156,535	**71.3**
Medium	497,108	546,767	696,821	150,054	**27.4**
Small	1,701,214	1,857,473	2,356,424	498,951	**26.9**
Rural	1,073,226	1,132,337	1,272,008	139,671	**12.3**
Total	**20,851,820**	**23,614,497**	**33,789,697**	**10,175,200**	**43.1**

Figure 2-5: Texas 2008 and Forecast 2035 Population Trends by County Type



2.2.2.2 Texas Population by Age Group

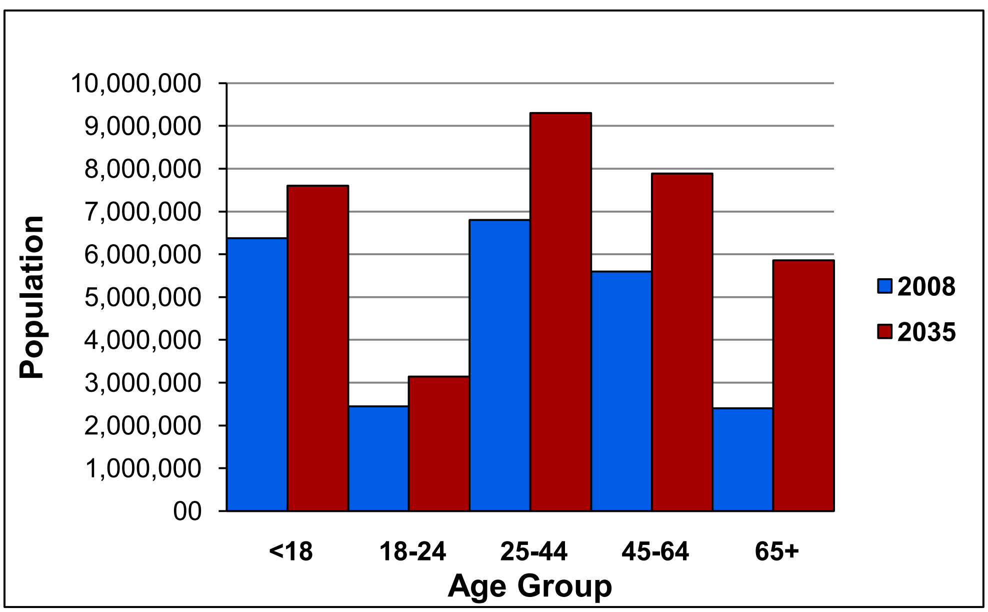
The overall population of the U.S. and Texas is aging, as the baby-boomer generation enters the 65+ age group. Table 2-3 and Figure 2-6 show the population forecast by age group for Texas. Between 2008 and 2035, Texas will add an additional 3.4 million persons in the 65+ age group, a 144 percent increase. Texas will go from having 10 percent of its population in this age group to over 17 percent. However, while the 65+ age group will be the fastest growing age group, the majority of Texas residents will remain in the younger age groups.

The increase in older Texans will have an impact on transportation needs, since this age group either is retired or demonstrates different work, shopping, leisure, and medical and special needs travel behavior.

Table 2-3: Texas 2008 and Forecast 2035 Population by Age Group

Age Group	2008	2035	% 2008	% 2035	Growth	% Change
<18	6,373,056	7,600,617	27.0	22.5	1,227,561	19.3
18–24	2,448,144	3,141,915	10.4	9.3	693,771	28.3
25–44	6,799,904	9,306,023	28.7	27.5	2,506,119	36.9
45–64	5,593,461	7,885,313	23.7	23.3	2,291,852	41.0
65+	2,399,932	5,855,829	10.2	17.4	3,455,897	144.0
Total	**23,614,497**	**33,789,697**	**100**	**100**	**10,175,200**	**43.1**

Figure 2-6: Texas 2008-2035 Population by Age Group



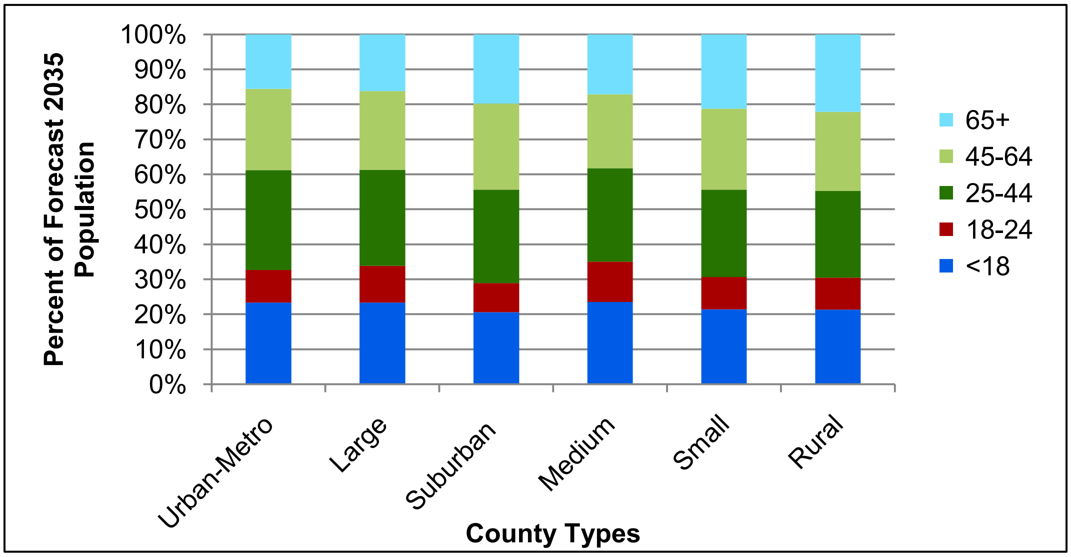
2.2.2.3 Population by Age Group and County Type

By 2035, the trend towards more elderly people living in Texas will be most significant in rural counties (22 percent age 65+), small counties (21 percent age 65+), and suburban counties (20 percent age 65+) (Table 2-4 and Figure 2-7).

Table 2-4: 2008 and Forecast 2035 Percent of Population by Age Group and County Type

County Type	<18	18–24	25–44	45–64	65+	Total
2008 Percent of Total Population						
Urban-Metro	28.0	10.0	30.7	22.7	8.6	**100**
Large	27.2	11.7	27.4	22.4	11.4	**100**
Suburban	26.1	9.9	28.3	26.5	9.2	**100**
Medium	26.5	12.8	27.1	21.8	11.8	**100**
Small	24.5	10.4	24.4	25.3	15.4	**100**
Rural	24.0	10.6	23.1	25.1	17.2	**100**
2035 Percent of Total Population						
Urban-Metro	23.3	9.4	28.5	23.2	15.6	**100**
Large	23.3	10.5	27.4	22.5	16.3	**100**
Suburban	20.6	8.3	26.7	24.6	19.8	**100**
Medium	23.5	11.5	26.7	21.2	17.1	**100**
Small	21.4	9.2	25.0	23.2	21.2	**100**
Rural	21.3	9.1	24.8	22.6	22.2	**100**

Figure 2-7: Forecast 2035 Population by Age Group and County Type

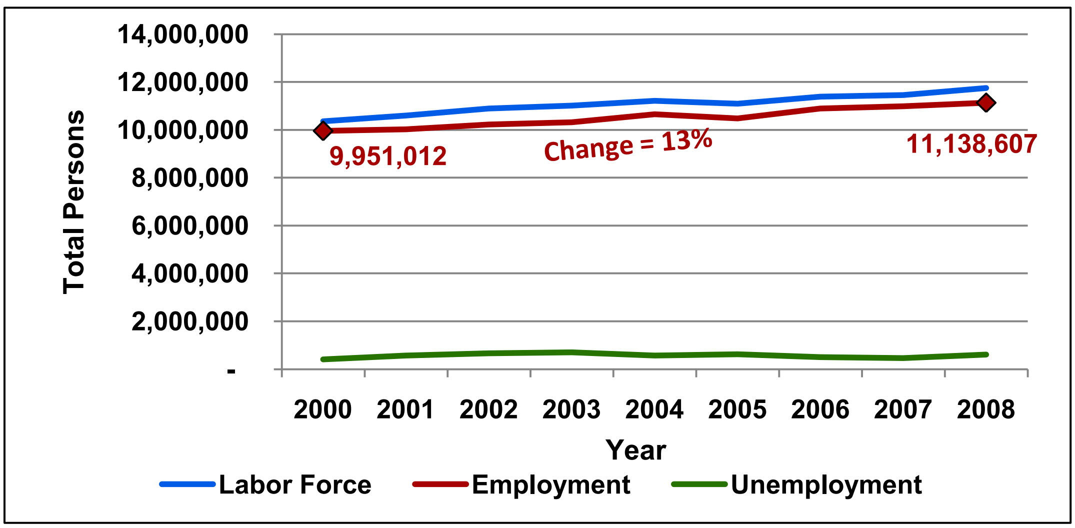


2.2.3 Texas Employment

Employment increase typically tracks with population increase, more specifically, with the labor force increase. Labor force is the proportion of the population that is eligible for work, typically measured as all eligible (e.g., nonincarcerated) population between the ages of 16 and 65 years old. Total employment is equal to labor force minus unemployed persons. Therefore, if the unemployment rate remains relatively stable and the proportion of the population eligible for work remains stable, then total employment typically tracks as a proportion of population. In 2008, the state's labor force was equal to 11,812,190 persons.

According to statistics published by the Texas Workforce Commission, there were 1,249,324 more persons working in 2008 (11,200,334) than in 2000 (9,951,010), representing a 13 percent change (Figure 2-8).

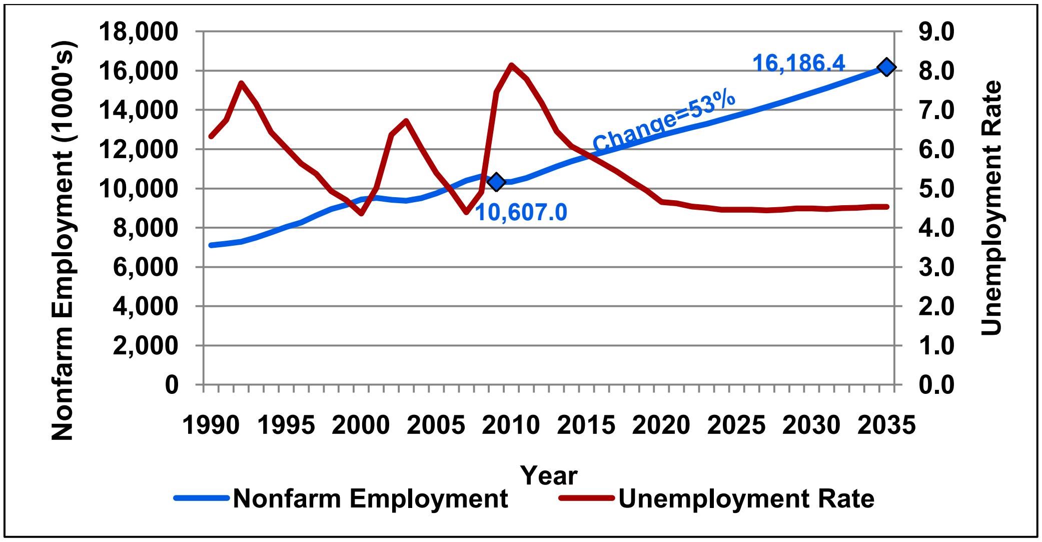
Figure 2-8: Labor Force, Employment, Unemployment 2000–2008[11]



Recent employment forecasts from the Texas Comptroller of Public Accounts estimate that by 2035 nonfarm employment will be 16,186,400 persons or an approximate 53 percent increase from 2008 nonfarm employment (Figure 2-9). Additionally, the unemployment rate in 2035 is forecast to be approximately 4.5 percent of the labor force.

[11] Historic Employment Data Source: Texas Workforce Commission, Tracer, Unemployment (LAUS), yearly October estimates, available at http://www.tracer2.com/cgi/dataanalysis/

Figure 2-9: Historic and Forecast Nonfarm Employment and Unemployment 1990–2035[12]



2.2.3.1 Worker Flows and Employment by County Type

The commute to work has a significant impact on the transportation system. Work trips constitute 9.6 percent[13] of all daily trips in Texas, and most of them occur during the same time of day. This commuter behavior creates most of the congestion during the peak periods.

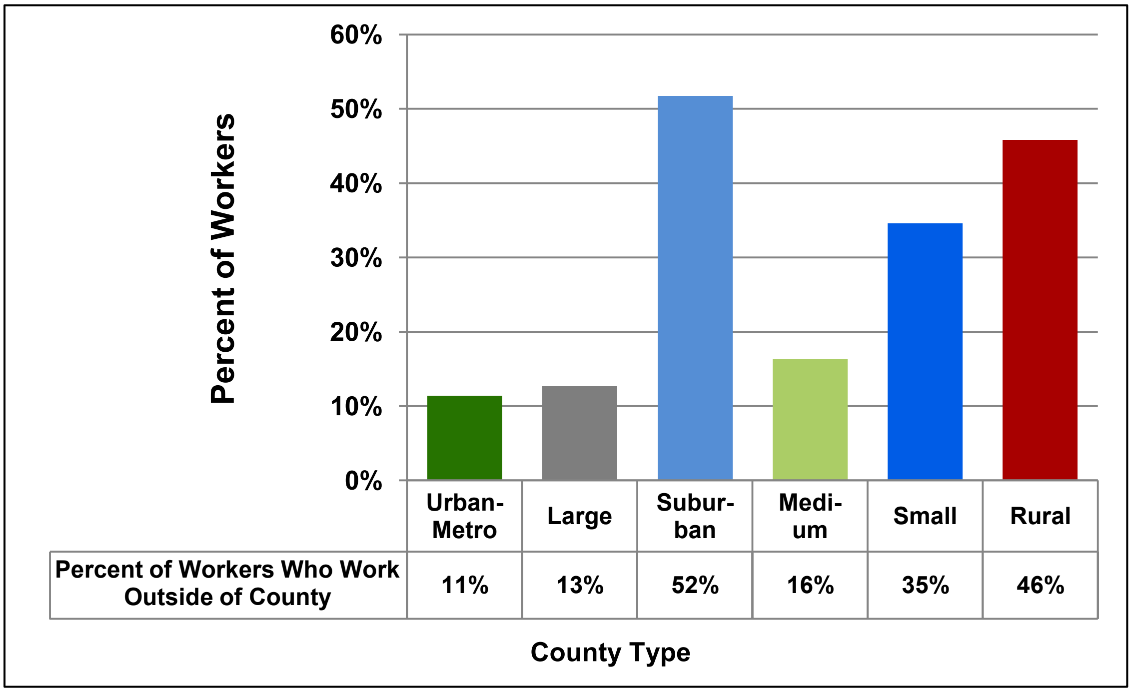
The U.S. Census Bureau conducts the American Community Survey (ACS) sample of U.S. households each year. The ACS is used to tabulate journey-to-work information. The ACS data are summarized and reported every year using the previous 3 years' collected data. According to the 2006–2008 ACS, 25 counties in Texas had greater than 50 percent of their residents work in an adjacent county. Most of these counties were adjacent to the large metropolitan regions of Dallas-Fort Worth, Austin, San Antonio, or Houston. This indicates that a significant proportion of workers are choosing to commute into core urban counties from surrounding counties rather than working in the county where they reside. This characteristic reflects the tradeoffs that people make between short commutes and access to affordable housing often found in more suburban or rural counties. It also reflects the dynamic nature of the job market with people changing jobs and thus commuter patterns on a regular basis. Transportation plays a role in these patterns, both in terms of supporting work-trip commutes and in the need to adapt to these new demands.

[12] Forecast employment data presented in this section is based on current economic analysis provided by the Texas Comptroller of Public Accounts provided by Gary Preuss. No data is available at this time for forecast conditions at the county level.

[13] National Household Travel Survey, 2009, available at http://nhts.ornl.gov/

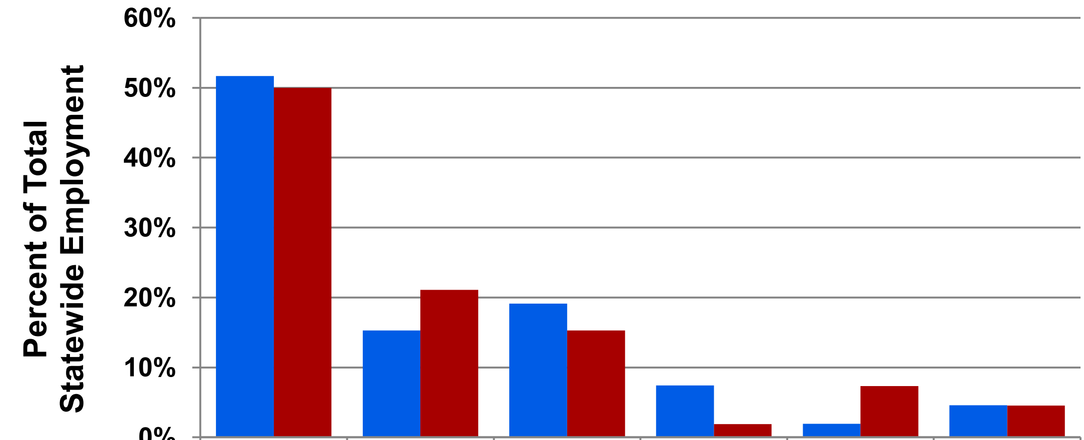
As illustrated on Figure 2-10, greater than 50 percent of workers living in suburban counties travel to work outside of their residence county, followed by rural counties (49 percent), small counties (35 percent), medium counties (16 percent), large counties (13 percent), and urban-metro counties (11 percent).

Figure 2-10: Percent of Workers Who Work Outside of County



Similar to population growth, employment as a percent of the state total is increasing for urban-metro, suburban, and large counties (from 84 percent in 2000 to 86 percent in 2008) (Figure 2-11).

Figure 2-11: Percent of Total Statewide Employment 2000–2008 by County Type



	Urban-Metro	Large	Suburban	Small	Medium	Rural
2000	52%	15%	19%	7%	2%	5%
2008	50%	21%	15%	2%	7%	5%

2.3 Texas Roadway Inventory

As part of the statewide planning process, an inventory of Texas roadways was completed. Roadways are measured by their length (“centerline” miles), and by the length and number of lanes they have (“lane miles”). Lane miles represent total capacity on the roadway system. Additionally, roadways are classified by TxDOT as either “on-system” or “off-system.”

On-system roadways are on the designated state highway system, owned and maintained by TxDOT, and are typically funded with a combination of federal and state or state-only funds. These roadways include all interstate highways, U.S. highways (US), state highways (SH), farm-to-market roads (FM), and other state roads.

Off-system roadways are not part of the designated state highway system and are under the direct jurisdiction of the local government such as a county, city, other political subdivision of the state, or special district with authority to finance a highway improvement project.

For the SLRTP, centerline miles and lane miles in 2008 were measured from several sources. The Roadway Highway Inventory Network (RHiNO) Database is the main source of information.

For 2035, future centerline and lane miles are subject to implementation of plans, programming of projects, construction, and funding availability. Details of potential future roadways can be found in:

- MTPs – These plans are published by MPOs and are updated every 5 years.
- 2010 UTP – adopted in April 2010 by the Texas Transportation Commission,

Table 2-5 provides 1990 and 2008 total centerline miles and lane miles for on-system roadways. From 1990 to 2008, total on-system roadway centerline miles and lane miles in the state grew by 4.3 percent and 6.0 percent, respectively. In addition, 226,336 centerline miles of off-system roadways were added to the state as of 2008. Figure 2-12 shows the interstates U.S. highways, and state highways of Texas.

Figure 2-12: Texas Roadways

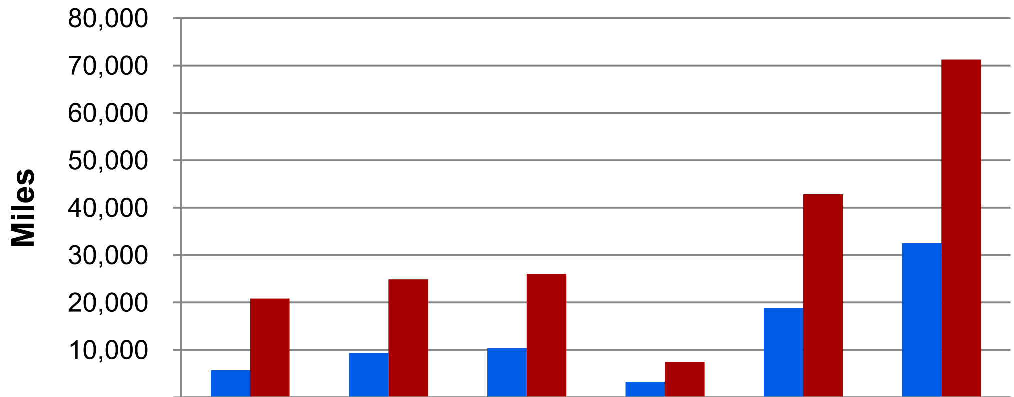
Table 2-5: Texas 1990 and 2008 Roadways, On-System Centerline and Lane Miles[14]

Mileage	1990	2008	Growth	% Change
Centerline Miles	76,730	80,067	3,337	4.3
Lane Miles	182,447	193,309	10,861	6.0

Note: Excludes Off-System Toll Roads

Figure 2-13 illustrates total 2008 centerline miles and lane miles by county type. Rural counties hold the most roadway mileage in Texas.

Figure 2-13: Texas 2008 Roadways, On-System Centerline Miles and Lane Miles by County Type[15]



	Urban - Metro	Large	Subur-ban	Medium	Small	Rural
Centerline Miles	5,714	9,335	10,370	3,276	18,844	32,528
Lane Miles	20,799	24,864	26,045	7,482	42,829	71,289

Note: Excludes Off-System Toll Roads

Table 2-6 provides total centerline miles and lane miles for on-system roadways in 2008 by highway system. FM and other roads are the largest part of the highway system in the state in terms of both centerline miles and lane miles, followed by SH (which include highways and loops).

[14] Source: TxDOT RHiNO database
[15] Source: TxDOT RHiNO database

Table 2-6: Texas 2008 Roadways, On-System Centerline and Lane Miles by Highway System[16]

Highway System	Centerline Miles	% of On-System Roads	Lane Miles	% of On-System Roads
Interstates (I-)	3,233	4.0	15,155	7.8
U.S. Highways (US)	12,105	15.1	35,737	18.5
State Highways (SH), spurs, loops, business routes	16,346	20.4	42,384	21.9
Other (farm-to, ranch-to-market roads, recreational roads, etc.)	41,313	51.7	85,355	44.2
Frontage Roads	7,069	8.8	14,677	7.6
Total	**80,067**	**100.0**	**193,309**	**100.0**

Note: Excludes Off-System Toll Roads

2.4 Texas Vehicle Miles of Travel Forecast

2.4.1 Variability in Transportation Forecasts

When developing a plan as large as the SLRTP, it is important to underscore the fact that the future cannot be precisely predicted. Although the SLRTP uses one set of forecasts, it is important to discuss the variability that might be expected over the life of the plan.

The past is not always a good guide to the future. It is plausible that some nontraditional factors will exert unexpected influences on society over the 25-year life of this plan, resulting in different trends.

For the most part, travel demand does not vary greatly in the short term. While factors such as weather, maintenance/construction, incidents, major events, and school/public holidays will influence road traffic and transit ridership from hour-to-hour or day-to-day, any given Monday will likely be similar to the previous and following Mondays. Over the long term, however, other factors begin to influence travel demand. These factors are typically gradual.

- Population growth,
- Age distribution, i.e., an aging population,
- Employment trends, and
- Disposable income.

[16] Source: TxDOT RHiNO database

Other factors can be both gradual and at times more precipitous:

- Economic disruptions (and recovery),
- Addition or loss of transportation system capacity,
- Relocation of major employers, and
- Opening/closure of major traffic generating facilities.

Over an extended period of time, such as the 24-year period covered by this plan, these and other factors will combine to influence the frequency and extent of local and long distance travel behavior, the modal choice, and the economics of personal travel and freight transportation.

2.4.2 Alternative Futures for Texas Transportation

Economic conditions have historically driven personal and freight transportation choices. Technological advances have historically led to efficiencies in transportation, which led to changes in modal choice and travel behavior. Texas has moved among various modes, from horseback to steam trains, to diesel trains to personal automobiles, to urban rail and commuter rail. In a plan such as the SLRTP 2035, it is expected that this trend of change in response to economics and efficiency will continue.

Traditionally, increasing affluence has led to increasing levels of personal mobility through greater auto ownership. Increasing affluence has also allowed Texans to afford a greater choice in residential location and discretionary travel choice. With Texas' abundance of land and limited constraint on new development, suburbanization has increased the footprint of its metropolitan areas, commutes have lengthened, and traffic congestion has grown. Looking forward, it is plausible that the same trend will continue over the life of this plan.

Relatively inexpensive energy coupled with the "just in time delivery" concept has allowed for a boom over the past 20 years in freight transportation. A much wider diversity of products has been made available to the average Texan because of economical freight transportation and supply chain management. The development of efficient freight movement and technologies has also put a strain on the ability of state and local governments to meet the demands that freight transportation is placing upon the systems.

The following factors may affect future transportation choices in Texas:

Factor 1: Changing Energy Sources Will Influence Transportation

The past 100 years has seen the rise of the internal combustion engine and the widespread availability of relatively inexpensive petroleum. This assumption has been traditionally built into transportation planning. Various opinions suggest that global oil production will reach a peak, and subsequently enter a state of terminal decline, in the coming years or decades.[17] Regardless of the exact timing, petroleum-related fuel prices are expected to rise significantly, unless fuel efficiency improves and/or global demand for oil decreases by at least the same rate as the decline in production. Several possibilities exist that must be taken into account for the SLRTP 2035. Future travel patterns may be significantly different from historic trends, unless alternate sources of transportation energy are brought online, such as:

- Alternative energy sources for vehicles, whether they are electric, hybrid, or natural gas conversions, or even other sources, may change the economics of personal and freight transportation choices.
- Possible scarcity of gasoline and diesel, changing the economic factors that currently contribute to the growth in single-occupant vehicular travel.
- Rapidly changing technologies and patterns of gasoline usage, resulting in more efficient personal and freight transportation, may offset the effect on personal and freight transportation choices that would otherwise be precipitated by increases in gasoline costs.
- Alternative energy sources will affect the gasoline tax, a major source of revenue used by government to build transportation systems.

If energy costs for personal and freight transportation can remain stable by bringing alternative sources into common usage, then travel demand is expected to grow at a similar pace as it has over the past 20 years.

Another possible scenario for the SLRTP 2035 is that transportation energy costs will be unstable. This instability could be a pattern of relatively inexpensive gasoline and diesel cost, spiked periodically by increasingly frequent increases in gasoline and diesel cost. This instability, while causing significant disruptions in transportation economics and individual choices, would precipitate a move towards stabilizing energy costs, resulting in increased usage of alternative fuels and sources of energy for transportation.

[17] National Academies Press, Available at; http://www.nap.edu/catalog.php?record_id=11585

Factor 2: Climate Change Could Effect Transportation

Climate change may have several important implications for the Texas transportation system by the end of the century. While these are beyond the timeframe for this plan, it is nonetheless timely to consider possible impacts of climate change:[18]

- Sea-level rise and increased storm surge during hurricanes may increase the risk of major coastal impacts, including both temporary and permanent flooding at airports, roads, rail lines, and tunnels,
- Flooding from increasingly intense downpours may increase the risk of disruptions and delays in air, rail, and road transportation, and damage from erosion in some areas,
- The increase in extreme heat may limit some transportation operations and cause pavement and track damage. Decreased extreme cold could provide some benefit such as reduced snow and ice removal costs, and
- Increased intensity of strong hurricanes could lead to more evacuations, infrastructure damage and failure, and transportation interruptions.

U.S. States Department of Transportation (USDOT) has provided some guidance on possible steps to adapting to climate change.[19]

Factor 3: Urban Livability and Sustainability Goals Will Impact Transportation

Livability and sustainability are concepts that are likely to be central to future surface transportation legislation. While new federal legislation is not expected soon, it is appropriate to recognize how this may influence transportation planning over the life of this plan.[20] Some impacts could include an increased focus on transit and rail services, transit-oriented development, smaller personal vehicles, and human powered modes, e.g., bicycle/pedestrian.

In the past 20 years, Texans have moved toward more sustainable choices for transportation, a trend that is expected to continue. Changes in Texas included the following:

- A revival of downtown and inner-city residential development and infill of central metropolitan regions,

[18] http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/
[19] http://climate.dot.gov/impacts-adaptations/planning.html
[20] http://fta.dot.gov/publications/publications_10935.html

- Development of three urban rail systems (in Dallas-Fort Worth, Houston and Austin), and support for the development of more rail and streetcar systems,
- An increasing desire for more bicycle and pedestrian opportunities for work, shopping, and recreational travel purposes.

Factor 4: Changing Personal Travel Behavior Will Change Transportation Demand

Personal choices to change how and when Texans choose to travel will affect how the transportation system is developed. While many of these changes are personal choices, transportation agencies can encourage alternative travel times and modes using Travel Demand Management (TDM). TDM provides an approach to better matching travel demand with available travel options. Some examples of TDM measures include:

- Dynamic and intelligent measures to increase vehicle occupancy, such as high-occupancy vehicle (HOV) lanes, car/van pooling, increased use of existing transit/paratransit, and addition of new transit services,
- Information and communications technologies with new workplace practices, including measures such as teleworking, telecommuting, and flextime,
- Measures such as allowing greater use of night time hours for truck deliveries, and changes in parking policies in both downtown and suburban areas,
- Parking policy changes could include reduced parking requirement standards for new developments, elimination of free parking spaces for employees in congested areas, introduction of on-street parking charges, and residential area parking policies. These measures may prove to be challenging in the short term for institutional, logistical, and societal reasons.

Factor 5: New Technology Could Bring New Patterns of Transportation to Texas

New technology can bring changes to how and when Texans choose to travel, and the economics of those decisions. Looking back 20 or 30 years, the advent of the internet and communications has changed the transportation landscape. Vehicles are now safer and more reliable. Changes in technology could bring changes in demand for transportation to Texas.

One example of a change in technology that is envisioned for intercity travel in the U.S. is high-speed rail service connecting large metropolitan areas. In April 2009, USDOT published its Vision of High-Speed Rail in America.[21] This includes several lines in

[21] Federal Rail Administration Vision of High-Speed Rail in America
http://www.fra.dot.gov/downloads/Research/FinalFRA_HSR_Strat_Plan.pdf

Texas that if developed as high-speed rail facilities, could result in new options for travel between San Antonio, Dallas and points north, and between Houston and points east.

Another example of an advanced technology that could change transportation demand is ITS. Global Positioning Systems (GPS) navigation, instant routing services, dynamic traffic signal systems, and other advanced traffic management techniques could have a large impact on the need for new capacity.

2.4.3 Forecast Vehicle Miles of Travel Methodology

Demand for roads is typically measured in vehicle miles of travel (VMT). VMT is the total daily vehicles that use a road multiplied by the length of the roadway. One car travelling for 1 mile equals one vehicle mile of travel. Two cars travelling for 2 miles are four VMT, and so on.

Forecasts for 2035 VMT were developed by using the RHiNO trend line method for the rural areas and urban network models for urban areas. The RHiNO trend line method uses a historical series of traffic counts to create a trend line of traffic for each segment of roadway to 2028. The trend line method was extended from 2028 to 2035. Urban network models are used to forecast the number of trips, their destination, and route, and in some urban areas, the mode used to make the trip. The urban network models reflect the capacity improvements documented in the urban area long-range plans.

2.4.4 Forces Affecting VMT Growth in Texas

VMT are the basic measurement of traffic on roadways, which includes personal autos commercial trucks. The main driving forces behind the predicted increases in VMT include:

- Population growth – as population continues to increase, more people use the roadways.
- The need for delivery of goods – increasing population requires more goods to be transported, much of which is done by commercial trucks.
- The quantity of travel per person – as the urban and suburban areas expand, the average miles driven per day per person also increases. Expanding urban areas create more opportunities for work, home, and business locations across a larger urban area.
- Increasing imports and exports to Texas ports drive growth in transporting goods from maritime ports to Texas and the rest of the U.S.

- Increasing imports and exports to international border gateways has a similar effect.
- Increasing flows of passenger and freight travel across the east-west and north-south interstate and US routes through Texas.
- Expanding tourist and business opportunities in Texas increases nonresident vacation and business conference attendance.

2.4.5 VMT and Population Growth

Figure 2-14 shows that the average daily VMT is expected to grow faster than population by 2035. VMT is predicted to grow 72 percent, while population will grow by 43 percent over 2008 measured levels. While some of this faster growth in VMT is attributable to increased trip length and number of trips per person, much of the higher growth rate in VMT is because of truck and commercial vehicle travel.

Figure 2-14: VMT, Population, and Lane Miles, 1985–2035[22]

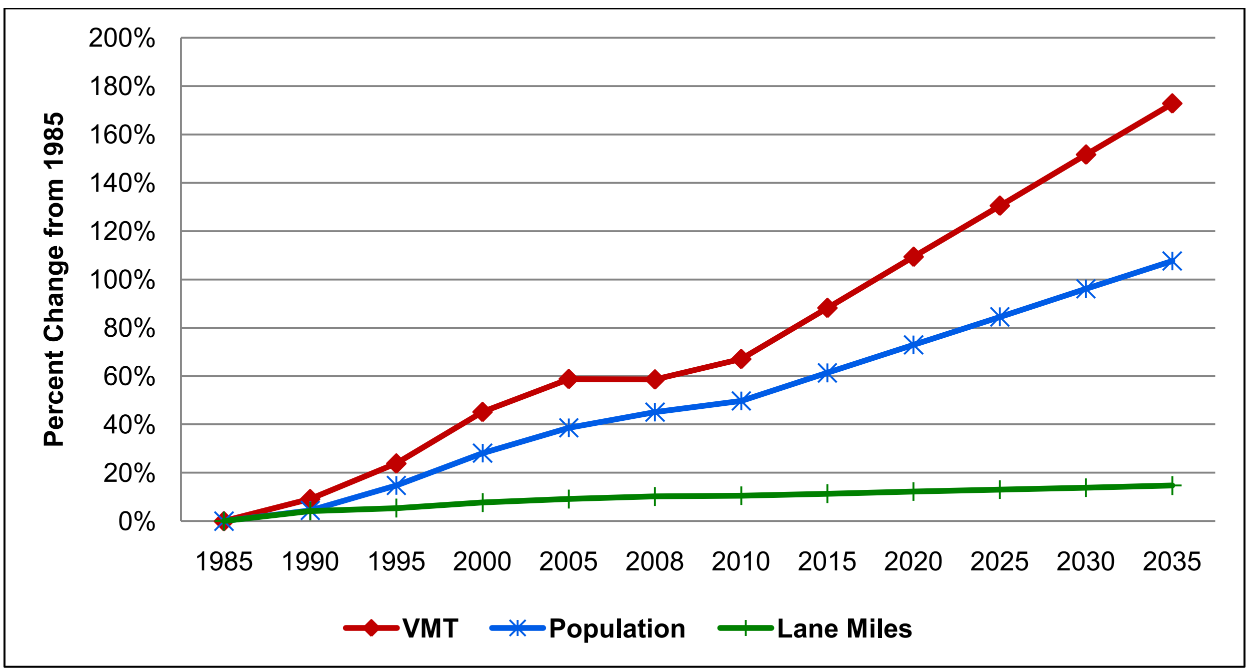


Table 2-7 and Figure 2-15 indicate the different growth rates between passenger autos and commercial trucks. While passenger auto VMT is expected to increase by

[22] Historical Lane Mileage and VMT, 1985, 1990, 1995, 2000, 2005 – Highway Performance Monitoring System (HPMS), USDOT; Historical population, 1985, 1990, 1995, 2000 – U.S. Census; Projected population, 2005 and 2035 –TSDC, 0.5 growth scenario; 2035 Projected VMT – TxDOT Roadway-Highway Inventory Network (RHiNO) and urban network travel demand model analysis; 2035 Projected Lane Mileage – TxDOT RHiNO, TxDOT UTP, urban network models as of May 2010; All projections interpolated for 2010, 2015, 2020, 2025, and 2030 for graphical presentation.

66 percent between 2008 levels and 2035, truck VMT is expected to grow by 123 percent. In addition to the faster growth rate in truck travel, the overall percentage of trucks as a proportion of total VMT is expected to increase from about 10.7 percent to about 13.9 percent. Much of the increase in truck travel is attributable to growth in population in Texas, but also to the efficiency of trucks over other modes for certain transport needs, and the growth in through-state and out-of-state freight transportation.

Table 2-7: Population, Auto VMT, Truck VMT, 2008–2035 On- and Off-System[23]

Summary	2008	2035	Growth	% Change
Population	23,614,497	33,789,697	10,175,200	43.1
Auto VMT	572,347,915	949,104,225	376,756,310	65.8
Truck VMT	68,617,389	152,998,839	84,381,450	123.0
Truck VMT (% of Total)	10.7	13.9	–	–
Total VMT (On/Off-System Breakout Below)	640,965,305	1,102,103,063	461,137,758	71.9
On-System VMT	**475,380,414**	**839,861,095**	**364,480,681**	**76.7**
Off-System VMT	**165,584,891**	**262,241,968**	**96,657,077**	**58.4**

Figure 2-15: Growth in Daily Auto and Truck VMT, 1985 to 2035[24]

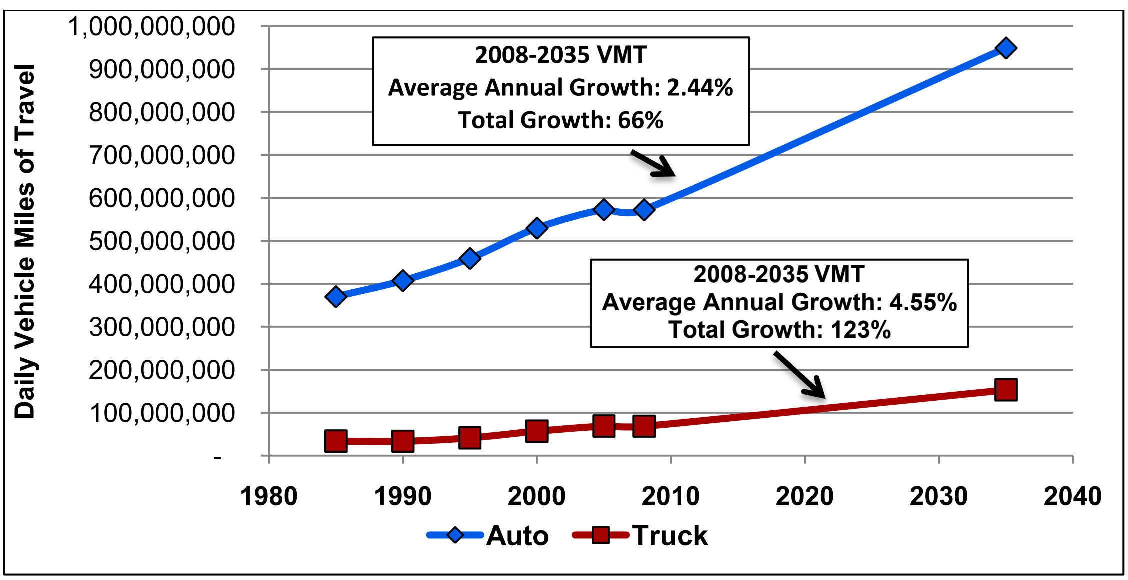
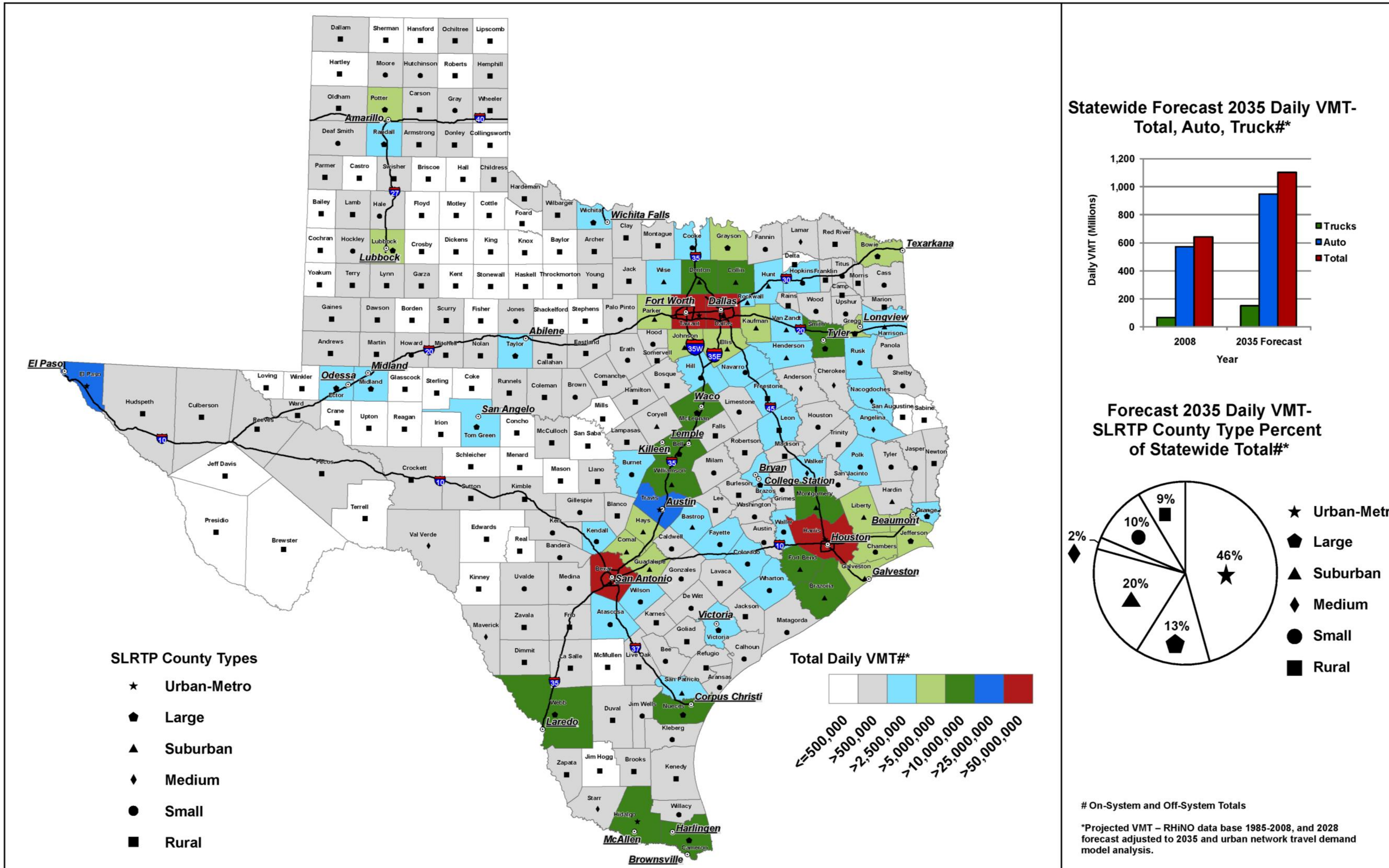


Figure 2-16 illustrates total daily VMT by county for 2035.

23 Projected population, 2008 and 2035 –TSDC, 0.5 growth scenario; 2035 Projected VMT – RHiNO database 2028 forecast adjusted to 2035 and urban network travel demand model analysis.

24 Projected VMT – RHiNO database 1985–2008, and 2028 forecast adjusted to 2035 and urban network travel demand model analysis.

Figure 2-16: Forecast 2035 VMT by County



2.4.6 The Geography of Texas Auto and Truck VMT Growth

Figure 2-17 shows the growth in VMT in the highest 20 counties in Texas ranked by total 2035 VMT. Harris County dominates the growth in auto and truck VMT. It is important to note that Dallas and Tarrant counties are considered one metropolitan area although they are shown separately on this chart. This chart shows the increase in VMT from 2008 to 2035. After the largest metropolitan counties, most of the remaining fastest growing counties are suburban to these core metropolitan counties. However, included in the top 20 counties are other individual large counties, such as El Paso and Nueces counties.

Figure 2-17: Daily Auto and Truck VMT Growth, 2008–2035, in Top 20 Counties[25]

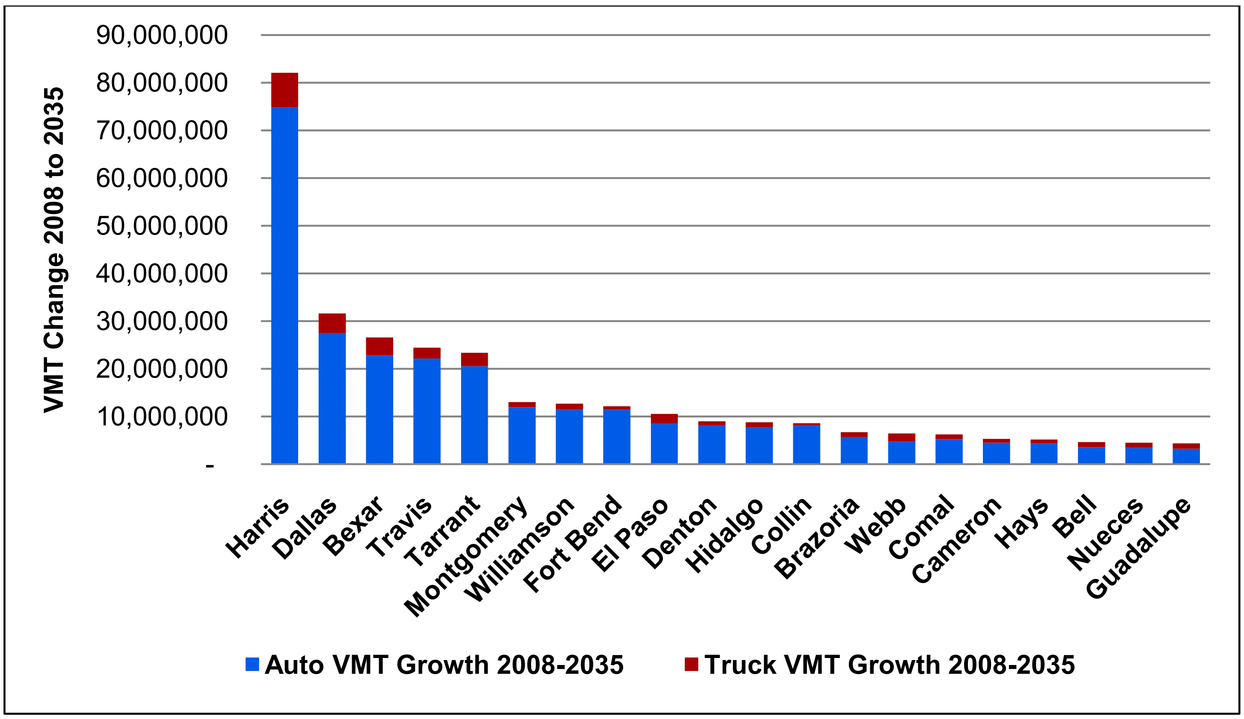


Table 2-8 shows the 2008 and 2035 auto, truck and total daily VMT and percent change by type of county type. Figure 2-18 illustrates VMT growth by county type. While much of the growth in both population and VMT by 2035 will occur in urban-metro counties, all areas will see a significant percent change in VMT. All county types (not all counties individually) will see a rise of more than 50 percent in VMT. This chart shows that in more urbanized regions of the state, VMT growth is more closely tied to population growth than in rural areas. In contrast, VMT will grow by over 60 percent in rural areas,

[25] Sources: Projected VMT – RHiNO database 2008 and 2028 forecast adjusted to 2035 and urban network travel demand model analysis.

while population increases by only 12 percent, indicating that growth in VMT in these counties is tied more closely to trucks and autos generated outside the county.

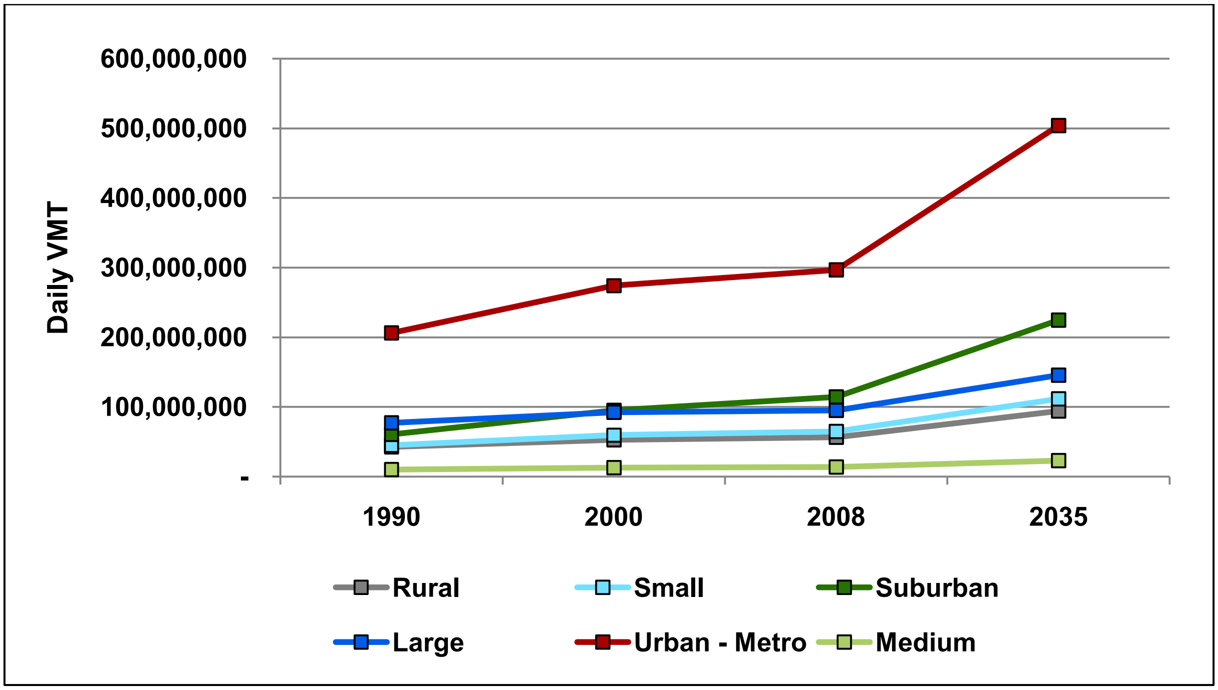
Table 2-8: Total Daily VMT by County Type
On- and Off-System Roads, 2008–2035[26]

Summary	Urban – Metro	Large City	Suburban	Medium	Small	Rural	Total
	2008						
Auto VMT	278,677,645	84,167,975	101,502,596	11,500,162	53,575,684	42,923,853	572,347,915
Truck VMT	18,006,787	10,884,740	12,788,259	2,187,325	11,180,160	13,570,118	68,617,389
Total VMT	296,684,433	95,052,716	114,290,855	13,687,487	64,755,844	56,493,970	640,965,305
Population	11,903,007	3,747,564	4,427,349	546,767	1,857,473	1,132,337	**23,614,497**
-	**2035**						
Auto VMT	462,662,358	120,712,594	195,756,808	18,184,470	87,751,643	64,036,351	949,104,225
Truck VMT	41,193,896	24,760,372	28,706,167	4,698,803	23,758,544	29,881,057	152,998,839
Total VMT	503,856,254	145,472,965	224,462,975	22,883,273	111,510,188	93,917,408	1,102,103,063
Population	17,028,201	4,852,359	7,583,884	696,821	2,356,424	1,272,008	**33,789,697**
-	**% Change 2008–2035**						
Auto VMT	66.0	43.4	92.9	58.1	63.8	49.2	65.8
Truck VMT	128.8	127.5	124.5	114.8	112.5	120.2	123.0
Total VMT	69.8	53.0	96.4	67.2	72.2	66.2	71.9
Population	**43.1**	**29.5**	**71.3**	**27.4**	**26.9**	**12.3**	**43.1**

While high growth in truck travel is to be expected in counties where population is growing the fastest, it is important to note that truck travel in rural areas is also expected to grow significantly. This growth in truck VMT in rural counties is a result of the many miles of connecting roadways crossing these counties including in particular the interstate system.

[26] Sources: Projected VMT – RHiNO database 2008 and 2028 forecast adjusted to 2035 and urban network travel demand model analysis.

Figure 2-18: Daily VMT by County Type, 1990–2035[27]



While Table 2-8 shows the expected growth in VMT for each county type, Table 2-9 shows where the total growth is expected to occur. Urban-metro counties and adjacent suburban counties will account for 69 percent of the growth in VMT in Texas by 2035 (45 percent plus 24 percent, respectively).

Table 2-9: Percent of Total Daily VMT Growth by County Type, 2008–2035

County Type	% of Total Growth	% of Auto Growth	% of Truck Growth
Urban-Metro	45	49	27
Large	11	10	16
Suburban	24	25	19
Medium	2	2	3
Small	10	9	15
Rural	8	6	19
Total	**100**	**100**	**100**

[27] Sources: Projected VMT – RHiNO database 1990, 2000, 2008, and 2028 forecast adjusted to 2035 and urban network travel demand model analysis.

2.4.7 Forecast Traffic Congestion Levels (On-System Roads Only)

While it is important to inventory the Texas roadway system and total travel in the state, it is also important to measure the roadway traffic conditions expected by 2035. Congestion is a term heard often when discussing highway traffic conditions, and there are many definitions. The Texas Transportation Institute (TTI) has an ongoing monitoring study called the Urban Mobility Report (http://mobility.tamu.edu/) that uses consistent methods to measure congestion. The SLRTP uses one of TTI's methods.

Using the RHiNO database, a basic measure of congestion can be obtained by dividing the Average Daily Traffic (ADT) into the number of lanes on each segment, yielding an ADT per lane. Table 2-10 shows the thresholds of ADT per lane for each level of congestion.

Table 2-10: Daily Traffic Volume per Lane Congestion Calculation[28]

Facility and Congestion Level	Daily Traffic Volume per Lane
Freeway	
Uncongested	Under 15,000
Medium	15,001–17,500
Heavy	17,501–20,000
Severe	20,001–25,000
Extreme	Over 25,000
Arterial	
Uncongested	Under 5,500
Medium	5,501–7,000
Heavy	7,001–8,500
Severe	8,501–10,000
Extreme	Over 10,000

Clearly, there are many special situations on certain segments of roadway that cause traffic bottlenecks and delays. These special situations, including inclement weather conditions, are not represented by this basic measure.

A representative summary of the overall traffic conditions can be obtained by aggregating the VMT on roadways that fall into each congestion level. Table 2-11

[28] 2009 Urban Mobility Report, TTI.

shows daily VMT on the state roadway system for each level of congestion for 2008 and 2035.

Table 2-11: VMT by Congestion Level On-System Roads, 2008–2035[29]

Summary	Freeway				Arterial			
	2008		2035		2008		2035	
	VMT	% of Total	VMT	% of Total	VMT	% of Total	VMT	% of Total
Uncongested	97,929,466	**45.6**	130,610,584	**32.7**	186,138,452	**71.4**	227,722,248	**51.8**
Medium	22,404,813	**10.4**	33,261,069	**8.3**	25,706,170	**9.9**	52,087,778	**11.8**
Heavy	17,578,520	**8.2**	28,856,963	**7.2**	17,366,898	**6.7**	45,276,220	**10.3**
Severe	37,538,930	**17.5**	54,728,298	**13.7**	9,818,812	**3.8**	31,045,088	**7.1**
Extreme	39,288,495	**18.3**	152,565,588	**38.1**	21,609,858	**8.3**	83,707,262	**19.0**
% ≥ Heavy		**44.0**		**59.0**		**18.7**		**36.4**
Total	214,740,224		400,022,501		260,640,190		439,838,594	

Figure 2-19 and Figure 2-20 show the breakout by county type of VMT on the state roadway system in the heavy or greater level of congestion for 2008 and 2035. While 67 percent of freeway travel is currently occurring in heavy or worse congestion in urban-metro counties, this is expected to grow to over 80 percent of travel by 2035. Additionally, given current trends, the percentage of VMT operating at heavy or greater level of congestion on freeways and arterials in large, suburban, medium, and small county types is expected to increase by 2035.

[29] Projected VMT – RHiNO database 2008 and 2028 forecast adjusted to 2035 and urban network travel demand model analysis. 2009 Urban Mobility Report, TTI.

Figure 2-19: Percent of Freeway VMT at Heavy or Greater Congestion by County Type, On-System Roads[30]

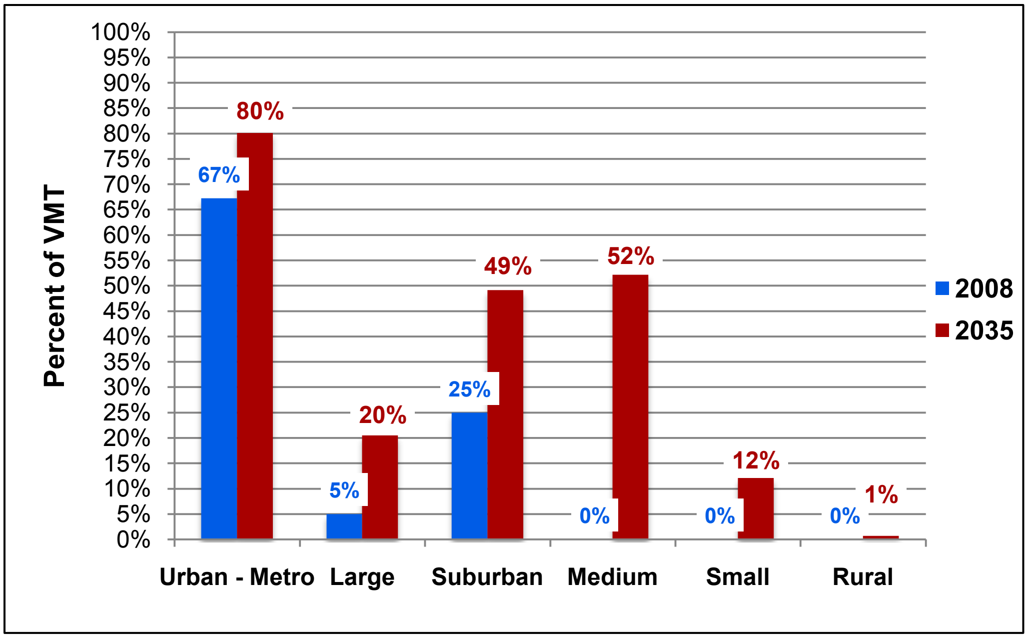
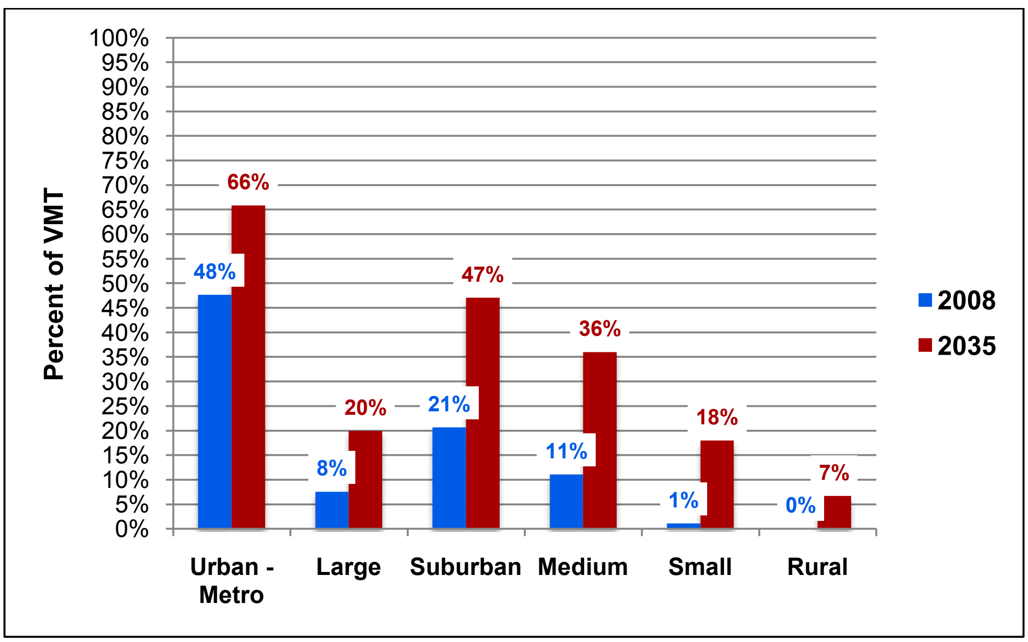


Figure 2-20: Percent of Arterial VMT at Heavy or Greater Congestion by County Type, On-System Roads[31]



[30] Ibid

[31] Ibid

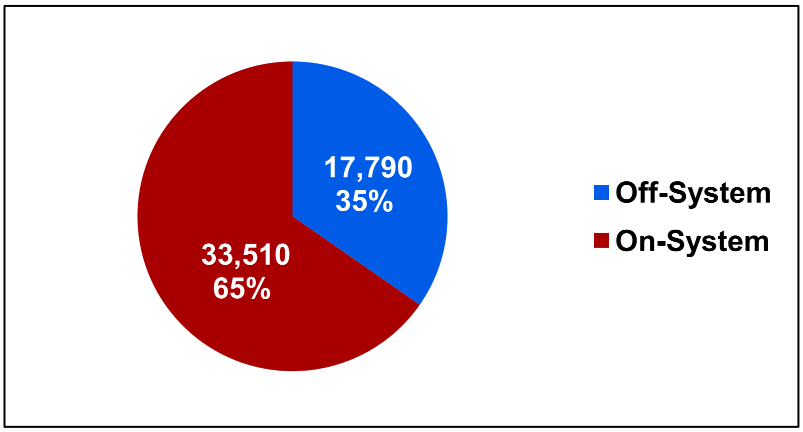
2.5 Texas Bridges

Figure 2-21 shows the number and distribution of Texas' 51,300 on- and off-system bridges in Texas.

On-system bridges are vehicular bridges that are located on the designated state highway system, owned and maintained by TxDOT, and typically funded with a combination of federal and state or state-only funds.

Off-system bridges are not part of the designated state highway system and are under the direct jurisdiction of the local government such as a county, city, other political subdivision of the state, or special district with authority to finance a highway improvement project.

Figure 2-21: Texas Bridge Classification 2010[32]



The correlation between the age of bridges and their need for special maintenance predicts the need for resources to support bridge replacement and rehabilitation. In addition, on-system Texas bridges built after 1900 can be classified by significant changes in the design criteria that governed their construction:

- Built before 1950—Bridges generally designed for less than the current state legal load.
- Built between 1950 and 1970—Bridges generally required to accommodate the minimum design load or higher recommended by the American Association of State Highway and Transportation Officials (AASHTO), but may be narrower than their approach roadways. A number of these bridges are too narrow to meet

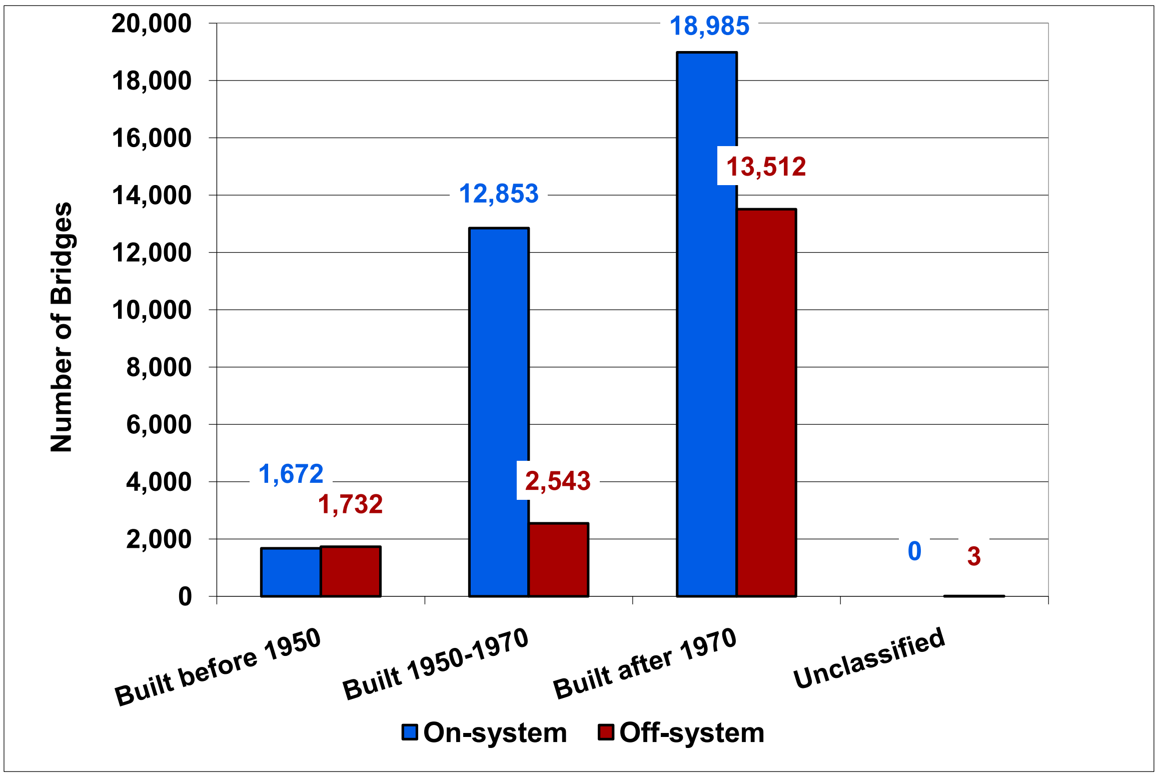
[32] TxDOT BRINSAP Database

current requirements. (Required bridge load capacity is described in detail in TxDOT's Bridge Inspection Manual.)

- Built after 1970—Bridges generally required to accommodate the minimum design load or higher recommended by the AASHTO and must be at least as wide as their approach roadways.

Figure 2-22 shows the number of bridges constructed during the periods described above.

Figure 2-22: Time Period of Bridge Construction[33]



The federal criterion for bridge replacement is a sufficiency rating of 50 or below. A statistical analysis on the Bridge Inventory, Inspection and Appraisal Program (BRINSAP) database from 1997 through 2007 performed by the Center for Transportation Research for 2030 Committee Transportation Needs Report determined that on-system bridges typically reach this threshold at 55 years of age. Similar analysis for off-system bridges yields a value of 50 years of age. The values were developed to

[33] TxDOT BRINSAP Database

achieve a 10 percent probability that the age of replacement is less than the calculated value.[34]

Data from BRINSAP indicate that Texas will experience one of the first sizeable “bridge reconstruction cycles” during this plan period (2010–2035). Based on an estimated service life of 55 years for on-system bridges, more than 15,000 bridges constructed between 1955 and 1980 will be considered potential candidates for replacement during the needs analysis. One quarter of these bridges were constructed in just three urban districts: Dallas, San Antonio, and Fort Worth—in the wake of post-war economic growth, implementation of the interstate system, and freeway development in the larger cities. Many of the remaining on-system structures during this timeframe appear to be related to the addition of mileage to the farm-to-market system in districts such as Waco, San Angelo, and Yoakum.

For off-system bridges, over 5,000 of the 17,800 structures were also built between 1955 and 1985, especially by large municipalities, cities, counties and developers of new residential and commercial neighborhoods in the suburban areas. Over half of these bridges are located in the largest urban areas of the period: Houston, Dallas, Fort Worth, and San Antonio.

The distribution of the on-system bridges indicates the decade in which most of the interstate construction was accomplished (1960s) and the decade of major construction efforts in each of the large districts. The off-system bridges track with the amount of residential and commercial development to accommodate the rapid growth in the state since 1980.

The number of bridges does not provide an indication of the size of bridges. The size of the bridge deck, measured in square feet, is used to compare bridge sizes. Figure 2-23 and Figure 2-24 show the distribution of deck area by age for on- and off-system bridges.

For on-system bridges, spikes in the graph can be associated with bridge work with major freeway construction/reconstruction projects. The 1960s reflected major efforts on the first wave of urban freeways as well as interstate construction. The spike in 1989 includes the Downtown Y in San Antonio. The 1990s encompassed the reconstruction of North Central Expressway in Dallas. The spike in 2007 is associated with the opening of SH 45, Loop 1, and SH 130 in Central Texas.

[34] TxDOT 2030 Committee Texas Transportation Needs Report, 2009

For off-system bridges, the amount of deck area tracks with population gains and economic prosperity of the mid- to late 1980s and the first decade of this century. The economic downturns in 2002, 2003, and 2008 clearly track the reduction in new housing and commercial developments.

Figure 2-23: Distribution of Deck Area by Year Built for On-System Roadways[35]

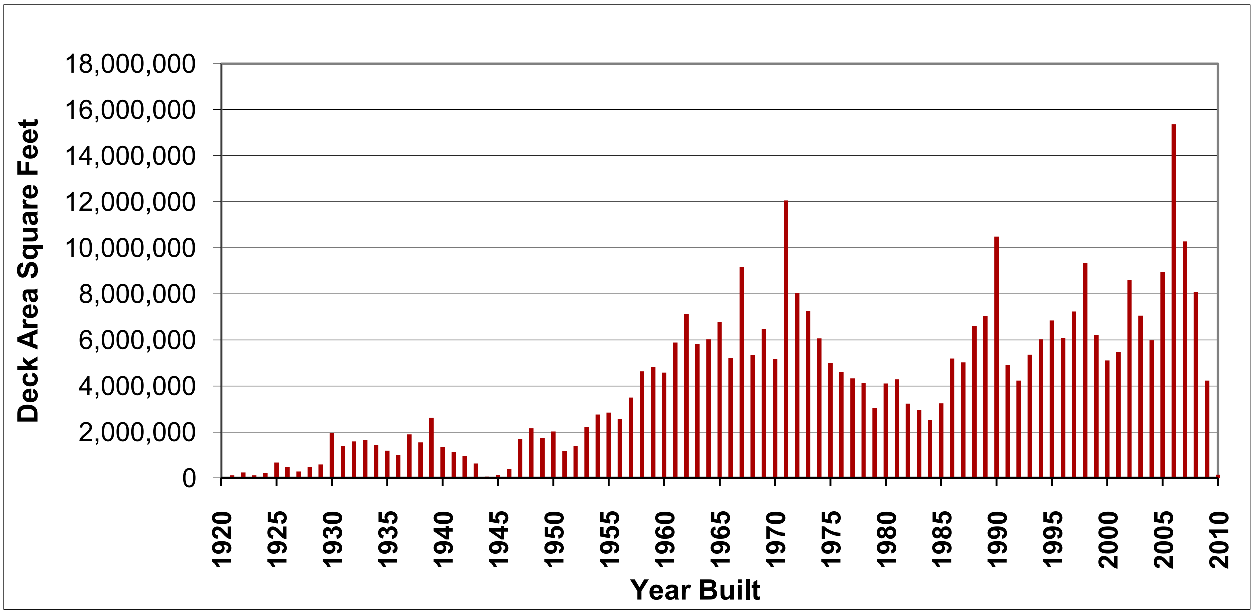
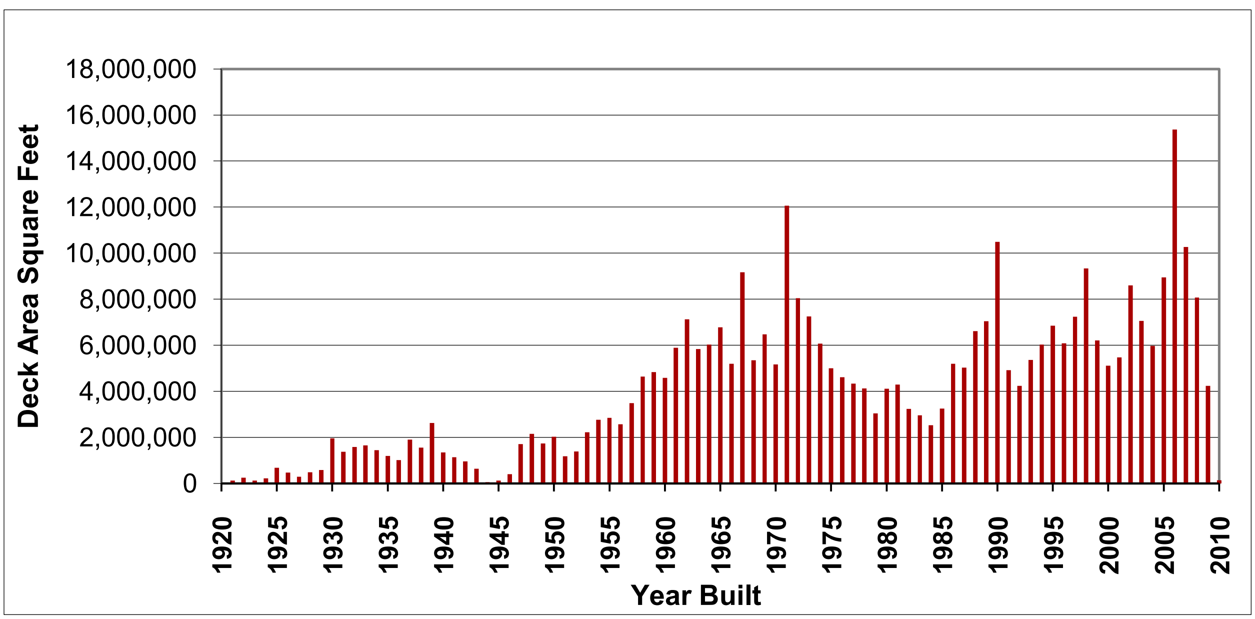


Figure 2-24: Distribution of Deck Area by Year Built for Off-System Roadways[36]



[35] TxDOT BRINSAP Database

[36] Ibid

Table 2-12 shows distribution of bridges by bridge length. The longest on-system bridge in Texas is the Sabine River/Toledo Bend Bridge on SH 21 at 13,196 feet. The longest off-system bridge in Texas is the Pharr/Reynosa Bridge over the Rio Grande at 15,770 feet.

Table 2-12: Bridges by Length[37]

Bridge Length	On-System Bridges			Off-System Bridges		
	Over Waterway	Not Over Waterway	Total*	Over Waterway	Not Over Waterway	Total*
<30 feet	5,707	4	5,711	3,098	4	3,102
30–100 feet	10,213	132	10,345	10,502	106	10,608
100–250 feet	6,068	3,376	9,444	2,759	202	2,961
250–400 feet	1,511	2,663	4,174	445	123	568
400–1,000 feet	1,429	1,142	2,571	286	108	394
1,000–2,500 feet	466	492	958	68	61	129
2,500 feet–1 mile	112	132	244	14	9	23
1–2 miles	30	24	54	3	0	3
≥ 2 miles	5	2	7	1	0	1
Totals	**25,541**	**7,967**	**33,508**	**17,176**	**613**	**17,789**

*Note: Totals differ from Figure 2-21 due to incomplete data records for a total of three bridges.

2.5.1 Texas Bridge Conditions

The standard definitions for condition of bridges are as follows:

- **Structurally Deficient:** A structurally deficient bridge is one with routine maintenance concerns that do not pose a safety risk or one that is frequently flooded. To remain open to traffic, structurally deficient bridges are often posted with reduced weight limits that restrict the gross weight of vehicles using the bridges.
- **Functionally Obsolete:** Classification as functionally obsolete means the bridge met current design standards when built, but over time has become obsolete due to an increase in traffic volume. Functionally obsolete bridges are those that do not have adequate lane widths, shoulder widths, or vertical clearance to serve current traffic demands or are occasionally flooded.
- **Substandard-for-Load-Only:** The term “substandard-for-load-only” is used by TxDOT to designate bridges in relatively good condition that do not have specific maintenance concerns, but do have a load-carrying capacity less than the state

[37] Ibid

legal limit for public roadways. Substandard-for-load-only bridges are posted with reduced weight limits. These bridges are not classified as structurally deficient or functionally obsolete under Federal Highway Administration (FHWA) definitions.

Table 2-13 shows the condition of Texas bridges as of March 2010.

Table 2-13: Condition of Texas Bridges, March 2010[38]

Rating	Bridges	Percent
On-System (33,510 bridges)		
Substandard for Load Only	93	0.28
Structurally Deficient	328	0.98
Functionally Obsolete	3,514	10.49
Off-System (17,790 bridges)		
Substandard for Load Only	1,085	6.10
Structurally Deficient	1,281	7.20
Functionally Obsolete	3,979	22.37

Figure 2-26 and Figure 2-27, provide a comparison of bridges in each of the four TxDOT regions (Figure 2-25) and show the distribution of functionally obsolete and structurally deficient bridges.

[38] Ibid

Figure 2-25: TxDOT Regions and Districts

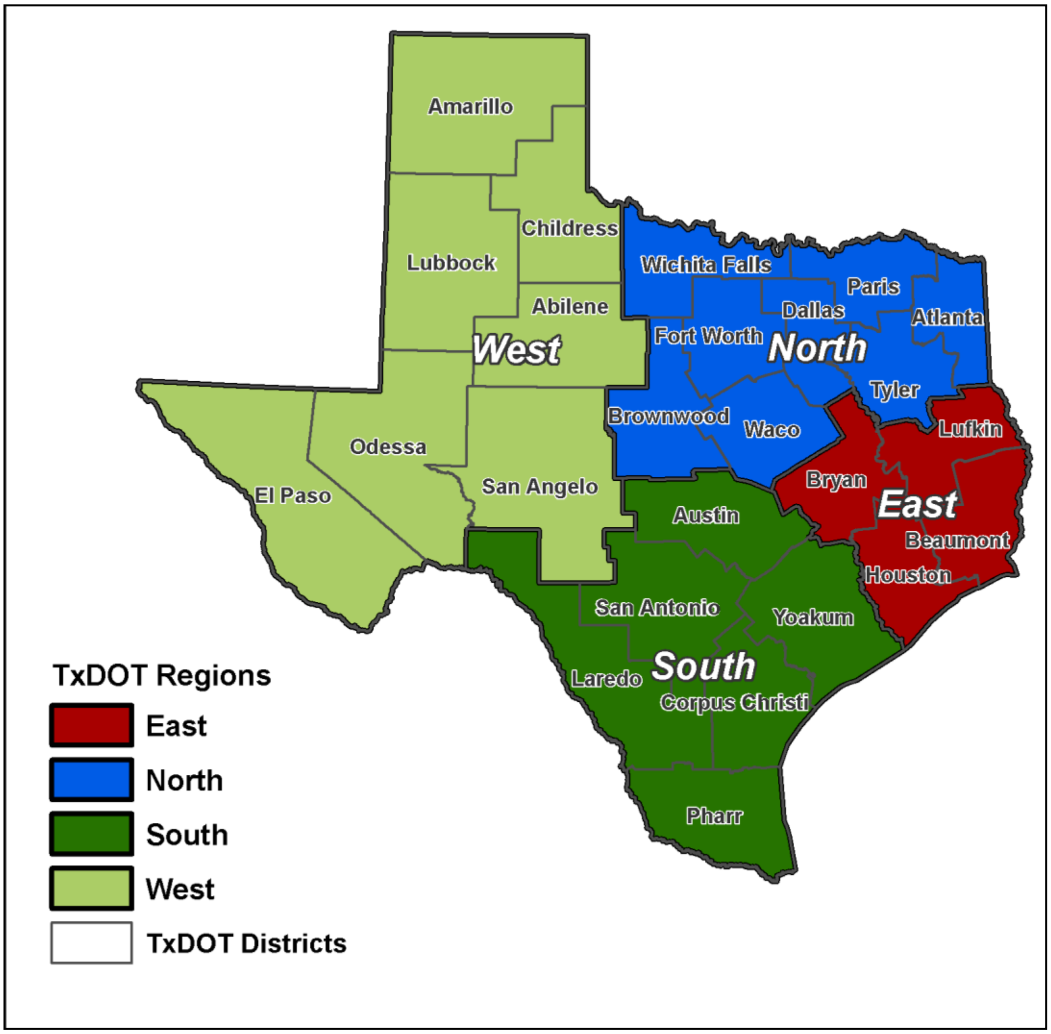


Figure 2-26: Functionally Obsolete Bridges by Region, March 2010[39]

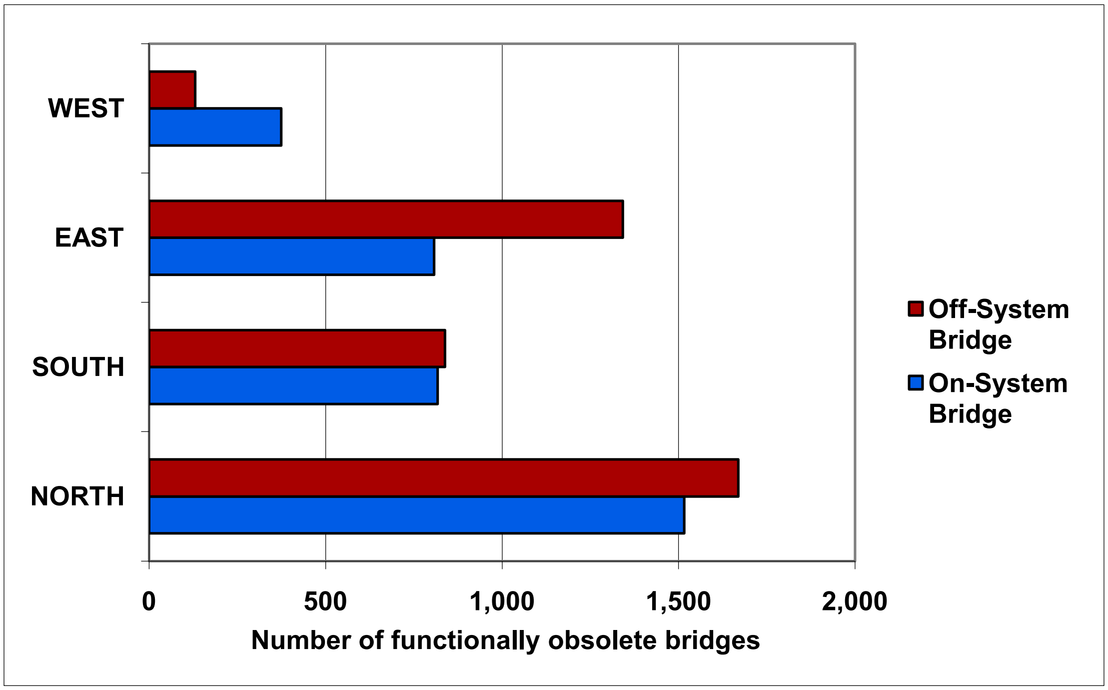
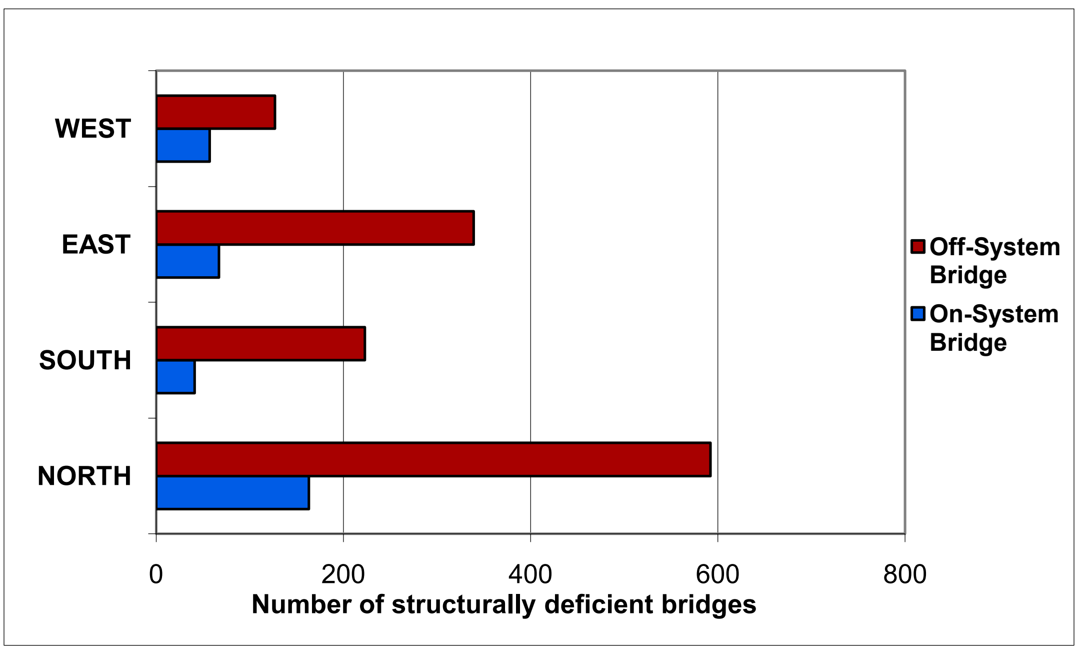


Figure 2-27: Structurally Deficient Bridges by Region, March 2010[40]



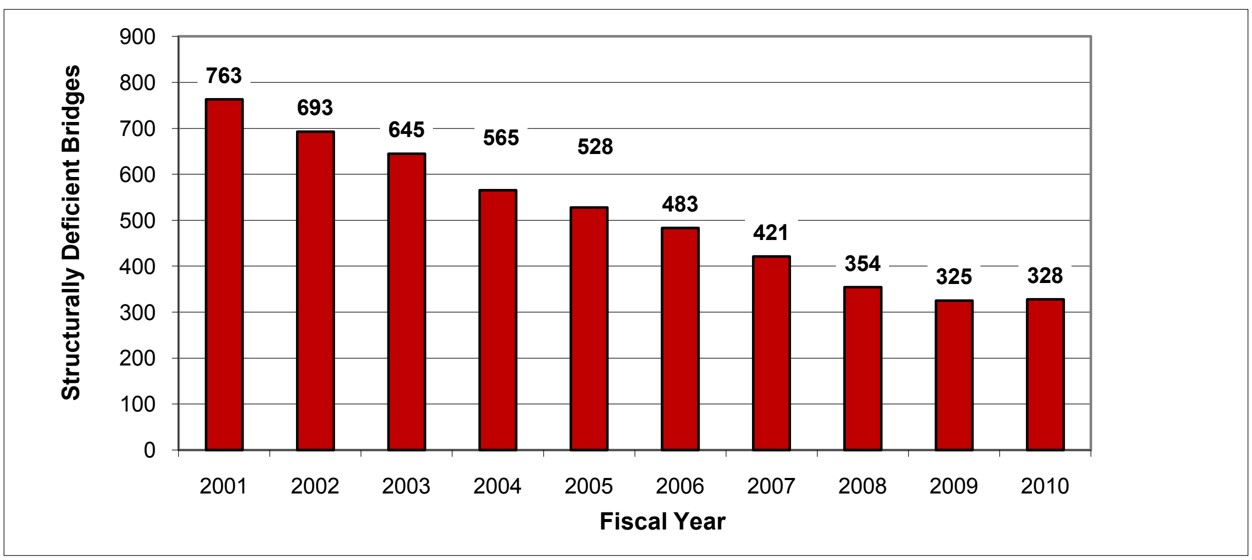
[39] Ibid
[40] TxDOT BRINSAP Database

The Texas Transportation Commission established the goal of achieving 80 percent of the bridges rated in good or better condition by September 2011.[41] Bridges are considered in "good or better" condition if they are not structurally deficient, functionally obsolete or substandard-for-load-only. Figure 2-28 summarizes the progress towards achieving this goal.

Table 2-14: On- and Off-System Bridge Ratings by Year[42]

Fiscal Year	Good or Better (%)
2001	70
2002	71
2003	75
2004	76
2005	76
2006	77
2007	78
2008	78
2009	79
2010	80
Goal 2011	**80**

Figure 2-28: Reduction in On-System Structurally-Deficient Bridges by Year, 2001–2010[43]



[41] Transportation Commission Minute Order 108608, August 30, 2001
[42] TxDOT Bridge Facts, 2001-2009
[43] Transportation Commission Minute Order 108608, August 30, 2001

TxDOT expended $3.9 billion over the last nine fiscal years to achieve the progress in replacing bridges. Figure 2-29 and Figure 2-30 show the value of construction contracts to replace or rehabilitate existing bridges and contracts to build new bridges over this time period.

Figure 2-29: Value of Rehab/Replace Bridge Contracts, 2001–2009[44]

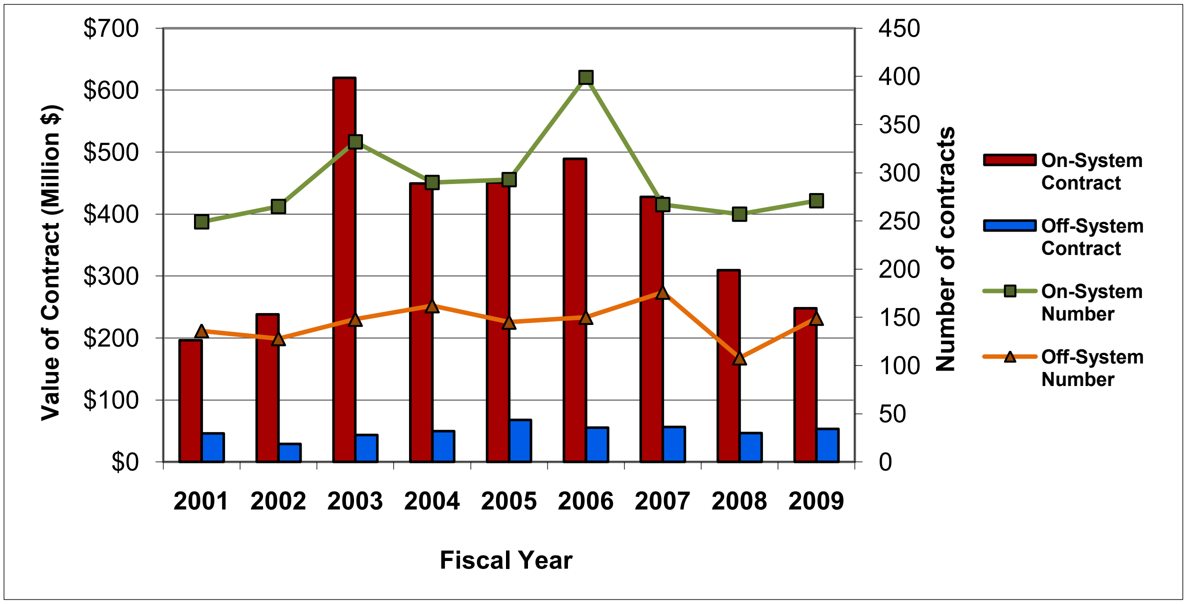
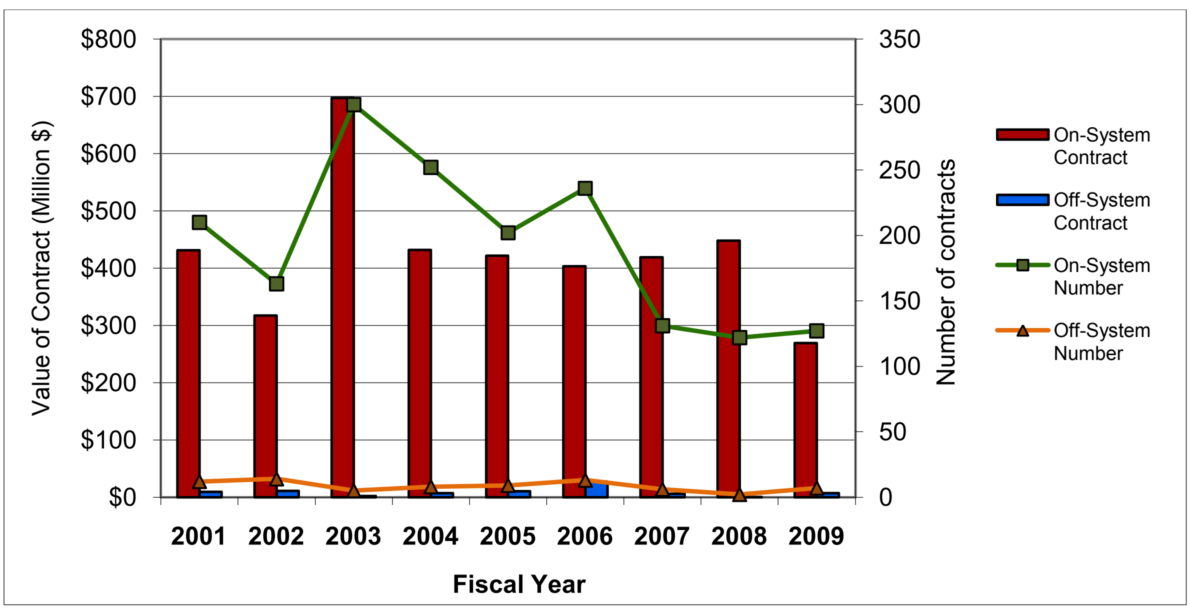


Figure 2-30: Value of New Location Bridge Contracts, 2001–2009[45]



[44] TxDOT Bridge Facts, 2001–2009

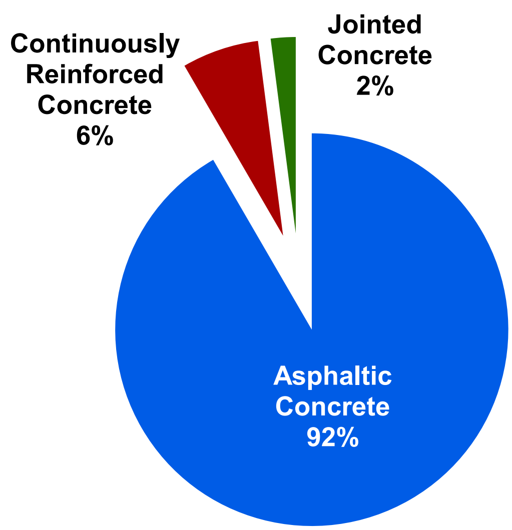
[45] TxDOT Bridge Facts, 2001–2009

2.6 Texas Pavements

2.6.1 Texas Pavement Types

For Routine Maintenance/Preventative/Rehabilitative Maintenance (RM/PRM) planning purposes, TxDOT groups pavements into three general categories. Figure 2-31 shows the general distribution of each pavement type within the TxDOT system.

Figure 2-31: Pavement Types[46]



- Asphaltic concrete pavement (ACP) is by far the most common type of pavement on the TxDOT system. This category also includes the sealed flexible base sections found on most farm-to-market roads.
- Continuously reinforced concrete pavement (CRCP) is primarily found on high volume roadways and uses steel reinforcement to manage concrete cracking in a controlled manner.
- As the name implies, joints are constructed at regular intervals, creating jointed concrete pavement (JCP) slabs. Reinforcing steel use varies widely in JCP.

2.6.2 Texas Pavement Conditions

Pavement conditions on existing Texas roadways are affected by a number of variables such as age, traffic volume, number and size of heavy trucks, weather, strength and

[46] TxDOT Construction Division, 2010

stability of underlying soils, stormwater and internal drainage, and the type/quality of the initial pavement construction. RM/PRM must be systematically performed to counter the combined impacts of these variables.

The process for planning, budgeting, and scheduling pavement RM/PRM generally includes development and maintenance of a pavement inventory, regular measurement of the existing pavement conditions, and identification and prioritization of RM/PRM needs.

Several terms have specific meanings when used in discussions about pavement conditions.

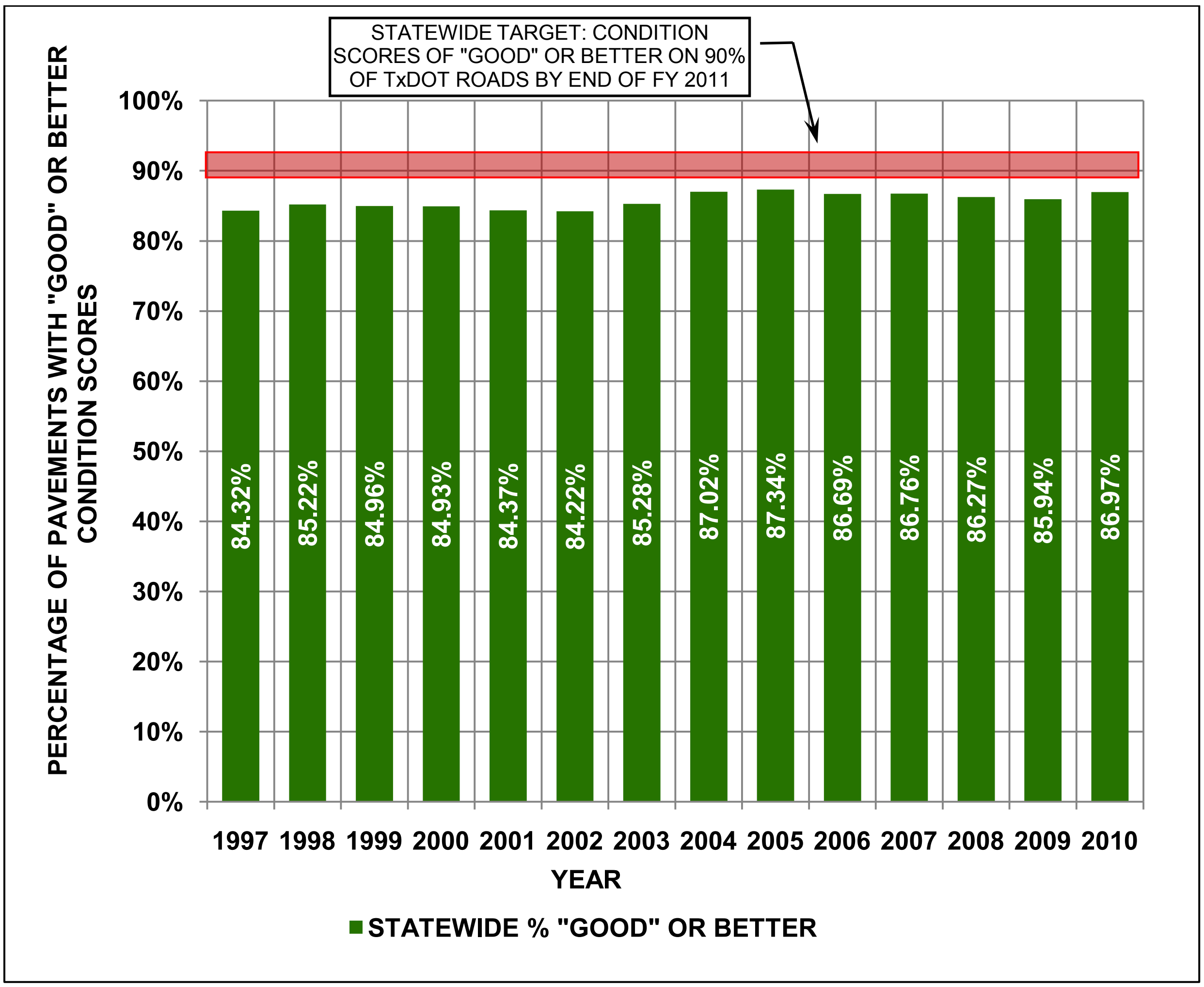
- ★ <u>Distress rating</u> – A numerical value used to quantify the extent of pavement distress for a particular roadway section. The distress rating is one of the two key measurements used to define overall pavement conditions.
- ★ <u>Ride quality measurement</u> – A directly measured numerical value used to quantify the smoothness or roughness of pavements. It is the second key measurement used to quantify overall pavement conditions.
- ★ <u>Pavement distress</u> – A general term used to describe pavement that has deteriorated from any combination of variable factors. Descriptive terms such as “rutting,” “cracking,” “potholes,” “patched areas,” and “punchouts” all refer to pavement distress.
- ★ <u>Ride quality</u> – This term is used to describe the smoothness of pavement surfaces.
- ★ <u>Pavement condition</u> – A composite numerical value calculated from pavement distress ratings and ride quality measurements taken for a specific section of roadway. TxDOT annually calculates new pavement condition scores – in roughly half-mile sections – for the entire roadway system not under construction.

TxDOT’s Pavement Management Information System (PMIS) is a statewide program that annually collects on-site measurements of pavement distress ratings, ride quality measurements, and composite pavement condition scores to show trends and overall RM/PRM needs for the TxDOT system.

A general snapshot of the pavement conditions is also generated to meet a specific Departmental goal. In August 2001, the Texas Transportation Commission set a statewide goal to have 90 percent of Texas pavements in “good” or better condition within 10 years.[47] "Good" condition is defined as a composite pavement condition score of 70 or higher for a particular section of roadway. The pavement condition scores collected within PMIS will need to be at least 70 for roughly 90 percent of the roadway sections to meet this goal.

Although pavement condition scores improved slightly from 2003 to 2005, scores are again declining. The goal of 90 percent of the pavement in "Good" or better condition has not been met. Figure 2-32 provides a summary of the overall pavement condition scores since 1997.

Figure 2-32: Percentage of Roads with Good or Better Condition, Fiscal Year 1997–2010[48]



[47] Transportation Commission Minute Order 108608, August 30, 2001

[48] TxDOT Construction Division, 2010

As demand increases, particularly truck traffic, the wear and tear on Texas' highways increases. Added to this increasing need for maintenance is severely limited funding to repair roads. A significant difference exists between TxDOT's projected PRM funding for 2010–2035 and the pavement maintenance funding needs recently identified by the Center for Transportation Research. A clear portrayal of the cumulative effect of the PRM funding deficit is presented on Figure 2-33, which shows the dramatic decline in PMIS pavement condition scores predicted by the Center for Transportation Research (CTR) pavement deterioration model under TxDOT's current projected PRM funding levels through 2035. This figure shows that although TxDOT is close to meeting its goal of 90 percent of pavements rated as good or better, current trends in funding lead to a rapid decline in overall average statewide pavement rating. This decline, given current funding trends, will cause Texas' pavement scores to average less than 10 percent good or better by 2035.

Figure 2-33: Projected Percentage of Lane Miles in Good or Better Condition

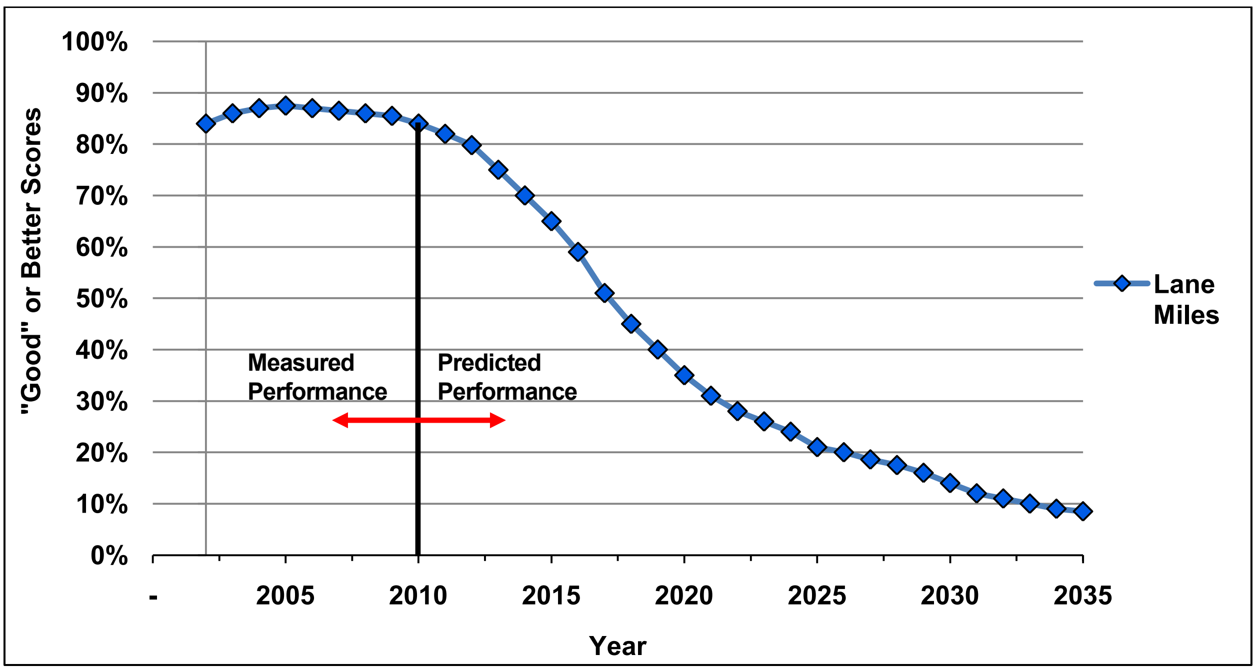
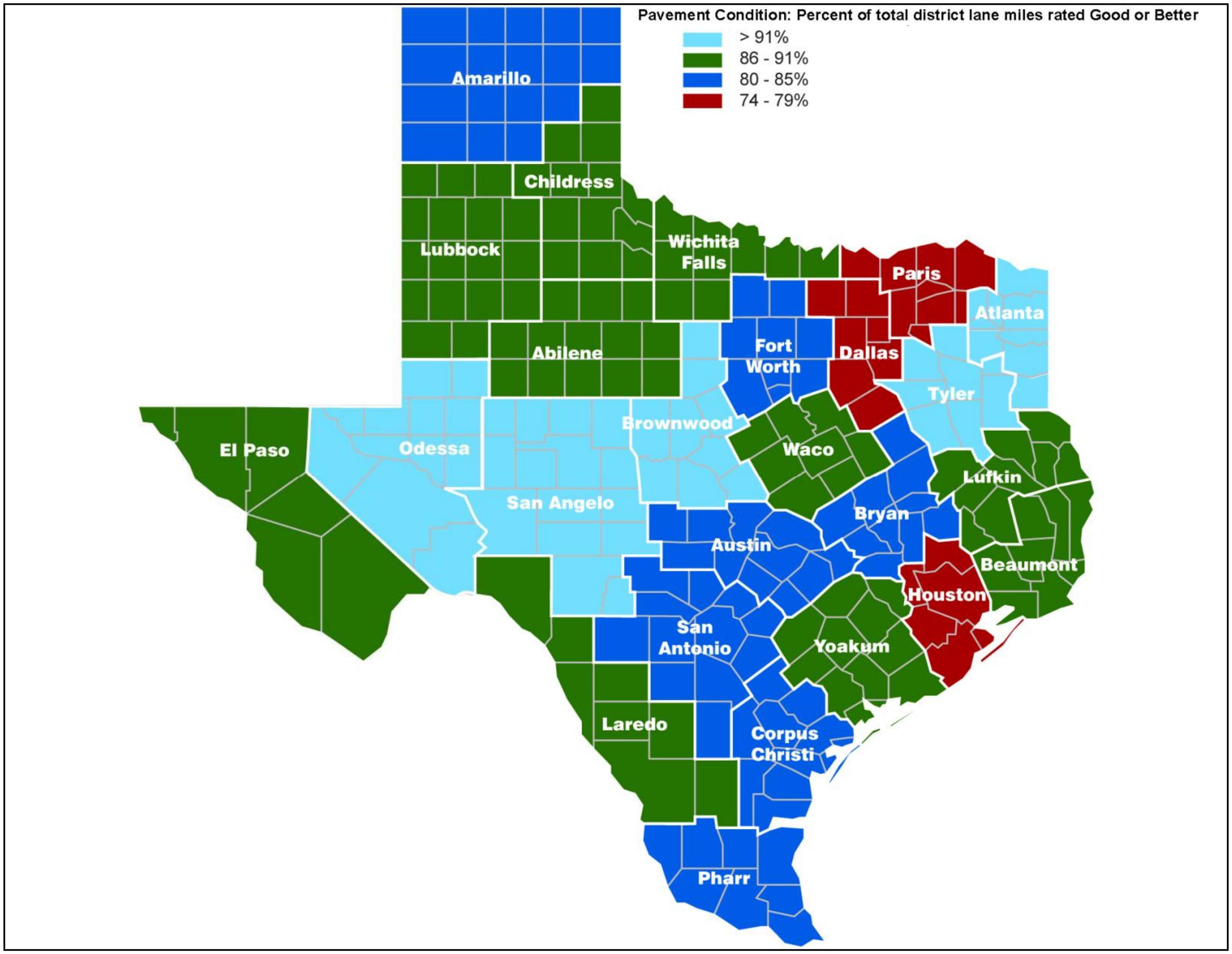


Figure 2-34 illustrates pavement conditions by TxDOT district.

Figure 2-34: Percent of Total District Lane Miles Rated Good or Better



2.7 Intelligent Transportation Systems

Since the early 1990s, ITS has been an important part of the Texas transportation system. USDOT defines ITS as “the integration of advanced communications technologies into the transportation infrastructure and in vehicles.”

ITS provides users with up-to-date information on incidents, weather conditions, and congestion while improving the overall movement of vehicles through the monitoring of traffic conditions at a centralized traffic management center (TMC). In addition, ITS improves the flow of information to emergency responders, media outlets, and traffic information providers—resulting in a safer and more efficient transportation system. ITS can be a cost-effective tool to reduce congestion and improve air quality.

ITS technologies can cover a wide range of travel modes including transit and freight. Advanced Public Transportation Systems (APTS) incorporate the latest technology into transit systems to move passengers and vehicles efficiently. The freight industry and businesses with large commercial fleets rely on ITS information for routing, dispatching, and managing fleet operations.

2.7.1 Intelligent Transportation Systems Technologies and Operations

A variety of ITS technologies has been implemented over the last 20 years in Texas. While roadway applications of ITS typically focus on state highways maintained by TxDOT, other agencies such as cities, counties, toll roads, and transit authorities have also implemented ITS into their overall systems.

The following are examples of ITS equipment currently deployed in Texas:

Traffic Management Centers (TMCs) are central hubs where highway, transit, incident, and weather information unite. The largest TMCs include DalTrans & TransVision in the Dallas-Fort Worth area, San Antonio’s TransGuide, and Houston’s TranStar. Several city agencies have also implemented smaller scale TMCs that focus on monitoring traffic signal timings throughout the city. An example is the City of Dallas’ TMC, where staff can detect signal malfunctions and change traffic signal timings directly from the TMC.[49]

Some TMCs house multiple agencies. At Houston’s TranStar, officials from Harris County, the City of Houston, Houston Metro, and TxDOT partner together to serve the

[49] City of Dallas, http://www.dallascityhall.com/pwt/traffic_management_center.html, May 25, 2010

mobility needs of the area. This cross-agency coordination has served the Houston area well especially during hurricane evacuation and response.[50]

Dynamic Message Signs (DMS) are large signs with electronic messaging that convey travel time, AMBER Alerts, weather, incident information, and safety messages to drivers. While the great majority of DMS are located along freeways, cities like Dallas have begun implementing DMS on arterial roadways in order to give drivers alternate options when congestion occurs.[51]

Closed-Circuit Television (CCTV) cameras monitor traffic conditions and incidents by providing real-time video to the TMC that the general public can access through websites. This allows the TMC to apply the necessary measures to warn the user of the impending condition and notify the appropriate emergency personnel. Cameras also give cities the ability to detect malfunctions at signalized intersections. CCTV cameras in Houston have been especially helpful before, during, and after hurricane evacuations.

Lane Control Signals (LCS) are mounted above the travel lane and give advance warning to drivers of a lane closure due to incidents or construction.

Radar Detection uses electromagnetic waves to determine vehicular volumes, speed, classification, and travel times between points. This data can be used for establishing traffic patterns and calculating travel times between points. Dallas/Fort Worth and El Paso implement nearly 80 percent of the radar detection devices in Texas.

Loop Detection provides similar information as radar detection except that it uses magnetic induction loops in the pavement to track vehicle information. The majority of loop detection on freeways is found in the Austin-San Antonio area.

Highway Advisory Radio (HAR) broadcast important roadway information to drivers. Typically, a large sign with flashers will indicate which station the driver can access. For example, a driver in the Austin area can tune into 5:30 AM to hear about lane closures 24 hours a day.[52] Similarly, drivers can also tune into a specific radio station as they approach a major airport to obtain flight information.

Ramp Metering uses timed signalization at entrance ramps to provide an even distribution of vehicles merging onto congested highways. Houston is currently the only

[50] Houston TranStar, http://www.houstontranstar.org, 2008 Annual Report, May 25, 2010
[51] City of Dallas, http://www.dallascityhall.com/pwt/dynamic_message_signs.html, May 25, 2010
[52] Texas Department of Transportation, http://www.dot.state.tx.us/aus/newsrel/laneclos.htm, May 25, 2010

city implementing ramp metering on its highways in order to control freeway congestion during peak hours.

Automatic Vehicle Identification (AVI) uses transponder tags to determine traffic flow characteristics and are used primarily by Houston TranStar to measure travel times and speeds.

Roadway Weather Information Systems such as flood warning systems and weather sensors warn drivers of adverse weather conditions. Information on wind, rainfall, hurricane, ice, and snow conditions can allow drivers and emergency officials to take the appropriate precautions during a weather event.

Advanced Traffic Signal Systems consist of equipment that can monitor traffic flows and can communicate to both the TMC and adjacent signal systems in order to maximize signal timing efficiency and reduce delays.

Traffic Signal Priority (TSP) enables transit vehicles to obtain an early or extended green light at traffic signals in order to allow improved service between stations. Dallas Area Rapid Transit (DART) has been implementing and testing TSP at several intersections in Dallas.[53]

Automatic Vehicle Location (AVL) uses GPS to monitor exact locations of transit vehicles and accurately calculate travel times. An example is VIA in San Antonio, which began implementing AVL in 2002 to manage their bus fleet better.[54] Most of the large transit agencies in Texas utilize AVL. In addition, freight companies utilize AVL to determine the location and movement of goods throughout Texas.

Automatic Passenger Counters (APC) are currently used on several DART and Capital Metro (Austin) vehicles. All of Houston Metro's transit vehicles use APC.[55] Passenger counts assist transit agencies in determining bus and rail schedules based on demand.

Electronic Toll Collection (ETC) allows drivers to use transponder tags to pay tolls. This reduces the need for cash systems that can delay traffic. Examples include EZ-tags in Houston, TollTags in Dallas, and TxTAGs, which can be used on any toll road statewide.

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[53] ITS-Texas, http://www.itstexas.org/meetings/2009meetingoverview.stm, May 25, 2010

[54] VIA, http://www.viainfo.net/Organization/History.aspx, May 25, 2010

[55] Boyle, Daniel, Passenger Counting Systems: A Synthesis of Transit Practice, Transit Cooperative Research Program (TCRP): Synthesis 77, 2008, pp. 71–72

The majority of ITS communications in Texas are based on wired networks—usually copper or fiber-optic cables that run underground through special conduits. The cost to construct and relocate these lines can be high. Additionally, underground cabling of fiber optic cable can be difficult to deploy in rural areas due to the long distances required and the ratio of construction cost to the overall users of the technology.

The use of wireless communication technology is being implemented as an alternative to traditional wiring. Wireless technology uses radio bands, which can be licensed or unlicensed. Although unlicensed bands can be used by everyone and are easier to implement, they can be susceptible to interference. TxDOT, city departments, and emergency personnel use both types of radio bands depending on the nature of communication. Wireless ITS devices use both unlicensed and licensed bands.

TxDOT maintains an inventory of ITS equipment throughout the state. Table 2-15 summarizes the current statewide ITS operations by District and gives a general idea of whether a District's ITS deployment is in its initial or advanced stages. All but three TxDOT Districts utilize some form of ITS equipment with urban areas commanding the largest percentage of operations. Where applicable, the TMC name is given.

Table 2-15: Summary of Statewide ITS Operations by TxDOT District

District (TMC Name)	DMS	CCTV	CCTV Wireless	LCS	Radar Detection	Loops	HAR	Ramp Meter	AVI Site	Flood Warning	Weather Sensor
Abilene	4										
Amarillo (PEGASIS)	13	16					1				1
Atlanta	3	5	1								2
Austin (Austin Roads)	44	91	23	261	12	1884	4				
Beaumont	19										
Brownwood	3		4								
Bryan	3	6	2								
Childress											
Corpus Christi	22	26	1								
Dallas (DalTrans)	62	285	14		287						
El Paso (TransVista)	61	113		169	256		13				
Ft Worth (TransVision)	74	162	14	56	182					2	
Houston (TranStar)	186	548	24		73		13	87	160		39
Laredo (STRATIS)	16	33	5	44	12	64					

Table 2-15: Summary of Statewide ITS Operations by TxDOT District

District (TMC Name)	DMS	CCTV	CCTV Wireless	LCS	Radar Detection	Loops	HAR	Ramp Meter	AVI Site	Flood Warning	Weather Sensor
Lubbock (TransView)	3	16			4					3	3
Lufkin											
Odessa	4	3									
Paris	4										
Pharr	13	1									
San Angelo											
San Antonio (TransGuide)	178	179	1	247	98	1,200				17	
Tyler (NETRIS)	2	3					1				
Waco	6	2	2								
Wichita Falls (Texoma Vision)	4		9			16				1	2
Yoakum	4		7		11						
Totals	**728**	**1,489**	**107**	**777**	**935**	**3,164**	**32**	**87**	**160**	**23**	**47**

2.7.2 Intelligent Transportation Systems and Congestion

As the Texas population increases, congestion and travel delays are expected to increase, placing significant economic and safety demands on the existing transportation system. ITS will allow agencies to innovatively use technology to reduce congestion and increase mobility at a lower cost than the traditional method of constructing new roadways.

The TTI has produced National Congestion Tables over the last 12 years that reflect the cost to the public from traffic delays and congestion. These measures are part of an ongoing, long-term effort by TTI to track congestion and mobility. Table 2-16 summarizes the congestion costs in Texas' urban areas and the savings that have been achieved in 2007 with operational and ITS treatments.

Table 2-16: Annual Congestion Cost and Savings by Urban Area (2007)[56]

Urban Area	Congestion Costs/Consumption			Operational Treatment Savings		
	Travel Delay (1,000 Hours)	Excess Fuel Consumed (1,000 Gallons)	Congestion Cost ($ Million)	Operational Treatment*	Delay Savings (1,000 Hours)	Cost Savings ($ Million)
Dallas/Fort Worth/ Arlington	140,744	96,477	2,849	r, i, s, a, h	11,186	221.8
Houston	123,915	88,239	2,482	r, i, s, a, h	15,201	300.8
San Antonio	31,026	21,973	621	i, s, a	1,386	27.8
Austin	22,777	15,578	471	i, s, a	1,209	25.1
El Paso	7,185	4,691	147	i, s, a	515	10.3
Laredo	1,806	1,005	37	i, s, a	36	0.8
Corpus Christi	1,629	970	32	s, a	23	0.5
Beaumont	1,425	866	28	s, a	13	0.2
Brownsville	841	486	17	s, a	18	0.4
Totals	**331,348**	**230,285**	**6,684**	**-**	**29,587**	**587.7**

*r: freeway ramp metering; i: freeway incident management; s: arterial street signal coordination; a: arterial street access management; h: high-occupancy vehicle lanes

2.7.2.1 Intelligent Transportation Systems Current Challenges and Future

Since TMCs and ITS systems are not uniform across all districts, one of the key challenges for TxDOT is statewide communication. The Traffic Operations Division is working to implement updated software that will allow TMCs across the state to communicate with each other. This update presents its own challenges such as:

- A mixture of old and new technology;
- District institutional and control boundaries; and
- Operational agreements.

The ultimate goal is to send information back and forth from a centralized statewide system so that the public can receive information about the whole state via one website.

Another challenge is funding. Federal funding from the FHWA was a key incentive to initiate the early ITS projects. These dedicated federal funds have been discontinued

56 Texas Transportation Institute Urban Mobility Report, 2009

now that ITS is considered an integral part of major highway construction projects. Consequently, Districts have had to incorporate equipment maintenance as a component of the traditional maintenance budget and to fund additions to ITS systems under the traditional traffic-funding category.[57]

2.7.3 Expanded Use of Existing Technologies

Depending on funding, the following is a sampling of potential applications that Texas could see in the future.

Enhance Traffic Management. Moving ITS components beyond freeways and implementing them on arterials will further enhance the system-wide operations of the transportation system. This will require efficient coordination between local and state governments. The Dallas area is one of several cities nationwide that is pioneering the concept of Integrated Corridor Management (ICM).[58] With ICM, multiple entities and modes can work together as a system rather than independently allowing travelers to have a central source of information to determine route and mode choice.

Continued dissemination of travel time and incident information via dynamic message signs, electronic devices, and websites could reduce congestion by providing road users with alternate choices. TxDOT is also evaluating the implementation of a “5-1-1 system” where travelers can dial 5-1-1 for up-to-date traffic information.

Increase use of Integrated Signal Systems. Continued improvements to existing signal systems through the monitoring of vehicular flows, efficient signal timing, and communication between multiple signalized intersections can significantly improve traffic flow within congested areas. This will require ongoing coordination between counties, cities, and TxDOT.

ITS at Texas Border Facilities. Increased usage of ITS technologies such as cameras, wait-time displays, ETC, and vehicle sensors can help improve the flow of trade and tourism between Mexico and Texas. This in turn will improve homeland security and cross-border data collection. Commercial vehicles that travel back and forth across the border will benefit from decreased delay times as these ITS technologies are implemented.

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[57] Discussion with TxDOT, March 17, 2010.

[58] USDOT website, http://www.its.dot.gov/icms/pioneer_dallas.htm, June 14, 2010

Freight Applications. Integrating ITS with commercial vehicles will improve general permitting processes and allow agencies to better track hazardous materials and oversized vehicles.

Transit ITS. As rail and Bus Rapid Transit (BRT) options become commonplace throughout Texas cities, ITS technologies such as AVL and travel-time displays can be used to assist passengers with planning trips. Combining transit and roadway management will be vital to efficient multimodal operations.

Congestion Pricing. On heavily congested highways that include an optional express lane, technologies like ETC can be used to apply congestion pricing (varying the toll rate based on congestion to influence traveling patterns).

Wireless Technology. Wireless connections allow ITS equipment to be implemented on a wider scale with less cost. This will allow important information to be transmitted quickly to travelers, as well as giving traffic management officials a broad range of information.

Emergency Management. ITS has emerged as a valuable resource during large-scale hurricane evacuations and dealing with congestion as a result of catastrophic events. Expanded use of ITS in these regions will allow the state to continue its commitment to improve responses to both weather and homeland security events.

2.7.4 New Technologies in Development

The following is a sample list of newer ITS technologies that have been in development.

In-Vehicle Technologies. Traditionally, many ITS technologies have focused outside of the passenger's vehicle. The next generation of ITS components will include the use of "in-vehicle" technologies. These "smart" technologies will allow vehicles to detect obstructions and other out-of-sight vehicles, improving the safety of drivers on the roadway and reducing collisions.

Floating Vehicle Data. Data such as speed and traffic information can be collected using wireless or GPS devices within vehicles.

Occupancy Detection. For HOV applications, emerging technologies that can detect the number of passengers in a vehicle will assist law enforcement in the verification process.

Intelligent Speed Assistance (ISA). These technologies advise a driver or vehicle to adapt their speed based on local speed limits and road conditions.

Road to Vehicle Communications. In-ground sensors using radio frequency identification (RFID) will assist drivers to safely adjust to roadway conditions.

As Texas grows, ITS will provide a key tool to achieve the state's goals to "provide safe, effective, and efficient movement of people and goods."[59] ITS will provide an important resource to obtain operations data that can be used to determine the overall transportation system's performance. These performance measures will allow agencies to objectively make decisions on how to fund and deliver ITS applications throughout the state.

2.8 Public Transportation in Texas

2.8.1 Urban Transit in Texas

As of 2010, urban transit in Texas includes fixed-route and demand-response bus systems, trolley systems, and urban rail systems. Urban transit systems in Texas consist predominantly of fixed-route bus service. Urban rail systems exist in the cities of Austin, Dallas, and Houston, and trolley/streetcar systems exist in Dallas and Galveston. Subsequent sections discuss these urban transit systems for each of the seven Metropolitan Transit Authorities (MTA), one coordinated county transit authority, and 30 urban transit agencies, providing ridership and fleet data for each.

In general, the majority of urban transit system usage within Texas occurs within the eight MTAs. Figure 2-35 shows the statewide transit ridership for fiscal 2008 for MTAs, urbanized, nonurbanized (rural), elderly and disabled, and Job Access Reverse Commute (JARC) systems. The seven MTAs and one coordinated county transit authority in Texas accounted for 92 percent of urban transit ridership, while the 30 urbanized areas only accounted for 6 percent. However, this disparity is expected, as the MTAs are the largest and most densely urbanized areas.

[59] TxDOT website, http://www.dot.state.tx.us/about_us/mission.htm, May 27, 2010

[59] Schrank, David, and Lomax, Tim, 2009 Urban Mobility Report, Texas Transportation Institute, July 2009.

Figure 2-35: 2008 Public Transit System Ridership[60]

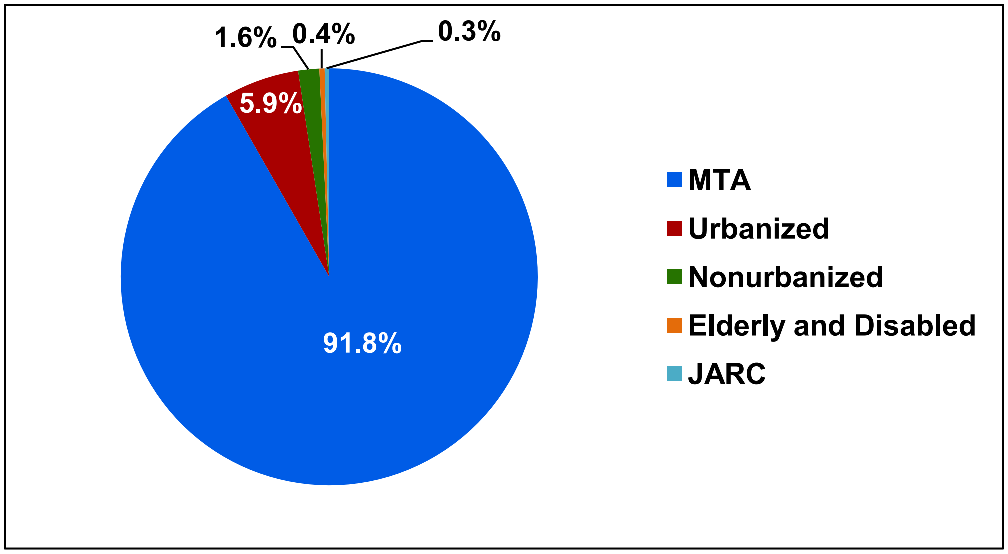
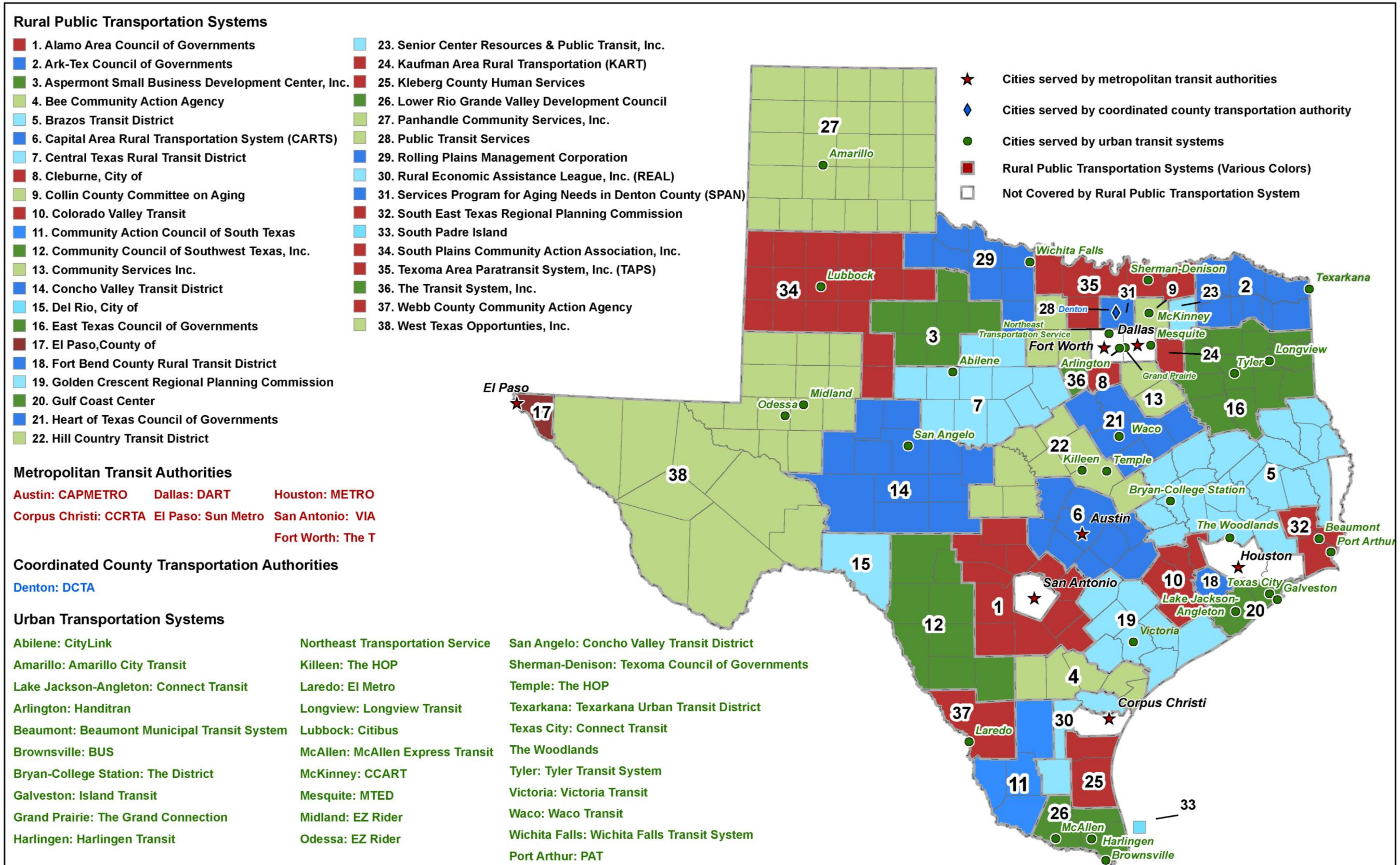


Figure 3-36 shows the geographic coverage of public transportation systems in Texas.

[60] TxDOT, 2008 Texas Transit Statistics

Figure 2-36: Public Transportation Systems in Texas (Cities and Counties Served by Public Transportation Systems)



Within Texas as a whole, urban transit system ridership is increasing. As shown in Table 2-17, between 2002 and 2008, transit ridership within the MTAs increased by 10.2 percent, while ridership within the urbanized areas increased 10.1 percent. An "Unlinked Passenger Trip" is a count of each passenger entering a public transportation vehicle. It does not represent a single passenger trip as some passengers may need to change busses to get to their final destination.

Table 2-17: Summary of Unlinked Passenger Trips and Bus Fleet Vehicles for 2002 and 2008[61]

Transit Area	2002	2008	2002 to 2008	
			Growth	% Change
Unlinked Passenger Trips				
MTA	252,550,674	278,397,166	25,846,492	10.2
Urbanized Area	268,991,402	296,181,091	27,189,689	10.1
Summary of Bus Fleet Vehicles				
MTA	4,912	4,449	-463	-9.4
Urbanized Area	5,491	5,193	-298	-5.4

While urban transit ridership increased as a whole between 2002 and 2008, bus fleet size actually decreased among MTA's and urban transit systems by 9.4 and 5.4 percent, respectively.

While some of this reduction is a result of the introduction of urban rail in cities such as Dallas and Houston, much of the bus fleet reduction is likely a result of efficiency reductions in order to lessen the impact of budget shortfalls due to the recession. The largest increases were in Denton, Longview, and McAllen with increases of 360 percent, 175 percent, and 63 percent, respectively, while the largest reductions were in Texas City, Fort Worth, and Victoria, with reductions of 52 percent, 37 percent, and 31 percent, respectively.

2.8.2 MTA Bus Systems

The following sections describe existing bus service in each of the MTAs: Austin, Corpus Christi, Dallas, Denton, El Paso, Fort Worth, Houston, and San Antonio. For each MTA system area, the service area is described, and recent fleet size and ridership trends are discussed.

61 TxDOT 2002–2005 Texas Transit Statistics; TxDOT 2008 Texas Transit Statistics

Austin Bus System: The Capital Metropolitan Transportation Authority (CapMetro or CMTA), serves a 500-square-mile area with approximately 3,300 stops throughout the capital area through local, limited and flyer, feeder, crosstown, special event, University of Texas Shuttle (UT) shuttle, express fixed bus routes, and vanpools.

The CapMetro bus fleet contained a total of 665 buses in 2008, an 11.3 percent reduction in fleet from fiscal year (FY) 2002. The FY 2008 ridership was approximately 35 million passenger trips, representing a 2.7 percent increase in ridership over FY 2002 ridership levels. Average weekday bus ridership in FY 2008 was 140,000 one-way trips.

A system map can be found at http://www.capmetro.org/riding/

Corpus Christi Bus System: The Corpus Christi Regional Transportation Authority (RTA) covers 838 square miles. The RTA provides fixed route service, tourist, commuter, charter, public event, and van/car pool services. Additionally, the RTA offers paratransit bus service called the B-Line, which provides public transportation for people whose disabilities prevent them from using fixed route bus services.

In 2008, the RTA's bus fleet contained 121 buses, a 1 percent reduction from FY 2002. The FY 2008 ridership was approximately 5.5 million passenger trips, representing a 3.6 percent decrease in ridership over FY 2002 ridership levels. Average weekday bus ridership in FY 2008 was 18,331 trips.

A system map can be found at http://ccrta.org/rider-info/system-map/

Dallas Bus System: The Dallas area is served by DART, providing fixed-route and demand-response bus services to the City of Dallas, as well as Addison, Carrollton, Cockrell Hill, Farmers Branch, Garland, Glenn Heights, Highland Park, Irving, Plano, Richardson, Rowlett, and University Park. As of 2010, the DART bus system operates approximately 130 bus routes covering 13 cities and 700 square miles. Additionally, DART provides paratransit services for the disabled.

The DART bus fleet had 1,025 buses in 2008, a 3.8 percent reduction from FY 2002. The FY 2008 ridership was approximately 67.0 million passenger trips, representing a 15.8 percent increase in ridership over FY 2002 ridership levels. Average weekday bus ridership in FY 2008 was 152,700 trips.

A system map can be found at http://www.dart.org/

Denton Bus System: The Denton County Transportation Authority (DCTA) provides several bus services to the general public in the Greater Lewisville and Denton area. These services include fixed route service in Denton, Highland Village, and Lewisville, campus shuttles to the University of North Texas and North Central Texas College, and a regional commuter service into downtown Dallas. Additionally, DCTA offers demand response/paratransit service in Denton, Lewisville, Highland Village, and Corinth.

The DCTA bus fleet contained 69 buses in 2008, a 360 percent increase from FY 2002. The FY 2008 ridership was approximately 1.9 million passenger trips, representing a 521 percent increase in ridership over FY 2002 ridership levels.

A system map can be found at http://www.dcta.net/commuterexpress.asp

El Paso Bus System: The El Paso area is served by Sun Metro, which offers fixed-route and paratransit bus service within El Paso County and throughout the City of Sunland Park, New Mexico. Sun Metro has 63 fixed bus routes running within this service area. Job Express, another service of Sun Metro, provides support to individuals transitioning from welfare to work through job training, education, employment, and childcare destinations.

Sun Metro had 251 buses in 2008, a 16.2 percent increase from FY 2002. The FY 2008 ridership was approximately 12.5 million passenger trips, representing an 8.4 percent decrease in ridership over FY 2002 ridership levels.

A system map can be found at http://www.elpasotexas.gov/sunmetro/

Fort Worth Bus System: The Fort Worth T, generally called The T provides local bus service, express bus service, and rider request service within Fort Worth and Richland Hills. The T has 37 fixed bus routes running within this service area. In addition, the T's Mobility Impaired Transportation Service offers door-to-door transportation within Fort Worth, Richland Hills, and Blue Mound.

The Fort Worth T bus fleet contained 200 buses in 2008, a 37.1 percent decrease from FY 2002. The FY 2008 ridership was approximately 8.4 million passenger trips, representing a 37.7 percent increase in ridership over FY 2002 ridership levels.

A system map can be found at http://www.the-t.com/

Houston Bus System: The Houston area is served by the Metropolitan Transit Authority of Harris County, referred to as METRO. METRO provides local, express, and Texas Medical Center circulator services, as well as paratransit services. Communities that are part of the METRO service area include the Cities of Houston, Bellaire, Bunker Hill Village, El Lago, Hedwig Village, Hilshire Village, Humble, Hunters Creek, Katy, Missouri City, Piney Point, Southside Place, Spring Valley, Taylor Lake Village, and West University Place. Major portions of unincorporated Harris County are also included.

METRO has 102 fixed bus routes running within this service area. METRO had 1,423 buses in 2008, a 16.6 percent decrease in fleet from FY 2002. The FY 2008 ridership was approximately 102.1 million passenger trips, representing a 6.1 percent increase in ridership over FY 2002 ridership levels.

A system map can be found at http://www.ridemetro.org/SchedulesMaps/

San Antonio Bus System: The San Antonio area is served by VIA Metropolitan Transit, commonly referred to as VIA. VIA's service area is 1,226 square miles, which is 98 percent of Bexar County. The service area is made up of the unincorporated parts of Bexar County and the following municipalities: Alamo Heights, Leon Valley, Balcones Heights, Olmos Park, Castle Hills, San Antonio, China Grove, Shavano Park, Converse, St. Hedwig, Elmendorf, Terrell Hills, Kirby, and Von Ormy. Also included in VIA's service area is the Bexar County portion of Cibolo.

VIA provides local and express bus service, paratransit service for riders with disabilities, vanpool service for commuters, and special event park-and-ride service. VIA has 6,994 bus stops along 90 bus lines, which are divided into five service categories: frequent, metro, express, skip, and streetcar.

The VIA bus fleet had 695 buses in 2008, a 3.2 percent decrease from FY 2002. The FY 2008 ridership was approximately 46.2 million passenger trips, representing an 18.2 percent increase in ridership over FY 2002 ridership levels.

A system map can be found at http://www.viainfo.net/

2.8.3 Other Urban Bus Systems

As of 2010, there are 30 urban bus systems operating in Texas. Cities with urban bus systems (see Figure 2-36) have service areas located in cities or geographic areas with urbanized area populations that range from 48,767 to 523,144 as listed in the 2000 census. These urban area transit districts can be classified into three population groups:

- Small urban areas with populations between 50,000 and 100,000,
- Medium urban areas with population from 100,000 to 215,000, and

- Larger urban areas with population greater than 215,000.

2.8.3.1 Small Urban Area Transit

The Texarkana Urban Transit District serves 48,767 people (Census 2000) in its urbanized area, which includes both Texas and Arkansas. Texarkana's bus transit agency (the T-Line) provides fixed route and Americans with Disabilities Act of 1990, as Amended (ADA)-compliant curb-to-curb bus service throughout the greater Texarkana area within both Texas and Arkansas. From 2002 to 2008, ridership on the T-Line system increased by approximately 70.5 percent, from 167,306 to 285,200 unlinked passenger trips per year. However, during this same period, the number of buses in the fleet (8) did not change. This suggests that Texarkana was successful in promoting service within its area and increasing efficiency within its existing operations.

Other small urban area transit districts with populations less than 100,000 that experienced an increase in ridership are Temple, Victoria, Wichita Falls, Galveston, San Angelo, and Longview. Small urban area transit districts that experienced a decrease in ridership greater than 25 percent include Sherman-Denison and Texas City.

2.8.3.2 Medium Urban Area Transit

The Midland-Odessa Urban Transit District serves an urbanized population of 210,616 people (Census 2000). The area's bus transit agency (EZ Rider) provides fixed route and ADA-compliant curb-to-curb bus service within the urbanized areas of both Midland and Odessa. The urban bus system started reporting data in 2004 and serviced 479,727 unlinked passenger trips in 2008. The first year this transit agency did report unlinked passenger trips was 2004 with 232,867 (TxDOT 2002–2005 Transit Statistics). The percent increase for unlinked passenger trips increased by 106 percent from 2004 to 2008. The number of buses decreased from 38 buses in 2004 to 23 buses in 2008, meaning the newly formed transit agency in 2004 became more efficient providing ridership with fewer buses.

Other medium urban area transit districts that experienced increases in excess of 90 percent in ridership include Mesquite and Bryan-College Station. Medium urban area transit districts that experienced decreases in ridership greater than 20 percent include Beaumont, Lubbock, and Harlingen.

2.8.3.3 Large Urban Area Transit

McAllen is served by multiple transit companies, including McAllen Express (ME) Transit as the City of McAllen's Public Transportation System and Valley Transit Company, offering intercity service within the Rio Grande Valley and Mexico. These services provide international, national, fixed route, and paratransit bus services for a population of 523,144 (Census 2000). McAllen is host to the only major bus terminal along the U.S.-Mexico border to house American and Mexican bus lines as well as the City's primary bus station for the urban bus system. McAllen Express increased its unlinked passenger trips by 10.9 percent from 2002 to 2008. The number of buses in its fleet also increased by 62.5 percent from 16 buses in 2002 to 26 buses in 2008. The urban area of McAllen includes more than one community experiencing increases in population, and therefore, the transit district is increasing its fleet size to meet the increased public transit demands.

Other large urban areas that also experienced increases in ridership include Arlington and North Richland Hills (NETS). None of the larger urban area transit districts experienced decreases in ridership.

2.8.4 Urban and Commuter Rail Systems

Note: Detailed Information regarding urban and commuter rail systems can be found in the Texas Rail Plan available at http://www.txdot.gov/public_involvement/rail_plan/trp.htm.

Within Texas, urban and/or commuter rail systems currently exist within the Dallas-Fort Worth metroplex area (DART, the Trinity Railway Express [TRE], and McKinney Avenue Transit Authority [MATA]), Houston (MetroRail), and Austin (Capital MetroRail). In addition, the Cities of Dallas, Fort Worth, and Austin have initiated studies for the planning and design or expansion of urban streetcar systems to complement regional rail. The City of Galveston operates a small streetcar system covering a service area of approximately 6 miles on the island. Two cars previously operated on the system, with each car designed to look like vintage electric trolleys. The cars are powered by diesel-electric engines. The Galveston trolley service is currently suspended due to extensive damage suffered during Hurricane Ike in 2008, including damage to the trolleys, tracks, and maintenance facilities. Each existing rail transit system is described in more detail below.

2.8.4.1 The Dallas-Fort Worth Urban and Commuter Rail System

The 48-mile DART Rail system provides service to work, shopping, and entertainment destinations in Dallas, Garland, Plano, and Richardson. Thirty-nine stations currently exist along three routes, with all stations served by additional connecting bus routes. DART Rail routes vary from dedicated elevated route segments to at-grade and underground routes. Power to the rail system is supplied by an overhead electrification system. The DART rail fleet contains 115 rail vehicles. The FY 2008 ridership was approximately 19.4 million passenger trips. Average weekday ridership in FY 2008 was 65,800 passengers, making it the eighth highest in the United States.

DART and the T jointly operate the TRE, containing 35 miles of commuter rail transit linking downtown Dallas and Fort Worth with stops in the mid-cities and at DFW Airport. The TRE system offers frequent departures from Union Station in downtown Dallas to the Intermodal Transportation Center (ITC) in Fort Worth. The TRE system currently serves 10 stations along the Dallas-Fort Worth route, with bus connections to the DFW Airport and consists of diesel-powered locomotives pulling one or two-level passenger cars. The TRE also operates self-powered diesel railcars. The TRE fleet contains 6 locomotives, 13 rail diesel cars, 11 bi-level coaches, and 10 bi-level cab cars. The FY 2008 ridership was approximately 2.7 million passenger trips. Average weekday ridership in FY 2008 was 9,800 passengers.

The MATA operates a 5.2-mile trolley route (M-Line) from the north side of Downtown Dallas along McKinney Avenue through the Uptown neighborhood. The MATA system consists of four vintage electric powered streetcars, all built between 1909 and 1925. The FY 2008 ridership was approximately 291,106 passenger trips, a 16 percent increase over FY 2007 levels.

2.8.4.2 The Houston MetroRail System

The Houston MetroRail system serves downtown Houston, Midtown, the Museum and Hospital Districts, and Reliant Stadium. As of 2010, the Red Line route consisted of approximately 7.5 miles of light rail transit. MetroRail has 18 light rail vehicles. Each 96-foot-long, double-articulated vehicle has four low platform doors per side and has a capacity of 72 seated and approximately 169 standing passengers, or a total capacity of around 241 per car. The average daily weekday ridership in FY 2008 was 39,500 passengers.

2.8.4.3 The Austin Capital MetroRail Commuter Rail System

The Capital MetroRail Red Line commuter rail system opened March 22, 2010, and provides a downtown Austin to Leander route. Nine stations exist along the 32-mile route.

The startup rail system fleet consists of six railcar vehicles. The vehicles have a capacity of 200 passengers, 108 seated and 92 standing. The system operates on shared-use track with local freight rail and is currently operating during rush hour periods only, Monday through Friday.

2.8.5 Rural Transit Systems

Rural transit systems provide the general public with both fixed-route and demand-response services. In Texas, rural transit systems are generally regional systems serving multiple counties, although some systems serve only one county or even sections of a county. Several rural transit systems provide service and connections to larger nearby metropolitan areas through established fixed route service with transfer points.

In general, fixed route service is normally the most cost-effective service available, as it provides dependability in moving riders between desired destinations. In rural areas, fixed route service may be available between larger communities within the service area, as well as servicing major destinations within a single community. Some rural areas also have fixed route service in local tourist areas, such as South Padre Island. In rural areas, fixed route service normally operates during daylight hours with limited to no service available at night. The service is designed for safe and efficient use of the traveling public. ADA accessible fixed-route bus service in rural communities has been successful at transporting persons with disabilities. This is due, in part, to the support of the communities' leadership and promotion of the service.

Rural transit agencies also provide demand-response transit services. This type of bus service is useful to meet the needs of lower density rural areas of Texas. Most demand-response trips tend to be taken by the elderly, lower income, and rural residents who require transportation assistance getting to medical appointments, employment, shopping, and other services. In many rural areas, demand-response service is also available during evening hours to serve customers' needs after established fixed-route service ends.

Figure 2-36 shows the 38 rural public transportation systems in Texas. All rural counties, except Newton County in southeast Texas, are serviced by a rural transportation system. Table 2-8 provides a summary of the total ridership and fleet size for all rural areas in Texas for calendar years 2002 and 2008 Based on 2002 and 2008 data, service ridership showed a 9.5 percent increase among all rural transit providers, from 4,516,606 riders to 4,947,317 riders. During this same period, total fleet size among all providers stayed ahead of ridership, increasing from 1,151 vehicles to 1,315 vehicles, a 14.25 percent increase.

Table 2-18: Summary of Unlinked Passenger Trips and Bus Fleet Vehicles for 2002 and 2008[62]

Summary	Unlinked Passenger Trips		% Change	Total Fleet Size		% Change
	2002	2008		2002	2008	
Total Rural Ridership and Fleet Size	4,516,606	4,947,317	9.50	1,151	1,315	14.25
Average for Reporting System*	115,810	126,854	9.50	29	34	17.24

*Average is based on 39 rural transit providers (two agencies merged after 2008).

2.8.6 Planned Transit System Improvements

Planning efforts for future transit improvements varies based on the size of the system. The MTA agencies generally have long-range planning studies available to guide expansion of service. Due to their smaller size and limited funding, urban and rural transit agencies do not generally conduct the same level of long-range forecasting and planning. Future services for the smaller agencies are almost exclusively a function of the amount of local, state, and federal funding provided to the agency.

While the majority of the population growth will be in the larger communities, counties with less than 50,000 population are projected to grow by over 625,000 people by 2035. The growth in population over 65 years of age for Texas as a whole is 144 percent (or nearly 3.5 million) which will lead to a higher percentage of the population within this age bracket for all county types.

2.8.6.1 Factors that Impact Future Transit Usage

The major factors that are anticipated to influence future transit usage and forecasts include system expansions, changes in demographics, transit-oriented development (TOD), roadway congestion, and economic conditions.

Factor 1: Demographics

One of the more significant influences on forecasted ridership is changing demographics, including total population, elderly population, and income level (Table 2-19). In general, increases in total population result in increases in transit ridership. Even where the percentage of transit ridership is static over time, an increase in the

[62] TxDOT 2002 – 2005 Texas Transit Statistics; TxDOT 2008 Texas Transit Statistics

pool of potential users (i.e., total population) will result in an overall increase in ridership. Moreover, elderly individuals (i.e., persons 65 years of age and older) have historically had a higher rate of transit ridership than any other age group. Therefore, increases in total population and/or increases in elderly populations will likely result in increased transit ridership as well.

Table 2-19: Population Change for Urban-Metropolitan Statistical Areas[63]

Metropolitan Statistical Area (MSA)	Total Pop (2005)	Total Pop (2035)	% Pop Change	Elderly Pop (2005)	Elderly Pop (2035)	% Elderly Change
Dallas-Fort Worth-Arlington	5,670,067	9,360,983	65.1	451,294	1,573,933	248.8
Houston-Sugar Land-Baytown	5,120,772	7,894,728	54.2	410,278	1,323,879	222.7
San Antonio-New Braunfels	1,833,766	2,448,170	33.5	198,199	465,305	134.8
Austin-Round Rock-San Marcos	1,405,087	2,466,185	75.5	104,260	470,647	351.4
El Paso	740,723	1,098,856	48.3	72,813	166,229	128.3
McAllen-Edinburg-Mission	657,116	1,308,819	99.2	60,715	165,377	172.4
Corpus Christi	430,831	587,030	36.3	49,267	97,365	97.6
Lubbock	261,945	296,760	13.3	28,943	50,799	75.5
Amarillo	240,465	320,247	33.2	28,527	58,150	103.8
Laredo	226,862	490,418	116.2	16,510	50,697	207.1
Brownsville-Harlingen	374,446	631,964	68.8	41,516	90,223	117.3
Waco	221,426	277,042	25.1	27,570	44,512	61.5
Bryan-College Station	195,410	263,456	34.8	16,565	39,800	140.3
Beaumont-Port Arthur	395,695	447,290	13.0	51,623	85,024	64.7
Odessa	126,645	158,776	25.4	14,155	26,698	88.6
Abilene	165,587	181,803	9.8	21,349	34,310	60.7
San Angelo	109,281	124,278	13.7	14,714	23,917	62.5
Victoria	117,996	150,201	27.3	14,856	27,246	83.4
Longview	200,411	242,056	20.8	28,224	48,225	70.9
Sherman-Denison	114,163	131,687	15.3	16,969	28,760	69.5

As shown in Table 2-19, all 20 MSAs are forecast to experience growth in both total population and elderly population, which suggests a corresponding increase in future urban transit system ridership. However, growth rates vary widely between the various

[63] Texas State Data Center. *2008 Population Projections, The One-Half 1990–2000 Migration (0.5) Scenario.* February 2009. Available at http://txsdc.utsa.edu/tpepp/2008projections/

MSAs, from a low of 9.8 percent total population growth in the Abilene MSA to a high of 351.4 percent elderly population growth in the Austin-Round Rock-San Marcos MSA.

Among the 20 MSAs analyzed, the overall highest growth rates in total population between 2005 and 2035 are forecast to occur in the Laredo, McAllen-Edinburg-Mission, Austin-Round Rock-San Marcos, Brownsville-Harlingen, and Dallas-Fort Worth-Arlington MSAs, with growth rates of 65 to 116 percent. Meanwhile, the highest growth rates in elderly population during this same time period are forecast to occur in the Austin-Round Rock-San Marcos, Dallas-Fort Worth-Arlington, Houston-Sugar Land-Baytown, Laredo, and McAllen-Edinburg-Mission MSAs, with growth rates in excess of 150 percent. Comparing the two lists reveals that four of the five MSAs are contained in both lists. Therefore, based on demographic changes between 2005 and 2035, a higher than average growth in transit ridership can be expected in the Laredo, McAllen-Edinburg-Mission, Austin-Round Rock-San Marcos, and Dallas-Fort Worth-Arlington MSAs.

Factor 2: System Expansion

System expansion is the most robust tool that transit agencies possess that can be used to increase ridership. By expanding the existing system, the transit agency provides a transit alternative to an area without service, resulting in increased ridership from people residing in that area as well as people traveling to destinations within the new service area.

System expansions vary in type and intensity depending upon the size and type of existing service. Some expansions consist of the addition of local bus routes or new express routes, while other expansions in the larger systems may include light rail, commuter rail, and/or streetcar lines.

Factor 3: Land Use

Public transportation systems typically have higher ridership in areas of more intense land use density. The land use patterns in the larger Texas cities are transitioning to increase residential density along new transportation corridors, such as the DART light rail lines, or to bring more residential units to downtown areas, such as in Austin. Increases in density bring the need for more transit and pedestrian-friendly streetscapes. In suburban counties, mixed-use developments, or TODs, are being planned around new (or planned) rail stations.

TODs are mixed-use residential and commercial centers designed to maximize transit and nonmotorized transportation access. TODs typically have a centrally located train station, metro station, tram stop, or bus stop surrounded by relatively high-density development. The land use density transitions to progressively lower-density development as the distance from the transit core increases.

TODs are being established in urban areas adjacent to public transportation facilities throughout Texas, especially within the largest MSAs, such as Dallas, Fort Worth, Houston, San Antonio, and Austin. By providing a compact, mixed-use development within an urban environment accessible by transit, TODs provide opportunities for people to move into urban neighborhoods, alleviate the need for and expense of personal vehicles, and avoid ever-increasing congestion. Urban planners and real estate experts expect TODs to continue gaining in popularity in the future due in part to some cities giving incentives that include, but are not limited to, the following:

- Allowing a mix of land uses,
- Allowing an increase in floor area ratios (FAR). FAR is the ratio of the total floor area of buildings on a certain location to the size of the land of that location,
- Allowing an increase in total development density,
- Allowing a reduction in required parking spaces per square foot of development,
- Providing streamlined permitting, and
- Providing tax incentives.

Therefore, as developers continue to build TODs around existing and proposed transit stops, transit ridership should continue to increase concurrently.

Factor 4: Economic Conditions

An overarching factor that influences all of the factors mentioned is economic conditions. The condition of the economy greatly influences whether transit agencies undertake system expansions, whether developers build more TODs, whether people decide to ride public transit versus using personal vehicles, and whether the entities responsible for building and expanding roadways throughout the state have the money to do so in order to attempt to relieve congestion.

The United States as a whole, is currently in the midst of a major economic recession. Most economists believe that while we are slowly emerging from the recession, we are not likely to return to prerecession levels of prosperity any time soon. Therefore, transit system expansions and TODs will likely continue to be deferred, while roadway expansions projects are also deferred due to lack of funds. This delay in roadway expansion coupled with continued population growth within the urbanized areas will likely increase congestion. As a result, transit ridership should continue to grow;

however, transit ridership will likely grow at a slow rate until the economy rebounds and transit agencies are able to program future expansions.

Another economic factor that influences transit ridership levels is the price of gasoline. As gasoline prices rise in Texas, more people across the state reduce the use of their cars and turn to public transportation to commute to work, to go to school, to travel to shopping centers, and to attend medical appointments. Record high gas prices of $4 per gallon during the summer of 2008 contributed to a significant increase in transit ridership for many of the transit systems in Texas. According to the American Public Transportation Association historical ridership data, the percentage increase in total public transit ridership levels during the summer of 2008 over summer 2007 levels were 4.8 percent in Fort Worth, 8.6 percent in Dallas, 17.2 percent in Austin, and 17.3 percent in Denton. The Dallas-Fort Worth Trinity Railway Express commuter rail system experienced an 18.8 percent increase in transit ridership during this period. Many smaller metropolitan and rural transit agencies experienced increased transit ridership during this same period with an increase of 7.3 percent in Corpus Christi and 11.0 percent within the rural Bryan, Texas, based Brazos Transit District. Of the large transit agencies, only the Houston (–6.9 percent) and Galveston (–10.8 percent) area experienced decreased transit ridership during this period. However, these areas were significantly impacted by Hurricane Ike during early September 2008. Prior to Hurricane Ike's landfall, Houston METRO experienced similar public transit ridership increases with a 9.6 percent increase from July 2008 over July 2007 levels.

By the summer of 2009, gasoline prices had fallen approximately 36 percent from their 2008 summer peak. Most transit agencies within Texas experienced decreased ridership levels during this period including Dallas (–12.3 percent), Austin (−11.3 percent), San Antonio (–10.9 percent), Houston (–7.1 percent), and El Paso (–4.5 percent).[64]

2.8.7 Transit Ridership Forecasts

The latest public transportation statistics were published by TxDOT in 2009 and reported information for 2008. Transit ridership increased substantially for some transit agencies due to the spike in gasoline prices. The straight-line forecast discussed below is based on total trips within the state of Texas for each type of system and may not reflect the trends in each community. Ridership forecasts by system are shown in Table 2-20.

[64] American Public Transportation Association (APTA) website, http://www.apta.com/mediacenter/pressreleases/2008/Pages/081208_ridership_surges.aspx, accessed June 8, 2010.

Table 2-20: Annual Transit Ridership Forecasts[65]

System	2002	2008	Ridership Growth (Unlinked Passenger Trips) 2002–2008	% Change 2002–2008	Projected Ridership (Unlinked Passenger Trips) 2035
Rural	4,516,606	4,947,317	430,711	9.5	6,885,517
Urban	16,206,693	17,783,925	1,577,232	9.7	24,881,469
MTA	252,857,636	278,397,166	25,539,530	10.1	393,325,052
Total	273,580,935	301,128,408	27,547,473		425,092,037

Rural: Between 2002 and 2008, the rural transit systems had a 9.5 percent growth in unlinked passenger trips. Using the growth from 2002 to 2008, the number of trips could increase from just over 4,947,000 in 2008 to over 6,885,000 in 2035.

Urban: Between 2002 and 2008, the statewide unlinked passenger trips grew by 9.7 percent or over 1,577,000 trips. This number includes 1,173,000 in 2008 on four new systems that went into operation after 2002. Using the growth from 2002 to 2008, the number of trips could increase from just over 17,783,000 in 2008 to over 24,881,000 in 2035.

MTA: Between 2002 and 2008, the statewide unlinked passenger trips grew by 10,1 percent or over 25,339,530 trips. Using the growth from 2002 to 2008, the number of trips could increase from just over 278,397,000 in 2008 to over 425,092,000 in 2035.

2.8.7.1 Bus and Urban and Commuter Rail System Expansions

Note: Detailed Information regarding urban and commuter rail system expansions can be found in the Texas Rail Plan available at:

http://www.txdot.gov/public_involvement/rail_plan/trp.htm

While all of the MTAs in Texas have long-term transit system expansion plans, the current state of the economy is forcing many of the agencies to defer expansion plans, replace high dollar expansion alternatives with more modest alternatives, or simply cancel expansion plans until the economy recovers. For example, DART recently announced that because of continuing shortfalls in sales tax revenues, all proposed rail expansion projects that are not currently under construction are being put on hold indefinitely. This decision applies to all rail expansion projects proposed over the next

[65] TxDOT 2008 Texas Transit Statistics and straight-line forecasts based on 2002 to 2008 growth

20 years. This move is being made as a result of the continued recession and is a move that many of the transit agencies in Texas are being forced to make, despite ongoing efforts to provide transit alternatives to a broader group of people.

Overall, long-term system expansion will continue statewide; however, most transit agencies are currently deferring major system expansions and focusing instead on less costly, more efficient alternatives that incrementally increase ridership. Some of these alternatives include implementing ITS to improve operational efficiency, encouraging additional TODs around existing stations, and considering BRT, streetcar, and commuter rail alternatives instead of the more costly light rail alternative. Additionally, the current administration in Washington, D.C., is proposing a change to the criteria used to select projects under the New Starts and Small Starts programs in order to consider sustainability and livability benefits for urban rail and BRT projects. Many agencies are focusing future expansion efforts toward using modern streetcars, including Dallas, Fort Worth, Houston, San Antonio, and Austin.

2.8.7.2 Planned Transit for Central Texas

Bus: Capital Metro has proposed 11 fleet and route expansion projects for the 2010 and 2011 fiscal years to meet population growth trends in their service area (TxDOT, Austin District – FY 2008–2011 STIP). The 11 fleet and route expansion projects include the following:

- Purchasing 7 buses for rapid transit services,
- Replacing 149 buses,
- Purchasing 49 sedans for paratransit service, and
- Replacing 47 paratransit vans.

Capital Metro is also proposing to expand nonfixed routes for ADA paratransit service, contract a third party to provide additional rural public transit, and provide job access reverse commutes for the 2010 and 2011 fiscal years. These proposed projects are to be funded with both non-federal and federal funds.

As part of its All Systems Go Long-Range Transportation Plan, Capital Metro has proposed expansion of enhanced/BRT bus service. The BRT bus service (MetroRapid) will consist of hybrid buses operating on 10 to 15 minute headways with limited stops, offering up to 20 percent faster service within defined corridors. This service is expected to offer high-tech features, such as traffic signal priority systems and continuously updated bus arrival information. Initial service will include two routes along heavily traveled Burnet Road, Lamar Boulevard, and Congress Avenue. Capital Metro has secured funding for the initial system and is completing designs of stations and the traffic signal priority system.

Commuter Rail: Capital MetroRail is currently considering expansion of its commuter rail system. The expansion would include:

- ★ A new 28-mile Green Line route connecting downtown Austin with East Austin, Manor and Elgin, using existing Capital Metro-owned tracks,
- ★ Up to five additional trains operating on 20-minute peak period headways along the new route that would serve eight stations, and
- ★ Projected ridership between 7,000 to 12,000 daily riders along the new route in 2030 assuming an all-day, weekday, bidirectional service.

Modern Street Car: The City of Austin has proposed a downtown modern streetcar circulator system. The system would:

- ★ Have estimated daily ridership of approximately 13,100 passenger trips in 2030 for the downtown circulator system,
- ★ Have approximately 19,100 weekday riders along a future extension from Downtown to Austin-Bergstrom International Airport,
- ★ Link to the existing Capital MetroRail Red Line and proposed Lone Star Rail District (LSTAR) commuter rail route,
- ★ Connect key activity centers within the Austin metropolitan area including the downtown area, the Capital Complex, the University of Texas, and the Mueller Redevelopment area, and
- ★ Provide a future connection to the Long Center and Zilker Park.

The City of Round Rock is considering an 18.3-mile commuter rail connection from the cities of Round Rock, Georgetown, and Pflugerville, called the RR/GT/PF Rail Link. The proposed alignment has the connecting branch starting from the Capital Metropolitan Transit Authority Red Line just north of Howard Lane and running along the SH 45 rights-of-way and the now-abandoned Missouri/Kansas/Texas corridor. Three stations are planned for Round Rock, with one station planned for Georgetown and one for Pflugerville.

The Lone Star Rail District (LSTAR): is a proposed passenger rail line that would consist of express service from Downtown Austin to Downtown San Antonio, with stops in San Marcos and New Braunfels. LSTAR would also provide local service between

Georgetown and San Antonio with stops at 16 proposed stations. The rail line would run in the Union Pacific corridor that parallels I-35. It is anticipated that completion and federal approval of the engineering and environmental studies and receipt of a notice-to-proceed allowing the Lone Star Rail to begin final design and construction will occur in 2011.

2.8.7.3 Planned Transit for Corpus Christi

Bus: RTA has proposed seven fleet expansion projects for the 2010 and 2011 fiscal years to meet population growth trends in their service area (TxDOT, Corpus Christi District – FY 2008–2011 STIP). The seven fleet expansion projects include the following:

- Purchasing paratransit vehicles,
- Purchasing service vehicles, vans and support vehicles, and
- Repowering existing fleet to extend useful life.

2.8.7.4 Planned Transit for the Dallas-Fort Worth-Arlington MSA

Bus: DART is planning to reinforce key radial express bus corridors currently not served by rail and improve cross-town express bus services. By doing this, it will allow passengers to be connected from cross-town express bus routes to radial rail corridors and key transit facilities. Future DART bus projects include the following:

- 4 Express bus projects,
- 9 Enhanced bus projects along Loop 12, and
- 2 BRT corridor projects (Northwest Highway and Ferguson Road).

According to the Fort Worth Transportation Authority's 2005 Strategic Plan, The T's projected future plans, which are divided into future year segments 1 to 3 years, 4 to 10 years, and 11 to 25 years starting in 2005 include:

1 to 3 years

- Research the feasibility of BRT systems,
- Identify potential corridors, and
- Coordinate with partner agencies to manage lanes for BRT and HOV.

4 to 10 years

- Acquire BRT funding,
- Complete design and construction,
- Begin circulator service for Downtown and Uptown areas, and
- Manage bus priority signaling.

11 to 25 years

- Establish high-capacity circulator services for Downtown and Uptown areas and
- Coordinate with TxDOT to construct freeway bus-only ramps.

The T has proposed fleet replacement funding for the 2010–2011 fiscal years to meet population growth trends in their service area, but do not give the exact number or specification of replacement vehicles (TxDOT, Dallas-Fort Worth District – FY 2008–2011 STIP). The proposed projects are to be funded with both local share and federal monies.

DCTA has proposed two fleet replacement projects for the 2010 and 2011 fiscal years to meet population growth trends in their service area (TxDOT, Dallas-Fort Worth District – FY 2008–2011 STIP). The two fleet replacement projects include the following:

- Replacing eighteen 30-foot vehicles, and
- Replacing six vans.

Urban and Commuter Rail: DART, TRE and MATA have all announced expansions or upgrades of their rail systems. In addition, Fort Worth's The T is planning commuter rail service from Fort Worth to DFW. In addition, the DCTA is planning rail service linking Downtown Denton with the DART light rail transit (LRT) Green Line route in Carrollton.

DART's *2030 Transit System Plan* details the following information regarding the LRT expansion:

- By 2018, LRT mileage will increase to 93 miles,
- By 2030, the LRT is projected to carry 160,000 riders a day,
- By 2030 an additional 17 miles will be added to the LRT system for a system-wide total of 110 miles,

- ★ The expansion will include 29 additional stations in southeast Dallas, Rowlett, Farmers Branch/Carrollton, Love Field, Irving, and DFW, and
- ★ Will expand commuter rail service along the 26-mile Cotton Belt corridor from the Red Line in Plano, Texas, to DFW.

DART is also conducting the Downtown Dallas Transit Study (D2) that seeks to identify a preferred route for a second LRT alignment through the Central Business District (CBD). The additional transit route would support the planned expansion of the regional LRT and commuter rail system and would be vital to sustaining DART's ridership growth, mobility, and continued quality of service. The study will also address expansion of the MATA trolley service to include modern streetcar service expansion into Downtown Dallas.

DART and The T jointly operate the TRE commuter rail system. Proposed improvements to the TRE system include the construction of a full double-track corridor between Union Station in Downtown Dallas, and the ITC in Fort Worth. Construction has begun on the east side of the corridor (Dallas County) and is planned for the west side of the corridor (Tarrant County). The upgrades will allow for shorter service headways across the entire corridor.

DART also supports MATA, the 5.2-mile historic trolley line (M-Line) linking Dallas' uptown and downtown neighborhoods. MATA is planning a realignment and extension that will cover the south end of the M-Line along Olive Street to a planned connection with the LRT at the St. Paul Station within the Downtown Dallas CBD.

The T is planning commuter rail currently scheduled to begin service in 2013 that will consist of:

- ★ Commuter rail service within a proposed 35-mile corridor from southwest Fort Worth, through downtown Fort Worth, and then northeast to link with the DFW Terminal A-B area,
- ★ Connections to the TRE at the Intermodal Transfer Center in Downtown Fort Worth,
- ★ Connections to the DART Cotton Belt Corridor and future Orange Line at DFW, and
- ★ Projected daily ridership of approximately 15,000 to 16,000 trips per day by 2030.

The City of Fort Worth is studying the feasibility of a modern streetcar system in downtown Fort Worth. The system would connect downtown and the TRE to adjacent mixed-use districts. In April 2010, the city voted to conduct a detailed streetcar study to examine such issues as alignments, funding, ridership, and projected economic benefits.

DCTA is currently constructing a regional rail line linking downtown Denton with Carrollton. The new service (the A-Train) will include:

- ★ A 21-mile regional rail line between downtown Denton and Carrollton, roughly paralleling I-35E,
- ★ Five rail stations in Denton, Highland Village, and Lewisville,
- ★ Projected ridership of about 5,600 riders per day by 2030, and
- ★ Total DART/DCTA system-wide transit usage to increase by about 17,300 unlinked trips daily.

2.8.7.5 Planned Transit for the El Paso Area

Bus: According to the El Paso MPO, 2007 – TransBorder 2035 Metropolitan Transportation Plan, Sun Metro has proposed to create a BRT system by 2015. The BRT system would include ITS, signal prioritization, diamond-striped lanes, and transit terminal interfaces. Sun Metro plans to create the BRT system incrementally, starting with an arterial corridor and four extension corridors. The BRT projects will include, but are not limited to, the following urban corridors within the city limits of El Paso: International/Downtown Corridor, Alameda Corridor, Mesa Corridor, Montana Corridor, and Dyer Corridor. Specific proposed BRT projects include:

- ★ The International/Downtown Corridor will connect the downtown international bridges to the Oregon Street Transit Mall and on to the University of Texas at El Paso by 2015. This BRT corridor will be the core line for the expansion of other BRT corridors.
- ★ The Alameda Corridor is scheduled to be the first expansion of the BRT system and will extend from the Oregon Street Mall to R.E. Thomason General Hospital and on to the Texas Tech School of Medicine complex by 2015.
- ★ The Mesa BRT Corridor is scheduled for construction by 2015 and will connect Baltimore Avenue to Crossroads (Doniphan Drive).
- ★ The Montana BRT Corridor is scheduled to be implemented by 2025 and would connect the Central Business District to George Dieter Drive.
- ★ The Dyer BRT Corridor is planned to be implemented by 2025 and would connect US 54 to Sun Valley Drive.

Sun Metro's other transit projects that are planned for the 2010 and 2011 fiscal years include:

- expanding ADA paratransit services, and
- constructing station stops and terminals.

2.8.7.6 Planned Transit for Houston and Harris County

Bus: The 2025 METRO Solutions Plan proposes to increase the existing bus service by 50 percent, which equates to 44 new routes or 1,038 miles in new routes for their local bus service. Other amenities that would support the increase in bus service include nine new transit centers, upgrading existing transit centers, bus service on major streets, longer hours of operation on major routes, and improved regional access to all activity centers. The 2025 Plan also proposes new signature express service with major crosstown routes. The proposed express routes will provide more frequent service with fewer stops, distinguishable vehicles and upgraded passenger shelters, and connections to regional activity and employment centers. Also planned by METRO are nine new park and ride lots with over 250 miles of two-way park and ride service.

METRO has budgeted for five regionally significant transit projects for the 2010–2011 fiscal years to meet population growth trends in their service area (TxDOT, Houston District – FY 2008–2011 STIP).

The regionally significant transit projects include the following:

- Bus acquisition for express bus service,
- Curb cut/intersection improvements,
- 250 bus maintenance facility, and
- Bus pads/bus lane program.

As part of its long-range METRO Solutions plan, Houston METRO is developing approximately 47 miles of BRT within the Greater Houston metropolitan area. The first line, called the Bellaire Quickline signature bus service, currently operates on a 9-mile West Houston to Texas Medical Center Transit Center Station route. The Quickline features ultra-quiet hybrid buses, limited stops, automated announcements, and eight state-of-the-art bus stations complete with digital "next bus" signage to provide commuters with real-time information. Additional BRT service is planned to begin operation in 2010 or 2011 along additional commuter routes from the west and northwest suburban areas of Houston.

Urban and Commuter Rail: The 2025 METRO Solutions Plan forecast includes $2 billion of transit system investments as contained within the METRO Solutions Phase 2 Implementation Plan. Key rail components of the Implementation Plan include:

- Expansion of five new rail lines,
- Construction of 56 light rail stations within the Greater Houston area,
- Purchase of 96-foot-long, double-articulated vehicles with a capacity of 72 seated and approximately 169 standing passengers, or a total capacity of 241 per car,
- Future connection opportunities for citizens and visitors to/from major activity centers throughout the metropolitan area and additional commuting opportunities for area residents,
- Increased ridership of approximately 15,000 to 30,000 trips per day by 2030,
- Approximately 30 miles of additional LRT,
- Service to the North Houston, East End, Southeast, Uptown, and University Corridors,
- Approximately 28 miles of commuter rail transit,
- Ten new transit intermodal facilities serving light rail, commuter rail, bus, and auto modes, and
- The University Corridor LRT project will consist of an 11.3-mile, double-track LRT line with 19 stations extending from the Hillcroft Transit Center on the west to the Eastwood Transit Center on the east, with the majority of the line located within the inner city I-610 Loop of the City of Houston. The line will include 32 light rail vehicles, and a projected total ridership of approximately 49,200 unlinked trips per day by 2030.

Potential commuter rail lines currently being considered include:

- US 90A, from the Fannin South Station to Missouri City,
- Westpark, from the Hillcroft Transit Center to FulShear,
- US 290, from Downtown to Cypress, and
- Within the Houston to Galveston corridor.

2.8.7.7 Planned Transit for the San Antonio Area

Bus: VIA is currently in the process of creating a Long Range Comprehensive Transportation Plan for Bexar County to year 2035. This comprehensive study labeled as SmartWaySA will identify and prioritize high capacity transit corridors for a range of transit alternatives and supporting activities.

VIA has budgeted for several transit projects for the 2010 and 2011 fiscal years to meet population growth trends in their service area (TxDOT, San Antonio District – FY 2008–2011 STIP).

The transit projects include the following:

- Constructing bus stations,
- Constructing and improving park and ride lots,
- Constructing passenger centers,
- Implementing job access/reverse commuting services,
- Improving paratransit services,
- Contracting third parties for transportation services,
- Implementing super stops,
- Improving traffic signal priorities for bus service,
- Replacement large and small buses,
- Purchasing expansion buses, and
- Improving elderly and disabled program.

The proposed projects are to be funded with both local share and federal monies.

The City of San Antonio is currently planning for the implementation of BRT services from the proposed Westside Multimodal Transit Center near downtown San Antonio to the proposed South Texas Medical Center Transit Center. The service, called VIA Primo, would operate along Fredericksburg Road and Medical Drive and would connect major employment centers in the medical center area, Balcones Heights, Deco District, and the downtown CBD. The proposed BRT route would be approximately 20 miles in length and will serve the two transit centers, eight stations along the corridor, and local stops in the CBD and medical center area. Service may also extend to The University of Texas at San Antonio's main campus in far North San Antonio.

According to VIA, the proposed VIA Primo system would utilize diesel-electric hybrid vehicles, and may incorporate such ITS features as automated scheduling/dispatch systems, signal priority systems, and real-time passenger service information. VIA is currently conducting environmental assessments along the proposed route with service expected to begin in 2012.

2.8.8 Planning for Rural Transit Systems

Rural transit systems provide services to areas not served by urban and metropolitan systems, providing services for special needs passengers as well as transportation for the general public. While the majority of the population growth will be in the larger communities, counties with less than 50,000 population are projected to grow by over 625,000 people by 2035. The growth in population over 65 years of age for Texas as a whole is 144 percent (or nearly 3.5 million) which will lead to a higher percentage of the population within this age bracket for most counties.

Future demand for rural transit services is generally function of the size of the elderly population, income levels and participation in special needs programs. As the Texas population ages and as people continue to move to fringe areas around larger cities, the future need for rural transit will also increase. In contrast, future services are highly dependent upon the amount of local, state, and federal funding provided to the agency.

Expansion activities for these rural transit systems are often a combination of additional vehicles and technology upgrades to improve the efficiency of the fleet, such as the implementation of a comprehensive ITS program to improve dispatching and scheduling. Transportation needs are often linked to the need for medical care and other social services only available in larger urban areas. In general, however, expansion activities for these small urban and rural transit systems may include of the implementation of a comprehensive ITS program to augment additional bus service routes.

2.8.9 Texas Intercity Bus Service

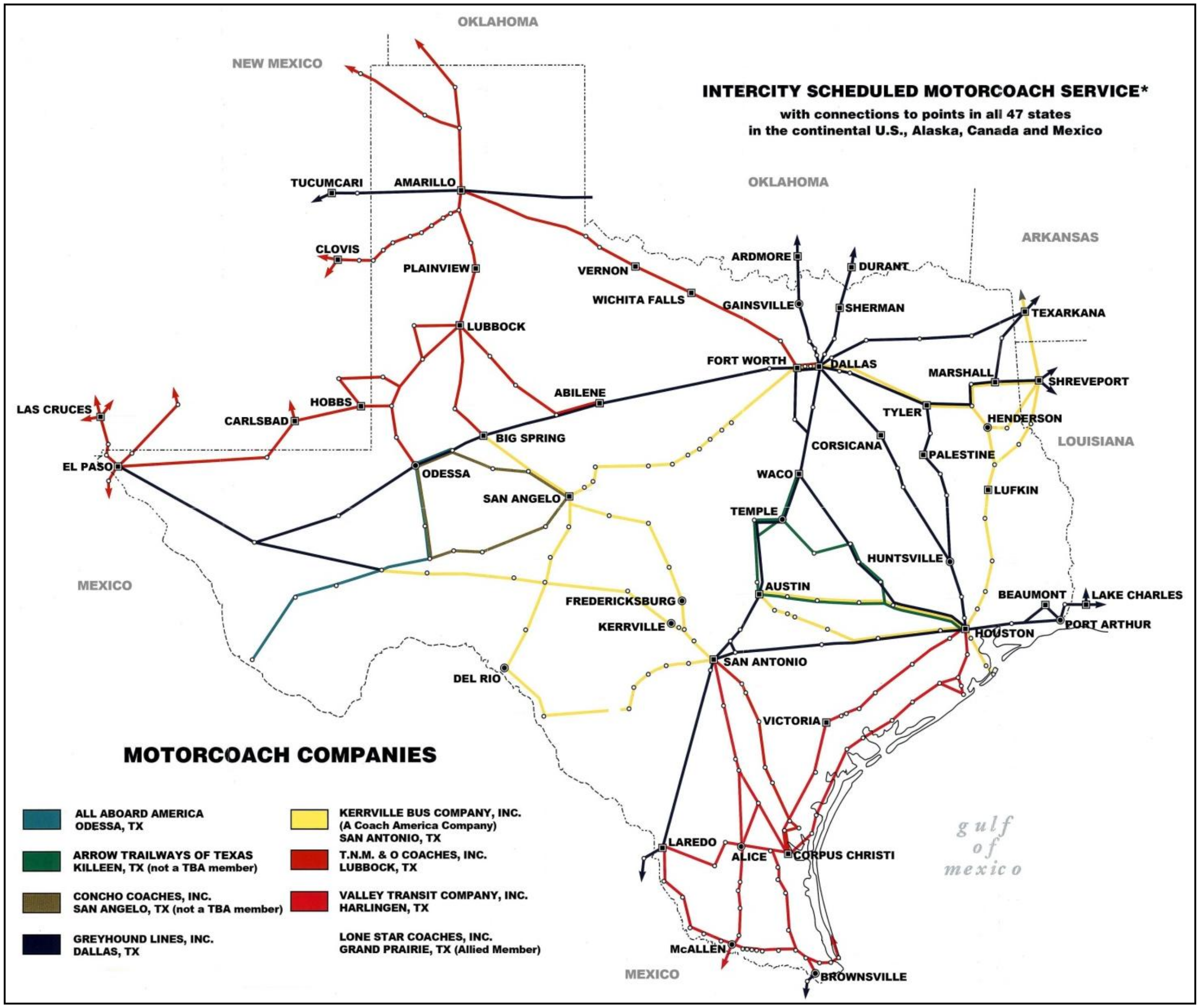
Within Texas and nationwide, the largest intercity bus systems are Greyhound Lines and the Trailways system. Greyhound had its beginnings in Minnesota in the 1920s, and through numerous mergers and acquisitions, evolved into the present nationwide system. The Trailways system formed in 1936 consisted of various companies working together to form a nationwide system. However, the company underwent reorganization in 1987 with the result that only smaller Trailways companies currently exist with many of these companies providing charter services only. The largest regional intercity bus services in Texas are Kerrville Bus Company and Valley Transit Company. Kerrville Bus Company provides service to most of Texas extending into parts of western Louisiana and Arkansas. Valley Transit has more than 60 vehicles in its coach fleet with a service area that extends from Houston and San Antonio in the north, southward through all of South Texas and the Rio Grande Valley into Northern Mexico. In addition, several other smaller companies provide intercity and coach charter service within Texas. Table 2-21 lists existing intercity transit providers in Texas along with service area, fleet information, and type of service and Figure 2-37.

Table 2-21: Summary of Intercity Bus Providers[66]

Intercity Bus Providers	Service Area	Fleet Information	Charter (Y/N)	Fixed Routes
All Aboard America	Midland/Odessa to Presidio, Texas	Motor-coaches	Y	Y
Arrow Trailways of Texas	Dallas, Houston, San Angelo, Austin, and San Antonio, and Nationwide	Motor-coaches, mini-coaches, and vans	Y	Y
Concho Coaches, Inc.	San Angelo and Midland/Odessa, Texas	Motor-coaches	Y	N
Greyhound Lines, Inc.	Nationwide and Statewide	1,250 buses	Y	Y
Sun Travel Trailways	Lake Charles Louisiana, and Beaumont, Texas	Nine 55-passenger motor-coaches and two 29-passenger mid-sized coaches	Y	N
Gotta Go Trailways	Dallas, Fort Worth, and Abilene, Texas	Motor-coaches	Y	N
Eagle Trailways of Texas	Dallas, Fort Worth, Houston, San Antonio, and Austin, Texas	Motor-coaches with 36 to 56 passengers	Y	N
Kerrville Bus Company, Inc.	Texas, Arkansas, Louisiana	Motor-coaches with 55 passengers	Y	Y
Sierra Trailways of Texas	College Station/Bryan, Freeport, Galveston, Houston, Sugar Land, Alvin, Pearland, and League City, Texas	Motor-coaches with 44 to 55 passengers	Y	N
Lone Star Trailways	East Texas and Shreveport, Louisiana	10 motor-coaches	Y	N
T.N.M. & O. Coaches, Inc.	Same as Greyhound	Operated by Greyhound	Y	Y
Valley Transit Company, Inc.	Mission, Harlingen, Brownsville, Roma, South Padre Island, San Antonio, and Houston, Texas, northern Mexico	Vans with 10 to 14 passengers, motor-coaches with 33 to 57 passengers	Y	Y
Central Texas Trails	Central Texas and Nationwide charter service	10 motor-coaches with 29 to 57 passengers	Y	N
Sun Set Stages, Inc.	Del Rio, Texas, and Nationwide	Motor-coaches	Y	N
Lone Star Coaches, Inc.	Local and nationwide charter service; serving the greater northeast Texas area; based in Grand Prairie, Texas	Motor-coaches with 48 to 57 passengers	Y	N

66 URS, 2010; from bus provider's websites

Figure 2-37: Intercity Bus Routes[67]



67 Texas Bus Association, Inc., Intercity Bus Routes as of 2007

2.8.10 Intercity Passenger Rail

Note: Detailed Information regarding intercity passenger rail in Texas can be found in the Texas Rail Plan available at:

http://www.txdot.gov/public_involvement/rail_plan/trp.htm

Intercity passenger rail service in Texas is provided by Amtrak. Amtrak is a common name for the National Railroad Passenger Corporation, which is a corporation owned by the U.S. government and several railroad companies that contributed equipment when the corporation was chartered in 1971. Amtrak routes in Texas include:

- The Texas Eagle: Chicago to San Antonio, via St. Louis, Little Rock, Texarkana, Dallas, Fort Worth, and Austin,
- The Sunset Limited: New Orleans to Los Angeles, via Houston, San Antonio, Alpine, and El Paso, and
- The Heartland Flyer: Daily round trip between Oklahoma City, Oklahoma and Fort Worth, Texas.

Additionally, Amtrak's partnership with Greyhound serves other areas of the state by providing bus connections where possible. Table 2-22 shows annual ridership for each route for 2008 and 2009.

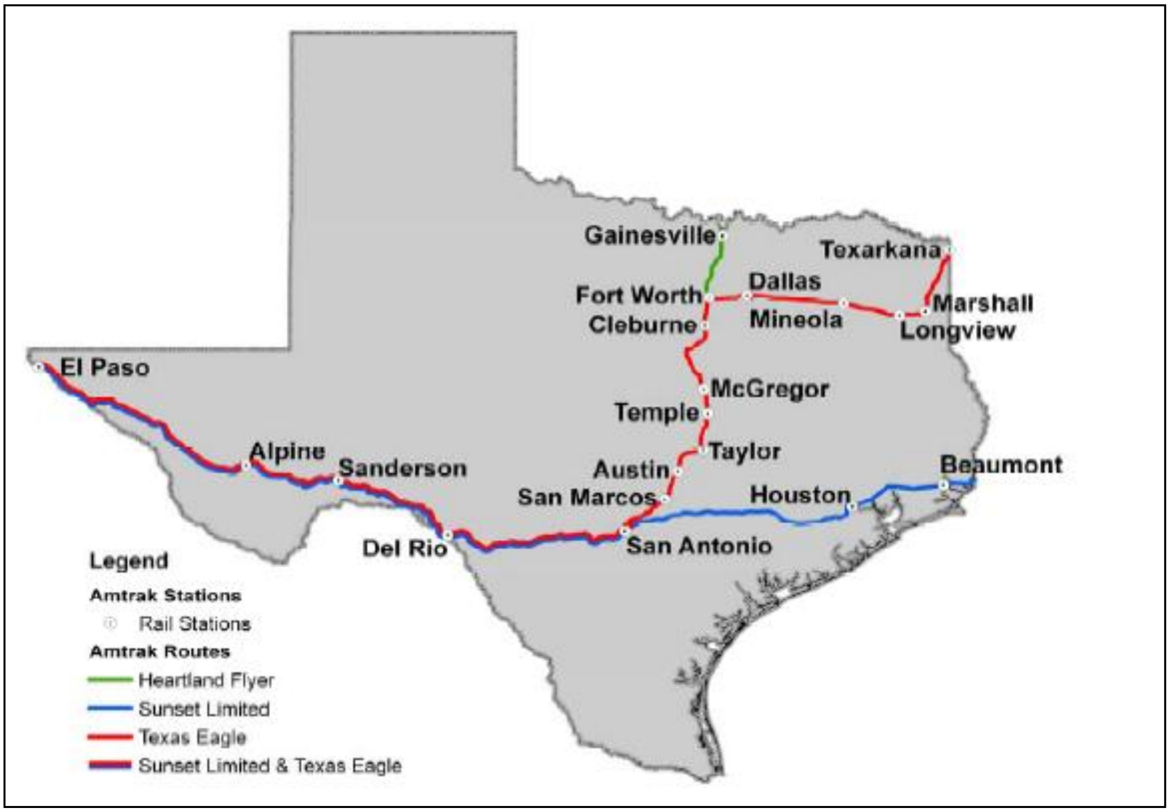
Table 2-22: Amtrak Ridership 2008–2009[68]

Amtrak Line	2008 Ridership	2009 Ridership	% Change in Ridership
Texas Eagle **Chicago-Dallas-San Antonio**	251,518	260,467	3.6
Sunset Limited **New Orleans-San Antonio-Los Angeles**	71,719	78,775	9.8
Heartland Flyer **Oklahoma City-Fort Worth**	80,892	73,564	-9.1

The Texas Eagle and the Sunset Limited lines both experienced increases in ridership over this period of time; however, the Heartland Flyer experienced a drop in ridership. While the purpose for Amtrak ridership is primarily recreational, this upward trend in ridership for the Texas Eagle and the Sunset Limited shows an interest in intercity passenger rail transportation in Texas. Figure 2-38 illustrates these Amtrak routes.

68 USDOT, Federal Highway Administration (FRA), National Rail Plan, 2009

Figure 2-38: Current Amtrak Routes



2.8.11 High-Speed Rail Planning in Texas

Note: Detailed Information regarding high-speed rail (HSR) in Texas can be found in the Texas Rail Plan available at http://www.txdot.gov/public_involvement/rail_plan/trp.htm

The Federal Railroad Administration (FRA) of the USDOT released a strategic planning document in April 2009 outlining the administration's vision for HSR development in the U.S. The report listed national strategic transportation goals for HSR investment.

The report's **Strategic Transportation Goals**[69] state that transportation investment strategy must address several strategic goals in the coming years:

- **Ensure safe and efficient transportation choices**. Promote the safest possible movement of goods and people, and optimize the use of existing and new transportation infrastructure.
- **Build a foundation for economic competitiveness.** Lay the groundwork for near-term and ongoing economic growth by facilitating efficient movement of

69 FRA, *Vision for High-Speed Rail in America*, 2009, page 1

people and goods, while renewing critical domestic manufacturing and supply industries.

- ★ **Promote energy efficiency and environmental quality.** Reinforce efforts to foster energy independence and renewable energy, and reduce pollutants and greenhouse gas emissions.

- ★ **Support interconnected, livable communities.** Improve quality of life in local communities by promoting affordable, convenient and sustainable housing, energy and transportation options.

As support, the plan asserts, "each transportation mode plays a critical role in intercity passenger transportation, but the comparative advantage of each varies by market factor…" and provides the following table (Table 2-23) as support.

Table 2-23: FRA, Potential Modal Comparative Advantage by Market

Intercity Distance Mile			
Population Density	**0–100**	**100–600**	**600–3,000**
Light	1) Auto	1) Auto 2) Conventional Rail	1) Auto 2) Air
Moderate	1) Auto 2) Commuter Rail	1) High Speed Rail 2) Auto	1) Auto 2) Air
High	1) Commuter Rail 2) Auto	1) High Speed Rail 2) Air	1) Air

In Texas, the large metropolitan regions all fall within the population densities and 100 to 600 mile intercity distance range needed for HSR to have a comparative market advantage.

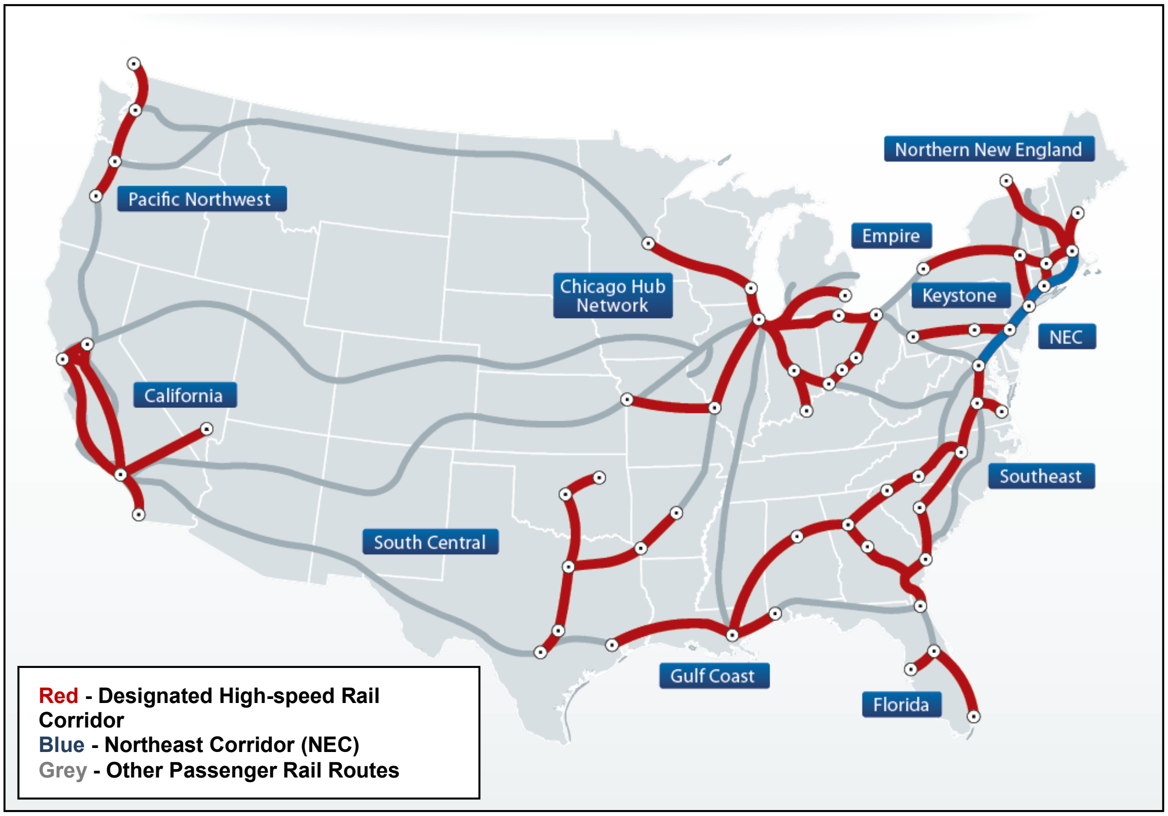
One of the distinguishing arguments for HSR is its ability to move people at high speeds from major cities and attractors, thus reducing a person's travel-time. Another benefit is the reduction in traffic congestion on the key roadways across the State. A final benefit that is certain to help Texans is the opportunity to move people who have limited transportation options.

Since the approval of the American Recovery and Reinvestment Act (ARRA) by Congress on February 13, 2009,[70] the momentum for HSR projects throughout the United States has increased considerably. HSR has been under study throughout the U.S. in various iterations either with intrastate or interstate programs for decades. This

[70] http://www.recovery.gov/About/Pages/The_Act.aspx

new funding mechanism provided states and regions with the ability to move forward with projects that either were currently under study or had been previously studied. After a nationwide competitive process, ARRA awarded over $8 billion to HSR projects throughout the U.S. The proposed FRA National High Speed Rail Map is shown on Figure 2-39.

Figure 2-39: High Speed Rail Map from the Federal Railroad Administration[71]



While Texas did not have a high-speed rail project ready for the 2009 ARRA application process, the Fort Worth area was awarded $4 million for improvements to Amtrak's Texas Eagle,[72] which operates between Fort Worth and Austin. This award is for final design and construction of signal timing improvements, which will improve the operating speed and on-time performance of this important rail arterial. As of 2010, TxDOT has prepared and submitted planning fund applications for three HSR corridors:

- **Austin to Houston:** This corridor would incorporate five intermediate cities; Bryan/College Station, Giddings, Brenham, and Hempstead;

[71] FRA, *Vision for High-Speed Rail in America*, 2009, page 6

[72] http://www.whitehouse.gov/sites/default/files/rss_viewer/hsr_awards_summary_public.pdf

- **Dallas/Fort Worth to Houston:** This corridor would parallel I-45. Intermediate cities connected by this corridor would include Waco, Bryan/College Station, Corsicana, Conroe, and Huntsville;
- **Oklahoma City to South Texas:** This would be an 850-mile corridor from Oklahoma City to South Texas includes the cities of Dallas/Fort Worth, Waco, Austin, San Antonio, Laredo, Corpus Christi, and Brownsville.

2.9 Texas Bicycle and Pedestrian Plans

Bicycle and pedestrian travel modes are becoming increasingly important parts of the Texas transportation system. They provide positive benefits both for users and for the community as a whole. Bicyclists and pedestrians experience increased levels of physical fitness, greater mobility (especially for nondrivers), financial savings, and enjoyment. Every trip taken by bicycle or on foot immediately benefits communities by decreasing traffic and air pollution. Many planning elements that are designed to increase the livability of communities, such as traffic calming, improved crossing signals, and decreased sprawl, also benefit the bicycle and pedestrian modes by making them safer, more practical, and more pleasant.

Unlike other transportation modes, bicycle and pedestrian movements provide more than a means to get from one place to another for errands and work. Bike and pedestrian travel modes also provide the community with recreational activities. Most improvements that are made to bicycle and pedestrian facilities therefore serve the work commute, other trip purposes, and recreation functions. The pedestrian mode is also unique in that travel by every mode includes a pedestrian component, even if it is only a walk from a parking place into a building.

Recreational motoring, in terms of travel as well as destinations, has for nearly 100 years been recognized in Texas as a significant economic generator for great personal and community benefit. Highway infrastructure investment has effectively supported the multiple purposes of commuting, business travel, commercial transportation and recreational motoring. A similar relationship exists between both transportation and recreational bicycling and pedestrian activities. For example, recreational cycling can help generate the motivation and skill to begin bicycle commuting, and vice versa. Also, charity fundraising challenges depending on cyclists, runners and walkers will benefit greatly if those persons have daily venues through which they can condition and train themselves for these events. It is critical that bicycle and pedestrian accommodations be considered and TxDOT is committed to proactively plan, design and construct for bicyclists and pedestrians on appropriate facilities.

Bicycle and pedestrian modes are appropriate for many "short trips" of 3 miles or less that are currently made 72 percent of the time by motor vehicles.[73] Of all driving trips, 43 percent are 3 miles or less, or a 20-minute bike ride[73]. Of all driving trips, 20 percent are 1 mile or less, or a 20-minute walk[73]. If half of these short motor vehicle trips were replaced with bicycling and pedestrian trips in congested urban areas, significant reduction in motor vehicle traffic in the 15 to 20 percent range could be realized. Bicycle and pedestrian modes are also appropriate for destinations involving longer distances. Bicyclists frequently commute for distances greater than five and even 10 miles. A 1997 University of Washington analysis of bicycle commuting practices of 2374 voluntary survey respondents from across the country reported an average bicycle commute distance of 7.2 miles.[74] Persons of average but not exceptional physical fitness can easily cover these distances, even up to and beyond the 12-mile average motor vehicle commute distance. Investment in infrastructure, education and encouragement for bicycling in communities such as Seattle, WA; Portland, OR; Minneapolis, MN and Copenhagen, Denmark has resulted in significant increases in the number of bicyclists and increase in trip distances for transportation purposes. Copenhagen currently has 36 percent bicycle commuters[75] with a goal of 50 percent for 2015.[76] Public transportation systems, especially those with bicycle accommodations, facilitate even greater pedestrian and bicycle commuting distances.

What can be safely assumed is that most all trips involve some type of pedestrian component. This may be as little as the walk from a parking place or bus stop to a final destination, or as much as the selection of walking as a primary commuting mode. Walking is also a common recreational activity. It can also be assumed that Texas bicycle transportation needs involve a range of different bicyclists. The most experienced adult riders may need bicycle facilities that support rapid travel on arterial streets with direct access to a work destination. At the other end of the spectrum, bicycle-riding children may need access to destinations such as schools using residential streets with low traffic volumes.

[73] National Household Travel Survey, Federal Highway Administration Office of Policy, 2009 (summary of "Mode Share" and "Short Trips" compiled into on-line report by League of American Bicyclists and America Bikes, Washington, D.C., 2010); Available at http://www.bikeleague.org/resources/reports/pdfs/nhts09.pdf

[74] *A Survey of North American Bicycle Commuters*, William E, Noritz, Ph.D., University of Washington, Seattle, WA, 1997. http://www.bicyclinglife.com/library/moritz1.htm

[75] *Livable Copenhagen: The Design of a Bicycle City*, Center for Public Space Research, Copenhagen, Denmark and University of Washington, Seattle, WA, 2009. http://www.sightline.org/research/sprawl/res_pubs/Livable_Copenhagen_reduced.pdf

[76] *Copenhagen: City of Cyclists; Bicycle Account 2008*, Traffic Department, City of Copenhagen, Denmark, 2008. http://www.kk.dk/sitecore/content/Subsites/CityOfCopenhagen/SubsiteFrontpage/CitizenInformation/CityAndTraffic/CityOfCyclists/~/media/F9FC02F424F84FFEAFC5428085F4AF05.ashx

The State of Texas has recognized that bicycle and pedestrian modes have a place in its transportation system and has committed to their expansion and improvement. TxDOT has adopted the AASHTO Guide for the Development of Bicycle Facilities as official design criteria for bicycle facilities. The state has also taken advantage of new sources of funding such as transportation enhancement funds for bicycle and pedestrian facilities available in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the Transportation Equity Act for the 21st Century (TEA-21, and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

Additionally, the 25 MPOs in Texas address cyclist and pedestrian needs in their respective MTPs. Several Texas MPOs have extensive bicycle and pedestrian networks that they promote in stand-alone plans. The need for facilities is difficult to forecast, but based on a review of the MPOs' MTPs, basic goals indentified include:

- Improve access to the downtown, including municipal, cultural and shopping locations
- Improve access to local recreational opportunities
- Provide for safe crossing of major highways
- Provide access to key inter-modal transit centers
- Improve bicycle and motor vehicle operator education
- Promote opportunities for bicycling in the City

2.9.1 Regional Bicycle and Pedestrian Plans

Bicycle and pedestrian travel are an increasingly important part of the Texas transportation system. Between 1990 and 2007 Texas experienced a 38 percent increase in commuters who bicycled to work. Similarly, between 2000 and 2007 people walking to work increased by 9 percent. In 2010, Texas had seven of the top 50 cities in terms of percentage of commuters who bicycled or walked to work.[77]

MPOs are federally mandated and federally funded transportation policy-making organizations in the United States that are made up of representatives from local government and governmental transportation authorities. Each MPO is tasked with providing a continuing, cooperative, and comprehensive planning process for federally funded transportation projects and programs in its respective region. Of the 25 MPOS,

[77] Alliance for Biking and Walking. *Bicycling and Walking in the United States 2010 Benchmarking Report.* Available at http://www.peoplepoweredmovement.org/site/

all include a bicycle/pedestrian section in their MTPs. Moreover, there are additional stand-alone plans in regions that establish a system of bicycle and pedestrian routes Table 2-24.

Table 2-24: MPO Bicycle and Pedestrian Plans

MPO	Location	Included in MTP	Additional Studies/Plans
Abilene MPO	Abilene, Texas	Yes	2006 Sidewalk Master Plan 2004 Abilene Comprehensive Plan (based on The City of Abilene's Multi-use Bicycle & Pedestrian Trail Plan)
Amarillo MPO	Amarillo, Texas	Yes	2003 Amarillo Hike and Bike Plan
CAMPO	Austin, Texas	Yes	2030 Regional Bicycle Map 2030 Campo Mobility Plan 2006 City of Austin Bicycle & Pedestrian Plans
SETRPC	Beaumont, Texas	Yes	
Brownsville MPO	Brownsville, Texas	Yes	2004 Bicycle Pedestrian Plan
BCSMPO	Bryan-College Station, Texas	Yes	
CRP	Corpus Christi, Texas	Yes	2004 Bicycle & Pedestrian Plan
El Paso	El Paso, Texas	Yes	Stand Alone Plan
HSB MPO	Harlingen, Texas	Yes	Stand Alone Plan
H-GAC	Houston-Galveston, Texas	Yes	2007 Regional Bikeway Plan 2004 Pedestrian and Bicycle Special Districts Study Standing Bike/Ped Advisory Sub-Committee Bayou Greenway Initiative
HMPO	Hidalgo, Texas	Yes	Non-Motorized Bicycle Plan in MTP 2007 Multi-Modal Study
K-T MPO	Belton, Texas	Yes	
Laredo	Laredo, Texas	Yes	
Longview MPO	Longview, Texas	Yes	
Lubbock	Lubbock, Texas	Yes	Comprehensive Bicycle Plan
MOTOR	Odessa, Texas	Yes	
NCTCOG	Dallas-Fort Worth	Yes	Bicycle and Pedestrian Advisory Committees
San Angelo MPO	San Angelo, Texas	Yes	2008 Bicycle and Pedestrian Plan
SABC MPO	San Antonio, Texas	Yes	City of San Antonio Bicycle Plan Regional Bicycle Travel Patterns Study
SD-MPO	Sherman, Texas	Yes	
Texarkana MPO	Texarkana, Texas	Yes	2009 Bicycle and Pedestrian Master Plan
Tyler MPO	Tyler, Texas	Yes	2009 Regional Trail Plan
Victoria	Victoria, Texas	Yes	
WUTS	Waco	Yes	
WFS MPO	Wichita Falls, Texas	Yes	

Source: Association of Texas Metropolitan Planning Organization, http://www.texasmpos.org/

The Abilene MPO used the Abilene City Council's Multi-Use Bicycle & Pedestrian Trail Plan as a foundation for the pedestrian mobility studies in the 2004 Abilene Comprehensive Plan. The Plan set guidelines for "paths, lanes and routes" shared by bicyclists, pedestrians and motorists. The MPO also encouraged use by facility accessibility (i.e., bicycle parking, shower/lockers and theft reduction measures) and suggested funding opportunities, such as, Transportation Enhancement Funds, Safe Routes to School Program, National Park Service, Texas Park and Wildlife – Recreational Trails Program and other private or nonprofit funding for projects.[78]

The City of Amarillo approved a "Hike and Bike Master Plan" in July of 2003. The Amarillo Hike and Bike Master Plan established a system of bicycle and pedestrian routes in and around the city. Implementation of bicycle facilities included plans to stripe 86 miles of cycling lanes. The plan outlined a schedule for linking neighborhoods south to the Rock Island Rail Trail and provides connections to selected schools.[79]

In 2010, civic and business leaders in the Houston Region came together with Harris County, the City of Houston and H-GAC (the Houston-Galveston Area Council) to develop a comprehensive hike and bike master trail plan that develops miles of land along Harris County's 10 major bayous, creating a system of linear parks. These 10 bayous all flow from west to east into Galveston Bay after meandering through multiple neighborhoods all over the region. This *Bayou Greenway Initiative* for the Houston Region includes almost 250 miles of new or upgraded hike and bike trails, miles of canoe/paddle trails and more than 50 new parks that also serve as retention basins and wetlands that improve the quality of the region's groundwater and flood runoff. The *Bayou Greenway Initiative* will also serve as the trunk line for an even larger network of trails and linear parks that will provide park and trail access to almost every community within Houston and Harris County and provide connectivity between communities, businesses and retail establishments. The initiative will create an alternative transportation source for urban residents and visitors alike.

As a result of the large number of cyclists and pedestrians in Austin, the Capital Area Metropolitan Planning Organization (CAMPO), through cooperative relationships with the City of Austin and other stakeholder groups, has developed a comprehensive planning program to manage its well-established and highly integrated network of bicycle-pedestrian facilities.

[78] Abilene Metropolitan Area Metropolitan Transportation Plan 2010–2035; http://www.abilenempo.org/

[79] Amarillo Metropolitan Transportation Plan 2010–203; http://www.amarillompo.com/

Due to the growing number of commuters and travelers, it is no doubt that MPOs and city councils around the state are focusing on bicycle and pedestrian transportation modes in order to achieve a balanced multimodal transportation system.

One of the greatest challenges facing the bicycle and pedestrian field has been the lack of documentation on usage and demand. However, effective methods for counting bicyclists and pedestrians continue to be developed and refined and are now being tested in Texas to improve the volume and quality of bicycle and pedestrian modal data. Without accurate and consistent demand and usage figures, it is difficult to measure the positive benefits of investments in these modes, especially when compared to the other transportation modes such as the private automobile. The 2002 National Survey of Pedestrian and Bicyclist Attitudes and Behaviors (U.S. Department of Transportation 2003) found only 0.9 percent of all trips in the United States were taken by bicycle, so bicycle counts on a route can vary by a large percentage, with only a small change in numbers. This lack of quantifiable methodologies for the nonmotorized modes is a likely reason the modes are often under-funded and an afterthought in policy decision-making.

2.9.2 Texas Regional Trails

The most extensive and well-documented system of bicycle and walking facilities in the State of Texas is maintained by the Texas Parks and Wildlife Department (TPWD). While these facilities are mostly recreational in nature, some multi-purpose trails may have utility in supporting nonrecreational trips. The statewide nature of this network and the available connections to other bicycle and pedestrian facilities warrants consideration as part of the Texas Transportation System.

2.9.2.1 Texas Parks and Wildlife Trails

The FHWA provides funding for the Texas Recreational Trails Program from a portion of federal gas taxes paid on fuel used in nonhighway recreational vehicles. While TPWD administers the program, proposed expenditures must be listed in TxDOT’s STIP. Funds can be spent on both motorized and nonmotorized recreational trail projects such as:

- Construction of new recreational trails
- Improvement of existing trails
- Development of trailheads or trailside facilities, and
- Acquisition of trail corridors.

Texas was the first state in the nation to create birding and wildlife viewing trails, an idea that resulted in similar projects throughout North America. These trails provide economic incentives for landowners and communities to conserve habitats while providing recreational opportunities for the traveling public. The wildlife trails of Texas promote sustainable economic development and build public support for conservation of wildlife and habitats.

TPWD promotes four main (eight total) birding and wildlife trails in Texas:

- Great Texas Coastal Birding Trails (Upper Texas Coast, Central Texas Coast, and Lower Texas Coast)
- Heart of Texas Wildlife Trails (East and West)
- Panhandle Plains Wildlife Trail
- Prairies and Pineywoods Wildlife Trail (East and West)

For general information on TPWD's Trail programs, visit http://beta-www.tpwd.state.tx.us/.

2.9.2.2 The Texas Heritage Trails Program

A combination of historic preservation and tourism, this economic development initiative encourages communities to partner to promote Texas' historic and cultural resources. These successful local preservation efforts, combined with statewide marketing of the areas as heritage regions, increase visitation to cultural and historic sites and bring more dollars to Texas communities, especially rural ones.

The Texas Heritage Trails Program (THTP) is based around 10 scenic driving trails created in 1968 by Gov. John Connally and the Texas Highway Department as a marketing tool. The trails were established in conjunction with the HemisFair, an international exposition that commemorated the 250th anniversary of the founding of San Antonio.

In 1997, the Texas Historical Commission (THC) was charged by the State Legislature to create a statewide heritage tourism program. The THC based its program on the original driving trails, creating 10 heritage regions, but included all the surrounding counties: Texas Brazos Trail Region, Forest Trail Region, Forts Trail Region, Hill Country Trail Region, Lakes Trail Region, Independence Trail Region, Mountain Trail Region, Pecos Trail Region, Plains Trail Region, and Tropical Trail Region (Figure 2-40).

Several of these regions including the Mountain Region and Forts Trail Region are promoting cycling and/or sponsoring pilot cycling programs. In particular, the Mountain Trail Region is promoting cycle-friendly accommodations and events. Information regarding cycling in this region can be found at:

http://www.texasmountaintrail.com/index.aspx?page=7

And information regarding cycling in the Forts Trail Region can be found at:

http://www.texasfortstrail.com/index.aspx?page=1416

Figure 2-40: Texas Heritage Trails Program Regions

For general information on THC's Trails program visit http://www.thc.state.tx.us/heritagetourism/htprogram.shtml.

2.9.2.3 Texas Bicycle Tourism Trails Act

The Texas Bicycle Tourism Trails Act took effect September 1, 2005. The act created Section 201.9025 of the Texas Transportation Code to facilitate development of an on-road and off-road statewide network of bicycle trails that 'reflect the geography, scenery, history, and cultural diversity of this state' and may include multiuse trails to accommodate pedestrians and equestrians. This infrastructure can serve local bicycle and pedestrian transportation network needs.

2.10 Texas International Border Transportation

Texas' 1254-mile border with Mexico creates a vital and unique economic, trade, and transportation region. Border entry points are both urban and rural between Texas and Mexico; and some regions have multiple entry points. The crossings handle vehicular, commercial, and pedestrian traffic. They are owned by the U.S. government, the State of Texas, local governmental entities, and private companies. The crossings are:

- El Paso, Texas – Ciudad Juárez, Chihuahua
- Fabens, Texas – Práxedis G. Guerrero, Chihuahua
- Fort Hancock, Texas – El Porvenir, Chihuahua
- Presidio, Texas – Ojinaga, Chihuahua
- Del Rio, Texas – Ciudad Acuña, Coahuila
- Eagle Pass, Texas – Piedras Negras, Coahuila
- Laredo, Texas – Nuevo Laredo, Tamaulipas
- Falcon Heights, Texas – Presa Falcón, Tamaulipas
- Roma, Texas – Ciudad Miguel Alemán, Tamaulipas
- Rio Grande City, Texas – Ciudad Camargo, Tamaulipas
- Hidalgo, Texas – Reynosa, Tamaulipas
- Progreso, Texas – Nuevo Progreso, Tamaulipas
- Los Indios, Texas – Lucio Blanco, Tamaulipas
- Brownsville, Texas – Matamoros, Tamaulipas

There are 27 vehicular border crossings between Texas and Mexico (Table 2-25). They are owned by the U.S. government, the State of Texas, local governmental entities, and private companies. Each bridge is unique allowing passage to a mix of private automobiles, commercial traffic, hazardous materials, and pedestrians. Each operates independently and has different hours. There is one additional bridge, the Donna International bridge located in Hidalgo County, not listed in Table 2-25, which is set to be open in 2010.

Table 2-25: Location and Ownership of International Bridges on Texas-Mexico Border

City	County	Bridge Name	Ownership
El Paso	El Paso	Ysleta-Zaragoza Bridge	City of El Paso
	El Paso	Good Neighbor Bridge	City of El Paso
	El Paso	Paso del Norte Bridge	City of El Paso
	El Paso	Bridge of the Americas (BOTA)	U.S. International Water and Boundary Commission
Fabens	El Paso	Fabens-Caseta Bridge	U.S. International Water and Boundary Commission
Fort Hancock	Hudspeth	Fort Hancock-El Provenir	U.S. International Water and Boundary Commission
Presidio	Presidio	Presidio Bridge	State of Texas
Del Rio	Val Verde	Del Río-Cuidad Acuña International Bridge	City of Del Rio
	Val Verde	Lake Amistad Dam	US and Mexico
Eagle Pass	Maverick	Camino Real International	City of Eagle Pass
	Maverick	Eagle Pass Bridge I	City of Eagle Pass
Laredo	Webb	Juárez-Lincoln Bridge	City of Laredo
	Webb	Gateway to the Americas Bridge	City of Laredo
	Webb	World Trade Bridge	City of Laredo
	Webb	Laredo-Colombia Solidarity Bridge	City of Laredo
Falcon Heights	Zapata	Lake Falcon	US and Mexico
Roma	Starr	Roma-Ciudad Miguel Alemán Bridge	Starr County
Rio Grande City	Starr	Starr-Camargo Bridge	Private
Los Ebanos	Hidalgo	Los Ebanos*	Private
Mission	Hidalgo	Anzalduas International Bridge	City of McAllen, Mission, Hidalgo, Granjeno
Hidalgo	Hidalgo	McAllen-Hidalgo-Reynosa Bridge	City of McAllen
Pharr	Hidalgo	Pharr-Reynosa International Bridge	City of Pharr
Progresso	Hidalgo	Progreso-Nuevo Progreso	Private
Los Indios	Cameron	Free Trade Bridge at Los Indios	Cameron County, City of San Benito, and City of Harlingen
Brownsville	Cameron	B&M Bridge at Brownsville	Private
	Cameron	Veterans International Bridge at Los Tomates	Cameron County and City of Brownsville
	Cameron	Gateway International Bridge	Cameron County

*Los Ebanos is a ferry

Table 2-26 and Figure 2-41 show total border crossings in 1995, 2000, and 2009. As shown in the table and figure, border crossings decreased in 2009 relative to 2000.

Table 2-26: Texas-Mexico Personal Vehicle, Truck, and Pedestrian Crossings, 1995–2000–2009[80]

Year	Vehicles	Buses	Pedestrians	Trucks	Trains
1995	40,632,864	82,776	15,293,043	1,892,545	8,268
2000	50,367,666	105,217	19,910,809	3,113,277	5,812
2009	35,585,141	102,111	18,847,287	2,854,881	6,406

Figure 2-41: Texas-Mexico Personal Vehicle, Truck, and Pedestrian Crossings, 1995–2000–2009[81]

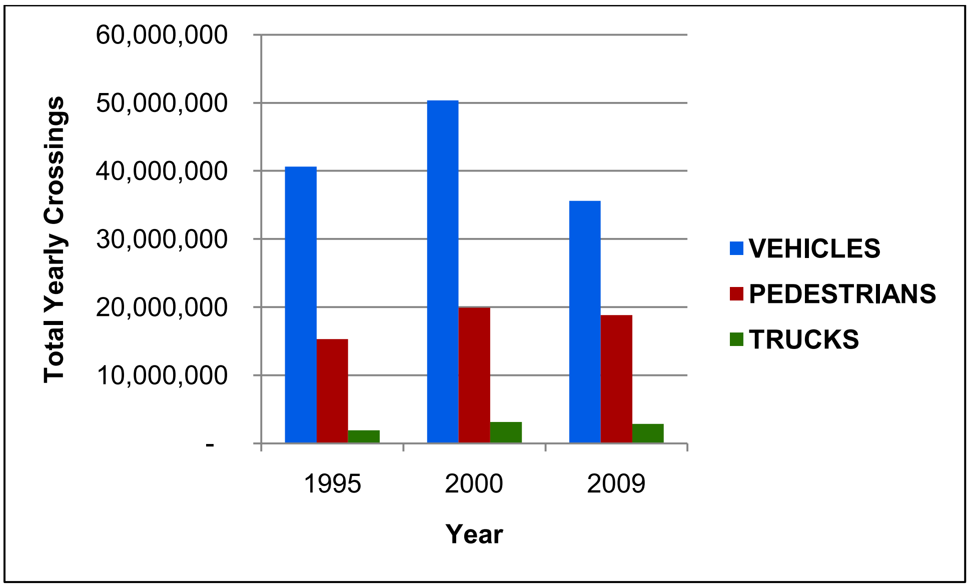


Figure 2-42 and Figure 2-43 show total border crossing in 1995, 2000, and 2009 for personal vehicles and trucks, respectively, by port region. As shown in the table and figure, border crossings decreased in 2009 relative to 2000.

80 Bureau of Transportation Statistics

81 Bureau of Transportation Statistics

Figure 2-42: Personal Vehicle Border Crossings by Port, 1995–2000–2009[82]

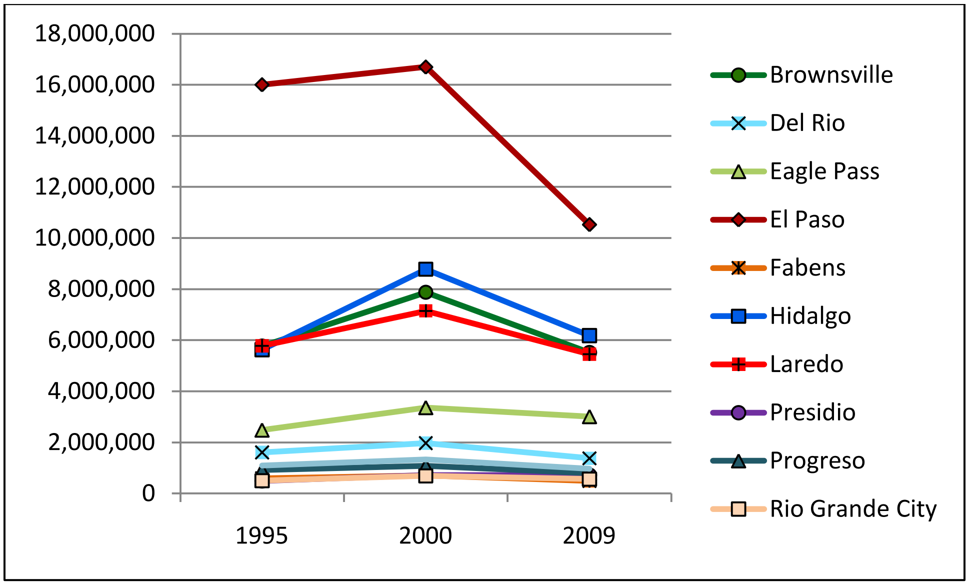
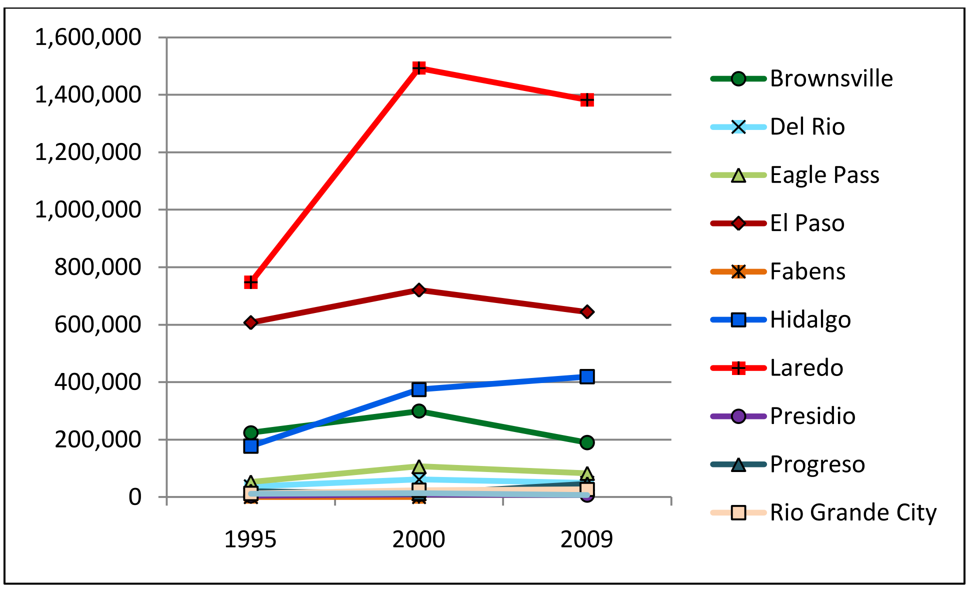


Figure 2-43: Truck Border Crossings by Port, 1995–2000–2009[83]



Future border crossings are difficult to predict and will vary based on economic, social, and political conditions.

82 U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data. Latest Available Data: December 2009 as of 6/1/2010

83 Ibid

2.11 Texas Aviation

Note: Detailed Information regarding the aviation system in Texas can be found in the Texas Airport System Plan (TASP) available at http://www.dot.state.tx.us/business/aviation/system_plan.htm

Texas is home to one of the most robust and active state airport systems in the nation. The state has 292 existing airports spanning in size from large hub commercial airports in heavily populated metropolitan areas to very small general aviation airports located in remote areas of the state. Due to the vast size of the state, the diverse activities of Texas businesses and residents, and the ever-present need to move people and goods efficiently, airports are critical to the state's economy.

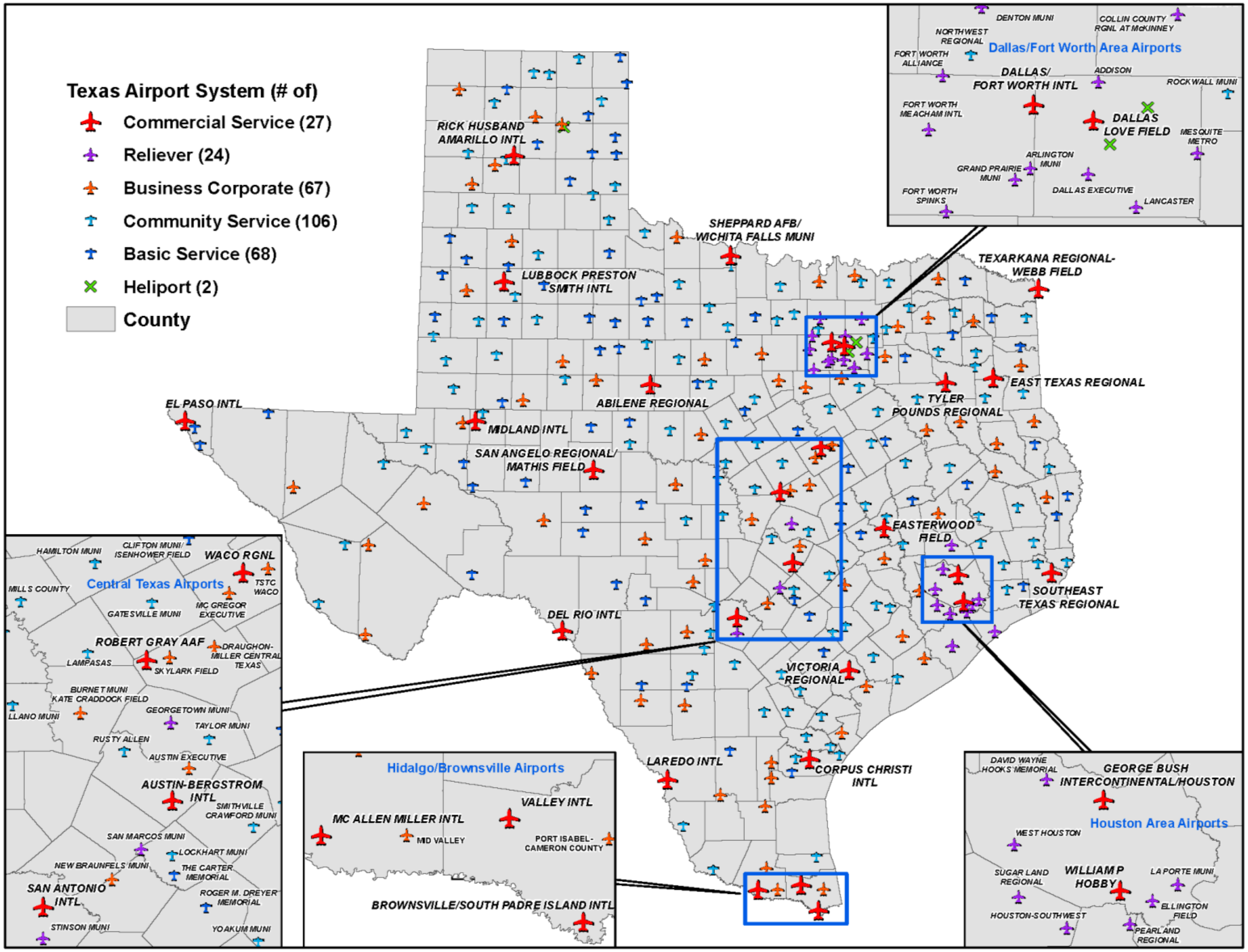
The importance of aviation to Texas is highlighted by the fact that three of the world's largest commercial airlines (American, Continental, and Southwest) maintain headquarters in the state and conduct major operations from Texas airports. These airlines have certainly contributed to the growth of air transportation within the state and, in fact, throughout the world. The growing demand for air transportation in turn, has led to the continued development of the Texas' commercial and general aviation (GA) airports.

While commercial aviation may be the most visible part of the Texas airport system, it is important to note that general aviation airports account for more than 90 percent of the state's airports. There are 27 existing commercial service airports and 265 general aviation airports in Texas. As expected, there are large clusters of airports close to population centers in Dallas-Fort Worth and Houston. While airports of all types are generally well dispersed throughout the state, there are notably fewer airports in West Texas given the lower population densities in that region.

As noted above, the state's airports differ widely in size and function. For instance, American Airlines and Continental Airlines operate some of the world's largest hubs at DFW and IAH, respectively. These airports handle millions of passengers and thousands of cargo tons each year via multiple terminals and runways. On the other hand, the primary function of many general aviation airports in Texas is to increase system capacity by providing air access to widely dispersed economic activity centers of the state and relieving air traffic congestion in and around major metropolitan areas.

Figure-44 shows airports in Texas.

Figure 2-44: Texas Airports



2.11.1 Methodology Forecast - Activity Levels: Commercial Aviation and General Aviation

In reporting forecasts for Texas aviation activity, a variety of sources were consulted. These sources included the 2010 TASP, the Federal Aviation Administration (FAA) Terminal Area Forecast (TAF)[84] FY 2009–2030, the FAA Aerospace Forecast – FY 2009–2025, and commercial airport master plans.

The forecasts contained in the TASP are themselves sourced to the two FAA forecasts, although in the case of the Terminal Area Forecast, TASP utilized the 2008 version of the report, which was the latest available at the time.

The commercial airport master plans contain independent forecasts and were used to verify FAA forecast levels. While differences between the forecasts are expected due to varying dates of production and differing methodologies, the FAA and master plan forecasts were compared in terms of order of magnitude as well as overall growth trends. For commercial airports, the forecasts go out to 2030, which is very close to the 2035 forecasts required for this report. For purposes of this study, activity estimates to 2035 were extrapolated from the existing forecast data using the average annual growth rates for each airport between 2010 and 2030. For GA airports forecasts are reported as presented in the TASP.

2.11.2 Commercial Aviation in Texas

The 27 commercial airports in Texas offer scheduled service by major, national, or regional airlines. Each of these airports offers flights to domestic points in the United States. Several Texas airports also have flights to international destinations, some of which are operated by foreign airlines. Table 2-27 lists the locations and names of Texas' commercial airports.

The runway lengths of the 27 commercial airports exceed 5,000 feet and, in the case of airports handling wide body aircraft, can exceed 12,000 feet. The Texas commercial airports also have full parallel taxiways and high intensity runway lighting. These airports are all capable of handling heavy transport aircraft.

The commercial aviation airports are typically owned and operated by the municipalities or the airport authorities of their respective communities. As the owners, these municipalities and airport authorities are responsible for developing and maintaining the facilities, roadways, equipment, and other infrastructure on the airport property.

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[84] FAA, Terminal Area Forecasts FY 2009–2030, Available at FAA Terminal Area Forecast 2009, Available at http://www.faa.gov/data_research/aviation/taf_reports/

Table 2-27: List of Commercial Airports in Texas

Associated City	Airport Name
Abilene	Abilene Regional
Amarillo	Rick Husband Amarillo International
Austin	Austin-Bergstrom International
Beaumont-Port Arthur	Southeast Texas Regional
Brownsville	Brownsville/South Padre Island International
College Station	Easterwood Field
Corpus Christi	Corpus Christi International
Dallas	Dallas Love Field
Dallas-Fort Worth	Dallas-Fort Worth International
Del Rio	Del Rio International
El Paso	El Paso International
Harlingen	Valley International
Houston	William P. Hobby
Houston	George Bush Intercontinental/Houston
Killeen	Robert Gray Army Air Field
Laredo	Laredo International
Longview	East Texas Regional
Lubbock	Lubbock Preston Smith International
McAllen	McAllen Miller International
Midland	Midland International
San Angelo	San Angelo Regional/Mathis Field
San Antonio	San Antonio International
Texarkana	Texarkana Regional
Tyler	Tyler Pounds Regional
Victoria	Victoria Regional
Waco	Waco Regional
Wichita Falls	Sheppard Air Force Base (AFB)/Wichita Falls Municipal

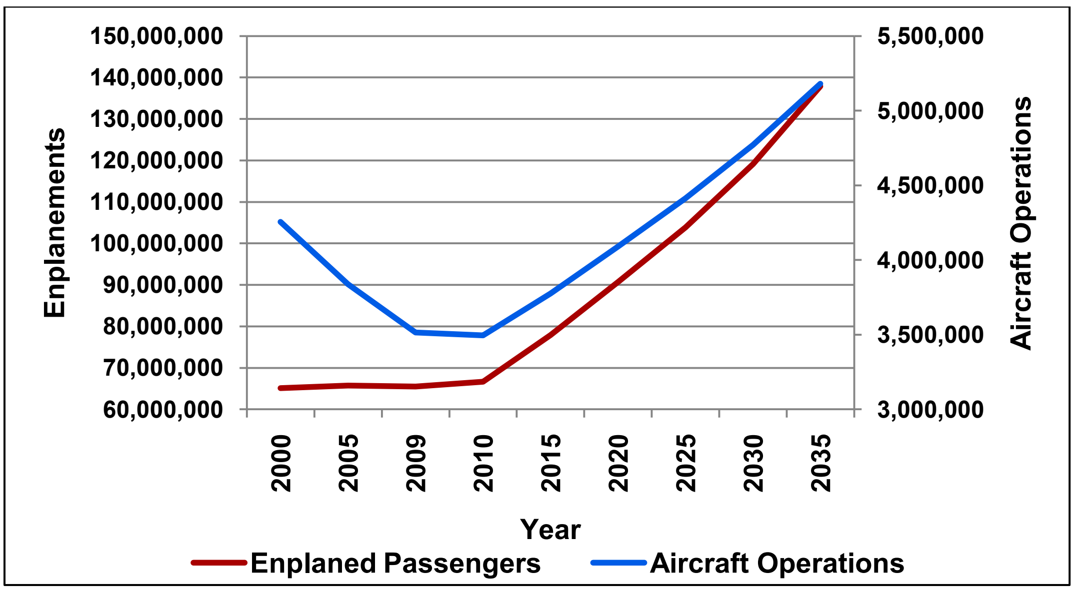
2.11.2.1 Historical and Forecast Activity Levels at Commercial Aviation Airports

Table 2-28 and Figure 2-45 present historic trends and forecasts of aircraft operations and enplanements for commercial airports in Texas and are described below.

Table 2-28: Commercial Airports Historic and Forecast Aircraft Operations and Enplanements[85]

Year	Aircraft Operations	Enplaned Passengers
2000	4,256,364	65,146,667
2005	3,838,117	65,749,646
2009	3,514,974	65,476,384
2010	3,494,706	66,643,944
2015	3,775,722	77,892,456
2020	4,090,693	90,676,709
2025	4,413,526	103,856,306
2030	4,772,312	119,183,428
2035	5,180,910	137,898,637
Total Growth 2000–2035	**924,546**	**72,751,970**
% Change	**21.7**	**111.7**
Compound Annual Growth Rate 2000–2035	**0.6%**	**3.2%**

Figure 2-45: Commercial Airports Historic and Forecast Aircraft Operations and Enplanements – Trends[86]



85 FAA, Terminal Area Forecasts FY 2009–2030, Available at FAA Terminal Area Forecast 2009, Available at http://www.faa.gov/data_research/aviation/taf_reports/; 2035 forecasts are the average annual growth rate between 2010 and 2030 extrapolated to 2035

86 FAA, Terminal Area Forecasts FY 2009–2030, Available at FAA Terminal Area Forecast 2009, Available at http://www.faa.gov/data_research/aviation/taf_reports/; 2035 forecasts are the average annual growth rate between 2010 and 2030 extrapolated to 2035

Aircraft operations at commercial airports have been on a noticeable decline over the past 10 years. Operations peaked at 4.1 million operations in 2000 and by 2009 had fallen below 3.4 million equating to an 18 percent drop.

There are many reasons for the decline in commercial aircraft operations. In 2000, business travel across the entire airline industry was at an all time high. As the economy faltered after 2000, it was somewhat natural for a slowdown in travel and, in turn aircraft operations, to occur. Then, the events of 9/11 led to even further cuts in aviation activity. In the years after 9/11, many airlines downsized their fleets and cut capacity to match lower travel demand. Several airlines also implemented strategies whereby fewer small aircraft were utilized in favor of larger aircraft with more seating capacity. These strategies led to reductions in aircraft operations as more seats could be flown with fewer operations. Finally, the onset of the global recession in 2008 led airlines to reduce capacity further by removing aircraft from their fleets. It is important to note, that the operational trends experienced by Texas' commercial airports over the past 10 years are not unique to Texas. These types of trends have been felt by airports across the United States and are explained by economic events and airline strategies.

Interestingly, while aircraft operations at Texas commercial airports have been falling since 2000, passenger enplanements have exceeded the levels of 2000 and experienced a new peak in 2007. In 2000, Texas commercial airport enplanements reached 65 million then fell back to 57 million in 2002 and 2003. By 2007, growth in enplanements reached 71 million passengers before again declining to 65 million in 2009.

As with aircraft operations, the changes in Texas commercial airport passenger enplanements can largely be explained by economic events and airline strategies. In terms of enplanements, the effects of the high business travel environment of 2000, the events of 9/11 and the beginning of recession in 2008 are all apparent in the historical Texas airport data. However, primarily because of the presence of the American Airlines hub at DFW and the Continental Airlines hub at IAH, enplanements increased significantly at Texas commercial airports. As airline strategies changed to match market demand, more passengers flowed through hub airports including DFW and IAH. Again, these passengers likely flew into and out of the hubs on larger aircraft with higher seat capacity. Thus, it is logical that at Texas' commercial airports over the past 10 years, aircraft operations have fallen significantly even while passenger enplanements have peaked in recent years.

The forecast of aircraft operations at Texas commercial airports shows a net increase of 1.7 million operations to 5.2 million between 2010 and 2035. This equates to total growth of over 48 percent with an average annual growth rate of 1.6 percent during the forecast period.

This forecast growth compares to an 18 percent decline in aircraft operations from 2000 to 2009. Of course, these past 10 years include some of the most extraordinary (and negative) events in commercial aviation history including the events of 9/11, record high fuel prices, and the global recession starting in 2008. With events such as these, the airline industry has retrenched and in doing so has generally cut capacity.

These capacity cuts have occurred disproportionately with smaller aircraft where the cost of fuel is spread out over a much smaller passenger base than with larger aircraft. The net effect has been negative aircraft operations growth at most airports worldwide. In this context, Texas airports were not unique and the declines in operations at the state's commercial airports should not be seen as evidence of problems at the local level.

Looking forward, the growth outlook through 2035 shows a return to more normal patterns where the business cycle turns the corner in 2010 and airline operations show modest year-over-year growth. During the forecast period, all Texas commercial airports show gains in aircraft operations. Notably, the two largest Texas airports, DFW and IAH, will account for approximately 40 percent of total growth in aircraft operations among commercial airports from 2010 to 2035.

The forecast of enplaned passengers at Texas commercial airports shows a net increase of 71.3 million enplanements from 2010 to 2035 to 137.9 million. This equates to a doubling of enplanements with an average annual growth rate of 3.0 percent during the forecast period.

2.11.3 General Aviation in Texas

The 265 GA airports in Texas do not offer scheduled air services and can function in a variety of ways including Reliever, GA Business/Corporate, GA Community Service, and GA Basic Service. A summary of the numbers of general aviation airports and their locations in the state are shown in Table 2-29.

The runway lengths of the Reliever and the GA Business/Corporate airports are typically in excess of 5,000 feet with the ability to handle business jet aircraft. The GA Community Service airports have runways lengths of at least 4,000 feet while the GA Basic service runways are typically at least 3,200 feet long. GA Community Service airports must be able to handle light twin-engine aircraft, turboprops, and light business jets. GA Basic Service airports are designed to accommodate light twin-engine aircraft as well as single piston airplanes. All GA level airports must have medium intensity runway lighting.

Table 2-29: General Aviation Airports in Texas[87]

Airport Service Level/Role	Number of Airports in Texas Airport System Plan
Reliever	24
Business/Corporate	67
Community Service	106
Basic Service	68
Total	**265**

2.11.3.1 Historical and Forecast Activity Levels General Aviation Airports

Table 2-30 and Figure 2-46 present historic trends and forecasts of aircraft operations for GA airports in Texas and are described below.

Table 2-30: General Aviation Airports Historic and Forecast Aircraft Operations[88]

Year	Single-Engine Aircraft	Other Aircraft#	Total
2000	3,949,824	1,083,901	5,033,725
2001	3,802,511	1,031,891	4,834,401
2002	3,895,825	1,067,651	4,963,477
2003	3,807,044	1,055,045	4,862,090
2004	3,635,305	1,090,172	4,725,477
2005	3,421,881	1,060,637	4,482,518
2006	3,436,412	1,097,223	4,533,635
2007	3,378,869	1,117,436	4,496,305
2008*	-	-	-
2009*	-	-	-
2010	3,240,039	1,184,393	4,424,432
2015	3,225,744	1,327,560	4,553,304
2020	3,316,682	1,477,947	4,794,629
2025	3,452,594	1,631,873	5,084,467
Total Growth 2000–2025	**(497,231)**	**547,973**	**50,742**
% Change 2000–2025	**-12.6**	**50.6**	**1.0**

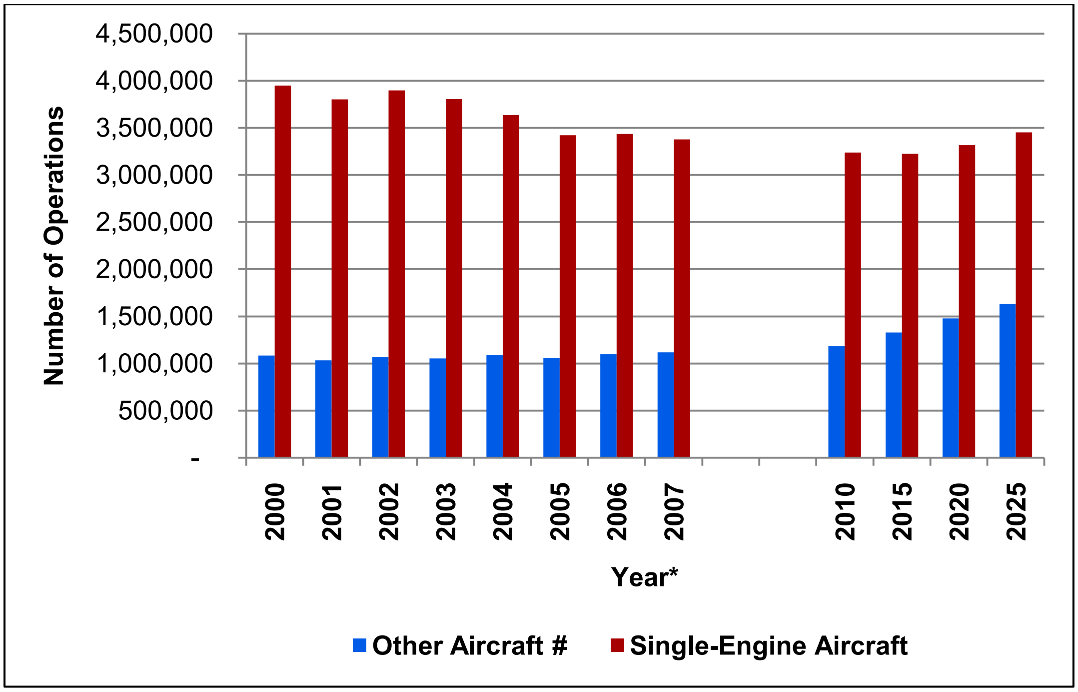
* TASP only includes forecasts to 2025 and excludes 2008 and 2009

Includes: multi-engine, turboprop, turbojet, and rotary aircraft

87 TxDOT, 2010 TASP, Available at http://www.dot.state.tx.us/business/aviation/system_plan.htm

88 TxDOT, 2010 TASP, Available at http://www.dot.state.tx.us/business/aviation/system_plan.htm

Figure 2-46: General Aviation Airports Historic and Forecast Aircraft Operations – Trends[89]



* TASP only includes forecasts to 2025 and excludes 2008 and 2009

Includes: multi-engine, turboprop, turbojet, and rotary aircraft

The forecast of Texas GA aircraft operations shows a net decrease of 50,742 from 2000 to 2025. This equates to total growth of over 1 percent. However, this decrease is due to declines in single-engine aircraft. For other types of aircraft (which include multi-engine, turboprop, turbojet, and rotary aircraft) operations are forecasted to increase by 547,973 from 2000 to 2025 for an increase of over 50 percent.

2.12 Texas Freight Demand

The movement of freight to, from, and within the state is integral to Texas' economy. This movement brings food and goods to the state's population, as well as supporting the movement of raw materials (for example crude oil) and refined materials (for example gasoline) to the nation and world. As shown in Table 2-31 and Figure 2-47, according to FHWA's Freight Analysis Framework^2 database (FAF^2), in 2008[90] the total amount of freight shipped to, from, and within Texas was greater than 2.389 billion tons with a combined value of greater than $1.742 trillion. By 2035, the total tons and value

[89] Ibid

[90] Note: The historic base year for FAF^2 is 2002. Freight data for 2008 presented in this section is an estimate prepared by FHWA. The methodology for this estimate can be found at: http://ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2provisional_2008/rpt/chap2.htm#23

of goods shipped by freight is expected to increase by approximately 82 percent and 166 percent, respectively. It should be noted that each mode presented in Table 2-29 represents the mode used prior to the good arriving at a destination and not all legs of the movement.

Table 2-31: Texas Freight Summary by Mode, 2008–2035[91]

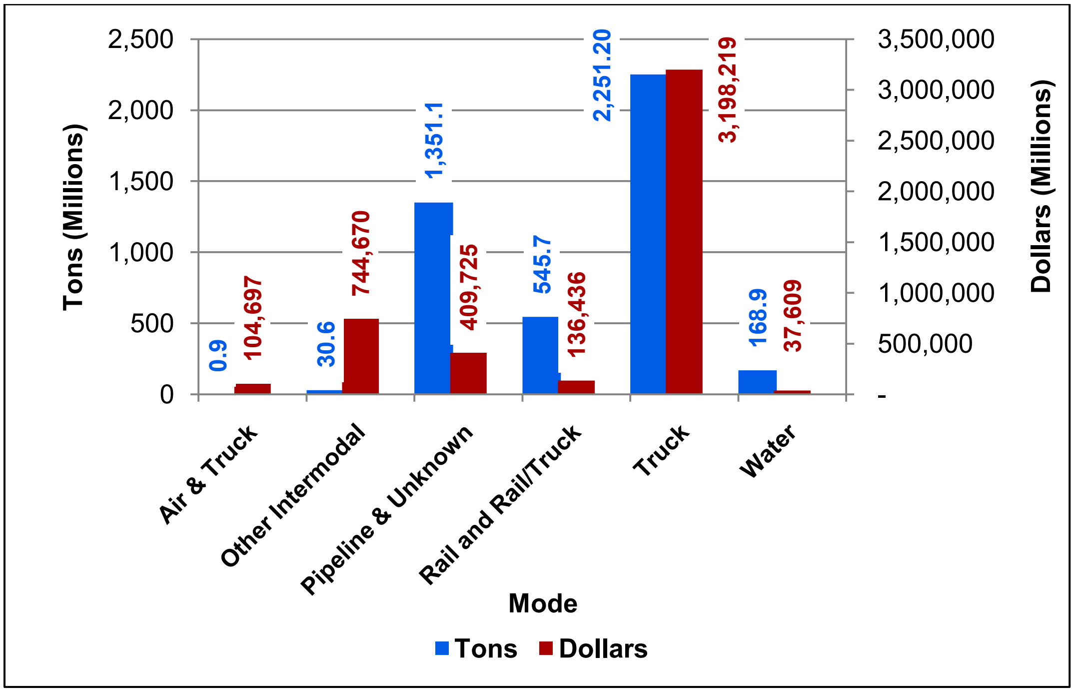
Mode	2008#	% of Total	2035	% of Total	% Change
Tons (millions)					
Air, Air & Truck	0.8	0.03	0.9	0.02	**12.50**
Other Intermodal	11.2	0.47	30.6	0.70	**173.21**
Pipeline & Unknown*	796.2	33.31	1,351.1	31.08	**69.69**
Rail and Rail/Truck	307.7	12.88	545.7	12.55	**77.35**
Truck	1,177.3	49.27	2,251.20	51.77	**91.22**
Water	96.5	4.04	168.9	3.88	**75.03**
Total	**2,389.7**	**100.00**	**4,348.4**	**100.00**	**81.96**
Dollars# (millions)					
Air, Air & Truck	73,102	4.19	104,697	2.25	**43.22**
Other Intermodal	85,816	4.93	744,670	16.07	**767.75**
Pipeline & Unknown*	318,339	18.26	409,725	8.86	**28.71**
Rail and Rail/Truck	96,605	5.54	136,436	2.95	**41.23**
Truck	1,157,575	66.43	3,198,219	69.06	**176.29**
Water	11,197	0.63	37,609	0.81	**235.88**
Total	**1,742,634**	**100.00**	**4,631,356**	**100.00**	**165.77**

*FHWA, regarding Pipeline and Unknown Shipments: "Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain."

#2002 Dollars (based on the earliest reported FAF^2 year, which is 2002)

[91] FAF^2 Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

Figure 2-47: Forecast 2035 - Texas Freight by Mode, Tons and Dollars[92]



2.12.1 Texas Forecast Truck Freight Demand

Trucks will play an increasingly dominant role in the movement of freight to, from, and within Texas. As shown in Table 2-32, according to statistics published as part of the FHWA's FAF^2, it is expected that from 2008 to 2035 the value of goods shipped by truck within, from, and to the state will grow by 176 percent. By 2035 the weight of all freight originating in the state shipped by trucks will increase to 49 percent and similarly the weight of all freight destined to the state shipped by trucks will increase to 36 percent. By value in 2035, trucks are expected to handle 80, 63, and 63 percent of goods moved within, from, and to Texas, respectively. This equates to approximately 2.251 billion tons of goods with a combined value of more than $3.198 trillion.

[92] FAF^2 Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

Table 2-32: Truck Tons/Dollars Within, From, To State, 2008–2035[93]

Year	Summary (Millions)	Within State	From State	To State	Total
Tons (millions)					
2008	Trucks Alone	843	167	168	1,177
	All Other Modes*	613	243	356	1,212
	Total	**1,456**	**410**	**524**	**2,390**
	Trucks Alone % of Total	**58**	**41**	**32**	**49**
2035	Trucks Alone	1,538	361	352	2,251
	All Other Modes*	1,104	378	615	2,097
	Total	**2,641**	**740**	**967**	**4,348**
	Trucks Alone % of Total	**58**	**49**	**36**	**52**
Dollars (millions)					
2008	Trucks Alone	562,946	254,504	340,126	1,157,575
	All Other Modes*	194,820	190,900	199,339	585,060
	Total	**757,766**	**445,404**	**539,465**	**1,742,635**
	Trucks Alone % of Total	**74**	**57**	**63**	**66**
2035	Trucks Alone	1,275,690	1,092,220	830,309	3,198,219
	All Other Modes*	314,491	638,104	480,542	1,433,137
	Total	**1,590,181**	**1,730,324**	**1,310,851**	**4,631,356**
	Trucks Alone % of Total	**80**	**63**	**63**	**69**
Trucks % Change 2008–2035 Tons		**82**	**117**	**110**	**91**
Trucks % Change 2008–2035 Dollars		**127**	**329**	**144**	**176**

*Note: Includes Multi-Modal Truck Movements

#2002 Dollars (based on the earliest reported FAF^2 year, which is 2002)

As shown in Table 2-33, in 2035 trucks will remain a vital component in the shipment of most goods. Similarly to 2008, in terms of gross tonnage, by 2035 trucks are expected to carry the majority for most commodities with the exception of raw materials and chemical/petroleum commodities. Additionally, in terms of dollars, in 2035 trucks are expected to carry the majority for all commodities except for raw materials.

93 FAF^2 Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

Table 2-33: Truck Tons/Dollars by Commodity, 2035[94]

Commodity Group	Tons (Millions)				Dollars (Millions)[#]			
	Trucks	All Other Modes*	Total	Trucks % of Total	Trucks	All Other Modes*	Total	Trucks % of Total
Raw Materials	384	1,251	**1,635**	**23**	50,977	223,035	**274,012**	**19**
Chemicals/ Petroleum	385	586	**971**	**40**	394,134	224,004	**618,139**	**64**
Building Materials	247	43	**289**	**85**	99,728	19,925	**119,653**	**83**
Food	247	116	**363**	**68**	160,397	18,454	**178,851**	**90**
Miscellaneous Mixed	359	10	**369**	**97**	527,027	120,448	**647,475**	**81**
Agriculture	96	8	**104**	**93**	45,472	2,950	**48,422**	**94**
Wood	71	14	**86**	**83**	102,961	11,814	**114,776**	**90**
Machinery	332	24	**356**	**93**	1,648,427	751,751	**2,400,178**	**69**
Other/ Unclassified Cargo	96	13	**110**	**88**	77,140	29,980	**107,120**	**72**
Textiles	34	33	**66**	**51**	91,954	30,775	**122,730**	**75**
Total	**2,251**	**2,097**	**4,348**	**52**	**3,198,219**	**1,433,137**	**4,631,356**	**69**

[#]2002 Dollars (based on the earliest reported FAF^2 year, which is 2002)

2.13 The Texas Freight Rail System

Note: Detailed Information regarding the freight rail system in Texas can be found in the Draft Texas Rail Plan available at http://www.txdot.gov/public_involvement/rail_plan/trp.htm

According to the Association of American Railroads (AAR), 44 railroads operate more 10,743 miles of track in Texas.[95] These railroads employ more than 17,000 people in the state, and in 2008,[96] 384.4 million tons of freight originated, terminated, or passed through Texas.

[94] FAF^2 Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

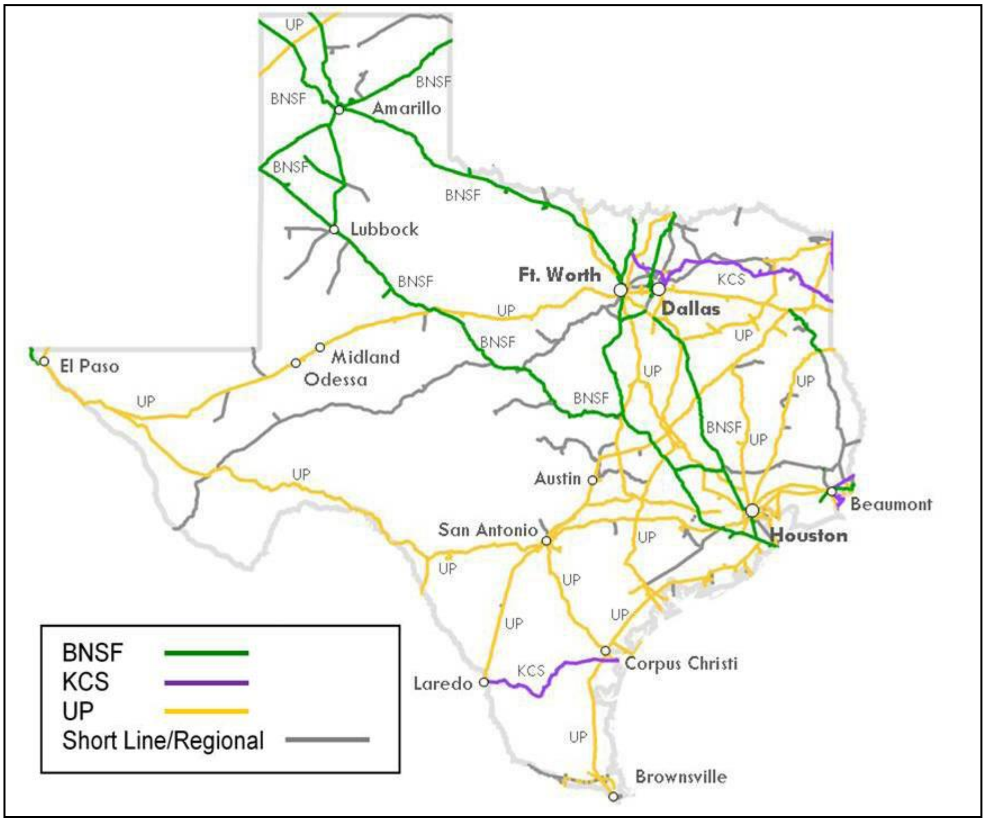
[95] "Freight Railroads in Texas: 2008," Association of American Railroads, 2008. Available at http://www.aar.org/~/media/AAR/InCongress_RailroadsStates/Texas.ashx

[96] Note: The historic base year for FAF^2 is 2002. Freight data for 2008 presented in this section is an estimate prepared by FHWA. The methodology for this estimate can be found at: http://ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2provisional_2008/rpt/chap2.htm#23

Three Class I railroads,[97] the BNSF, Kansas City Southern (KCF), and Union Pacific (UPRR) account for the majority of rail miles in the state. Additionally there are 2 regional railroads, Texas Northeastern Railroad and Texas Pacifico, and 39 local, switching, and terminal railroads in Texas.

Figure 2-48 illustrates the railroad mileage and locations within Texas.

Figure 2-48: The Texas Freight Rail Network



Short lines often serve a single customer or a small set of customers and haul a very limited set of commodities. Farm products and aggregate are among the most popular commodities moved by short line railroads. Current estimates suggest that as much as 90 percent of all short line moves involve an interchange with a Class I railroad.

The freight rail system is used predominantly to haul low-value, high-volume commodities over long distances. Energy products, aggregates, and chemicals are popular rail commodities, partly due to their high-volume/low-value in combination with

[97] Class I Railroad – A railroad with 2008 operating revenues of at least $401.4 million. Regional Railroad – A non-Class I line-haul railroad operating 350 or more miles of road and/or with revenues of at least $40 million. Local Railroad – A railroad which is neither a Class I nor a Regional Railroad and is engaged primarily in line-haul service. Switching & Terminal Railroad – A non-Class I railroad engaged primarily in switching and/or terminal services for other railroads. Railroads operating are as of December 31, 2008. Some mileage figures may be estimated.

delivery schedules that do not require precise delivery schedules. Additionally, intermodal freight rail is popular among shippers of bulk, nonperishable consumer goods. Containerized goods imported from the Asia-Pacific region pass through ports on the West Coast of the U.S., are placed on trains and moved eastward. These containers are often then placed on trucks for movement to deconsolidation facilities, where individual shipments are separated and reloaded into trucks for delivery to retail outlets throughout the state.

The Railroad Division within TxDOT maintains responsibility to inspect the network for safety compliance. According to the Rail Division's website, its responsibilities are:

> "…to improve highway-rail grade crossings by partnering with railroads to install and maintain crossing signals and gates, improve crossing surfaces on state highways and consolidate crossings where possible. The division has the authority to implement 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. The division participates in the state rail safety participation program in conjunction with the Federal Railroad Administration. State rail safety inspectors coordinate investigative activities with federal authorities in the areas of hazardous materials, motive power and equipment, operating practices, signal and train control and track structures."

2.13.1 Freight Rail Issues

The Texas Rail Plan indicates that between 1953 and 2005 Texas lost approximately 39 percent of its total track miles.[98] The plan highlights these critical issues:[99]

- **Freight Bottlenecks** – Rail operational bottlenecks, such as Tower 55 in Fort Worth, are hindering efficient movement of freight and passenger trains resulting in heavy congestion that slows commerce.
- **Grade Crossings** – Safety at rail grade crossings is major concern for the Houston greater area and several crossings have been identified as being "hot spots" for auto-train collisions. Conflicts between trains and trucks at grade crossing on the railroad mainlines are creating further reductions in mobility of trucks that serve the Port of Brownsville. The ports of Texas City and Lavaca also have significant grade crossing issues.

[98] "Draft Texas Rail Plan" TxDOT, 2010. Available at http://www.txdot.gov/public_involvement/rail_plan/trp.htm

[99] "Draft Texas Rail Plan" TxDOT, 2010, Pages 3-43,3-60, and 3-61, Available at http://www.txdot.gov/public_involvement/rail_plan/trp.htm

- **Rail Yard Capacity** – Increasing amounts of freight are straining capacity at rail yards in many parts of the state. For instance, over 95 percent of all freight trains moving in the Houston region must stop to pick up or drop off cars. Yard capacity is also a concern at the Union Pacific railroad interchange yard at the Port of Beaumont.

- **Border Rail Operational Issues** – Limited rail infrastructure and community impacts at border crossings have contributed to delays in crossing trains between the U.S. and Mexico.

- **Sidings** – Longer and heavier trains also are being used by the railroads to maximize existing capacity and improve efficiency. For example, the BNSF prefers that all their international intermodal shipments be handled in 40-foot well cars and all their inter-modal trains are 8,000 feet in length.

2.13.2 Freight Rail Usage Trends in Texas

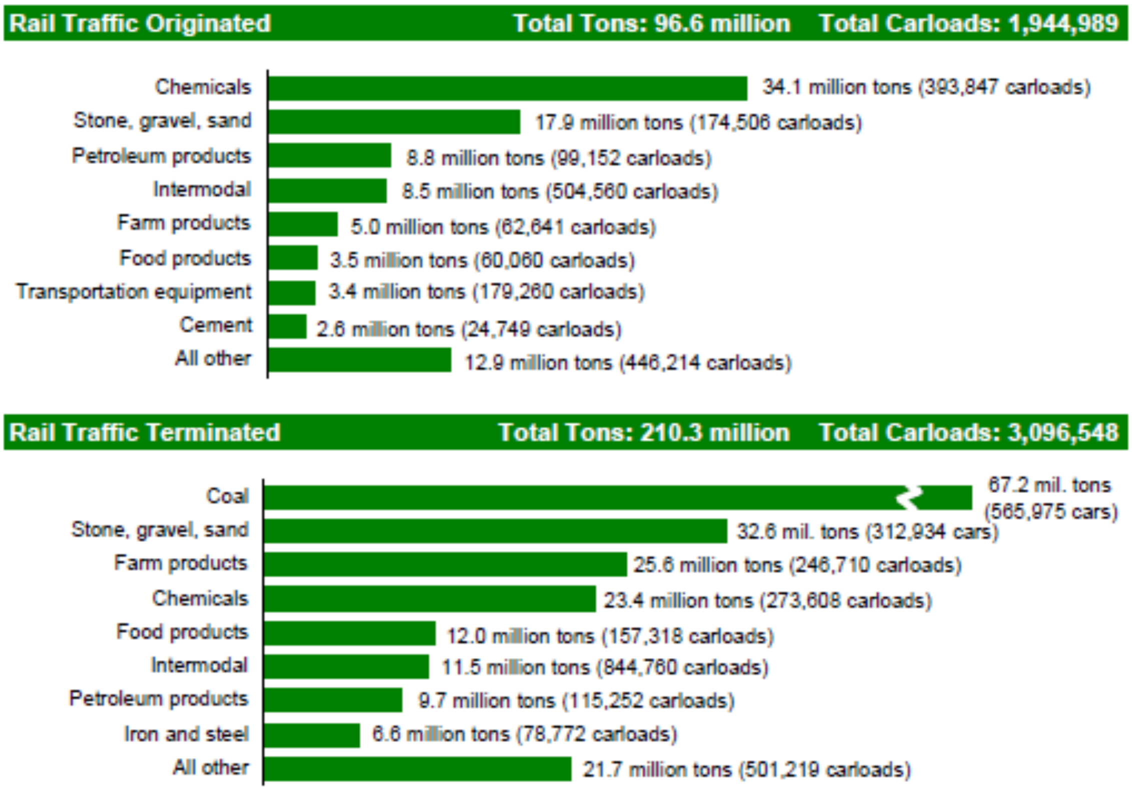
The 2007 Commodity Flow Survey (CFS) conducted by the U.S. Census Bureau shows increases in key indicators regarding the use of freight rail within the state since the 2002 CFS. According to the CFS the overall value of goods shipped by rail from the State more than doubled during the 5-year span to more than $76 billion. During the same period, the weight of goods increased by 5 percent to 153 million tons, and the average length of haul via railroad decreased by 5 percent, as well, to 724 miles. Rail handles 11.4 percent of the weight and 6.5 percent of the value of goods originating in Texas. These figures do not include shipments where rail was one component of an intermodal move. With the inclusion of intermodal movements (truck and rail, rail and water), the total weight of goods shipped by rail originating in Texas climbs to 185 million tons.[100]

These figures differ somewhat from those compiled by the AAR for 2008. According to the AAR, a total of 384.4 million tons of freight originated, terminated, or passed through Texas. Of this total, 96.6 million tons of goods originated in Texas, while another 210 million tons terminated in the state. Because these datasets originate from different sources, it is not recommended that they be compared directly to assess yearly changes from 2007 to 2008.

The AAR also offers statistics regarding the commodities moved by rail. Figure 2-49 shows these data.

[100] U.S. Census, Commodity Flow Survey, 2007, Texas, Available at: http://www.bts.gov/publications/commodity_flow_survey/2007/states/texas/index.html

Figure 2-49: 2008 Rail Movement Commodity Summary[101]



According to data compiled by the Texas Center for Border Economic and Enterprise Development (Table 2-34), rail border crossings into Texas from Mexico and out of Texas into Mexico decreased significantly from 2008 to 2009. These figures, which are illustrated in the tables below, reflect the effects of the global economic downturn.

Table 2-34: Annual Rail Crossings, 2008–2009[102]

Gateway	Northbound		North-bound Total	Southbound		South-bound Total
	2008	2009		2008	2009	
Brownsville	80,147	36,134	116,281	72,609	40,981	113,590
Eagle Pass	137,693	145,527	283,220	131,773	144,284	276,057
El Paso	168,361	102,240	270,601	-	-	-
Laredo	257,875	202,862	460,737	263,048	200,720	463,768
Total	644,076	486,763	1,130,839	467,430	385,985	853,415

101 "Freight Railroads in Texas: 2008," Association of American Railroads, 2008. Available at http://www.aar.org/~/media/AAR/InCongress_RailroadsStates/Texas.ashx

102 Texas Center for Border Economic and Enterprise Development, Border Trade Data, Rail Crossings, Available at http://texascenter.tamiu.edu/texcen_services/rail_crossings.asp?framepg=datarail

2.13.3 Texas Forecast Freight Rail Demand

As shown in Table 2-35, according to statistics published as part of the FHWA's FAF^2, it is expected that from 2008 to 2035 the value of goods shipped by rail within, from, and to the state will grow by 77 percent. By value in 2035, rail is expected to decrease from 2008 and handle only 1, 3, and 6 percent of the value of goods moved within, from, and to Texas, respectively. This equates to approximately 546 million tons of goods with a combined value of more than $136 billion (as shown in Table 2-35).

Table 2-35: Rail and Rail/Truck Tons/Dollars Within, From, To State, 2008–2035[103]

Year	Summary (Millions)	Within State	From State	To State	Total
Tons (Millions)					
2008	Rail and Rail/Truck	113	59	136	308
	All Other Modes*	1,342	351	388	2,082
	Total	**1,456**	**410**	**524**	**2,390**
	Rail and Rail/Truck % of Total	**8**	**14**	**26**	**13**
2035	Rail and Rail/Truck	194	86	266	546
	All Other Modes*	2,448	653	702	3,803
	Total	2,641	740	967	4,348
	Rail and Rail/Truck % of Total	**7**	**12**	**27**	**13**
Dollars (Millions)*					
2008	Rail and Rail/Truck	18,597	39,751	38,257	96,605
	All Other Modes*	739,169	405,653	501,208	1,646,029
	Total	**757,766**	**445,404**	**539,465**	**1,742,635**
	Rail and Rail/Truck % of Total	**2**	**9**	**7**	**6**
2035	Rail and Rail/Truck	17,947	44,152	74,337	136,436
	All Other Modes*	1,572,234	1,686,171	1,236,514	4,494,920
	Total	1,590,181	1,730,324	1,310,851	4,631,356
	Rail and Rail/Truck % of Total	**1**	**3**	**6**	**3**
Rail and Rail/Truck % Change Tons		**71**	**47**	**96**	**77**
Rail and Rail/Truck % Change Dollars		**–3**	**11**	**94**	**41**

*2002 Dollars (based on the earliest reported FAF^2 year, which is 2002)

As shown in Table 2-36, rail, in comparison to all other modes, will continue to play a lesser role in the shipment of most goods in terms of both tonnage and value.

[103] FAF^{2}Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

Table 2-36: Rail and Rail/Truck Tons/Dollars by Commodity 2035[104]

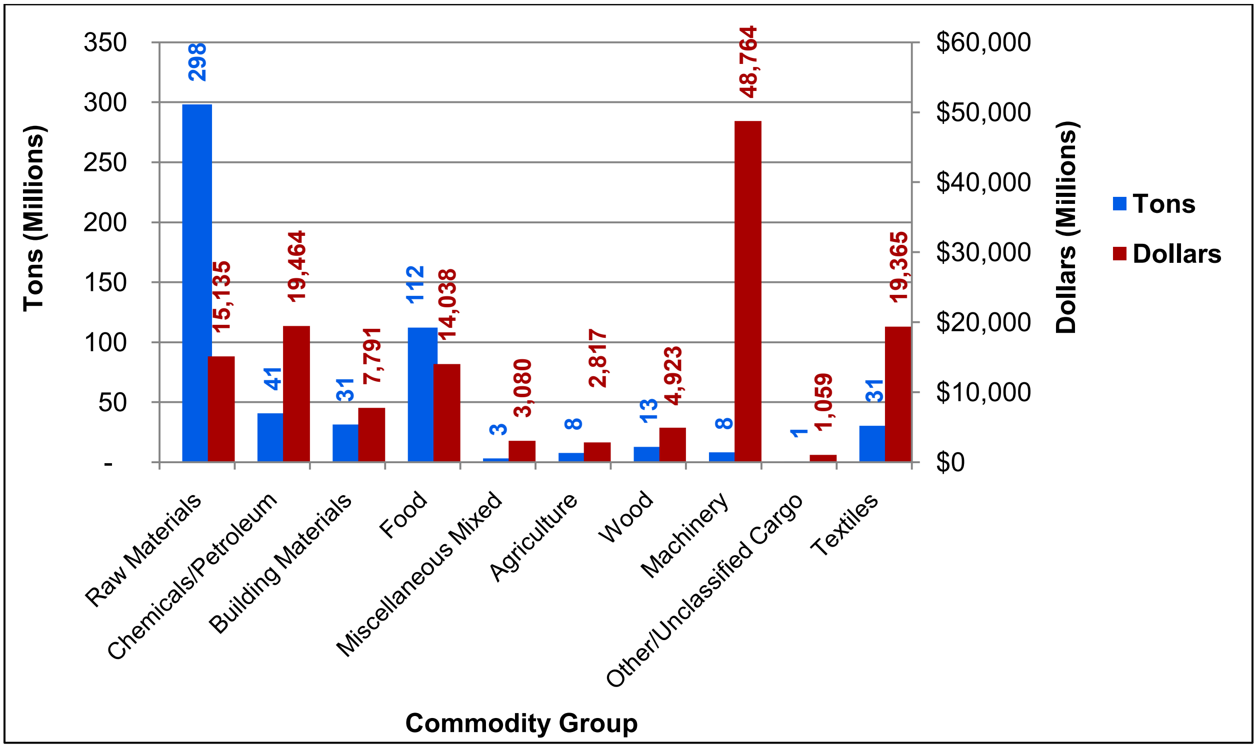
Commodity Group	Tons (Millions)				Dollars (Millions)*			
	Rail	All Other Modes	Total	Rail % of Commodity	Rail	All Other Modes	Total	Rail % of Commodity
Raw Materials	298	1,336	**1,635**	**18**	15,135	258,878	**274,012**	**6**
Chemicals/ Petroleum	41	930	**971**	**4**	19,464	598,675	**618,139**	**3**
Building Materials	31	258	**289**	**11**	7,791	111,862	**119,653**	**7**
Food	112	251	**363**	**31**	14,038	164,813	**178,851**	**8**
Miscellaneous Mixed	3	366	**369**	**1**	3,080	644,395	**647,475**	**<1**
Agriculture	8	96	**104**	**7**	2,817	45,605	**48,422**	**6**
Wood	13	73	**86**	**15**	4,923	109,852	**114,776**	**4**
Machinery	8	348	**356**	**2**	48,764	2,351,414	**2,400,178**	**2**
Other/ Unclassified Cargo	<1	109	**110**	**<1**	1,059	106,061	**107,120**	**1**
Textiles	31	36	**66**	**46**	19,365	103,365	**122,730**	**16**
Total	**546**	**3,803**	**4,348**	**13**	**136,436**	**4,494,920**	**4,631,356**	**3**

*2002 Dollars (based on the earliest reported FAF^2 year, which is 2002)

Figure 2-50 illustrates 2035 expected rail commodity shipments by tons and dollars. It is expected that for 2035 the value of goods per ton shipped by rail will decrease for most commodities with the exception of agriculture good, miscellaneous mixed goods, and machinery.

[104] FAF^2 Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

Figure 2-50: Rail and Rail/Truck Shipments by Commodity, 2035[105]



2.14 Texas Ports and Waterways

The ports and waterway system is an important component of the State of Texas' transportation system. The state has 270 miles of deep draft channels along with 12 deep draft public ports. There are also 750 miles of shallow draft channels and over 14 shallow draft public ports. Counting public and private facilities, Texas has more than 970 wharves, piers, and docks handling waterborne freight. In 2008, over 470 million tons of commodities moved through these channels. Employing over 1 million Texans, the ports contribute over $135 billion annually to the economy and generate approximately $5 billion in local and state tax revenues.[106] TxDOT recently estimated that Texas waterways are expected to move over 766 million tons by 2030 an increase of 293 million tons over 2008.[107]

Detailed statistics are collected for each of the deep draft ports. Data collected includes tonnage, vessel sailings, containers (measured in 20-foot Equivalent Unit [TEUs]),

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[105] FAF[2] Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

[106] TxDOT, Texas Ports 2010 – 2011 Capital Program, http://www.dot.state.tx.us/travel/marine.htm

[107] Texas Ports 2009–2010 Capital Program, Texas Department of Transportation, p.2. The data cited in the report was from 2006 and does not reflect the recent recession which will have an impact on future forecasts.

commodities, imports, and exports. A TEU (or more commonly a shipping container) is equivalent to an 8-foot by 8-foot by 20-foot intermodal container and is used as a basic unit to measure the volume of containerized cargo. The data is collected by the port, U.S. Customs, Department of Commerce, the U.S. Army Corps of Engineers (USACE) Navigation Data Center, and various private data sources. These statistics have been historically used to forecast traffic changes through the ports. In addition, many ports have commissioned economic impact studies for their port and these often contain projections.

During the last decade, the national transportation system has experienced bottlenecks, congestion, and capacity problems resulting in delay and higher shipping costs. As the U.S. global outsourcing to Asia grew, the West Coast ports became dominant. However, in recent years, shippers have shifted and spread out deliveries to other ports and Texas ports have been the beneficiaries of some of this shift. Cargo through the Panama Canal from the Pacific has also grown over the last several years.

2.14.1 Ports Inventory

Texas has more than 1,000 port facilities on 1,000 miles of channel maintained by the Corps of Engineers. Of these, 21 ports can be considered major and are listed in Table 2-37 and ports, waterways, and channels are illustrated on Figure 2-51.

Table 2-37: Listing of Texas Ports, 2008

Common Name	Official Name	Deep/Barge/ Fishing	2006 Tonnage	Org. Type
1. Port of Anahuac	Chambers-Liberty Counties Navigation District	Barge	Anahuac: None Double Bayou: 36,000 Trinity River: None	Nav. Dist.
2. Aransas/Rockport/ Fulton/Cove	Aransas County Navigation District No. 1	Fishing	N/A	Nav. Dist.
3. Port of Bay City	Port of Bay City Authority	Barge	494,000	Nav. Dist.
4. Port of Beaumont	Port of Beaumont Navigation District of Jefferson County	Deep	79,486,000	Nav. Dist.
5. Port of Brownsville	Brownsville Navigation District	Deep	5,309,000	Nav. Dist.
6. Cedar Bayou	Cedar Bayou Navigation District	Barge	1,054,000	Nav. Dist.
7. Port of Corpus Christi	Port of Corpus Christi Authority of Nueces County, Texas	Deep	77,557,000	Nav. Dist.
8. Port Freeport	Port Freeport	Deep	32,147,000	Nav. Dist.
9. Port of Galveston	Board of Trustees of the Galveston Wharves	Deep	9,357,000	Municipal Utility
10. Port of Harlingen	Port of Harlingen Authority	Barge	349,000	Nav. Dist.
11. Port of Houston	Port of Houston Authority	Deep	222,147,000	Nav. Dist.
12. Port of Orange	Orange County Navigation and Port District	Deep	718,000	Nav. Dist.
13. Port of Palacios	Matagorda County Navigation District No. 1	Fishing	N/A	Nav. Dist.
14. Port of Port Arthur	Port of Port Arthur Navigation District	Deep	28,403,000	Nav. Dist.
15. Port of Port Isabel	Port Isabel-San Benito Navigation District	Deep	1,000	Nav. Dist.
16. Port of Port Lavaca	Calhoun Port Authority	Deep	10,808,000	Nav. Dist.
17. Port Mansfield	Willacy County Navigation District	Fishing	N/A	Nav. Dist.
18. Port of Sabine Pass	Sabine Pass Port Authority	Deep/Fishing	902,000	??
19. Port of Texas City	Texas City Terminal Railway Company	Deep	48,875,000	Private
20. Port of Victoria	Victoria County Navigation District	Barge	3,556,000	Nav. Dist.
21. Port of West Calhoun	West Side Calhoun County Navigation District	Barge	Included in Victoria	Nav. Dist.

Figure 2-51: Ports, Waterways, and Navigation Channels along the Texas Gulf Coast

As shown in Table 2-38 and Table 2-39, in 2009, the Port of Houston ranked second in the nation in terms of tonnage and seventh in the nation in terms of TEUs.

Table 2-38: Texas Ports Tonnage Shipped 2008[108]

U.S. Rank	Port Name	Domestic	Foreign Imports	Foreign Exports	Foreign Total	Total
2	Houston, Texas	65,808,295	92,018,956	54,380,670	146,399,626	212,207,921
5	Corpus Christi, Texas	21,430,962	43,373,738	11,981,473	55,355,211	76,786,173
7	Beaumont, Texas	22,687,915	41,167,853	5,627,771	46,795,624	69,483,539
13	Texas City, Texas	13,895,595	33,926,630	4,783,805	38,710,435	52,606,030
25	Port Arthur, Texas	10,004,521	14,834,711	6,913,510	21,748,221	31,752,742
26	Freeport, Texas	4,135,091	22,971,011	2,736,193	25,707,204	29,842,295
52	Matagorda-Port Lavaca-Port Comfort, Texas	1,873,129	6,953,796	1,490,689	8,444,485	10,317,614
54	Galveston, Texas	4,199,979	1,825,635	3,755,754	5,581,389	9,781,368
76	Brownsville, Texas	1,843,662	3,541,172	284,611	3,825,783	5,669,445
94	Victoria, Texas	2,861,933	0	0	0	2,861,933
136	Sabine Pass, Texas	1,214,023	290	0	290	1,214,313

Table 2-39: Top 20 U.S. Container Ports[109]

2005–2009 (in TEUs)						
Ranking	Ports	2005	2006	2007	2008	2009
1	Los Angeles	4,867,073	5,743,400	5,740,261	5,670,897	5,028,998
2	Long Beach	4,395,942	4,798,617	4,994,949	4,611,671	3,765,560
3	New York	3,390,308	3,678,247	3,935,262	3,992,258	3,587,740
4	Savannah	1,482,728	1,609,131	2,041,521	2,115,986	1,914,751
5	Oakland	1,372,231	1,414,782	1,451,326	1,394,684	1,398,420
6	Norfolk	1,318,831	1,424,993	1,573,273	1,591,566	1,375,632
7	Houston	1,231,186	1,295,366	1,415,657	1,370,759	1,256,049

[108] U.S. Army Corps of Engineers, Navigation Data Center, 2008 Waterborne Commerce of the United States (WCUS) Waterways and Harbors, Available at: http://www.ndc.iwr.usace.army.mil/publications.htm

[109] Journal of Commerce PIERS — Port Import/Export Reporting Service. Note: Ranking based on 2009 reported TEU counts.

Table 2-39: Top 20 U.S. Container Ports[109]

2005–2009 (in TEUs)						
Ranking	**Ports**	**2005**	**2006**	**2007**	**2008**	**2009**
8	Seattle	1,339,641	1,222,596	1,289,364	1,082,573	1,072,838
9	Charleston, SC	1,511,935	1,517,311	1,408,434	1,330,919	954,836
10	Tacoma	1,154,350	1,095,896	1,150,590	1,129,301	873,708
11	Miami	770,839	748,130	684,793	669,199	625,716
12	Port Everglades	580,179	639,481	691,645	680,536	543,387
13	Baltimore	380,574	409,526	427,902	435,135	405,552
14	New Orleans	174,072	177,487	254,782	239,792	229,869
15	San Juan	213,570	241,993	208,265	222,739	222.033
16	Jacksonville	144,635	153,009	151,110	158,119	197,656
17	Wilmington, NC	127,269	127,269	150,147	147,443	187,955
18	Philadelphia	158,706	176,901	196,827	218,618	180,091
19	Wilmington, DE	161,645	170,453	185,231	182,833	162,757
20	Gulfport	150,205	162,551	171,835	172,607	158,636
Top 20 U.S. Ports – Total		**24,925,919**	**26,807,139**	**28,123,174**	**27,417,635**	**23,920,373**
All U.S. Ports – Total		***26,444,652***	***28,555,590***	***29,306,922***	***28,532,629***	***28,532,629***

2.14.2 Cruise Ships

The Port of Galveston is the main cruise ship terminal in Texas. With the opening of the Bayport terminal in 2007, the Port of Houston added additional infrastructure to attract cruise ships to the Texas Gulf Coast. The cruise industry associations as well as the ports have passenger and sailing statistics, which can be used for forecasting. This industry has already modified its outlook and forecasts to account for the recession and its lingering impacts. Included in the forecast considerations will be ships currently under construction and planned for deployment in the U.S. market.

2.14.3 Military Traffic and Texas Ports

Texas ports have become a critical component in sustaining military operations. In terms of tonnage shipped, the Port of Beaumont is the largest military port in the U.S. and second largest in the world.[110] Significant infrastructure investments have been made in recent years and some are ongoing to improve the channel and the inland infrastructure connections to the port. Forecasting this element presents some

[110] Port of Beaumont

challenges since the military does not release shipment information and need will depend on the U.S. military presence or involvement on foreign soil.

2.14.4 Potential Effects of the Panama Canal Expansion

The opening of the expanded Panama Canal will allow larger, deeper draft vessels to access the Gulf of Mexico via the Caribbean Sea from the Pacific Ocean, which may affect Texas ports. The Panama Canal expansion project, started in 2007, is building locks on both sides of the 50-mile canal, digging a new channel linking the locks and deepening the waterway connecting the Pacific Ocean with the Caribbean Sea. As of 2010, ships loading fewer than five thousand 20-foot boxes use the canal. The expansion will accommodate vessels carrying about 12,600 containers and may generate cargo growth of about 5 percent a year.

Houston does not have a deep enough draft to handle some of these ships, but the port is pursuing funding and developing plans to deepen its draft.[111] Some analysts have predicted that about 20 percent of cargo ships now serving West Coast ports could divert to Houston once the Panama Canal is widened to handle a new breed of container vessel known as post-Panamax ships.

Once completed, the Panama Canal will have significant impacts on shipping routes, port development, and cargo distribution to the U.S. More ships are expected to shift to east and gulf coast ports from the congested west coast ports. Container trade is expected to be the single largest gainer. Houston already has 73 percent of the container market in the Gulf of Mexico, and 94 percent of the container market in Texas. About 14 percent of container traffic handled by the Port of Houston comes through the Panama Canal, a percentage that port officials say could grow to about 25 percent by 2020.[112] A 2006 TxDOT study said the impact of the Panama Canal expansion "will be felt most heavily on and around the Port of Houston, the state's largest container port and a key trading partner for goods shipped via the Panama Canal."[113]

Historically, dry and liquid bulk cargo have generated most of the Panama Canal's revenues. Bulk cargo includes dry goods, such as grains (corn, soy, and wheat, among others), minerals, fertilizers, coal, and liquid goods, such as chemical products, propane gas, crude oil, and oil derivatives. Recently, containerized cargo has replaced dry bulk cargo as the Panama Canal's main income generator, moving it to second place. Texas

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[111] Port of Houston Authority, June, July 2010 Magazine

[112] "Houston eyes Asia trade as Panama Canal expands," Reuters on-line article, December 14, 2009, http://www.reuters.com/article/idUSN1016913920091214.

[113] Effects of the Panama Canal Expansion on Texas Ports and Highway Corridors," Cambridge Systematics, October 2006, www.camsys.com/pubs/freight_Panama%20Canal_ExecSum.pdf

ports handle much of the bulk goods entering the U.S., as well as most of the containerized cargo that does not flow through the west coast ports. The growth in Panama Canal usage over the past few years has been almost entirely driven by increased U.S. imports from China passing through the canal en route to ports on the U.S. east and Gulf coasts. However, it is increasingly recognized in both the United States and China that this imbalance in trade is unsustainable, so some of the more optimistic growth estimates should probably be trimmed back. The Panama Canal forecasts its growth at about 3 percent annually, doubling its tonnage between 2005 and 2025.[114] Approximately 70 percent of the canal's $100 billion containerized cargo is either destined to or coming from the United States. As the result of congestion at west coast ports and other inland bottlenecks, shippers have moved their shipments to alternative ports. This has resulted in the Panama Canal gaining significant market share, now handling over 40 percent of container traffic headed to the east coast.[115]

One of the most significant shifts resulting from the Panama Canal expansion is the introduction of even larger ships into the Gulf and east coast shipping lanes. The new generation of containerships, including many of the post-Panamax ships that will be attracted to the expanded Panama Canal, typically require channel depths of at least 50 feet, particularly for fully loaded vessels. Few Texas ports currently have the ability to handle ships of that depth. Although at 45 feet, the Port of Houston will have one of the deeper channels among Gulf Coast ports, it will still lag behind several of its major east coast competitors. The Port of Houston is spending about $1.2 billion to expand its Bayport Container Terminal to enable it to handle about 1.4 million containers per year.[116] The port is buying giant cranes capable of unloading post-Panamax cargo ships, which can carry up to 12,600 containers, almost three times the current number.[117] The Port predicts that its container volume will increase 11 percent a year for the next 5 years as a result of the larger, more efficient ships coming through the Panama Canal.[118] Since many Gulf and east coast ports do not have deep enough drafts for the post–Panamax ships, it will be necessary to build transshipment facilities to break up the cargoes from the larger ships to smaller ships that can be accommodated. One such scenario is an initial stop in a Mexican port that does have sufficient draft and then on to Houston, which is the closest major port.

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[114] "Proposal for the expansion of the Panama Canal," Panama Canal Authority, April 24, 2006 http://www.pancanal.com/eng/plan/

[115] "The Implications of Panama Canal Expansion to U.S. Ports and Coastal Navigation Economic Analysis," U.S. Army Corps of Engineers White Paper, December 2008. http://www.iwr.usace.army.mil/docs/iwrreports/WhitePaperPanamaCanal.pdf

[116] Ibid, Cambridge Systematics Study

[117] Port of Houston Authority, June, July 2010 Newsletter

[118] "The Gulf Coast's Rising Tide," Inbound Logistics, January 2009. Quote attributed to Jeff Moseley, president and CEO of the Greater Houston Partnership http://www.inboundlogistics.com/articles/features/0109_feature07.shtml

2.14.5 The Gulf Intracoastal Waterway

The primary shallow draft waterway in Texas is the Gulf Intracoastal Waterway (GIWW) (Figure 2-52), which stretches from Brownsville, on the Mexican border to the Louisiana state line at the Sabine River. There are two navigation locks on the Texas reach of the GIWW. The entire GIWW is a 1,300-mile-long man-made canal that runs along the Gulf of Mexico coastline from Texas' southernmost tip at Brownsville to St. Marks, Florida. The Texas portion of the waterway is 423 miles long. The GIWW is the nation's third busiest waterway with the Texas portion handling more than 58 percent of its traffic. The GIWW requires regular dredging to maintain the waterway at optimum levels and allow navigation without grounding for fully loaded commercial vessels. TxDOT, as the non-federal sponsor, works cooperatively with the USACE to plan, maintain, research, and improve the waterway.

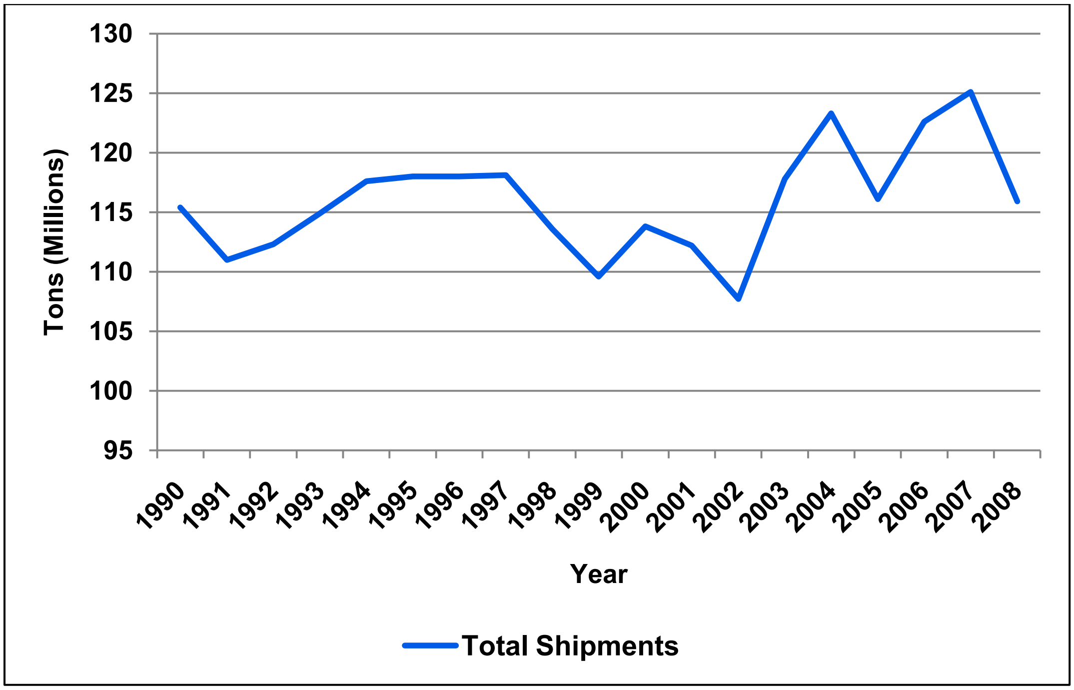
Table 2-40 and Figure 2-52 show shipping traffic along the GIWW from 1990 to 2008.

Table 2-40: Gulf Coast Intracoastal Waterway, Shipments by Type of Traffic and Commodity[119]

Summary	1990	2000	2008	% of 2008	% Change 1990–2008
	Type of Traffic (Millions of Tons)				
Coastwise	0.7	0.8	0.2	0.2	–71.4
Internal	114.6	113	115.7	99.8	1.0
Total	**115.3**	**113.8**	**115.9**	**100.0**	**0.5**
Summary	**Commodity (Millions of Tons)**				
Coal	9.2	5.9	6.9	6.0	–25.0
Petroleum & Petroleum Products	62.4	53.3	59.4	51.3	–4.8
Chemical & Related Products	22.9	25.4	20.2	17.4	–11.8
Crude Materials	14.4	20.4	20.8	17.9	44.4
Primary Manufacturing Goods	3	4.4	5.6	4.8	86.7
Food & Farm Products	2.2	2.1	1	0.9	–54.5
All Manufacturing Equipment	0.4	1.3	1.1	0.9	175.0
Other	0.8	1	0.9	0.8	12.5
Total	**115.3**	**113.8**	**115.9**	**100.0**	**0.5**

[119] USACE; 2008 Waterborne Commerce of the United States (WCUS) Waterways and Harbors on the: Part 5 – National Summaries of Domestic and Foreign Waterborne Commerce, Table 3-13 and Table 3-14

Figure 2-52: Gulf Coast Intracoastal Waterway, Total Shipments 1990–2008[120]



As shown in Table 2-40, from 1990 to 2008 internal shipments along the GIWW have remained steady with relatively small growth (1 percent). However, when viewed by commodities shipped there is much more variability with manufacturing equipment showing the greatest growth at 175 percent (although it should be noted that the overall tons of this commodity is small).

2.14.6 The Maritime Administration America's Marine Highway Program[121]

In April 2010, the USDOT Maritime Administration (MARAD) recently announced America's Marine Highway program to help identify rivers and coastal routes that could carry cargo efficiently, bypassing congested roads around busy ports and reducing greenhouse gases. Speaking to transportation professionals at the 7th Annual North American Marine Highways and Logistics Conference in Baltimore, MD, Transportation Secretary Ray LaHood said, "For too long, we've overlooked the economic and environmental benefits that our waterways and domestic seaports offer as a means of moving freight in this country. Moving goods on the water has many advantages: It

120 USACE; 2008 Waterborne Commerce of the United States (WCUS) Waterways and Harbors on the: Part 5 – National Summaries of Domestic and Foreign Waterborne Commerce, Table 3-13

121 Most of the information for this section comes from the MARAD site http://www.marad.dot.gov/ships_shipping_landing_page/mhi_home/mhi_home.htm

reduces air pollution. It can help reduce gridlock by getting trucks off our busy surface corridors."

The Marine Highway initiative stems from a 2007 law requiring the Secretary of Transportation to establish a short sea transportation program and designate short sea transportation projects to mitigate surface congestion. Under the new regulation, regional transportation officials will be able to apply to have specific transportation corridors—and even individual projects—designated by the USDOT as a marine highway if they meet certain criteria. Once designated, these projects will receive preferential treatment for any future federal assistance from the department or MARAD.

In 2010, Secretary LaHood announced $58 million in grants for projects to support the start-up or expansion of Marine Highways services, awarded through the Department's Transportation Investment Generating Economic Recovery (TIGER) grants program. Congress has also set aside an additional $7 million in grants, which MARAD awarded in August 2010. The Port of Brownsville was selected as part of the Cross Gulf Container Expansion. This project will expand existing container-on-barge operations by increasing the frequency and capacity of the service between Brownsville, and Port Manatee, Florida, across the Gulf of Mexico (Figure 2-53).[122]

The USDOT published an interim final rule on October 9, 2008, establishing a framework to provide federal support to expand the use of America's Marine Highway. The four primary components of the framework are:

- **Marine Highway Corridors:** Designated corridors will integrate the Marine Highway into the surface transportation system and encourage the development of multi-jurisdictional coalitions to focus public and private efforts and investment.
- **Marine Highway Project Designation:** Designation of marine highway projects is aimed at mitigating landside congestion by starting new or expanding existing services to provide the greatest benefit to the public in terms of congestion relief, improved air quality, reduced energy consumption, and other factors. Designated Projects will receive direct support from the USDOT.
- **Incentives, Impediments and Solutions:** The Maritime Administration, in partnership with public and private entities, will identify potential incentives and seek solutions to impediments to encourage utilization of the Marine Highway and incorporate it, including ferries, in multi-state, state, and regional transportation planning.

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122 Maritime Administration News Release, August 2010 http://www.marad.dot.gov/news_room_landing_page/news_releases_summary/news_release/MARAD_13-10_Marine_highway_Projects_release.htm

- **Research:** The USDOT, working with the Environmental Protection Agency, will conduct research to support America's Marine Highway, within the limitations of available resources. Research would include environmental and transportation benefits, technology, vessel design, and solutions to impediments.

Figure 2-53: MARAD Gulf Coast and America's Heartland Marine Highway Corridors Map[123]

2.14.7 Texas Ferry Systems

There are two main ferry locations in Texas: at Port Aransas and Galveston-Port Bolivar. Throughout the year, more than 8 million people use these TxDOT ferry systems. The peak months for ferry use are June, July, and August. Ferry service has been a part of the Texas transportation system since the 19th century when a skiff, *The Tarpon*, began operating from Galveston Island.

123 USDOT, Maritime Administration, America's Marine Highway Corridors, Available at: http://www.marad.dot.gov/ships_shipping_landing_page/mhi_home/mhi_home.htm

This ferry operation consists of five boats, each of which can carry approximately 70 vehicles, 500 passengers, and 6 crewmembers. Each ferry is capable of carrying eight 18-wheel trucks weighing 80,000 pounds each.

The Port Aransas Ferry System provides free transportation service 7 days a week, 24 hours a day connecting Mustang Island and Port Aransas with the mainland via Aransas Pass. The number of ferryboats in service at any time depends on demand.

Port Aransas has six identical large vessels that can carry 20 regular passenger vehicles on each trip. Each boat can move 100 vehicles per hour. A total overall length (for combined vehicles such as a car and boat) is 85 feet. The maximum width allowed is 96 inches. A maximum of 13 feet 6 inches in height is allowed.

There are three ferry services within the state not operated by TxDOT. They are:

- Lynchburg Ferry – located near Channelview, Texas, and operated by Harris County; provides service to historic San Jacinto State Park.
- Los Ebanos Ferry – located in Los Ebanos, Texas, and privately owned and operated. This ferry is a hand drawn ferry across the Rio Grande and provides service between the U.S. and Mexico.
- Jetty Boat – located near Port Aransas, Texas, and privately owned and operated; provides service to St. Jo Island.

Table 2-41 presents average ferry trip time and total annual passengers and vehicles for the ferries described above.

Table 2-41: Texas Ferries Total Annual Passengers and Vehicles[124]

Ferry	Average Trip Time	Passengers			Vehicles		
		2000	2006	2008	2000	2006	2008
Galveston – Port Bolivar Ferry	50	6,648,007	6,320,648	5,789,737	2,105,953	2,134,999	1,843,101
Port Aransas Ferry	6	NA	26,254	54,494	2,500,000	1,084,654	2,135,054
Lynchburg Ferry	3	1,270,200	NA	NA	1,058,500	372,915	372,915
Los Ebanos	5	122,000	NA	NA	77,000	NA	NA
Jetty Boat. Inc. (Passenger Only)	15	18,000	18,238	NA	-	-	-

[124]National Census of Ferry Operators, 2008

2.14.8 Texas Port Freight Forecasts

FHWA's FAF[2] provides historic and forecast freight flows (in dollars and tons) between origins and destinations for U.S. port regions. Within this data, freight flows are categorized by origin and destination, port region, commodity, and connecting mode (i.e., truck, rail, etc.) of connection to the port region. The historic base year for FAF[2] is 2002. Freight data for 2008 presented in this section is an estimate and may not reflect final yearly summaries provided by the other sources such as the USACE (Table 2-38). As shown in Table 2-42 pipelines have been, and will remain, the dominant mode of freight transport from Texas seaport regions, followed by trucks. Rail and multiple modes play a much smaller part in the movement of freight to/from Texas seaport regions.

Table 2-42: Texas Seaport Regions, Foreign Tonnage (Millions of Tons) Shipped by Connecting Mode[125]

Mode	2008	% of 2008	2035	% of 2035	% Change 2008–2035
Truck Alone	94.5	26.5	201.9	38.7	***113.8***
Pipeline, Water	240.2	67.3	288.1	55.1	***19.9***
Rail Alone	20.2	5.7	29.8	5.7	***47.5***
Multiple Modes*	2.2	0.6	2.5	0.5	***11.8***
Total	**357.1**	**100.0**	**522.3**	**100.0**	**46.3**

*Includes Truck & Rail, Air & Truck, and Other Intermodal

As shown in Table 2-43, according to forecasts published as part of the FHWA's FAF[2], from 2008 to 2035 the value of exports/imports shipped through Texas Ports is expected to increase by 220 percent. Alternatively, the weight of exports/imports shipped through Texas Ports is expected to increase by only 46 percent. By weight and value, the Houston seaport region will continue to handle the bulk of exports/imports with 41.1 percent of the total tonnage and 59.9 percent of the total value of goods in 2035. However, the remaining seaport regions will continue to play an equally important role. Combined, these seaport regions will handle 58.9 percent of the total tonnage and 40.1 percent of the total value of exports/imports in 2035.

[125] FAF[2] Commodity Origin-Destination Data: 2002–2035; Available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_com.htm; and Provisional Annual Commodity Origin-Destination Data – 2008 available at http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_pro.htm

Table 2-43: Texas Seaport Regions, Seaport Foreign Exports/Imports 2008–2035[126]

Seaport Region*	2008 Foreign Exports	2008 Foreign Imports	2008 Total	2008 % of Total	2035 Foreign Exports	2035 Foreign Imports	2035 Total	2035 % of Total	% Change Totals
Tons (Millions)									
Brownsville/ Hidalgo	0.5	0.4	0.9	0.2	0.3	1.4	1.7	0.3	93
Houston	55.1	83.4	138.5	38.8	91.8	122.9	214.7	41.1	55
Beaumont	7.9	49.1	57.0	16.0	10.6	78.3	88.9	17.0	56
Corpus Christi	12.7	50.9	63.6	17.8	19.4	59.6	79.0	15.1	24
Texas Remaining	22.2	75.0	97.2	27.2	38.9	99.1	138.0	26.4	42
Total Tons	98.3	258.8	357.1	100	161.0	361.2	522.3	100	46
Dollars (Millions)*									
Brownsville/ Hidalgo	52	130	181	0.1	109	863	972	0.2	436
Houston	48,831	37,394	86,225	58.4	169,469	113,195	282,664	59.9	228
Beaumont	3,381	10,143	13,524	9.2	13,631	26,683	40,313	8.5	198
Corpus Christi	5,852	8,600	14,451	9.8	24,929	15,901	40,830	8.6	183
Texas Remaining	15,409	17,763	33,172	22.5	65,912	41,337	107,248	22.7	223
Total Dollars	73,525	74,028	147,553	100	274,050	197,978	472,028	100	220

Note: The Freight Analysis Framework[2] aggregates ports into regions.
For example, the Houston region would be inclusive of the Port of Houston and the Port of Galveston.
#2002 Dollars (based on the earliest reported FAF[2] year, which is 2002)

Table 2-44 illustrates cross-tabulations of total Texas seaport exports and imports by international origin/destination. As indicated in both figures, trade with Mexico and the Americas will continue to make up a considerable portion of the international trade through Texas' seaports in 2035. Of total exports/imports combined, these two international regions contribute 47.5 percent of tonnage and 42.1 percent of total dollars. However, Europe and Asia (Southwest Asia and Asia East and South) will play an equally important role. Of total exports/imports combined, these international regions will contribute 33.1 percent of tonnage and 45.3 percent of total dollars in 2035.

126 Ibid

Table 2-44: Total Seaport Foreign Exports/ Imports by Trading Partner 2008–2035[127]

Summary	Tons (Millions)				
	2008	% of 2008 Total	2035	% of 2035 Total	% Change
Americas	91.5	**25.6**	135.9	**26.1**	**48.5**
Asia East & South	22.9	**6.3**	47.3	**9.1**	**106.9**
Canada	7.4	**2.1**	11.6	**2.2**	**56.6**
Europe	48.3	**13.5**	77.7	**14.9**	**60.8**
Mexico	84.2	**23.6**	111.7	**21.4**	**32.6**
Southwest Asia	38.5	**10.9**	48.4	**9.1**	**25.9**
Rest of World	64.3	**18.0**	89.6	**17.2**	**39.4**
Totals	**357.1**	**100.0**	**522.3**	**100.0**	**46.3**
Summary	**Dollars (Millions)***				
Americas	41,530.7	**28.1**	129,716.8	**27.5**	**212.3**
Asia East & South	20,774.9	**14.1**	79,887.2	**16.9**	**284.5**
Canada	2,885.3	**2.1**	10,098.7	**2.2**	**250.0**
Europe	32,380.3	**21.9**	111,515.8	**23.6**	**244.4**
Mexico	22,493.2	**15.2**	68,699.7	**14.6**	**205.4**
Southwest Asia	10,221.4	**6.9**	22,816.6	**4.8**	**123.2**
Rest of World	17,267.1	**11.7**	49,292.9	**10.4**	**185.5**
Totals	**147,552.9**	**100.0**	**472,027.7**	**100.0**	**219.9**

#2002 Dollars (based on the earliest reported FAF^2 year, which is 2002)

Table-45 presents exports/imports shipped though Texas's seaports by commodity. As shown in Table-45, in terms of 2035 tonnages raw materials will continue to make up the largest portion of total exports/imports at 60.8 percent of total exports/imports, followed by processed chemical/petroleum goods at 25.9 percent. However, for 2035 in terms of value, processed chemical/petroleum goods will make up 57.0 percent of total dollars, followed by machinery at 20.2 percent.

127 Ibid

Table 2-45: Texas Seaport Foreign Exports/Imports by Commodity 2008–2035[128]

Commodity	2008				2035			
	Foreign Exports	Foreign Imports	Total	%of Total	Foreign Exports	Foreign Imports	Total	%of Total
Tons (Millions)								
Agriculture	3.7	2.5	**6.2**	**1.7**	5.8	6.4	**12.2**	**2.3**
Raw Materials*	31.5	230.9	**262.4**	**73.5**	19.3	298.3	**317.6**	**60.8**
Food	15.5	0.3	**15.8**	**4.4**	13.4	0.3	**13.7**	**2.6**
Textiles	0.0	0.0	**0**	**0.0**	0	0	**0**	**0.0**
Wood	0.8	0.5	**1.3**	**0.4**	0.9	2.0	**2.9**	**0.6**
Processed Chemicals/Petroleum	41.3	9.7	**51.1**	**14.3**	112.4	23.0	**135.5**	**25.9**
Building Materials	0.6	5.0	**5.6**	**1.6**	1.4	7.9	**9.4**	**1.8**
Machinery	2.3	2.0	**4.2**	**1.2**	4.7	7.8	**12.4**	**2.4**
Miscellaneous Mixed	2.5	7.9	**10.4**	**2.9**	3.0	15.6	**18.6**	**3.6**
Other/Unclassified Cargo	0.0	0.0	**0.0**	**0.0**	0.0	0.0	**0.0**	**0.0**
Total Tons	**98.3**	**258.8**	**357.1**	**100.0**	**161.0**	**361.2**	**522.3**	**100.0**
Dollars (Millions)*								
Agriculture	950	681	**1,631**	**1.1**	2,892	2,476	**5,368**	**1.1**
Raw Materials*	1,864	39,332	**41,196**	**27.9**	3,467	79,712	**83,179**	**17.6**
Food	699	13	**713**	**0.5**	1,338	42	**1,381**	**0.3**
Textiles	0	0	**0**	**0.0**	0	0	**0**	**0.0**
Wood	815	368	**1,183**	**0.8**	1,266	1,398	**2,664**	**0.6**
Processed Chemicals/Petroleum	50,510	14,179	**64,688**	**43.8**	226,210	42,718	**268,928**	**57.0**
Building Materials	222	1,534	**1,757**	**1.2**	1,125	6,297	**7,422**	**1.6**
Machinery	16,609	15,887	**32,496**	**22.0**	35,839	59,284	**95,123**	**20.2**
Miscellaneous Mixed	1,855	2,034	**3,889**	**2.6**	1,914	6,050	**7,964**	**1.7**
Other/Unclassified Cargo	-	-	**-**	**<1.0**	-	-	**-**	**<1.0**
Total Dollars	**73,525**	**74,028**	**147,553**	**100.0**	**274,050**	**197,978**	**472,028**	**100.0**

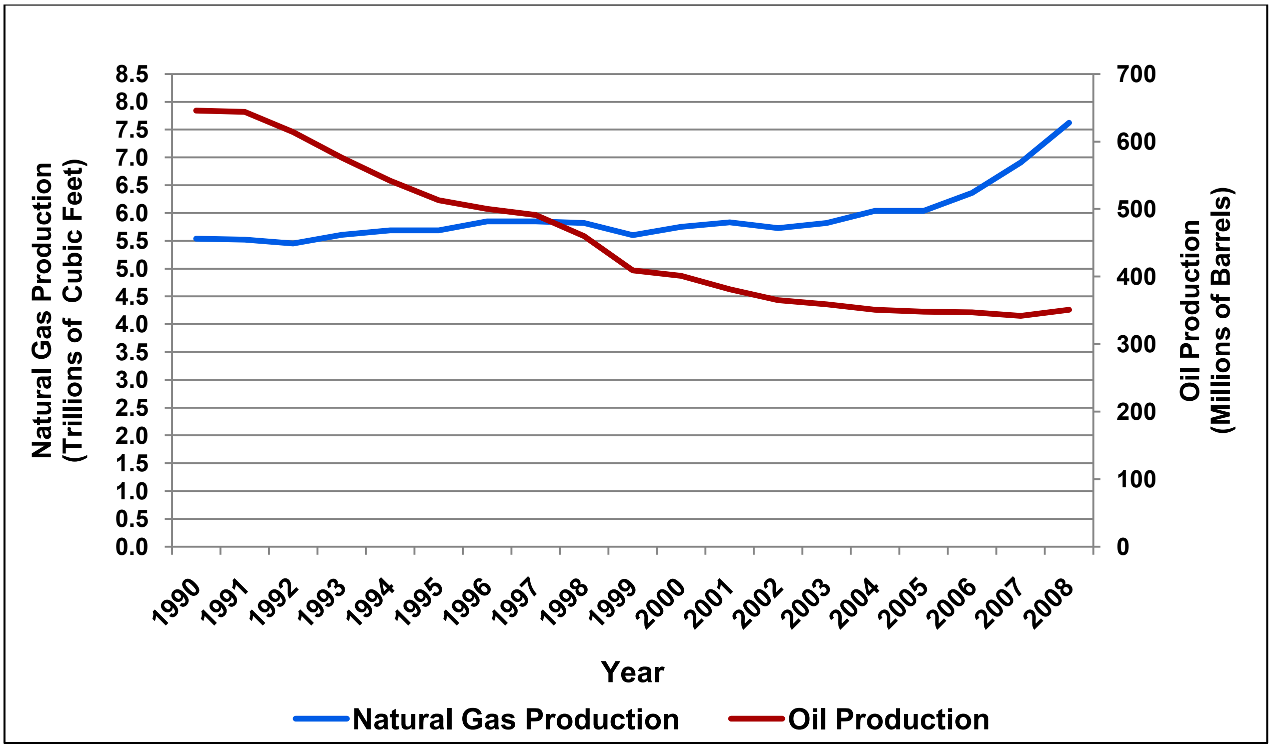
#2002 dollars (based on the earliest reported FAF[2] year, which is 2002)

[128] Ibid

2.15 Texas Pipelines

Texas leads the nation in refining capacity and the production of crude oil and natural gas. Its marketed production represents 30 percent of total U. S. natural gas production[129] and 20 percent of crude oil production.[130] Pipelines are a major mode of transportation of crude oil and natural gas in Texas, providing an economic and efficient way to move these commodities. Texas is a net exporter of natural gas both nationally and internationally. Although oil production in the state is in decline, natural gas production in the state continues to increase rapidly due to in increased production from unconventional sources in Northeast Texas (Figure 2-54).

Figure 2-54: Texas Natural Gas Production and Oil Production 2000–2008[131]



Most of the state's 27 oil refineries are clustered near major ports along the Gulf Coast, including Houston, Port Arthur, and Corpus Christi. These facilities can process more than 4.7 million barrels of crude oil per day. Refined-product pipelines spread out from

[129] Energy Information Administration Independent Analysis and Statistics http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html

[130] Texas Petrofacts – Monthly Data Review from the Railroad Commission of Texas March 2010 http://www.rrc.state.tx.us/data/petrofacts/2010/petro0310.pdf

[131] Ibid

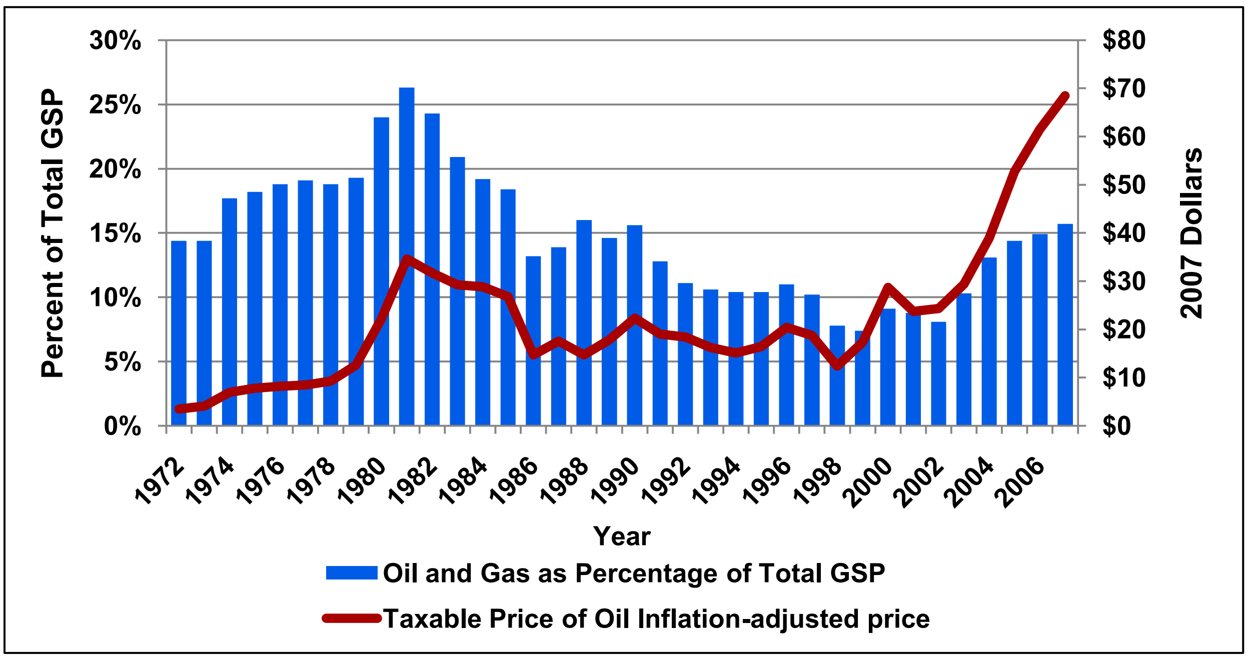
Houston across the country, allowing Texas petroleum products to reach virtually every major consumption market east of the Rocky Mountains.[132]

2.15.1 Contribution of Pipelines to the Texas Economy

In 2006, more than 312,000 Texans, or 3.1 percent of the state work force, were employed in the oil and natural gas industry, which accounted for $159.3 billion or 14.9 percent of Texas' GSP. For comparison, in 2003 the industry contributed $85.6 billion to GSP, 10.3 percent of the state GSP. Likewise, oil and gas industry wages have risen substantially in recent years. In 2006, wages totaled $30.6 billion, or about 6.9 percent of all wages in Texas. In Texas in 2003, oil and gas industry wages were $20.9 billion or 5.8 percent of all wages.

Historically, the oil and natural gas industry have accounted for approximately 10 to 25 percent of the state's GSP, a trend that roughly tracks the price of oil (Figure 2-55). (The price indicated in the figure is based on the taxable value of oil from in-state production, in dollars adjusted for inflation.)

Figure 2-55: Texas Oil and Gas Industry Contribution to the Texas Economy[133]



[132] Energy Information Administration. State Energy Profiles – Texas http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=TX

[133] The Energy Report 2008, Comptroller of Public Accounts http://www.window.state.tx.us/specialrpt/energy/nonrenewable/

2.15.2 Types of Pipelines

There are three primary types of pipelines: gathering pipelines, transmission pipelines, and distributing pipelines. Gathering pipeline systems collect raw natural gas or crude oil from production wells. Transmission pipeline systems transport natural gas thousands of miles across different states in the continental United States. These are usually large diameter long-distance lines and connect supply areas to markets and points of export. Distribution pipeline systems deliver natural gas to our homes and businesses across several communities. In addition, refined products pipeline systems transport products from oil refineries such as gasoline, kerosene, and other petrochemicals to storage and distribution terminals.[134]

The overall total mileage of all pipelines in Texas is 222,285 miles.[135] Table 2-46 provides a breakdown of pipeline mileage by use—transmission, gathering, and distribution. Natural gas and crude oil are the major commodities transported by pipelines—these together constitute 67 percent of pipeline miles. Other products transported by pipeline include Carbon Dioxide, Nitrogen, and Hydrogen.

Table 2-46: Texas Pipeline Mileage[136]

Pipeline System	Mileage (miles)
Hazardous liquid line mileage	56,375
Gas transmission line mileage	66,918
Gas gathering line mileage	6,659
Gas distribution mileage	92,333
Total Pipeline Mileage	**222,285**

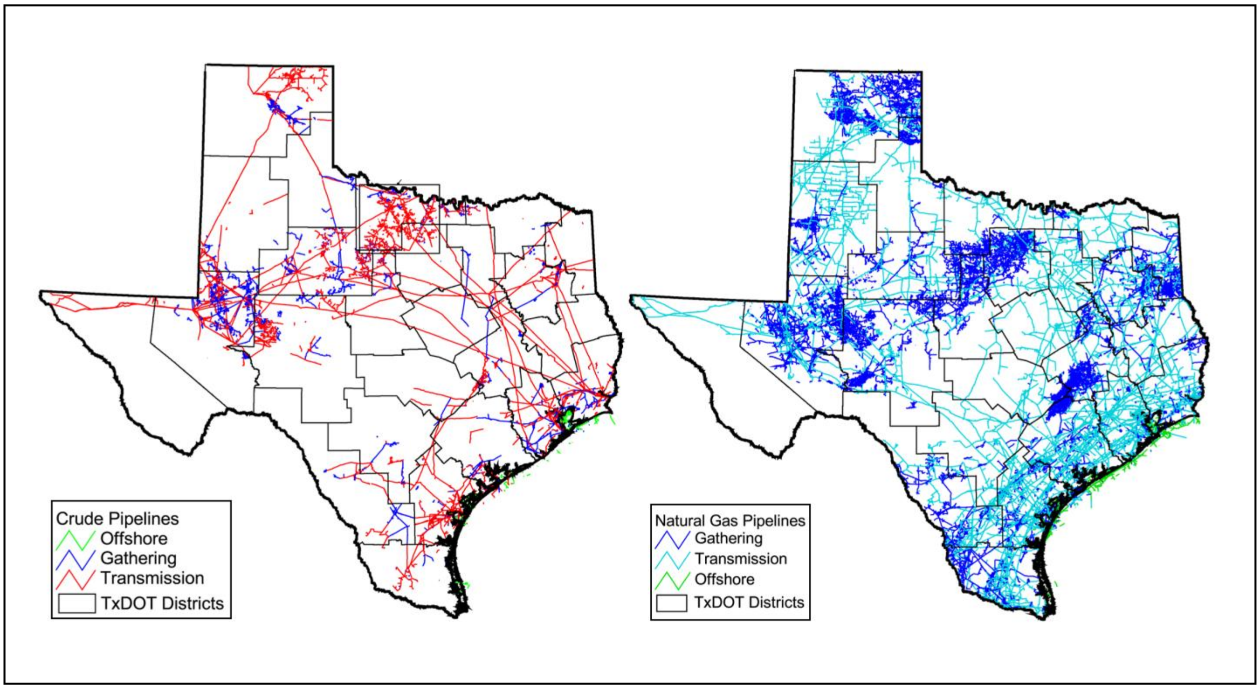
Figure 2-56 illustrates crude petroleum and natural gas pipelines in Texas.

[134] Pipeline and Hazardous Materials Safety Administration. Pipeline Significant Incidents and Mileage Overview http://primis.phmsa.dot.gov/comm/reports/safety/PSI.html

[135] Office of Pipeline Safety Statistics: http://primis.phmsa.dot.gov/comm/reports/safety/TX_detail1.html

[136] Ibid

Figure 2-56: Crude Petroleum and Natural Gas Pipeline in Texas[137]



2.15.3 Ownership and Maintenance

Both natural gas and oil pipeline systems are owned and operated and maintained by several different private companies. These are constructed in response to the evolving supply and demand dynamics of the market. Federal Energy Regulatory Commission (FERC) regulates the construction, operation, and safety of interstate pipelines whereas intrastate gas and petroleum pipelines are regulated by the Texas Railroad Commission (RRC).

2.15.4 Pipeline Forecasts

As discussed in this section, oil and natural gas production and transportation are thriving in Texas. Because pipelines are privately owned and operated, growth and needs are determined based on market forces. Quantitative needs estimates were not prepared for the expansion of the pipeline network. During the development of this plan, representatives of pipeline companies expressed no concerns about needed capacity or the ability of the industry to address future capital investment needs.

[137] FHWA, TxDOT, and TTI, The Value of Pipelines to the Transportation System Of Texas: Year One Report, October 2000

3.0 Funding the Construction, Maintenance, and Operation of the System

3.1 Who Owns, Builds, Maintains, and Operates the Transportation System?

The multimodal transportation system—comprised of the modal networks—is owned, operated, and maintained by a number of public and private transportation entities and partnerships. Determining ownership of a specific modal facility can be complicated.

Public entities like TxDOT may own the real estate or rights-of-way on which a private network is operated and lease the rights-of-way to a private operator. Private operators may own the real estate on which their infrastructure and supporting structures are built, but require easements across local or state owned rights-of-way for continuity (e.g., pipelines or fiber-optic networks).

The transportation system is owned by local, state, and federal transportation entities, taxpayers that pay taxes to those entities, and private interests that build, maintain, and operate some modes for profit. TxDOT manages funds to build and maintain the roadways and highways, as well as funding for the maintenance of certain transit, airport, rail and marine facilities that it does not own or operate. The following sub-sections provide additional information for each transportation mode.

3.1.1 Roadways and Highways

The roadways and highways are constructed and maintained with federal, state, and local tax dollars; therefore taxpayers are the primary owners of the roadway and highway systems.

3.1.2 Bicycle and Pedestrian

These facilities are generally located along existing roadways or within municipal or state parks; therefore they are owned primarily by taxpayers and maintained by the government entity responsible for the surrounding or adjacent real estate on which the facility is located.

3.1.3 Public Transportation

The vast majority of urban transit trips are provided by the seven Metropolitan Transportation Authorities (MTAs) and one coordinated county transit authority located in Texas. There are an additional 30 urban systems operating in cities between 50,000 and 200,000 in population throughout Texas.

The majority of rural transportation is provided by local governments, public agencies, nonprofit organizations or rural transit districts that provide service within multi-county areas not served by an urban or MTA systems.

Financing the construction, operation, and maintenance of these transit systems comes from different sources, including federal and state grants, loans, bonds, local sales taxes, passenger fares, and advertising fees. For major capital improvements, transit agencies rely on federal grants, bond market investments in the urban areas and other innovative financing schemes.

3.1.4 Freight and Passenger Rail

Class 1 rail infrastructure in Texas is owned, maintained, and operated by BNSF, UPRR, and KCS. Short-line rail is owned by a number of privately held freight rail companies.

TxDOT does own rail infrastructure, but leases it to a privately held company. In addition the state owns or has a security interest in the Bonham Subdivision between Paris and Bonham and the Northeast Texas Rural Rail Transportation District (NETEX) line between Greenville to Mount Pleasant. Other than TxDOT, there are several other entities within the state that have the authority to study, develop and implement freight rail projects. These include freight rail districts, Regional Mobility Authorities (RMAs), and rural rail transportation districts. Most have the powers of eminent domain but have minimal or no taxing authority.

The National Railroad Passenger Corporation, Inc. (Amtrak) is the sole provider of intercity passenger rail service in Texas. It serves most of the state's major urban areas, though not all major urban areas are directly connected. Amtrak's partnership with Greyhound serves other areas of the state by providing bus connections where possible. The two long-distance trains are fully funded by Amtrak and include the Texas Eagle (San Antonio to Chicago) and the Sunset Limited (Los Angeles to New Orleans). The Heartland Flyer provides a daily round trip between Oklahoma City, Oklahoma, and Fort Worth, Texas. This route is subsidized by TxDOT in equal partnership with the Oklahoma Department of Transportation.[138]

3.1.5 Airports

Airports in Texas are owned by the cities or counties in which they operate—although many of the commercial airports are operated by financially independent authorities. At

[138] TxDOT. Texas Rail Plan Executive Summary. ftp://ftp.dot.state.tx.us/pub/txdot-info/rail/plan_exec_summary.pdf

some airports, airlines have developed complex contractual arrangements that determine the use of and payment for airfield and terminal facilities.

3.1.6 Waterways and Ports

Public Ports in Texas are owned and operated by port authorities, which are subdivisions of the State of Texas, municipalities, and private entities. Most have a board that directs the policies of the port and answers to local area constituents in their respective navigation district/political subdivision.

The public port authorities generally own and operate their docks and often own other facilities such as terminals, freight handling equipment, cranes, warehouses, open storage facilities, bulk commodity handling facilities, and other facilities. Ports also generally have a wide variety of private operators on the property responsible for everything from rail and truck transportation, to warehousing, materials handling, storage, and other port related activities.

In addition, there are also a large number of private facilities built along the waterways. These facilities own and operate docks, terminals, freight handling equipment, cranes, warehouses, open storage facilities, bulk commodity handling facilities, and other facilities. They connect the waterway directly to their businesses and they are responsible for everything from rail and truck transportation, to warehousing, materials handling, storage, and other related activities.

Commercial waterways are created by the federal government and activities associated with the waterways are supervised and coordinated by the USACE. Local non-federal sponsors work with the USACE according to terms set during the Federal authorization of the channel.

TxDOT acts as the local non-federal sponsor of the main channel of the GIWW from the Sabine River to the Brownsville Ship Channel, The state is charged with providing the necessary lands, easements, relocations, and realignments required during construction and maintenance of the GIWW. In addition, the state has an agreement with the USACE to cost-share in GIWW beneficial use of dredged material projects.

3.1.7 Pipelines

Natural gas and oil pipeline systems are owned, operated, and maintained by several different private companies. These systems are constructed in response to the evolving supply and demand dynamics of the market. The FERC regulates the construction, operation, and safety of interstate pipelines, where as intrastate gas and petroleum pipelines are regulated by the RRC. USDOT's Pipeline Hazardous Materials Safety Administration (PHMSA) is responsible for pipeline safety.

3.1.8 Intelligent Transportation Systems

ITS are generally an integrated part of the state transportation system or a local transportation network, and can be used in conjunction with a variety of modes as discussed in Chapter 2. These systems are constructed, implemented, operated and maintained by TxDOT (e.g., traffic cameras), a local transportation authority (e.g., City of Dallas' Integrated Signal System), or the private sector (e.g., airline providing real time weather and flight information via radio or cellular phone).

3.2 Forecasted Financial Needs

3.2.1 Highway Needs

TxDOT manages expenditures to build, maintain, and operate the state highway network (80,067 centerline miles). While vital for the state's economic and social well being, the funds managed by TxDOT support only a portion of the state's total transportation network.

3.2.1.1 Highway Travel Needs Analysis: Urban Areas

Travel needs in urban areas were estimated based on traffic forecasts of urban mobility needs from studies carried out by the TTI. TTI provided the analysis for the 2030 Committee's report on Texas transportation needs, and then updated the urban travel needs to 2035 for the SLRTP. The needs were estimated on a calculation of the amount of highway capacity needed to satisfy projected demand in 2035, or "lane mile equivalents." However, the actual solution to satisfy the need is decided at the local level in each metropolitan area and can be highways, public transportation, other modes, or a combination of modes. No specific projects or recommendations were made for the plan.

As stated in the 2030 Needs Report,

> *"Neither the 2030 Committee nor the technical team from TTI is suggesting that constructing additional highway lane-miles is the only solution in any part of the state. This approach is simply a tool for approximating the level of investment needed, regardless of the form of the solution. The actual mix of solutions will vary across all of the urban regions."*

Traffic volumes were forecast to 2035 and the number of lane mile equivalents needed to avoid severe congestion was calculated.

These estimates focus on capacity needs in urban areas, using congestion as a metric to identify the amount of improvement needed. TTI worked with the MPOs throughout Texas to gather data for estimating needs in the metropolitan areas. Using the results from individual MPO travel demand models and demographic data for each MPO, TTI ran its own congestion reduction utility model. This model enabled TTI to estimate additional capacity needed for each MPO based on that MPOs forecasted population.

Once the forecasted amount of congestion in each metro and urban area was estimated, TTI calculated the cost of the additional capacity required for each scenario (in 2008 dollars) by multiplying with an average unit construction cost. Costs are categorized by functional classification and geographic classification (urban, suburban, etc.).

The Texas Highway Cost Index (HCI) provides a way to compare expenditures over time by taking into account inflation. Table 3-1 provides a comparison of the 2008 TTI values for the facilities and areas used for this rural analysis and proposed adjusted unit costs based on the 2010 Texas HCI (reduced from 2008 as a result of the recession).

Table 3-1: Roadway Unit Cost Data

Area Type	Arterial (2008)	Freeway (2008)	Arterial (2010)	Freeway (2010)
Highway Construction Cost Index	191.60	191.60	165.11	165.11
	$ Million per Lane-Mile (2010 dollars)			
Suburban	1.3	2.6	1.12	2.24
Rural	1.0	1.6	0.86	1.39

Source: 2030 Committee Texas Transportation Needs Report, 2009; URS

The cost estimates do not include any funds for additional right-of-way, utility adjustments, preliminary engineering, environmental, design engineering or construction engineering/inspection.

3.2.1.2 Highway Travel Needs Analysis: Rural Areas

The rural highway system provides connectivity between cities of all sizes and access to and between rural areas of the state. In general, the rural highway network can be described in three levels:

- Interstate highways – a network of controlled-access highways providing four or more travel lanes.
- Texas Trunk System – a network of highways identified in 1990 that includes and complements the interstate network, with the goal of providing a network of four-lane, divided roadways connecting cities, water ports, major Mexican ports of entry and other criteria established in Texas Administrative Code.[139]
- Regional/local highways – the U.S., state highway, and farm-to-market/ranch-to-market highways not included in the Texas Trunk System.

As in the urban analysis, travel needs in rural areas were estimated on the same lane mile equivalent concept. Traffic volumes were forecast to 2035 and the number of lane mile equivalents needed to avoid severe congestion was calculated.

By 2035, congestion will not be limited to the urban areas of the state. A capacity analysis was performed on all rural on-system highways to identify locations where additional travel lanes are warranted to complement the 2030 Needs Report. It is important to note that the 2030 Needs Report defined urban areas as those counties within the 2008 MPO boundaries. As of 2010, several MPOs expanded their boundaries to include additional counties that were previously defined as rural based on the 2030 Needs Report. In keeping with this definition, the rural capacity analysis performed for the SLRTP used this same definition. Because the boundaries changed from 2008, the mileage that was previously rural but now in MPO boundaries has been separated out to adequately account for those new urban needs. This is shown in Table 3-2.

Table 3-2: Investment Summary for Newly Added Urban Counties (not included in Urban Needs Analysis) – Capacity Needs

Rural Highway Network Type	Estimated Lane-Miles Needed	Investment Required ($ Millions, 2010)
Small urban (5,000 to 50,000 population)		
Interstate	0	0
Texas Trunk System (non-Interstate)	85	95
Regional/Local Highways	113	127
Rural		
Interstate	148	206
Texas Trunk System (non-Interstate)	407	350
Regional/Local Highways	313	269
Total	**1,067**	**1,047**

Source: URS, PBS&J

139 43 Texas Administrative Code (TAC), Part 1, Subchapter D, § 15.42.

Table 3-3 provides the summary of the investment needed to satisfy anticipated rural, as defined by the 2010 MPO boundaries, capacity needs through 2035. Suburban unit costs were applied to projects in small urban areas, defined as cities/towns between 5,000 and 50,000 in total population. Rural costs were used for all other areas. It should be noted that Table 3-2 and Table 3-3 are independent.

Table 3-3: Investment Summary for Rural Capacity Needs

	Estimated Lane-Miles Needed	Investment Required ($ Millions, 2010)
Small urban (5,000 to 50,000 population)		
Interstate	41	92
Texas Trunk System (non-Interstate)	346	388
Regional/Local Highways	362	105
Rural		
Interstate	507	664
Texas Trunk System (non-Interstate)	1,831	1,469
Regional/Local Highways	594	511
Total	**3,681**	**3,529**

Source: URS, PBS&J

The cost estimates do not include any funds for additional rights-of-way, utility adjustments, preliminary engineering, environmental, design engineering or construction engineering/inspection.

In addition to highway capacity needs, Table 3-4 shows the routine and preventive maintenance costs for highways, and bridge replacement, maintenance, and inspection costs.

Table 3-4: Summary of Highway Needs through 2035 ($ Millions, 2010)

Highway	2035 Needs ($ Millions)
Metro/Urban needs from TTI	$242,046
Urban needs based on new MPO boundaries	$1,047
Routine Pavement Maintenance	$7,540
Preventive / Rehabilitative Maintenance	$83,244
Rural Capacity Needs	$3,529
Total Highways	***$337,406***

Table 3-4: Summary of Highway Needs through 2035 ($ Millions, 2010)

Highway	2035 Needs ($ Millions)
Bridges	
Replacement Cost (On-System)	$22,389
Replacement Cost (Off-System)	$8,042
Maintenance Cost	$1,162
Inspection Cost	$548
Total Bridges	***$32,141***
Grand Total	**$369,547**

3.3 Other Modal Needs

3.3.1 Bicycle and Pedestrian

Goals for optimal levels of bicycle and pedestrian mode share may be determined using data and methods developed from communities that made significant investment and have seen significant increases in bicycle and pedestrian mode share. This may allow a more detailed evaluation of future funding needs. Planned facilities will be included in an MPO's MTP, but may or may not have funding for implementation. Bicycle and pedestrian projects being funded in the next 4 years in MPOs and in the rural areas of the state can be found in the MPO TIPs and TxDOT's STIP (http://www.txdot.gov/business/governments/stips.htm).

3.3.2 Public Transportation

The vast majority of transit service and funding in Texas is in urban areas with populations greater than 200,000, most of which have locally dedicated funding sources. According to the American Association of State Highway and Transportation Officials, the average state funding for transit in 2008 was $42.50 per person, while state transit funding in Texas was $1.18 per person. As shown in Table 3-5, the anticipated public transportation capital investment needed between 2006 and 2035 is $40.2 billion, with 95 percent estimated for metropolitan areas and 5 percent for small urban and rural transit operators. The estimated operating funds need (state funds only) for small urban and rural operators is $3.2 billion.

Table 3-5: Summary of Public Transportation Needs through 2035 ($ Millions, 2010)[140]

Category of Expense	Total Funds Required 2006-2035 ($ Millions)	Percent of Capital Funds Required
Metropolitan Urban Capital Requirements	38,309	95.4
Small Urban Fleet Replacement/Expansion	333	0.8
Rural Fleet Replacement/Expansion	696	1.7
Small Urban/Rural Major Capital Facilities	769	1.9
Small Urban Passenger Facilities	27	0.1
Rural Passenger Facilities	35	0.1
Total Capital Expense	***40,169***	***100.0***
Small Urban and Rural Operating (State Funds)	3,174	-
Total Funds Required	**43,343**	-

3.3.3 Rail

Regional freight rail studies commissioned by TxDOT to assist the Rail Division in prioritizing projects, including costs and benefit information, have been completed in San Antonio, Houston, West Texas, East Texas, Corpus Christi/Yoakum, Dallas-Fort Worth, and Rio Grande Valley/Laredo. El Paso's regional freight system is currently being studied.

From the aforementioned studies, a number of needed improvements have been identified throughout much of the state and are summarized in Table 3-6. This list of projects is best considered as a plan in progress, as studies have yet to be completed for the San Angelo, Childress, Abilene, Wichita Falls, Waco, Beaumont, Bryan, and Brownwood districts.[141]

[140] Capital Expenses Forecasted by TTI, Operational Forecasts provided by TxDOT Public Transportation Division
[141] TxDOT. Texas Rail Plan Executive Summary.

Table 3-6: Estimated Costs of Identified Rail Improvements in TxDOT Districts ($ Millions)

TxDOT District	Crossing Closure	Crossing Closure and Pedestrian Bridge	Grade Separation	New Rail Connections	Total
Houston	5.7	7.0	785.9	3,384.4	4,183.0
Austin	0.4	-	238.0		
San Antonio Bypass	-	-	-	1,369.6	1,608.0
San Antonio	6.6	-	923.8	236.3	1,166.7
Dallas	1.7	-	151.1	-	152.8
Fort Worth	2.2	-	191.4	165.2	358.8
Corpus Christi and Yoakum	-	-	71.8	72.2	144.0
Amarillo	0.4	-	46.5	-	46.9
Lubbock	0.4	-	32.2	-	32.6
Odessa	-	-	4.8	-	4.8
Atlanta	0.2	-	31.0	-	31.2
Lufkin	0.4	-	-	-	0.4
Paris	0.4	-	9.3	-	9.7
Tyler	0.2	-	20.8	-	21.0
Total	18.6	7.0	2,506.6	5,228.0	7,759.9

The increasing population density coupled with the forecasted increase in rail traffic present a number of issues which must be addresses to ensure economic growth, safety, mobility, and improved air quality. Upgrading the existing system and possibly relocating freight rail activity from highly urbanized areas is necessary to adequately address these issues. Estimated annual freight rail needs are $637 million from 2005 to 2030:[142]

- Short line Infrastructure – $27 million;
- Class I Infrastructure – $396 million;
- Class I Noninfrastructure – $159 million; and
- Safety – $55 million.

Texas also has 41 regional, local, and switching and terminal railroads. Because of constrained resources, railroads trackage for these railroads is generally not as well maintained as Class I trackage because of deferred maintenance, aging lighter weight rail than is standard for Class I track, and little ballast. The industry-wide adoption of the 286,000-pound rail car in particular poses a hardship for most short line railroads

[142] Cambridge Systematics, Texas Rail Plan Draft Rail Short and Long Range Investment Program, "Table 7.1 Estimated Texas rail freight needs, 2005-2030,"p. 7-3.

because they do not have the capacity for the heavier cars and do not have the means to fund the $250 million investment necessary to accommodate them.[143] Bringing the short line infrastructure up to current standards is necessary to maintain their viability and to enhance freight choices in Texas.

TxDOT's Texas Rail Plan provides additional project-specific information regarding rail investment needs.

3.3.4 Commercial and General Aviation

Passenger travel demand at commercial airports is monitored continuously and airport development projects are initiated when demand drives the need for additional or expanded facilities. Table 3-7 depicts proposed projects that are planned at some of the larger commercial airports and the associated funding required for each.

Table 3-7: Examples of Projects at Commercial Airports

Airport	Proposed Projects	Funds required
Dallas Fort Worth International (DFW)	Upgrading Terminals A, B, C, rail service from DART and Fort Worth Transportation Authority.	$1.5–2 billion
Dallas Love Field	2014 – Modernization Program	$519 million (inflated)
George Bush Intercontinental Airport (IAH)	2025 – 2 new runways, terminal reconstruction	$9.4 billion (inflated)
Houston Hobby	2023 – Ground transportation, access roads, upgrading Runways	$1.4 billion (inflated)
San Antonio	2050 – new third terminal at the airport and a six store parking garage and increasing the length of runways	
	2015 Capital Improvement Program (CIP)– upgrading airfield infrastructure, terminal and parking facilities	$640 million (inflated)
Austin	2020 Master Plan – Terminal expansion, Third Runway, Construct Taxiways, Expand Parking Garage	$2.0 billion (2002 dollars)
	2014 CIP – apron expansion, passenger terminal expansion, new parking garage, cell phone waiting lot and a airport maintenance complex	$486 million (inflated)

The 2010 Texas Airport System Plan provides implementation costs for development of general aviation airports over the next 5 years. Altogether, almost $600 million in

[143] Texas Transportation Institute estimate cited by Cambridge Systematics in Texas Rail Plan Draft Rail Short and Long Range Investment Program, p. 7-30.

improvements have been identified for the reliever airports, while over $500 million in improvements have been identified for business/corporate, community and basic service facilities.

Projects needed to meet airport design standards account for the largest share of the improvement costs at all airports, followed by costs associated with maintaining and preserving airport pavements. The community service airports projected costs includes expenses for construction of two new airports in the short term and one proposed airport in the long term. A summary of costs by type of improvement for different classes of airport is included in Table 3-8.

Table 3-8: 2010–2015 General Aviation Development Costs ($ Thousands)

Airport Type	Safety	Preservation	Standards	Capacity	Planning	Misc.	Total
Reliever	7,600	96,245	432,747	43,124	2,554	12,456	594,726
Business/ Corporate	439	123,355	105,769	11,338	1,615	8,997	251,513
Community Service	45	75,268	75,812	13,352	1,350	5,669	171,497
Basic Service		27,963	47,390	686	390	2,892	79,322
Total	8,084	322,831	661,719	68,501	5,909	30,014	1,097,057

Source: 2010 Texas Airport System Plan

3.3.5 Waterways and Ports

Although Texas is home to several top 25 ports and one of the most heavily used inland waterways in the U.S.; the infrastructure has not kept pace with growth and will be greatly strained with the forecasted increases in freight traffic. Many of the channels have not been maintained at their authorized width and depth and locks are in need of repair. Many of Texas' ports are operating at less than their allowable drafts.

Maintenance of the authorized depth for the Houston Ship channel is lacking. In 2008 it was estimated that $231 million in federal funding was needed to return the channel and its tributaries to their authorized depth. The loss of 6 inches of draft between Houston and Corpus Christi translates to $30 million per year in extra transportation costs.

In addition to shipping channel issues, the port needs to continue to expand its support facilities. There is a major expansion underway for Houston that is scheduled to be completed in 2014 to coincide with the opening of the Panama Canal. The highway and rail connections from the port are often congested and need to be expanded.

TxDOT completed the replacement of the dual Interstate Highway 45 bridges over the Galveston Causeway in November 2008 and there is now over a 300-foot opening for barge traffic beneath the highway bridges. However, the adjacent Galveston Railroad Bridge only has an opening of 105 feet wide and this constriction remains the greatest hazard to navigation to the towing industry along the entire 1,300 miles of the GIWW.

In April 2009 United States Department of Homeland Security Secretary Janet Napolitano announced that the Galveston Bridge Alteration project was included in the projects identified to receive funding from the American Recovery and Reinvestment Act. Galveston County and the U.S. Coast Guard (USCG) proceeded to develop plans and specifications for the alteration project and on April 8, 2010 the $80.1 million bid of Cianbro/Brasfield and Gorrie was accepted to widen the bridge from 109 to 300 feet, convert the draw bridge into a lift bridge system, as well as other improvements. Construction is estimated to take 3 years.[144]

Dredging needs for all Texas ports, waterways and channels in 2010 dollars are estimated to be $100 million per year. Capital projects are estimated to be $130 million per year, equating to $3.25 billion by 2035. The grand total is $5.75 billion for maintenance and capital projects for ports and waterways through 2035.

3.3.6 Pipelines

Demand for pipeline capacity is driven by market forces. Much of the data needed to quantify needs and forecast funding is proprietary and is not available.

3.3.7 Intelligent Transportation Systems

Over the next 24 years, congestion and travel delays are expected to increase, placing significant economic and safety demands on the existing transportation system. ITS will allow state and local transportation agencies—as well as nongovernmental transportation providers—to innovatively use technology to reduce congestion and increase mobility at a lower cost than the traditional method of constructing new infrastructure. With no reliable method for forecasting either needs or the costs of ever-advancing technologies, ITS projects are evaluated on a case-by-case basis, not statewide.

ITS projects being funded in the next 4 years in MPOs and in the rural areas of the state can be found in the MPO TIPs and TxDOT's STIP under grouped projects (http://www.txdot.gov/business/governments/stips.htm).

[144] Department of Homeland Security, News Release, Available at: http://www.dhs.gov/ynews/releases/pr_1240253287014.shtm

3.4 Urban and Rural Highway Funding Forecast

TxDOT periodically prepares an 11-year financial plan outlined in the UTP that describes financial forecasts of funds. This plan is financially constrained. The UTP funding over the 11-year plan period through 2020 is projected to total in excess of $33 billion including the expected sale of bonds under Proposition 12 and Proposition 14, and toll revenue agreements, concession payments and contracted maintenance.

In November 2009, TxDOT released a long-range financial forecast approved by the Texas Transportation Commission. This forecast covers the period 2021 through 2035. Not counting new bonds that may be issued, the funds available for highways for 2010–2035 total over $58 billion—net of payments for existing bonds. Table 3-9 presents the baseline allocation of these anticipated future funds for the years 2010–2020 and 2021–2035.

Table 3-9: Future Funds for Highway Projects ($ Millions)[145]

Category	FY 2010–FY 2020	FY 2021–FY 2035
Preventive Maintenance and Rehabilitation	10,724	11,630
Metropolitan Area Corridor Projects	1,963	$0
Urban Area Corridor Projects	282	$0
Statewide Connectivity Corridor Projects	70	$0
Congestion Mitigation and Air Quality Improvement	1,246	2,230
Structures	2,813	3,750
Metropolitan Mobility/Rehabilitation	2,106	3,140
Safety	1,444	1,950
Transportation Enhancements	676	900
Supplemental Transportation Projects	818	490
District Discretionary	728	940
Strategic Priority	178	0
CATEGORY SUBTOTAL	**23,048**	**25,030**
Program		
Prop 12 (voter approved $5 Bn)	2,000	
Prop 14	818	
Prop 14 Safety Bond	423	
Concessions and Toll Revenue Agreements	2,431	
Federal Earmarks	625	
Pass through Finance	749	
ARRA	1,247	

145 Texas 2010 UTP and Minute Orders 112048 and 112049 approved by TxDOT in November 2009

Table 3-9: Future Funds for Highway Projects ($ Millions)[145]

Category	FY 2010–FY 2020	FY 2021–FY 2035
Contracted Routine Maintenance	2,054	
PROGRAM SUBTOTAL	**10,347**	
GRAND TOTAL	**58,425**	

3.5 Public Transportation Funding Forecast

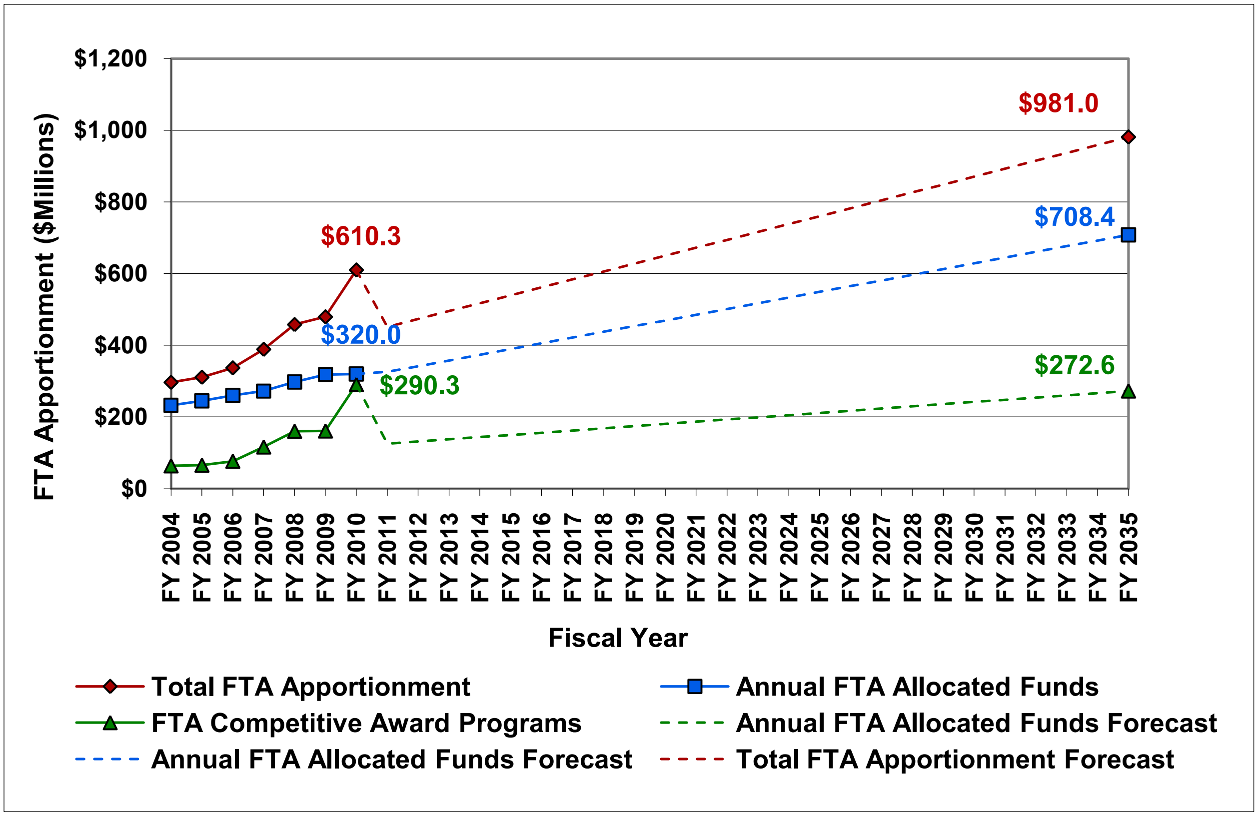
Public transportation in Texas is a responsibility of local government. Funding for public transportation comes from federal, state, and local resources. The largest transit agencies are funded with a dedicated local sales tax. State transit funds are distributed to small urban and rural transit providers; the state does not fund transit programs in large metropolitan areas where most of the state's population resides. The source of local government funds for the smaller urbanized and rural providers is the general revenues of cities and counties served by these providers.

The FY 2010 total federal apportionment was $610 million for all Texas public transportation. There are two types of federal transit programs: allocations and competitive awards. Allocations are provided annually based on formulas for distributing funds to each type of public transportation system. Competitive awards are competitively are awarded based on applications for specific projects. Because competitive awards cannot be predicted future award amounts are difficult to forecast. For the SLRTP, a trend line forecast of the previous seven FY years (2004-2010) was used to develop anticipated 2035 Federal Transit Administration (FTA) allocated funds (Figure 3-1). Additionally, FTA competitive awards were also forecast. The forecast of FTA competitive awards is based on the average percentage of competitive awards to annual allocated funds from 2004 to 2009. This forecast of $981 million does not represent a true need for public transportation. Transit providers program services based on annual allocations.

Most public transit agencies in Texas have plans to expand their operations, but are forced to delay those plans due to the current economy. Many are focusing instead on less costly, more efficient alternatives that incrementally increase ridership. The long-term needs of the metropolitan areas are outlined in the MPO MTPs, but many of the projects are only planned and do not yet have funding for implementation. The projects being funded in the next 4 years in MPOs and in the rural areas of the state can be found in the MPO TIPs and TxDOT's STIP at:

http://www.txdot.gov/business/governments/stips.htm

Figure 3-1: Historical and Forecast FTA Apportionment[146]



3.6 Funding and Revenue Sources

3.6.1 Ongoing Major Transportation Related Revenues

The State of Texas receives revenues from some 40 different transportation taxes and fees, including federal funds. Motor fuel taxes, registration fees, and federal funds dominate the resources that are available to TxDOT for transportation (Table 3-10). TxDOT prepares 11-year forecasts in support of the UTP. These forecasts rely on trend analysis, rather than attempting to prepare independent forecasts of each of the major forces that influence total revenues.

TxDOT adjusts these trend forecasts for economic trends as well, relying most strongly on forecasts made by independent consultant firm IHS Global Insight for a variety of economic factors, including the rate of retail sales growth. Beyond the 11-year baseline forecast provided by TxDOT as part of the UTP, the analysis presented here uses the forecasts approved by the Texas Transportation Commission on November 19, 2009.[147]

146 FTA, Grants and Funding, Annual Apportionments

147 Independent forecasts were not carried out since competing forecasts risked creating confusion among the readers.

3.6.1.1 Motor Fuel Taxes

State motor fuel taxes are the largest source of state revenue to the SHF. The current state tax rate is 20¢ per gallon for gasoline and diesel and 15¢ per gallon for liquefied petroleum gas (LPG). In addition, the federal government collects taxes of 18.4¢ per gallon for gasoline and 24.4¢ per gallon of diesel fuel—making a total of 38.4¢ per gallon of gasoline and 44.5¢ per gallon of diesel fuel. The Texas Comptroller retains 1 percent of the total amount collected for administration and enforcement of the state tax. After providing refunds for nonhighway use collections, 25 percent goes to the state's Available School Fund. The remaining amount gets deposited to the SHF.

Gasoline taxes constitute nearly 74 percent of motor fuel tax revenues and the rest comes from diesel fuel taxes and LPG taxes. In 2009, state motor fuel tax revenues decreased by 2.17 percent, showing the impact of the economic recession (diesel tax receipts actually dropped by more than 10 percent in 2009) and from the impact of high gasoline prices in 2008. While diesel tax receipts grew by 39 percent between 2000 and 2009, gasoline taxes only increased by 9 percent. This reflects a historical trend toward slower growth in automobile VMT and the use of more fuel-efficient vehicles in recent years. The steady growth in diesel tax receipts (until 2009) reflects the increased growth in freight transportation and the greater market share generated by trucks relative to rail and other modes.

Table 3-10: Transportation Related Revenues

TEXAS STATEWIDE LONG-RANGE TRANSPORTATION PLAN
STATE HIGHWAY FUND (SHF) REVENUE SOURCES

Motor Fuel Taxes
- Major source of SHF revenue.
- Tax rates:
  - Gasoline and diesel – 20¢/gallon (state tax)
  - Liquefied petroleum gas – 15¢/gallon (state tax)
  - Gasoline – 18.4¢/gallon (federal tax)
  - Diesel – 24.4¢/gallon (federal tax)
- Of the state tax, 74% goes to SHF; 25% goes to Available School Fund; 1% goes to State Comptroller.
- 2009 SHF Revenue: $2,227 million

State Sales Taxes *(on vehicles and motor oil)*
- Highest single source of transportation-related revenue, although majority goes to the General Fund (GF).
- 6.25% tax on the sale of motor vehicles goes to GF.
- 6.25% tax on the sale of motor oil goes to SHF.
- 2009 GF Revenue: $2,300 million
- 2009 SHF Revenue: $40 million

Federal Receipts
- Distributed by federal agencies including FHWA, FAA, FMCSA, and FTA (95% from FHWA Highway Trust Fund).
- Historically, Texas has been a donor state and receives less than 90% of the funds deposited to highway trust fund from the state by federal motor fuel taxes.
- 2009 Revenue Redistributed to Texas: $2,667 million

Vehicle Registration Fees
- Service fee and sliding scale portion (for *County Road and Bridge Fund)* retained by county.
- Remainder remitted to the SHF and Texas Mobility Fund.
- 2009 SHF Revenue: $1,136 million

Licenses, Fees and Permits
- Collected for issuing driving licenses and providing driver record information.
- Progressively larger amounts are being diverted to Texas Mobility Fund.
- 2009 SHF Revenue: Negligible

Other Sources of Revenue
- Additional taxes and fees received by way of tolls, concessions, general fund appropriations, bonds, local funding matches, County Road and Bridge Funds.
- Concessions give a private firm the right to design-build-operate-maintain a specific roadway with upfront payments to TxDOT.

Stimulus Funds
- Of $2.25 billion American Recovery and Reinvestment Act (ARRA) funds for highways and bridges:
  - $1.68 billion to the Texas Transportation Commission.
  - $500 million to the state's Metropolitan Planning Organizations (MPOs).
  - $67.5 million for transportation enhancement projects (e.g. hike and bike trails).
- Additional $371 million to transit agencies, with $50 million provided to TxDOT for disbursement to rural and smaller cities.

3.6.1.2 State Sales Taxes

Sales taxes (a 6.25 percent state rate) collected on sale of motor vehicles and the sale, storage, or use of lubricating and motor oils for motor vehicles constitute the highest single source of revenues related to transportation—although most of these funds are deposited in the state's General Fund (GF) and are not used for transportation projects. Revenue from sale of motor vehicles (including seller financed vehicles and motor carrier vehicles) are deposited into the state GF and totaled more than $2.3 billion in 2009—a significant decline from the $3 billion received in 2007 and 2008 due to the economic recession. Sales tax revenues from lubricants ($40 million in 2009) are deposited into the SHF.

3.6.1.3 Vehicle Registration Fees

Vehicle registration fees vary by class of vehicle. The current registration rate for new cars is $58 per car. Motor vehicle registration fees are collected by the county tax assessor-collector and remitted to either the SHF or the Texas Mobility Fund (TMF) after deducting service fees ($1.90 for each receipt) and an apportionment to the County Road and Bridge Fund. The apportionment amounts are the first $60,000 of collections, 100 percent of net collections equal to $350 per mile of county-maintained roads up to 500 miles; 70 percent of the 5 percent of the tax and penalties collected on all sales of motor vehicles in the county during the preceding calendar year; and 50 percent of the next $250,000 of net collections. The remainder of the fees are remitted to the SHF (with the exception of approximately $3,000 going to the TMF for United We Stand plates). Revenue from special vehicle permits (for oversized and overweight vehicles) also goes into the state GF and SHF.

3.6.1.4 Licenses, Fees, and Permits

The state collects fees for services offered through the Department of Motor Vehicles and the Department of Public Safety for issuing driver licenses and providing driver record information. Over time, larger fractions of these taxes have been paid into the TMF.

3.6.1.5 Federal Receipts

TxDOT receives funds from several federal agencies: FHWA, FAA, Federal Motor Carrier Safety Administration (FMCSA), and FTA. FHWA funds (mainly from taxes on motor fuel, truck tires, new truck sales and a heavy vehicle tax paid into the federal Highway Trust Fund) constituted about 95 percent of total federal funds received by Texas in 2009. These funds are deposited into the SHF once the state invoices FHWA for expenditures that are eligible for reimbursement with federal funds (primarily construction, rehabilitation work, preliminary engineering, and rights-of-way work).

Current funding allocations reflect apportionments set forth in the most recent multi-year federal surface transportation authorization bill: Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Texas is a donor state, meaning that it pays more into the federal Highway Trust Fund than it receives back in federal funds. Since the start of the modern federal highway program in 1956, the state has received about 80 percent of the federal highway fees paid by its residents. For example, in 2005, Texas paid over $500 million more in federal user fees than it received in FHWA funds.[148] Of course, the federal program was enacted to support national goals, but Texas has provided the largest state subsidy to the national program of any state.[149] Over the past 2 years, Congress has appropriated more than $60 billion in general fund monies for surface transportation (some for the stimulus program and some to shore up the federal Highway Trust Fund).

3.6.2 Nonrecurring Major Transportation Related Revenues

Nonrecurring transportation related revenues are limited in their amounts and/or duration of funding. These revenues cannot be relied on to provide predictable, continuous funding to fulfill transportation needs of the state, but rather serve as short-term solutions. In many cases, however these sources of revenue allow transportation projects to move forward that would have otherwise been delayed for many years.

3.6.2.1 Toll Road Revenue Bonds

TxDOT is able to construct toll road infrastructure using proceeds from Toll Road Revenue Bonds. Toll collections are pledged for repayment of toll-revenue bonds that have been issued.

3.6.2.2 Concession Agreements

In recent years, TxDOT has delivered toll road infrastructure through long-term leases called concessions that give a private firm the right to design, build, operate, and maintain a specific roadway for a certain number of years. A competitive bidding process is used to select the entity to operate the concession or toll revenue agreement, occasionally, with upfront payments to TxDOT for this right.

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[148] Ronald Utt, Heritage Foundation Backgrounder, “Restoring Regional Equity to the Highway Trust Fund” (October 2007).

[149] See FHWA Highway Statistics 2008, “Comparison of Federal Highway Trust Fund Highway Account Receipts Attributable to the States and Federal-Aid Apportionments and Allocations from the Highway Account http://www.fhwa.dot.gov/policyinformation/statistics/2008/fe221.cfm

For the SH 130 concessions, a team led by Cintra and Zachry American Infrastructure paid $25 million up front and a share of the gross project revenues over time for the right to build, operate, and maintain a toll road between Austin and San Antonio. In accordance with state law, the funds paid to TxDOT by the private sector will be used for transportation infrastructure projects in the region in which the toll road was built. The San Antonio and Austin regions have begun work and developed plans to use the funds from the SH 130 concession.

Some concession agreements require a contribution of public funds rather than a payment from the private sector. These concession agreements are only entered into if TxDOT estimates it will receive significantly more value in terms of roadway improvements, operations, and maintenance versus the public funds it is required to contribute to the project under the concession agreement. For example, for the North Tarrant Express (NTE) project, TxDOT provided $572 million in public funds in order to receive approximately $2.5 billion of roadway improvements and operations and maintenance for approximately 50 years.

TxDOT had a similar outcome on the I-635 project where it contributed $490 million to receive approximately $4 billion of roadway improvements and operations and maintenance for approximately 50 years. If it were not for these concession agreements, these major roadway projects would not be delivered for decades, if ever, due to their significant cost. It is also important to keep in mind that at the end of these long-term leases, the lessor is required to maintain the road such that it can be turned over to TxDOT in good condition.

In addition to concession agreements with the private sector, in 2008, the North Texas Tollway Authority (NTTA), a quasi-governmental toll road operator in the Dallas and Fort Worth area, paid $3.2 billion for the right to build, operate, and maintain the SH 121 toll project located in Denton and Collin counties. These funds will also be used in the region in which the toll road was built, but within a smaller geographic area as required by the state law that applies to the receipt of this type of funds. In fiscal year 2008–2009, $691 million went towards projects in the Dallas/Fort Worth area.

3.6.2.3 General Obligation Bond Proceeds

Another source of revenue was authorized by voters in 2007 with Proposition 12, which with accompanying legislative appropriations, would allow for issuance of up to $5 billion in general obligation bonds to provide funding for highway improvement projects. The first $2 billion of Proposition 12 was appropriated to TxDOT in 2010–2011. These bonds are backed by state GF revenues, not transportation user fees from the SHF.

3.6.2.4 Stimulus Funds

The ARRA awarded $2.25 billion to transportation projects in Texas as part of the economic stimulus package for highways and bridges. Of that, $1.68 billion was allocated directly to TxDOT and $500 million was allocated directly to the state's Metropolitan Planning Organizations (MPOs), while the remaining $67.5 million was allocated for transportation enhancement projects (e.g., hike and bike trails). In addition, Texas received awards of $371 million in stimulus funds for transit, with $50 million provided to TxDOT for disbursement to rural and smaller cities.

3.7 Funding Mechanisms and Debt Programs

Funding mechanisms are utilized to determine how funds are used—for example, for direct expenditures, debt repayment, and/or loan programs, TxDOT relies on the SHF for most operating expenditures.

The SHF and TMF Bond programs allow TxDOT to leverage ongoing transportation revenues into up front debt issuance proceeds. Proposition 12 bonds will be funded by general revenues of the state. Bond programs are authorized through the legislature and are limited in scope by their authorization.

3.7.1 State Highway Fund

The SHF is restricted to expenditures for building, maintaining, and policing of state highways. Table 3-11 and Figure 3-2 provide details on revenue sources to the SHF—a portion of the total transportation-related revenues shown in Table 3-10.

Table 3-11: State Highway Fund Revenues

Fund Type	Revenue in Millions (current dollars – not adjusted for inflation)								
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
State Motor Fuel Tax	2,022	2,078	2,087	2,130	2,148	2,194	2,238	2,276	2,227
Motor Vehicle Registration Fees	752	730	789	846	875	933	984	1,024	1,066
Special Vehicle Registration Fees	-	15	13	14	17	20	23	56	70
Sales Tax on Lubricants	29	30	31	32	33	35	37	39	40
Vehicle Certificate Fees	18	19	18	24	24	26	26	27	26
Total Tax Receipts	**2,821**	**2,872**	**2,938**	**3,046**	**3,097**	**3,208**	**3,308**	**3,422**	**3,429**
Federal Funds	1,809	2,320	2,604	2,776	3,250	3,091	1,974	2,690	2,667
SHF Bond Proceeds (Proposition 14)	-	-	-	-	-	628	1,001	1,473	-
Commercial Paper	-	-	-	-	-	300	170	270	445*

Table 3-11: State Highway Fund Revenues

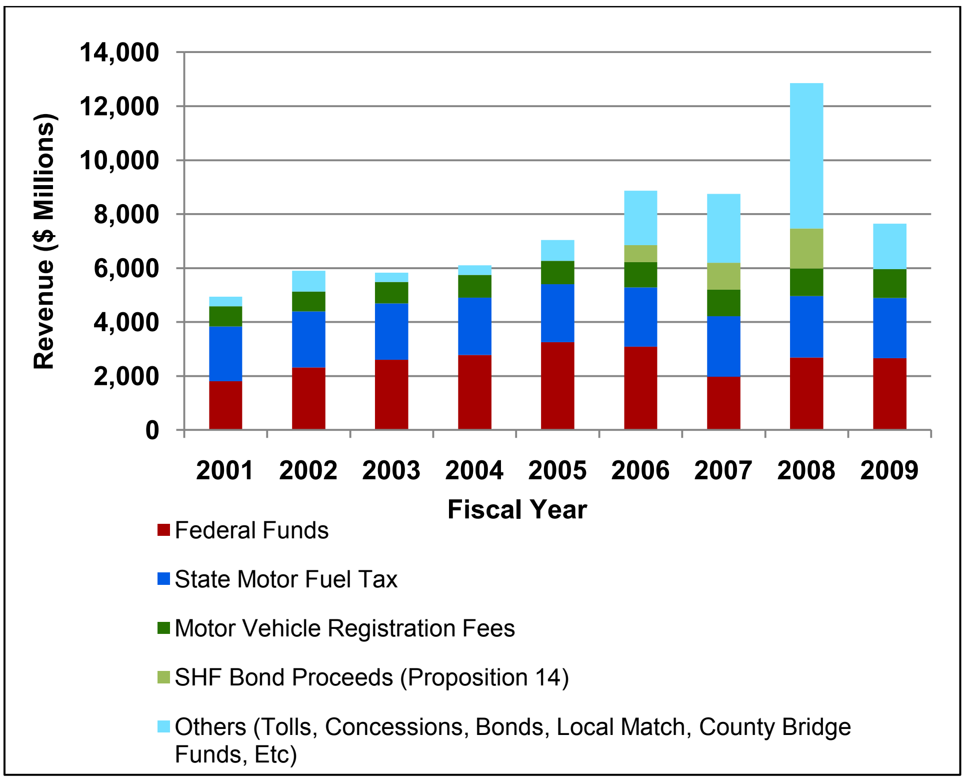
Fund Type	Revenue in Millions (current dollars – not adjusted for inflation)								
	2001	2002	2003	2004	2005	2006	2007	2008	2009
Concession Agreements	-	-	-	-	-	-	-	3,197	-
Others**	311	713	292	281	690	1,642	2,292	1,804	1,100
Total	4,941	5,905	5,834	6,103	7,037	8,869	8,745	12,856	7,641

Source: Texas annual cash report at http://www.window.state.tx.us/finances/pubs/cashrpt/

*Outstanding commercial paper totaled $65 million as of June 2010.

**Others fees includes cash transfers from other accounts, toll revenue, ARRA funds, and local participation funds.

Figure 3-2: State Highway Fund Revenues (current dollars, not adjusted for inflation)



Source: Texas Annual Cash Report

The three main categories of funds that are deposited in the SHF are (1) dedicated highway revenues, (2) federal reimbursements for eligible expenditures, and (3) bond proceeds (until authorized bond issuance is used up). Additional revenues include revenues from concession agreements or toll-road agreements, commercial paper, and other revenues such as interest on SHF balances.

The largest source of funds for the SHF is dedicated revenues. These revenues include motor fuel taxes, vehicle registration fees, sales tax on lubricants, and vehicle certificate of title fees. State motor fuel taxes are the largest single source of revenue for this fund. Revenues from this tax have shown slow growth (an increase of only about 10 percent total between 2001 and 2009—not enough to keep pace with inflation).

The second largest source of revenue for the fund is federal reimbursements for eligible expenditures. These reimbursements have seen fluctuation throughout the past decade. Looking ahead, long-term growth in federal funds is impossible without an increase in federal user fees or without long-term reliance on the federal GF. The U.S. Congress has used more than $60 billion from the federal GF in fiscal years 2009 and 2010 to provide short-term support for the federal Highway Trust Fund and as part of the economic stimulus program. But continued reliance on federal general funding for highways would represent a dramatic change in policy and might be difficult given the current size of the federal budget deficit.

Another major source of funds in the SHF is bond proceeds. Proposition 14 allows TxDOT to issue up to $6 billion in revenue bonds (with $2.4 billion set aside for safety projects) and a maximum of $1.5 billion of bond issuance in each fiscal year. Through FY 2009 TxDOT issued $3.1 billion of Prop 14 bonds and expects to issue the remaining $2.9 billion by the end of FY 2012. The bonds have a senior lien on revenues of the SHF and must mature within 20 years of issuance.

TxDOT uses commercial paper (short-term loans) to manage temporary cash flow shortfalls and manage operations more efficiently. TxDOT can issue a maximum of $500 million in these short-term notes, which are repaid from future SHF revenue.

The largest expenditure from the SHF is for highway construction, followed by TxDOT employee wages (Table3-12). In 2009, construction made up 49 percent of all SHF expenditures. Construction includes new roads and bridges as well as major reconstruction work. Indeed, new capacity is a declining share of total state spending on roads and bridges.

Table 3-12: Major Categories of State Highway Fund Expenditures ($ Millions)

	Total Expenditures	Highway Construction	Salaries and Wages	Repairs and Maintenance	Professional Services	Others**
2001	5,132.9	2,978.8*	947.1		278.1	928.9
2002	5,669.4	3,344.2	1,035.5	247.9	280.9	760.9
2003	5,599.4	3,287.7	1,062.6	308.6	240.5	700.0
2004	6,114.5	3,492.9	1,142.0	334.6	286.3	858.7
2005	7,521.7	4,630.4	1,152.9	334.1	383.7	1,020.6
2006	8,528.8	5,132.8	1,265.1	374.5	425.4	1,331.0
2007	8,845.5	5,359.4	1,314.2	357.8	478.8	1,335.3
2008	8,921.9	5,208.6	1,013.4	418.5	412.2	1,869.2
2009	8,549.2	4,204.2	1,025.8	462.1	284.8	2,572.3

Source: Highway Funding Primer, Legislative Budget Board Staff – February 2009

*In 2001, highway construction and maintenance expenditures were combined as one category.

** Others category includes – payments for debt services, expenditure on supplies and materials, public assistance and intergovernmental payments.

3.7.2 Texas Mobility Fund

The TMF was created in 2001 to allow certain transportation revenues to support revenue bonds. Bond proceeds are used to fund the acquisition, construction, maintenance, and expansion of highways and publicly owned toll roads and other public projects. This allows TxDOT to leverage certain revenues to attain more funding for projects sooner. This is in contrast to the earlier pay-as-you-go system where bonds were limited to those backed by toll revenues.

Tax revenues from different taxes are deposited into this fund. As shown in Table 3-13, revenue from certificate of title fees beginning in FY 2009, vehicle inspection fees beginning in FY 2006, driver license fees beginning in FY 2008, driver record information fees beginning in FY 2007, and vehicle inspection fees beginning in FY 2006 were all deposited into this fund. Proposition 15 allows TxDOT to issue up to $6.4 billion in bonds backed by funds in the TMF. These bonds are also guaranteed by the state GF.

Table 3-13: Texas Mobility Fund Revenues

Revenue in $ Millions (current dollars, not adjusted for inflation)					
Texas Mobility Fund	**2005**	**2006**	**2007**	**2008**	**2009**
Driver Record Information Fees			54	62	58
Driver License Fees				118	102
Motor Vehicle Inspection Fees		83	85	86	83
TMF Bond Proceeds	1,041	771	2,245	1,157	1,201
Vehicle Certificate of Title Fees					74
Others*	83	29	183	-106**	17
Total	1,124	883	2,567	1,317	1,534

Source: Texas annual cash report at http://www.window.state.tx.us/finances/pubs/cashrpt/

* Others category includes Motor Carrier Act Penalties, Interest on State Deposits and Treasury Investments – General, Non-Program, Other Miscellaneous Governmental Revenue

** In late fiscal year 2007, $64 million in court fines and $80 million from driving license surcharges revenue was erroneously deposited into the TMF by the Texas Department of Public Safety (DPS). It was transferred out of TMF in early fiscal year 2008 to correct the error.

3.7.3 Proposition 12 General Obligation Bonds

In November of 2007, under referendum Proposition 12, Texas voters authorized the Texas Transportation Commission to issue up to $5 billion in general obligation bonds for the purpose of highway construction. Debt service on the General Obligation (GO) bonds is paid by state general revenue. In July 2009, the Texas Legislature, in House Bill 1, 81st Legislature, appropriated $3 billion of the Prop 12 bonds, including $1 billion to create a state-funded State Infrastructure Bank.

The remaining $2 billion was appropriated for nontolled road construction. Currently, no Prop 12 debt is outstanding. Legislative Budget Board (LBB) approval is required for Prop 12 issuance and $1 billion has been approved by the LBB. TxDOT plans to issue $1 billion of Prop 12 bonds in September 2010 for nontolled highway construction projects. Funds may not be used for conversion of a nontolled road to a toll road.

3.7.4 Toll Road Bonds

The Texas Transportation Commission is authorized to issue Project Revenue Bonds (or Toll Road Bonds) where the bonds are secured by the toll revenue collected. To date, the Texas Transportation Commission has only issued such bonds for the Central Texas Turnpike System in Austin ($1.29 billion). The bonds do not constitute an obligation of the state, the Texas Transportation Commission, TxDOT, nor any agency or political subdivision of the state. Toll road bonds enable future toll revenues to be leveraged to build current transportation assets.

3.7.5 Other Debt Strategies

Texas also has access to other sources of funds, including the federal Transportation Infrastructure Finance and Innovation Act (TIFIA) loans and loan guarantees; loans issued by the Texas State Infrastructure Banks (SIB) and Grant Anticipation Revenue Vehicles (GARVEE) backed by future federal funds,

- **TIFIA loans:** The TIFIA program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. TIFIA credit assistance provides improved access to capital markets, flexible repayment terms, and more favorable interest rates than can be found in private capital markets for similar instruments. TIFIA can help advance qualified, large-scale projects that otherwise might be delayed or deferred because of size, complexity, or uncertainty over the timing of revenues.

  TIFIA allows the U.S. Department of Transportation to provide direct credit assistance of up to 33 percent of project costs to sponsors of major transportation projects. Projects in Central Texas like the Central Texas Turnpike ($900 million TIFIA loan), SH 130 ($430 million TIFIA loan), U.S. Highway 183A ($66 million TIFIA loan), and projects in the Dallas-Fort Worth metropolitan area, (North Tarrant Express ($650 million TIFIA loan) and I-635 [$800 million TIFIA loan]) have benefited significantly with loans from TIFIA. TIFIA loans have flexible repayment schedules, something of value during the early years of a new toll facility.
- **State Infrastructure Bank (Federal):** Texas was chosen as 1 of the 10 states to test the SIB program in 1995. The Texas SIB was started in 1997 with federal funding and the state has since expanded the bank. The Texas SIB follows a formal application process and provides direct loans to Texas public agencies with attractive interest rates (lower than commercial market rates) and receives revenues from repayment of principal and interest. Additional capital can be, but has not been provided by the state, from a variety of revenue sources. The Texas SIB is a revolving loan fund, where the account balance grows through the monthly interest earned and repaid principal and interest. As of July 2010, TxDOT has approved 91 loans totaling more than $417 million from the SIB, helping to leverage approximately $4 billion in transportation projects in Texas.
- **Proposition 12 funded State Infrastructure Bank (State):** In July 2009, the Texas Legislature, in House Bill 1, 81st Legislature, appropriated $1 billion to a state funded SIB program. Funding will come from future Proposition 12 bond proceeds. As indicated above, Proposition 12 SIB bonds have not been approved by the LBB and have not been issued. Once funded and SIB loans are made, it is contemplated that revenues from the loans may be used to secure additional revenue bonds. A public entity may borrow from the fund in order to construct, maintain, or finance a tolled or nontolled transportation project.
- **GARVEE bonds:** GARVEEs are bonds or notes whose principal and interest is to be repaid from future federal aid funds. Proceeds from GARVEE bonds must be used for FHWA-eligible expenditures. They do not require a public referendum or increased motor fuel taxes. However, bonds maturing over a long period face a reauthorization risk as Congress may alter total funding for surface

transportation, may change the allocation between highways and transit, and/or the allocations among states.

Between 1997 and 2008, 20 states issued GARVEE bonds, totaling $9.3 billion. Texas has not issued any GARVEE bonds to date, though it has the authority. Transit agencies can use similar mechanisms to borrow against future federal-aid funding known as Grant Anticipation Notes (GANs). Given the current uncertainty over federal legislation, GARVEE bonds do not appear attractive since they depend on future federal authorizations and the Congress is currently 1 year behind the schedule called for under current practice.

- **Private Activity Bonds:** SAFETEA-LU (Title XI, Section 11143) amended Section 142 of the Internal Revenue Code expanded the eligibility of Private Activity Bonds (PABs) to include highways and freight transfer facilities to the types of privately developed and operated projects. PABs provide private developers and operators of transportation facilities access to tax-exempt interest rates that lowers the cost of capital significantly, enhancing investment prospects. Increasing the involvement of private investors in highway and freight projects generates new sources of money, ideas, and efficiency.

  SAFETEA-LU limits the amount PABs $15 billion dollars with applications approved by the Secretary of Transportation. As of January 2010, seven projects have been approved for $6.3 billion. Two projects in Texas – North Tarrant Express for $400 million and LBJ Freeway for $2,650 million – represent 48 percent of the approved financing.

  http://www.fhwa.dot.gov/ipd/how_business/fact_sheets/pabs.htm

- **Buy America Bonds:** The Buy America Bonds (BAB) program was a component of the American Recovery and Reinvestment Act (ARRA) enacted in February 2009 to stimulate the economy, create jobs, and encourage investments in capital projects. The program provides a Federal subsidy of 35 percent of the interest payment for state and local governments as a trade-off for issuing taxable bonds instead of tax-exempt bonds for government purposes, including transportation. The subsidy reduces the cost of borrowing to below that of traditional tax-exempt bonds. There was no cap in volume of bonds eligible for this program, but BABs must be issued prior to January 1, 2011. The program is administered by the U.S. Treasury.

  Nationally, local governments in 49 states, DC and two territories issued $106 billion between April 3, 2009 and May 31, 2010. In Texas, 51 issuances totaled $8.319 billion, of which $3.057 billion was for transportation. The transportation bonds were issued by TxDOT ($1,208 M), RMAs ($61 M), MTAs ($913 M) and NTTA ($913 M).

  http://www.fhwa.dot.gov/ipd/how_business/fact_sheets/babs.htm

- **Transportation Reinvestment Zones:** A Transportation Reinvestment Zone (TRZ) provides a way to capture taxes from a portion of the increased value in real estate resulting from a highway improvement. In Texas, this mechanism is only available to municipalities and counties that are planning to execute a pass through finance agreement to fund a highway project. Municipalities and counties can keep one-half of the revenue to be used for any purpose with the TRZ and use the other one-half of the revenue for use on future pass-through projects. The first TRZ in Texas was established in the City of El Paso on nine separate but contiguous corridors in December 2008.

http://texinfo.library.unt.edu/texasregister/html/2007/dec-28/adopted/43.TRANSPORTATION.html

Table 3-14 shows the major bonding programs of TxDOT.

Table 3-14: Major Bonding Programs ($ Billions)

	SHF (Prop 14)	**TMF**	**Prop 12 GO**
Revenue Source	State fees and taxes + federal reimbursements	State fees and taxes	General Fund of the State
Purpose/use	Highways	Highways	Highway Construction, State SIB
Amount Authorized	6.0	**Only limited by debt service requirements. Current estimated capacity 6.4**	5.0
Amount Appropriated	Restricted to 1.5 issuance per year		30, including 1.0 for SIB
Amount Approved by LBB			1.0 for HW Construction
2005		1.000	
2006	1.553	1.790	
2007	1.242	1.006	
2008	0.163	1.100	
2009		1.208	
2010	1.500		1.000
2011			
2012	1.400		

3.8 Nonhighway Funding and Revenue Sources

3.8.1 Public Transportation Finance

Financing the construction, operation, and maintenance of these transit systems involves funds from different types of sources, including federal and state grants, loans, bonds, local sales taxes, passenger fares, and advertising fees. For major capital improvements, transit agencies rely on federal grants, bond market investments and other innovative financing schemes, TIFIA loans or SIB grants.

3.8.1.1 Federal Transit Funding

Every year the FTA distributes the annual appropriation from Congress to fund a variety of transit related activities. These grants require matching funds at state and local level depending on the type of expenditure. In 2008, Texas ranked sixth in the nation in the apportionment of federal funding for transit received from FTA under various grant programs. Table 3-15 shows the federal grants received between 2004 and 2010. More than 50 percent of the federal funds received have been under the urbanized area program, to fund transit needs in metropolitan areas. Under the bus and bus related equipment and facilities program (administered as part of capital program) capital assistance for new and replacement buses, related equipment, and facilities is provided to supplement formula funding in both urbanized and rural areas.

Table 3-15: FTA Transit Funding to Texas 2004–2010 ($ Thousands)

Program Number	Program	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
5307	Urbanized Area Formula Program - 1m and over	129,698	136,000	132,014	137,542	149,757	158,483	158,493
5307	Urbanized Area Formula Program - from 200k - 999,999	35,558	37,760	37,602	38,510	41,582	45,497	45,581
5307	Urbanized Area Formula Program - less than 200k	30,160	31,608	33,525	34,767	38,055	40,583	40,485
5309	Capital Investment Program - Fixed Guideway	9,982	12,211	14,925	16,781	19,966	22,859	24,493
5311	Nonurbanized Area Formula Program	16,113	16,866	28,096	29,711	32,047	33,830	33,801
5311(b)(3)	Rural Transit Assistant Program	191	190	280	334	350	373	380
5310	Special Needs for Elderly Individuals and Individuals with Disabilities	5,625	5,900	6,940	7,357	8,020	8,620	8,488
5303	Metropolitan Transportation Planning Program	4,511	4,451	5,682	6,047	6,477	6,873	6,875
5304	Statewide Transportation Planning Program	-	-	1,166	1,244	1,327	1,468	1,434
5313	Statewide Planning and Research Grant Program	956	956	-	-	-	-	-
Total Annual Allocated Program		**232,796**	**245,942**	**260,231**	**272,293**	**297,581**	**318,586**	**320,031**
5308	Clean Fuels Program	-	-	3,175	3,332	3,622	3,839	0
5309	Bus and Bus Facility Program	19,827	44,746	31,034	13,960	24,824	31,054	12,605
5309	New Starts Program	37,558	17,856	23,522	80,000	111,230	101,945	253,495
5316	Job Access and Reverse Commute Program	5,458	2,329	12,461	13,135	14,229	16,701	15,968
5317	New Freedom Program	-	-	5,616	5,917	6,392	7,368	7,232
5314	National Research Program	956	913	990	-	-	-	1,000
Competitive Award Programs		**63,799**	**65,845**	**76,799**	**116,344**	**160,297**	**160,907**	**290,300**
Total Funding		***296,595***	***310,831***	***337,030***	***388,637***	***457,879***	***479,493***	***610,331***

Source: Federal Transit Administration

3.8.1.2 Stimulus Funds for Transit

Approved in February 2009, the ARRA provided approximately $371 million for public transit improvements in Texas. Texas' urban transit providers will receive funding through direct allocations in the amount of $321 million. Rural areas have been allotted $42 million for rural program operators and $8 million intercity bus projects.

3.8.1.3 State and Local Transit Funds

States and other public agencies may appropriate funds for transit services from their GF. These funds may be made up of revenues from a number of sources including state sales taxes, property taxes, and income taxes. Table 3-16 and Table 3-17 show federal, state, and local funds received by transit agencies under the urbanized area program and nonurbanized area program.

Table 3-16: Transit Providers Supported with State Funds through TxDOT

District	Urbanized Area	FY 2010 Federal $ (5307)	FY 2010 State $	FY 2008 Local $	Total $
Abilene	Abilene	1,546,438	364,513	1,670,078	3,581,029
Amarillo	Amarillo	2,687,153	410,583	1,712,171	4,809,907
Fort Worth	Arlington	*	243,739	1,050,624	1,294,363
Beaumont	Beaumont	1,774,153	425,296	4,134,103	6,333,552
Pharr	Brownsville	3,037,022	569,719	4,847,885	8,454,626
Bryan	College Station-Bryan	2,101,108	373,278	1,485,005	3,959,391
Houston	Galveston	1,644,405	458,596	746,322	2,849,323
Dallas	Grand Prairie	*	159,579	150,197	309,776
Pharr	Harlingen-San Benito	1,467,617	152,917	11,969	1,632,503
Waco	Killeen, Copperas Cove, Harker Heights	2,624,272	404,769	1,284,406	4,313,447
Houston	Lake Jackson-Angleton	1,042,039	247,501	50,485	1,340,025
Laredo	Laredo	4,040,202	708,885	8,643,887	13,392,974
Tyler	Longview	952,721	238,830	367,045	1,558,596
Lubbock	Lubbock	2,824,406	634,681	7,066,614	10,525,701
Pharr	McAllen Urbanized Area (UZA)	3,566,400	468,850	2,369,888	6,405,138
Dallas	McKinney	746,087	245,404	802,434	1,793,925
Dallas	Mesquite	*	142,455	237,783	380,238
Odessa	Midland-Odessa	2,968,119	446,746	897,184	4,312,049
Fort Worth	North Richland Hills	*	116,134	63,654	179,788
Beaumont	Port Arthur	1,746,929	309,750	841,565	2,898,244

Table 3-16: Transit Providers Supported with State Funds through TxDOT

District	Urbanized Area	FY 2010 Federal $ (5307)	FY 2010 State $	FY 2008 Local $	Total $
San Angelo	San Angelo	1,486,406	266,188	511,706	2,264,300
Paris	Sherman-Denison	724,425	236,608	218,402	1,179,435
Waco	Temple	922,789	262,261	942,855	2,127,905
Atlanta	Texarkana (Federal also includes ArkTex)	532,087	250,284	400,902	1,183,273
Houston	Texas City	1,208,395	251,290	111,990	1,571,675
Houston	The Woodlands	1,720,087	417,689	1,656,914	3,794,690
Tyler	Tyler	1,310,301	274,861	490,382	2,075,544
Yoakum	Victoria	685,151	273,645	731,100	1,689,896
Waco	Waco	2,187,058	401,624	2,715,250	5,303,932
Wichita Falls	Wichita Falls	1,329,835	302,699	399,388	2,031,922
	Total	**46,875,605**	**10,059,374**	**46,612,188**	**103,547,167**

Source: TxDOT, Public Transportation Division

*Note: received 5307 funds through North Central Texas Council of Governments

Table 3-17: Rural Transit[150]

District	Rural Transit Agency	FY 10 Federal (5311)	FY 2010 State	FY 2008 Local	Total
San Antonio	Alamo Area Council of Governments	1,273,552	916,513	1,764,725	3,954,790
Atlanta	ArkTex Council of Governments	1,052,414	635,903	861,585	2,549,902
Abilene	Aspermont Small Business Development Center	394,554	264,927	282,432	941,913
Corpus Christi	Bee Community Action Agency	379,297	277,393	132,178	788,868
Bryan	Brazos Transit District	2,442,331	2,074,217	2,746,043	7,262,591
Austin	Capital Area Rural Transportation System	1,651,296	1,001,942	4,819,787	7,473,025
Brownwood	Central Texas Rural Transit District	1,089,160	650,266	3,328,244	5,067,670
Fort Worth	Cleburne, City of	387,497	303,337	324,871	1,015,705
Dallas	Collin County Committee on Aging	280,798	191,554	8,974	481,326
Yoakum	Colorado Valley Transit	536,726	397,383	758,430	1,692,539
Pharr	Community Action Council of South Texas	432,440	371,645	194,979	999,064
San Antonio	Community Council of Southwest Texas	849,130	489,227	1,733,648	3,072,005

[150] Rural numbers are provided for those MPOs or districts which desire to show them as information items. Actual programming is done by TxDOT-PTN.

Table 3-17: Rural Transit[150]

District	Rural Transit Agency	FY 10 Federal (5311)	FY 2010 State	FY 2008 Local	Total
Dallas	Community Services, Inc.	613,969	414,146	673,588	1,701,703
San Angelo	Concho Valley Rural Transit District	537,862	416,693	716,893	1,671,448
Laredo	Del Rio, City of	378,295	258,835	243,826	880,956
Tyler	East Texas Council of Governments	1,517,224	889,475	659,610	3,066,309
El Paso	El Paso, County of	362,381	245,617	458,557	1,066,555
Houston	Fort Bend County Rural Transit District	549,279	102,804	1,227,088	1,879,171
Yoakum	Golden Crescent Regional Planning Commission	868,158	518,507	1,025,319	2,411,984
Houston	Gulf Coast Center	329,367	257,486	61,733	648,586
Waco	Heart of Texas Council of Governments	669,282	453,137	197,885	1,320,304
Brownwood	Hill Country Transit District	781,501	532,108	1,133,164	2,446,773
Dallas	Kaufman Area Rural Transportation	536,233	319,011	745,750	1,600,994
Corpus Christi	Kleberg County Human Services	237,599	195,125	50,247	482,971
Pharr	Lower Rio Grande Valley Development Council	481,761	331,538	120,308	933,607
Amarillo	Panhandle Community Services	1,178,411	822,380	1,052,328	3,053,119
Fort Worth	Public Transit Services	647,414	390,003	541,328	1,578,745
Childress	Rolling Plains Management Corporation	559,499	381,821	541,650	1,482,970
Corpus Christi	Rural Economic Assistance League	549,724	366,650	286,905	1,203,279
Paris	Senior Center Resources and Public Transit, Inc.	419,259	281,544	383,197	1,084,000
Beaumont	South East Texas Regional Planning Commission	502,153	381,213	921,620	1,804,986
Pharr	South Padre Island, Town of	547,216	368,279	70,699	986,194
Lubbock	South Plains Community Action Association, Inc.	1,114,182	824,905	1,687,733	3,626,820
Dallas	SPAN, Inc.	421,922	257,878	634,613	1,314,413
Paris	Texoma Area Paratransit System	787,952	549,595	886,172	2,223,719
Fort Worth	The Transit System, Inc.	301,214	265,182	402,683	969,079
Laredo	Webb County Community Action Agency	353,809	272,859	291,781	918,449
Odessa	West Texas Opportunities, Inc	1,573,956	1,010,596	2,661,371	5,245,923
	Total	**27,588,817**	**18,681,694**	**34,631,944**	**80,902,455**

Source: TxDOT, Public Transportation Division

3.8.1.4 Sales Tax for Public Transportation

Transportation authorities in Texas receive a portion of local sales tax revenue within their service area for operating and maintaining transit services. There are six MTAs, two city transit departments (CTDs), one county transit authority (CTA) and one advanced transportation district (ATD) in Texas that impose sales and use tax. These authorities, their tax rates, and the year from which the tax has been effective are shown in Table 3-18. Houston, Dallas, and Austin have 1 percent of local sales tax revenue diverted to transit agencies. These rates have been in effect for more than 20 years in some cities and have been a major source of revenue to cover operating expenses.

Sales tax revenues are the largest revenue source for transit agencies. In 2009, DART received nearly 50 percent of total revenues ($378 million) from sales tax receipts.[151] In Houston, METRO sales taxes revenue comprised nearly 80 percent ($571 million) of the revenue base for the same year.[152]

Table 3-18: Transit Sales Tax 2009

	Rate (%)	Effective From
Austin MTA	1	1985
Corpus Christi MTA	0.50	1986
Dallas MTA	1	1984
Denton County CTA	0.50	2004
El Paso CTD	0.50	1988
Fort Worth MTA	0.50	1984
Houston MTA	1	1978
Laredo CTD	0.25	1991
San Antonio ATD	0.25	2005
San Antonio MTA	0.5	1978

Source: Texas Comptroller of Public Account

3.8.1.5 New Starts Program

New Starts is an FTA program that provides federal funding for supporting locally planned, implemented, and operated transit capital investments. The North Corridor BRT and Southeast Corridor BRT projects in Houston—estimated to cost $444 million

[151] Dallas Area Rapid Transit – Financial Statements, 2009.
[152] 2009 Comprehensive Annual Financial Report – METRO, 2009.

are under consideration to receive New Starts funding. DART received $101.19 million in 2007 to construct a 21-mile extension of LRT under this program.

3.8.2 Freight Rail Funding

SAFETEA-LU and its reauthorizations include an array of programs that may have an impact on Texas passenger and freight rail projects. Currently federal tools for rail projects are available through a combination of:

- Apportionments (i.e., funding programs via formula or through Congressional mandate);
- Allocations (i.e., discretionary funds, earmarks); and
- Financing sources (i.e., loans, credit enhancement).

Almost all federal funding for transportation projects is distributed through the USDOT. Within this agency, several different administrations, such as the FRA, the FTA, and the FHWA, have the potential to fund rail projects through various programs.

There are also a number of state and local funding programs and options that can be used for various types of rail projects. A comprehensive list of federal, state, and local funding programs and options can be found in the Texas Rail Plan.

3.8.3 Airport Funding

Commercial and General Aviation airports have five major sources of revenue:

1. Federal Funds – Airport Improvement Program (AIP) Grants,
2. Airport Operating Revenue – airline landing fees, charges for terminal use, parking fees, and rental car facility charges,
3. Passenger Facility Charges (PFC) – fees added on to airplane tickets for passengers who land at that airport,
4. State and Local Grants, and
5. Tax-exempt Bonds (usually supported by airport operating revenues or PFCs).

Airports use different combinations of these sources depending on the individual airport's financial situation and the type of project being considered. The larger commercial airports are self-sufficient to support operating and maintenance costs and capital improvement projects through revenue raised by taxes and fees charged for use of airport facilities. For major infrastructure projects, airports participate in the tax-exempt bond market pledging airport revenues. Small airports are more dependent on federal AIP grants for improvement projects than large or medium-sized airports.

3.8.3.1 Federal Aviation Funding

The FAA historically has had a major role in support of the national system of airports. Improvements to the airport and airway system are financed from the Airport and Airway Trust Fund through AIP grants to eligible public airports. The trust fund revenues come from an assortment of aviation user fees and taxes listed in Table 3-19. Nationally, the Century of Aviation Reauthorization Act (Vision 100) authorized grants for airports in Texas of $40 million in FY 2004; FY 2005, $41 million; FY 2006, $42 million; and FY 2007.[153]

Table 3-19: Federal Airway and Aviation Trust Fund Revenue Sources

	Fee Charged	Rate
1	Passenger Tickets	7.50%
2	Freight Waybills	6.25%
3	Frequent Flyer Award Tax	7.50%
4	Passenger Flight Segment Fee	$3.40
5	Passenger Ticket Tax for Rural Airports	7.5%
6	International Arrival and Departure Tax	$15.10 per person
7	General Aviation Fuel Tax	19.3¢ per gallon aviation gas, 21.8¢ per gallon of jet fuel
8	Commercial Fuel Tax	4.3¢ per gallon

3.8.3.2 Airport Improvement Program (AIP)

The AIP provides grants for the planning and development of public-use airports. Funding is available only for projects that are related to nonrevenue producing items (this excludes parking facilities and the commercial portions of airport terminals). For large and medium primary hub airports, the grant covers 75 percent of eligible costs (or 80 percent for noise program implementation). For small primary, reliever, and general aviation airports, the grant covers up to 95 percent of eligible costs. Note: Texas

[153] TxDOT. 2010 Texas Airport System Plan (2010).

administers AIP funds on behalf of the FAA, and utilizes a 90 percent limit for federal grant matching funds.

The multi-year authorization of the AIP under Vision 100 Century of Aviation Reauthorization Act ended in 2007. Since then, a series of short-term extensions have been authorized and provided funding for AIP. Other federal programs funding airport improvements are the hangar program (75 to 80 percent funding for construction of hangars), fuel program (75 percent funding for building fuel facilities) and air traffic control towers program (90 percent grants up to a maximum of $ 1.5 million).

General aviation airports and some smaller commercial airports may not be able to meet total operating costs or fund capital improvements. Development operations at these airports have largely been funded through airport bonds and federal funding sources. General aviation airports are not eligible for primary entitlement funding and receive AIP funds from the state's apportionment of trust fund revenues via the FAA's State Block Grant Program.

3.8.3.3 Airport Operating Revenues

Airport revenues are typically generated through user fees charged by the airport for the facilities and services that are provided to airlines (landing, terminal, and parking fees), and concession contracts for off-airport facilities like rental car operations and parking garages.

3.8.3.4 Air Passenger Facility Charges

Passenger Facility Charges (PFCs) were first authorized by Congress in 1990 and are tied directly to local airport-related projects. The PFC program allows the collection of PFC fees up to $4.50 for every enplaned passenger at commercial airports controlled by public agencies. Airports use these fees to fund FAA approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition.

As of July 2010, most large and medium size commercial airports in Texas collect PFC at the maximum level ($4.50)—DFW, Dallas Love Field, Austin-Bergstrom, San Antonio, and El Paso. Houston area airports, IAH and Hobby, have a PFC fee of $3.00.

3.8.3.5 State and Local Airport Funding

TxDOT administers the AIP grants for general aviation airports under the State Block Grant Program, which gives it greater discretion and flexibility in selecting, developing, and administering projects. Federal funding for general aviation is more limited than for commercial service airports; hence, these airports are more dependent on state and local funding. TxDOT Aviation Division also administers its own funding programs to address improvement needs at general aviation airports.

Local governments, including cities, are typically owners of airports and provide the mandatory local share of project costs—typically 10 percent for projects funded by federal and state grants.

3.8.3.6 Tax Exempt Bonds for Aviation

Commercial airports finance major capital improvement projects, raising capital from the bond market, by pledging capital funds, PFC revenue, and federal grants. In certain situations, where strategic partnerships exist between airports and airlines, airlines support bonds and pay debt service.

3.8.3.7 Non-aeronautical Revenue

Non-aeronautical revenue sources at airports have become an increasingly important source of cash to fund operations and capital expansion. Non-aeronautical revenues include funds generated by automobile parking, terminal retail and services, advertising, rental cars, duty free, and other commercial operations in and around airports. The revenue generated by these sources typically represents more than half of the total revenue generated at airports.

Because nonaeronautical revenue growth has out-stripped revenue generated from airline activity for many years, forward-thinking airports have come up with new and innovative sources of such revenue. “Airport City” or “Aerotropolis” concepts involve airports taking control of real estate in and around the airport so that the airport can control its use. While airports originally did this to ensure that land use around the airport was compatible with airport activity, (i.e., noise) airports and the communities they serve are now controlling land so that uses are actually complementary to airport activity.

Some examples of components of airport cities include hotels, office facilities, conference centers, logistics centers, multi-modal transit facilities, aircraft maintenance facilities, markets, and others. Ultimately, airport cities concepts allow the airport operator and surrounding communities to capture value generated by additional links in the transportation value chain.

Some airports also derive nonaeronautical revenue from other activities on airport property that may be unique to their location. An example of this is the case where Dallas-Fort Worth International Airport has several active oil wells on the property that serve as an important source of nonaeronautical revenue.

3.8.3.8 Private Sector Participation

The benefits of Private Sector Participation (PSP) or Public Public Partnership (PPP) in the provision and/or management of public infrastructure such as airports include:

- ★ Implementation of private sector commercial development,
- ★ Efficient airport management, and
- ★ Design and construction cost savings and efficiency gains.

Furthermore, flexibility in private procurement allows for mitigation of risks associated with large design and construction projects—a mitigation that is often not possible under strict public procurement rules. The worldwide trend towards PSP demonstrates the political willingness to transfer operating responsibilities to the private sector while strengthening public competencies in the regulatory and inspection environment.

Numerous forms of PSPs have been experimented with—usually varying in terms of the level of participation of the private sector. In ascending order of level of PSP, airport options to structure PSPs include airport management contracts, concession contracts or a partial or full privatization (divesture/sale). Besides the level of participation and risk sharing, all PSP forms have their own characteristics and merits. Hybrid or overlapping structures exist as well. Each alternative reflects a certain allocation between risk and responsibility shared between the private and public sector.

Although PSP and PPP models are still relatively new concepts at U.S. airports, the models have been employed successfully at many non-U.S. airports. As airport financing and management becomes increasingly complex and as cities and airport authorities look to minimize their risks relative to airport operations, PSP and PPP options may become more commonplace at U.S. airports.

3.8.4 Waterways and Ports Funding

The port authorities generally own and operate their docks and often own other facilities such as terminals, freight handling equipment, cranes, warehouses, open storage facilities, bulk commodity handling facilities, and other facilities. Ports also generally have a wide variety of private operators on the property responsible for everything from rail and truck transportation, to warehousing, materials handling, storage, and other port related activities.

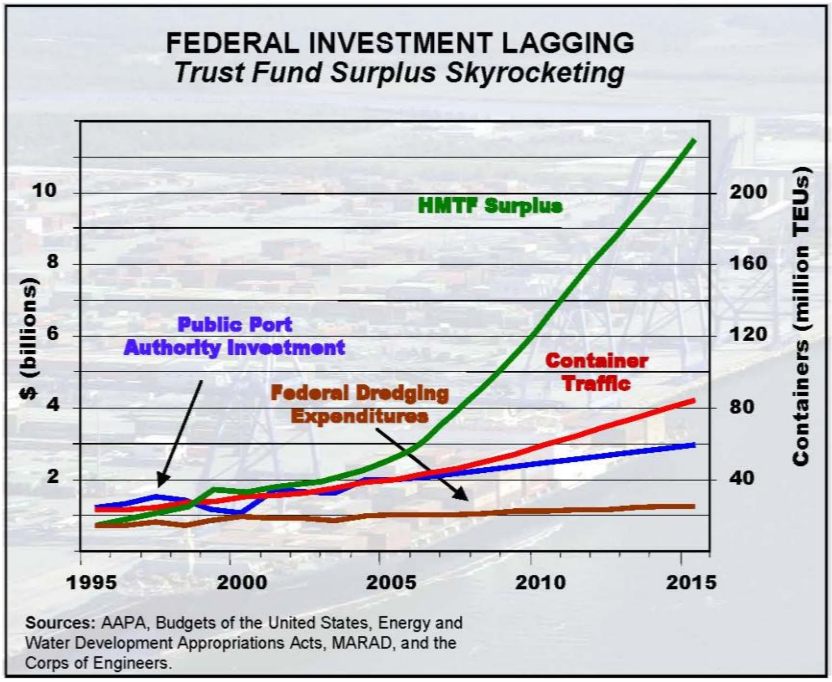
Revenue for port operations and day-to-day maintenance are derived from a variety of fees charged for use of the port. These include dockage and wharfage fees such as loading, unloading and demurrage. They also receive revenue from leasing space on the property they own for warehouses and other materials handling activities. Heavy maintenance, such as routine dredging to maintain the harbor depth to the dimensions authorized by Congress is coordinated through the USACE. Most of the funding for these activities comes from the Harbor Maintenance Trust Fund (HMTF).

Congress established a user fee for deep draft coastal ports and harbors—the Harbor Maintenance Tax (HMT) in 1986. The HMT was designed to provide 100 percent of the cost of operations and maintenance, primarily dredging, of the nation's deep draft and coastal ports and harbors. The HMT is a 0.125 percent ad valorem tax ($1.25 per $1,000 in cargo value) levied on cargo imported or domestically moved through federally maintained channels and harbors. The tax is also levied on cruise ships, with the value of the ticket being the basis for taxation. Export waterborne cargo was exempted from the tax after a 1998 Supreme Court decision that found that it violates the export clause of the Constitution. Passengers aboard ferries and cargo moving to and from Alaska (except for crude oil), Hawaii, and other U.S. possessions are also not subject to the tax. Ports on inland rivers are subject to the inland waterways fuel tax, which is collected for the Inland Waterways Trust Fund (discussed in the next section). Since 1998, nearly all of the tax revenue is generated by importers—domestic cargo shippers generate only about 5 percent of the revenue and cruise ship passengers less than 1 percent.[154]

The tax is collected by the Bureau of Customs and Border Protection and directed to the Trust Fund. However, the monies are not immediately eligible for dredging activities. Those monies can only be spent if the funding is actually appropriated by Congress. The HMTF balance was almost $5 billion at the end of FY 2009, as shown on Figure 3-3. The decrease in international trade reduced HMT collections by about $375 million in FY 2009.

[154] Congressional Research Service, John Frittelli. Harbor Maintenance Trust Fund Expenditures, January 25, 2010, 7-5700, 141042.

Figure 3-3: Federal Investment Lagging



As of July 2010, revenue deposited into the HMTF exceeds transfers out of the fund. HMTF expenditures fall under the discretionary spending budget ceilings. Congress appropriates funds for the USACE to perform navigation operation and maintenance at individual harbors. Because the HMTF is not a separate, or "off-budget," account within the federal budget, the "surplus" in the HMTF has in effect already been spent on general government activities. According to a Congressional Research Service report, the current HMTF balance, in conjunction with the revenue stream from the remaining HMT collections and interest payments, is considered sufficient to cover expenditures for the foreseeable future.[155]

There are several issues with the HMT that need to be resolved. First, the HMT is placed on the value of foreign cargo transported between two U.S. coastal ports. This issue principally affects domestic (cabotage) shipments. In these cases, the cargo is being double taxed whereas a truck or rail movement would not be charged the tax. This is a federal issue that must be resolved by the U.S. Congress. Second is the inability to expend the funds placed in the HMTF because Congress has not allocated them.

HMT revenues are used for the benefit of noncargo harbor users who do not pay any fees for the use of the harbor. There are Congressional bills currently being considered

[155]Ibid.

calling for the use of HMT only for cargo related projects and to give the USACE more discretion over the use of the funds. Third, there are equity issues associated with HMT revenue distribution among the nation's top commercial ports. Due to geological differences, ports vary greatly in the amount of dredging they require.

The amount of HMT revenue ports generate also varies significantly due to differences in the amount and characteristics of the cargoes they handle. Consequently, HMT revenues are redistributed from ports that are large import gateways with naturally deep channels to lower volume ports that require frequent dredging to maintain adequate channel depths and widths.

The HMTF is used to fund maintenance dredging, not new construction. To increase a channel's authorized depth or width requires an act of Congress. Construction or "new work" is funded from the General Treasury not the HMTF. There are also different federal/local cost sharing requirements between construction and maintenance dredging as indicated in Table 3-20.

Table 3-20: Cost-Share Requirements for USACE Harbor Projects[156]

Operation and Maintenance and Construction Federal Share and (Source of Funds)		
Harbor Depth Operation	**Maintenance**	**Construction**
<20 feet	100% (HMTF)	80% (General Treasury)
20–45 feet	100% (HMTF)	65% (General Treasury)
>45 feet	50% (HMTF)	40% (General Treasury)

The Port of Houston Authority (Authority) has an operating budget of $200 million for 2010, an increase of 7 percent over 2009. The Authority has estimated that it will have a net income of $3.3 million in 2010. The Port of Houston has suffered greatly during the recession—net income was $34 million in 2008. Revenue that year also included some federal stimulus funds and some Federal Emergency Management Agency (FEMA) funds for Hurricane Ike recovery).

The Authority's revenue comes primarily from harbor and docking fees paid by shippers—about 85 to 90 percent. It also receives revenue from rental of facilities and equipment, operation of a grain elevator and bulk materials handling facility. The port also receives a tax (1.6¢ per $100 in assessed value) from Harris County property owners for improvement projects (not port operations). The Authority typically expends

[156] 33 United States Code (USC) 2211. The non-federal sponsor pays 10 percent of the cost over a period not to exceed 30 years. For example, of the 20 percent paid by a non-federal sponsor for the construction of a harbor of less than 20 feet, 10 percent of the total (half of the non-federal sponsor's costs) is paid over 30 years.

55 to 60 percent of their budget on maintenance and operation of facilities. The rest is split between general and administrative expenses and depreciation and amortization expenses.

The Port of Houston generated 6.1 percent of the revenue for the HMTF in 2005, making it the fourth largest contributor. Although Houston is the leading import port in terms of tonnage, lower valued bulk commodities make up a large percentage of the imports. The HMT is levied against the value of the goods imported so Houston is not the leader in this statistic.

Table 3-21 shows the top 5 ranking ports and then the rank of each Texas port that falls in the top 25.

Table 3-21: Ports by Value of Imported Cargo 2005 ($ Millions)

Rank	Port	Import Value ($)	% of Total
1	Los Angeles, CA	116,489	13.7
2	New York, NY	104,366	12.2
3	Long Beach, CA	103,801	12.2
4	Houston, Texas	52,306	6.1
5	Charleston, SC	36,487	4.3
14	Beaumont, Texas	15,805	1.9
15	Corpus Christi, Texas	13,271	1.6
22	Texas City, Texas	9,218	1.1
24	Freeport, Texas	7,918	0.9

Source: Association of American Port Authorities

The Congressional Research Service estimated that the larger ports collect more revenue than is expended on their maintenance. The ports of Los Angeles, Long Beach, Seattle, and Tacoma, and to a lesser degree, Boston, New York, and Houston are large net generators of HMT revenue. For instance Houston receives less than a quarter of the tax revenues collected—thus, it is a significant donor. While a tax based on cargo value places higher costs on those who can afford to pay more, it has no correlation to the dredging needs of each port.

The USACE had total expenditures of $528,914,950 for the State of Texas from FY 1999 through FY 2008. This represented about 7.7 percent of the total expended. Only Louisiana received more funds.[157] Texas had two of the channels with highest

[157] USACE, Waterborne Commerce Statistics.

expenditures in that 10-year period – Sabine-Neches Waterway (serving Port Arthur and Beaumont) at 2.0 percent of the total, and the Houston Ship Channel at 1.3 percent of the total.

The Inland Waterway Trust Fund (IWTF) was established in 1984 to help fund the cost of modernizing and building the nation's waterways infrastructure. Revenues are raised from a tax on diesel fuel paid by commercial users of the waterways. Since its inception more than $1.7 billion dollars has been contributed and another $300 million more has been added through interest paid on the balance in the account.

The IWTF pays 50 percent of the cost of construction and major rehabilitation on the inland waterways system. The remainder of the funds comes from general revenues or from state or local governments.

3.8.5 Pipeline Funding

Pipelines are privately owned and privately funded. As discussed in Chapter 2, oil and natural gas production and transportation are thriving in Texas. Because pipelines are privately owned and operated, growth and needs are determined based on market forces. Quantitative needs estimates were not prepared for the expansion of the pipeline network. During the development of this plan, representatives of pipeline companies expressed no concerns about needed capacity or the ability of the industry to address future capital investment needs.

4.0 Planned Improvements to the Transportation System

4.1 The Unified Transportation Program

The Unified Transportation Program (UTP) is a comprehensive document that encompasses public transportation, aviation, and rail in addition to highways. The nonhighway modes and any programs adopted by specific minute order, such as Proposition 12 Bond Funded Projects are included for informational purposes. The core of the UTP is the listing of highway projects that are planned to be developed and constructed within the first 11 years of the 24-year statewide long-range transportation plan and MPO MTPs. The Texas Transportation Commission approves the UTP and authorizes those highway projects for development. Project development includes activities such as preliminary engineering work, environmental analysis, right of way acquisition, and design. Projects that are beyond the first 11 years of the UTP are generally not authorized for design work other than preliminary engineering work to support environmental studies.

The UTP is comprised of two major components: mobility and preservation—each component having a separate document. The mobility portion of the UTP includes projects that add capacity, while the preservation portion includes maintenance and rehabilitation projects.

The UTP is used to guide project development to meet highway needs. The UTP includes distribution of funding in the following project categories for the maintenance of the existing highway system and for all highway construction programs:

- Category 1 – Preventive Maintenance and Rehabilitation
- Category 2 – Metropolitan Area Transportation Management Area (TMA) Corridor Projects
- Category 3 – Urban Area (non-TMA) Corridor Projects
- Category 4 – Statewide Connectivity Corridor Projects
- Category 5 – Congestion Mitigation and Air Quality Improvement
- Category 6 – Structures Replacement and Rehabilitation
- Category 7 – Metropolitan Mobility and Rehabilitation
- Category 8 – Safety
- Category 9 – Transportation Enhancements
- Category 10 – Supplemental Transportation Projects
- Category 11 – District Discretionary

- Category 12 – Strategic Priority

Despite its importance, however, the UTP is basically a subset of the statewide long-range transportation plan and as such is neither a budget nor a guarantee that projects will or can be built.[158] All projects and program funding levels for highway, transit, aviation, and railroad projects planned for the next 10 years can be accessed at:

http://www.txdot.gov/txdot_library/publications/finance/unified_transportation.htm .

Categories 2, 3, and 4 contain the listing of added capacity projects. These projects are listed in Table 4-1 and reflect various levels of authority. The level of authority represents the steps required in project development. They are organized into three levels:

- **Plan** – Allows for preliminary right of way and environmental activities.
- **Develop** – Allows for preparation of construction plans and acquisition of necessary right of way.
- **Construct** – Allows for completion of construction plans, perform necessary utility adjustments and award of a construction contract for the project in the scheduled fiscal year provided funds are available.

Table 4-1: 2010 UTP Category 2, 3, and 4 Projects[159]

Highway*	CSJ	Limits From	Limits To	Laymans Description	Estimate/Low Bid ($)	Authority
Category 2 - Metropolitan Area Corridor Projects						
SH 358	0617-01-177	Nile Drive	Staples Street	Ramp reversal phase II-B	29,610,626.00	Develop
I-10	2121-01-080	Loop 375 (Transmountain)	Loop 375 (Joe Battle/Americas)	Aesthetics	10,000,000.00	Construct
FM 1464	1415-02-044	Shiloh Lake Drive	SH 99	Construct 2 detention ponds and 1 mitigation site	1,081,600.00	Construct
SH 45	1200-07-001	FM 1626	Travis county line	Construct 4-lane turnpike with 1-lane frontage roads (toll)	7,400,000.00	Develop
SH 45	1200-06-004	Hays county line, west of FM 1626	Loop 1	Construct 4-lane turnpike with 1-lane frontage road (toll)	48,940,000.00	Develop
SH 357	1069-01-028	FM 665	Cuernavaca Street	Construct 2 additional lanes with continuous left-turn lane	12,649,684.00	Develop
FM 529	1006-01-065	SH 99	Fry Road	3 detention ponds	865,280.00	Construct
VA	0918-45-121	New location from I-35E/SH 183	US 175/SH 310 (Trinity Parkway)	Construct new location 4- to 6-lane tollway (toll)	385,580,006.00	Develop
I-10	2121-04-065	I-10 at Loop 375		Interchange improvements including the construction of direct connectors	50,000,000.00	Let
SH 71	0700-03-077	US 290 West	Silvermine Drive	Construct tolled lanes & frontage roads	7,800,001.00	Develop

[158] TxDOT. 2010 UTP. http://www.txdot.gov/business/governments/unified_transportation.htm

[159] Ibid.

Table 4-1: 2010 UTP Category 2, 3, and 4 Projects[159]

Highway*	CSJ	Limits From	Limits To	Laymans Description	Estimate/Low Bid ($)	Authority
Loop 375	2552-03-034	0.5 mile northeast of Loop 375 (On FM 659)	0.53 mile south of FM 659 (on Loop 375)	Build 2-direct connectors	32,000,000.00	Construct
SH 358	0617-01-170	Staples Street	Ayers Street	Ramp reversal phase II-A (south side only)	48,749,255.00	Construct
SP 276	0608-01-001	SH 20, 0.168 mile north of Borderland Road	0.13 mile west of I-10	Build spur between I-10 and SH 20	28,250,000.00	Construct
I-45	0500-03-042	0.4808 mile south of El Dorado	South of Medical Center Drive	Widen and reconstruct to 10 mainlanes, two 3-lane frontage roads	74,134,333.00	Develop
I-45	0500-03-043	0.9884 mile south of FM 2351	0.4808 mile south of El Dorado	Widen and reconstruct to 10 mainlanes, two 3-lane frontage roads	59,925,415.00	Develop
VA	0912-73-115	FM 518 at FM 2094	SH 146	3 detention ponds	628,620.07	Let
FM 2978	3050-03-019	Montgomery county line	South of Boggs Road	Widen from 2 to 4 lanes	173,056.00	Construct
MH	8170-12-006	On Washington at Hempstead	Washington-Katy split to I-10	Construct 8-lane divided (raised median) urban street	8,891,549.00	Construct
MH	8170-12-004	Hempstead Road at UPRR	White Oak Bayou	Construct detention channel (phase 1 of 2)	4,477,441.00	Construct
MH	8056-24-001	0.09 mile west of SH 20 (Alameda)	0.06 mile west of FM 76 (North Loop)	Widening of horizon boulevard	6,952,206.00	Develop
SH 99	3510-05-011	Northeast of Kingsland Blvd at Governors Place		Noise wall contract 1	423,987.00	Construct
FM 3386	3364-01-010	End of FM 3386	Haven Drive	Construct new FM road	1,946,880.00	Construct
BW 8	3256-01-095	West Little York	North of US 290	Construct two 3-lane frontage roads	18,717,737.00	Develop
Loop 1604	2452-02-915	SH 16	FM 1535 (NW Military)	Expand 4- to 8-lane expressway (toll 4 new mainlanes), nontoll outer lanes	188,378,909.00	Construct
Loop 1	3136-01-015	0.68 mile north of Davis Lane	0.35 mile south of Lacrosse	Construct roadway underpasses for a 6-lane facility	45,874,994.00	Develop
Loop 1604	2452-01-910	West Military Drive	Braun Road	Expand to 6-lane expressway (toll 6 new mainlanes), nontoll outer lanes	194,224,420.00	Construct
FM 2978	3050-03-015	0.065 mile south of Bogs Road	0.145 mile south of Bogs Road	Construct detention facility	949,234.00	Construct
FM 2978	3050-02-021	Conroe Huffsmith Road	Harris county line	Widen from 2 to 4 lanes	648,960.00	Construct
Loop 375	2552-04-027	Park Street	Paisano Drive	Loop 375 extension to construct expressway	140,634,608.00	Develop
Loop 375	2552-03-900	I-10	Zaragoza Port of Entry	Construct managed lanes	37,600,000.00	Develop
Loop 375	2552-01-036	Business 54 (Dyer Street)	US 54 (Gateway South)	Construction of mainlanes and interchanges	80,000,000.00	Construct
Loop 1604	2452-01-911	Braun Road	SH 16	Expand 4 to 8 lane expressway (toll 4 new mainlanes), nontoll outer lanes	10,737,427.00	Construct
Loop 1	3136-01-107	FM 734 (Parmer Lane)	Cesar Chavez Street Interchange	Phase 1: Construct northbound and southbound managed lanes (toll)	69,500,001.00	Construct
US 287	0014-15-035	Entrance/exit ramp, North	FM 3479 (Harmon Road)	Reconstruct northbound frontage road from FM 3479 to ramp and southbound frontage road	1,379,589.00	Develop
SH 146	0389-05-119	At BNSF Rain Road/Port Road		Construct northbound direct connector	7,633,832.00	Construct
I-45	0500-03-556	Various locations on I-45		Design and construction of 3 detention facilities	3,244,800.00	Construct
SH 20	0001-02-054	Doniphan Drive	Schuster	Bus Rapid Transit	25,000,000.00	Construct
US 287	0014-15-034	FM 3479 (Harmon Road)	Southbound Entrance Ramp	Construct turnaround from northbound to southbound at North Tarrant Parkway	1,379,589.00	Develop

Table 4-1: 2010 UTP Category 2, 3, and 4 Projects[159]

Highway*	CSJ	Limits From	Limits To	Laymans Description	Estimate/Low Bid ($)	Authority
US 287	0014-15-036	North of FM 3479	North of I-35W Interchange	Construct auxiliary lane from northbound entrance from FM 3479	1,397,889.00	Develop
US 290	0050-09-069	West of Pinemont	West of 34th Street (Segment 4)	Reconstruct & widen to 10 mainlanes with auxiliary lanes	135,235,972.00	Develop
US 290	0050-09-070	East of West Little York	West of Fairbanks North Houston (Segment 5)	Reconstruct & widen to 10 mainlanes with auxiliary lanes	77,602,015.00	Develop
US 290	0050-09-071	West of FM 529	East of West Little York (Segment 6)	Construct 10 mainlanes with auxiliary lanes & two 2 lane	62,587,433.00	Develop
US 290	0050-09-080	West of FM 529	East of West Little York (Segment 6)	Construct 10 mainlanes with auxiliary lanes & two 2 lane	65,090,930.00	Develop
US 290	0050-09-081	West of Pinemont	East of West 43rd-Frontage Road (Segment 4)	Reconstruct 2-lane westbound frontage road and Pinemont	68,945,772.00	Develop
US 290	0113-08-060	Circle Drive	East of Williamson Creek	Construct 6-lane turnpike with frontage roads (toll)	65,987,469.00	Develop
SH 71	0113-13-149	East of Montopolis Drive	US 183	Construct underpass, frontage roads, & mainlanes	44,000,001.00	Construct
US 290	0114-02-053	US 183	SH 130	Construct 6-lane tollway with frontage roads	128,900,001.00	Construct
US 290	0114-05-037	1.0 mile east of FM 696	8.864 miles east of FM 696	Widen to 4 lane divided	20,400,000.00	Develop
SH 105	0338-03-087	Walden Road	Old River Road	Widen westbound from 2 to 3 lanes	1,081,601.00	Construct
US 287	0014-15-033	FM 3479 (Harmon Road)	South of proposed NTP crossover	Reconstruct northbound frontage road and exit ramp south of FM 3479	1,383,078.00	Develop
US 62	0374-02-089	Hueco Club Park	Airway	Bus Rapid Transit	2,000,000.00	Construct
SP 327	0380-15-018	1,500 feet west of Milwaukee Avenue	1,500 feet east of Milwaukee Avenue	New interchange	14,726,946.00	Develop
Loop 336	0338-11-051	FM 2854		Widen to 4 lanes undivided rural	7,968,479.00	Construct
US 183	0151-09-036	0.356 mile south of US 290	Boggy Creek	Construct mainlanes and frontage roads (toll)	68,399,000.00	Develop
SH 105	0338-04-077	Loop 336	San Jacinto county line	Widen in sections and base repair	2,900,000.00	Construct
SH 121	0364-02-017	Tarrant county line	Denton county line near Denton Creek	Convert 4-lane divided to 10-lane freeway with frontage roads	112,180,301.00	Develop
SH 286	0326-01-052	SH 357	1 mile south of FM 43	Complete freeway section	27,514,173.00	Construct
I-10	0271-07-303	I-10 West of Wilcrest	.	Construct noise wall	170,893.00	Construct
SH 71	0265-04-054	West of FM 20	West of SH 304	Construct overpass & frontage roads	36,994,001.00	Develop
US 183	0265-01-080	Colorado River	Patton Avenue	Construct mainlanes and frontage roads (toll)	85,401,001.00	Develop
US 281	0253-04-138	0.2 mile north of Loop 1604	Bexar/Comal county line	Expand to 6-lane expressway (toll 6 new miles) & nontoll outer lanes	271,068,364.00	Construct
US 183	0151-09-138	Blessing Avenue (near I-35)	Cameron Road	Add southbound entrance ramp	1,000,000.00	Develop
US 183	0151-09-127	Boggy Creek	Colorado River	Construct mainlanes and frontage roads	37,200,001.00	Develop
Category 3 - Urban Area Corridor Projects						
US 190	0231-01-044	US 190 West of Copperas Cove	Lampasas/Coryell county line	Construction 2 lanes of ultimate 4-lane divided control	6,381,440.00	Construct
SL 306	0264-07-029	US 87	2.929 miles north of US 87	Construct mainlanes & interchange	10,923,850.43	Construct
FM 131	0202-08-905	Lamberth Street (Sherman)	Taylor Street (Sherman)	Widen from 2-lane to 4-lane	2,244,751.00	Construct
FM 131	0202-08-051	At US 82 Frontage Roads		Construct turn lanes	826,084.00	Construct

Table 4-1: 2010 UTP Category 2, 3, and 4 Projects[159]

Highway*	CSJ	Limits From	Limits To	Laymans Description	Estimate/Low Bid ($)	Authority
CS	0901-19-900	Canyon Grove Road	US 82 West Bound Frontage	New location nonfreeway	321,420.00	Construct
FM 60	0506-01-082	SH 6	FM 158	Widening of a nonfreeway facility consisting of grading	13,285,302.00	Construct
VA	0909-39-114	FM 3046	FM 116	Construct 2 lanes of ultimate 4-lane divided control access	22,605,440.00	Construct
CS	0904-11-047	Hillside Road, from Loop 335 West	Nancy Ellen Street	Widen to 4 lanes	624,030.00	Construct
Loop 463	2350-01-043	0.6 mile west of Salem Road	0.5 mile east of Mockingbird Lane	Construct two 4-lane overpasses	25,422,000.00	Develop
CS	0921-06-186	On Morrison Road, from west of Pablo Kisel		Extend & construct to 4 lanes	5,644,291.00	Construct
FM 1179	1316-01-034	0.3 mile east of SH 6	Kent Street	Misc construction to add right-turn lanes	5,408,001.00	Construct
VA	0909-39-115	FM 116	US 190 east of Copperas Cove (Station 305+00)	Construct 2 lanes of ultimate 4-lane divided control access	20,246,871.00	Construct
VA	0909-39-120	Lampasas/Coryell county line	FM 3046	Construct 2 lanes of ultimate 4-lane divided control access	2,812,161.00	Construct
Loop 335	2635-03-905	0.2 mile north of Southwest 77th Avenue	I-27	Upgrade to urban section	2,891,659.00	Develop
SL 20	0086-14-046	US 59	SH 359	Widen to 6 lanes and upgrade intersection at Spur 400	30,959,922.00	Develop
FM 1637	0833-03-035	FM 3051	FM 2490	Widen to 4 lanes with raised median	21,313,175.00	Develop
Loop 335	2635-02-901	I-27	Western Street	Additional 2 lanes	3,515,905.00	Develop
I-10	0028-11-905	5 miles east of KCS Rail Road	SH 62	Widen existing mainlanes from 4 to 6 lanes	9,246,563.00	Develop
Loop 338	2224-01-058	0.5 mile west of US 385a	SH 191	Convert nonfreeway to freeway	6,975,819.00	Develop
I-10	0028-14-105	UPRR, east	Adams Bayou	Reconstruct existing 4-lane freeway facility	31,221,162.85	Let
VA	0904-02-900	On North Coulter, Frontage .2 miles north of Weeping Willow	Loop 335	New 4-lane arterial	1,595,337.00	Develop
FM 2275	2158-01-011	SH 300 in North Longview, East	McCann Road, 0.1 mile north of Gray Stone	Construct 4-lane divided roadway on new location (phase 1 of 3)	13,526,652.00	Develop
US 75	0047-18-906	At Loy Lake Road (Sherman)		Widen existing bridge overpass	5,611,134.00	Develop
I-10	0028-11-193	KCS Rail Road, east	SH 62	Widen existing mainlanes from 4 to 6 lanes	8,890,926.00	Develop
I-10	0028-11-195	SH 62, east	UPRR	Reconstruct existing 4-lane freeway facility	7,094,085.45	Let
Loop 323	2075-02-045	SH 41 (west) in Tyler, south 0.3 mile	Bellwood	Widen from 4 lanes to 6 lanes & replace Cotton Belt railroad underpass	7,251,252.00	Develop
Loop 463	2350-01-900	0.14 mile southeast of Mockingbird Lane	0.26 mile northwest of Business 59	Construct 4-lane overpass	13,000,000.00	Develop
CS	0904-11-906	North South Georgia Street, from south city limits	Loop 335	Widen to 4-lane arterial	5,797,733.00	Develop
Loop 335	2635-04-020	Hester Road	Coulter Road	Add 2 lanes and interchanges	11,758,746.00	Develop
I-10	0028-11-179	SH 62, east	UPRR	Widen existing mainlanes from 4 to 6 lanes	2,052,855.00	Develop
VA	0922-33-066	Mangana-Hein Road	US 83 at Rio Bravo	Loop 20, extension of Cuatro Vientos - construct 2-lane rural	6,830,167.00	Develop

Table 4-1: 2010 UTP Category 2, 3, and 4 Projects[159]

Highway*	CSJ	Limits From	Limits To	Laymans Description	Estimate/Low Bid ($)	Authority
FM 131	0202-08-906	US 82	Lamberth Street	Widen from 2 lane to 4 lane	2,924,835.00	Develop
US 67	0158-02-084	At Tractor Trail		Construct interchange	10,774,862.00	Develop
FM 2493	0191-03-900	FM 2813 in Gresham, south	FM 346 in Flint	Widen from 2 lanes to 4 lanes with flush median	10,800,000.00	Develop
RM 1061	1245-02-032	Coulter Street	FM 2381	Widen existing roadway	10,787,927.00	Develop
SH 6	0049-12-082	At Rock Prairie Road		Replacement of an existing bridge facility	9,170,376.00	Develop
US 75	0047-18-904	Intersection of Loy Lake and US 75	Interchange of FM 691 and US 75	Build new ramps	7,227,131.00	Develop
FM 2275	2158-01-900	McCann Road, 0.1 mile north of Graystone	SS 502,0.6 mile south of FM 1844 in Longview	Construct 5-lane divided roadway on new location (phase 2 of 3)	7,636,781.00	Develop
I-35	0015-01-171	South Loop 340	North Loop 340	Reconstruction, widen mainlanes from 6 to 8, reconstruct frontage road	299,911,750.00	Develop
I-10	0028-14-916	Adams Bayou, East	West of SH 87	Reconstruct existing 4-lane freeway to 6 lanes	9,982,579.00	Develop
I-10	0028-14-091	UPRR Overpass, east	Adams Bayou	Widen existing mainlanes from 4 to 6 lanes	4,516,279.00	Develop
Category 4 - Statewide Connectivity Corridor Projects						
SL 79	3621-01-004	US 90 North	FM 2523	Construction of a 2-lane undivided (phase I-flood)	42,200,000.00	Construct
US 281	0253-03-043	River Crossing	Blanco county line	Expand 2 to 4 lanes divided rural	35,000,000.00	Construct
SL 79	3621-01-002	US 90	Laughlin Airforce Base Road	Construction of rail road grade separation street & approaches	18,900,000.00	Construct
SL 79	3621-01-001	Laughlin Airforce Base Road	US 277 South	Construction of a 2-lane undivided facility (phase II)	11,700,000.00	Construct
SL 79	3621-01-003	FM 2523	US 90 East	Construction of a 2-lane undivided facility (phase IA)	6,200,000.00	Construct

*CS= City Street
MH= Metropolitan Highway - designation for a temporary road that is added to the system to build a project and then remove it after completion
VA= Various - Used when there are multiple locations within the contract.

4.2 Metropolitan and Urban Areas – Metropolitan Transportation Plans

Each MPO in Texas develops an MTP—which is the MPO's 20+ year long-range plan.

The MTPs include long-range policies, investment strategies, and list financially constrained project development and construction projects for a specific metropolitan region. MPO MTPs are updated every 5 years except for those in nonattainment (for air quality) area. In nonattainment areas, MTPs are updated every 4 years and must be cleared by the Environmental Protection Agency (EPA) for air quality conformity. This process—as it affects the planning and implementation of transportation projects—is discussed in more detail in Chapter 8.

The MTPs are updated on a rotating schedule. An MPO cannot submit a TIP without an MTP approved by their policy board. In nonattainment areas, both the MPO MTP and

TIP must be found to be conforming in order for projects to be moved into the STIP and advanced to construction or implementation. Table 4-2 lists the MPOs in Texas and associated addresses for each MPO's website.[160] The MPO's most current MTP will be located on that MPO's website.

Table 4-2: Texas MPOs and Website Addresses

MPO	MPO Web Address*
Abilene MPO	http://www.abilenempo.org/
Amarillo MPO	http://www.amarillompo.com/
Austin – Capital Area MPO (CAMPO)	http://www.campotexas.org/
Beaumont-Port Arthur MPO	http://www.setrpc.org/
Brownsville	http://www.cob.us
Bryan/College Station	http://www.bcsmpo.com/
Corpus Christi MPO	http://www.corpuschristi-mpo.org/
Dallas-Fort Worth MPO (NCTCOG)	http://www.nctcog.dst.tx.us/
El Paso MPO	http://www.elpasompo.org/
Harlingen/San Benito MPO	http://hsbmpo.com/
Hidalgo County MPO	http://www.hcmpo.org/
Houston MPO (H-GAC)	http://www.h-gac.com/home/
Killeen-Temple MPO	http://www.ktmpo.org/about.htm
Laredo MPO	http://www.ci.laredo.tx.us/city-planning/Departments/MPO/index.html
Longview MPO	http://www.ci.longview.tx.us/services/metropolitan_planning_organization_mpo.html
Lubbock MPO	http://www.lubbockmpo.org/
Midland-Odessa MPO (MOTOR)	http://www.motormpo.com/
San Angelo MPO	http://www.sanangelompo.org/
San Antonio – Bexar County MPO	http://www.sametroplan.org/
Sherman-Denison MPO	http://www.sdmpo.org/
Texarkana MPO	http://www.texarkanampo.org/
Tyler MPO	http://www.cityoftyler.org/
Victoria MPO	http://www.victoriampo.org/
Waco MPO	http://www.waco-texas.com/MPO/
Wichita Falls MPO	http://www.wfmpo.com/

* MPO web addresses accessed and valid as of August 1, 2010.

[160] Texas MPOs (TEMPO). http://www.texasmpos.org/

4.3 Proposition 12 – Texas Transportation Commission-Selected Projects

In July 2009, the Texas Legislature authorized TxDOT to issue approximately $2 billion in general obligation bonds for highway improvements. Texas voters approved Proposition 12 bonds, which are backed by the state's general revenue not by fuel tax revenues.

In June 2010, the Texas Transportation Commission approved the use of $150 million in Proposition 12 bond proceeds for consultant engineering that will enable the development of future projects and reduce congestion on some of Texas' most congested corridors. This funding was approved to allow critically needed projects to continue to advance through the planning process and engineering phase in order to be ready for construction when funding is available.[161]

Projects selected to be accelerated using these bond proceeds are separated into three categories:

- ★ Corridor projects, which are of statewide significance;
- ★ Rehabilitation and safety projects, which focus on improving declining pavement scores and driver safety; and
- ★ Mobility projects, which focus on relieving congestion on specific roadway segments.

Additionally, TxDOT also used a recently developed list of the 100 most congested roadways in Texas to select the recommended projects in Table 4-3 that were approved by the Texas Transportation Commission. Eleven of these projects will help make improvements to the top 100 congested segments of roadways on the TxDOT highway system. In cooperation with the state's transportation partners, TxDOT developed this list of potential projects to be developed with these funds.

[161] TxDOT. http://www.txdot.gov/news/021-2010.htm

Table 4-3: Proposition 12 Projects[162]

District	County	Highway	Prop. 12 Funding	Description	Selection (See Key Below)	Benefits (See Key Below)	Congestion Reduction
Abilene	Nolan	I-20	$1,120,743.03	RESURFACE ROADWAY	S	E S C P	
Amarillo	Carson	I-40	$19,027,510.11	REBUILD ROADWAY	R	E S C P	
Amarillo	Randall	I-27	$3,831,938.14	REPAIR ROADWAY	R	E S C P	
Austin	Blanco	RM 32	$467,081.35	RESURFACE ROADWAY	S	E S C P	
Austin	Travis	I-35	$352,228.12	WIDEN ROADWAY	R	E S C P	
Corpus Christi	Bee	FM 798	$2,399,205.27	REBUILD ROADWAY	R	E S C P	
Corpus Christi	Live Oak	FM 3162	$3,425,198.56	REBUILD ROADWAY	R	E S C P	
Corpus Christi	Nueces	FM 666	$2,352,920.86	REBUILD ROADWAY	R	E S C P	
Corpus Christi	Refugio	SH 239	$2,184,925.73	REBUILD ROADWAY	R	E S C P	
Corpus Christi	San Patricio	SH 188	$15,648,615.87	REPAIR ROADWAY	R	E S C P	
Dallas	Collin	FM 6	$4,680,000.00	REPAIR ROADWAY	R	E S C P	
Dallas	Collin	FM 543	$6,341,178.48	REPAIR ROADWAY	R	E S C P	
Dallas	Collin	FM 545	$3,192,351.76	REBUILD ROADWAY	R	E S C P	
Dallas	Collin	FM 546	$3,859,730.32	REBUILD ROADWAY	R	E S C P	
Dallas	Dallas	I-30	$1,999,982.59	CONSTRUCT NEW ROADWAY LANES	S	E S C P	Yes
Dallas	Dallas	I-20	$1,703,699.60	REPAIR ROADWAY	R	E S C P	
Dallas	Denton	FM 156	$3,520,968.47	WIDEN ROADWAY	R	E S C P	
Dallas	Denton	FM 156	$6,624,919.60	WIDEN ROADWAY	R	E S C P	
Dallas	Ellis	I-35E	$19,269,812.96	RESURFACE ROADWAY	R	E S C P	
Dallas	Navarro	SH 31	$8,849,756.66	REPAIR ROADWAY	R	E S C P	
Dallas	Navarro	FM 739	$1,968,122.41	RESURFACE ROADWAY	R	E S C P	
Dallas	Rockwall	FM 3097	$724,722.86	RESURFACE ROADWAY	R	E S C P	
El Paso	El Paso	LP 375	$82,490,513.04	WIDEN ROADWAY	C	E S C P	Yes
Fort Worth	Parker	I-20	$4,326,400.00	REBUILD ROADWAY	R	E S C P	

[162] TxDOT, Proposition 12 Projects, Available at: http://apps.dot.state.tx.us/apps/project_tracker/prop12projects.htm

Table 4-3: Proposition 12 Projects[162]

District	County	Highway	Prop. 12 Funding	Description	Selection (See Key Below)	Benefits (See Key Below)	Congestion Reduction
Fort Worth	Parker	I-20	$26,913,963.48	REPAIR ROADWAY	R	E S C P	
Fort Worth	Tarrant	FM 157	$167,410.02	RESURFACE ROADWAY	S	E S C P	
Houston	Harris	I-610	$257,083,031.92	CONSTRUCT INTERCHANGE DIRECT CONNECTION	M	E S C P	Yes
Houston	Harris	I-45	$104,536,640.00	WIDEN ROADWAY	M	E S C P	Yes
Lubbock	Lubbock	US 62	$10,315,372.88	REPAIR ROADWAY	R	E S C P	
Lufkin	Nacogdoches	FM 1275	$1,754,455.14	REBUILD ROADWAY	R	E S C P	
Paris	Grayson	US 75	$3,123,858.75	REPAIR ROADWAY	R	E S C P	
Paris	Grayson	FM 996	$989,265.07	REPAIR ROADWAY	R	E S C P	
Paris	Hopkins	FM 2285	$3,615,238.29	REPAIR ROADWAY	R	E S C P	
Paris	Hunt	I-30	$10,663,114.42	REPAIR ROADWAY	R	E S C P	
Paris	Hunt	FM 6	$2,723,958.22	REPAIR ROADWAY	R	E S C P	
Paris	Hunt	FM 36	$2,044,781.44	REPAIR ROADWAY	R	E S C P	
Paris	Hunt	FM 1565	$4,851,109.90	REPAIR ROADWAY	R	E S C P	
Paris	Hunt	SH 11	$6,082,128.00	REPAIR ROADWAY	R	E S C P	
Paris	Hunt	FM 2737	$2,069,061.54	REPAIR ROADWAY	R	E S C P	
Paris	Lamar	US 271	$2,776,800.00	REPAIR ROADWAY	R	E S C P	
Pharr	Cameron	FM 800	$7,627,885.78	INSTALL/UPGRADE DRAINAGE STRUCTURES	N/A	N/A	
Pharr	Cameron	FM 3248	$6,589,878.66	INSTALL TRAFFIC SIGNAL	N/A	N/A	
Pharr	Hidalgo	US 281	$1,697,993.42	REBUILD ROADWAY	R	E S C P	
Pharr	Hidalgo	US 281	$9,367,623.20	WIDEN AND REHABILITATE ROADWAY	R	E S C P	
Pharr	Hidalgo	US 281	$4,688,134.58	REBUILD ROADWAY	R	E S C P	
Pharr	Hidalgo	FM 681	$1,172,679.66	REBUILD ROADWAY	R	E S C P	
Pharr	Starr	US 83	$19,052,800.00	REBUILD ROADWAY	R	E S C P	
Pharr	Zapata	US 83	$8,389,464.02	REBUILD ROADWAY	R	E S C P	
Pharr	Zapata	US 83	$25,693,014.09	REBUILD ROADWAY	R	E S C P	

Table 4-3: Proposition 12 Projects[162]

District	County	Highway	Prop. 12 Funding	Description	Selection (See Key Below)	Benefits (See Key Below)	Congestion Reduction
San Antonio	Bexar	I-35	$720,797.50	INSTALL/UPGRADE ROADWAY LIGHTING	S	E S C P	
San Antonio	Bexar	I-35	$2,004,785.03	INSTALL/UPGRADE ROADWAY LIGHTING	S	E S C P	
San Antonio	Bexar	I-10	$2,388,355.31	INSTALL/UPGRADE SAFETY BARRIER	S	E S C P	
San Antonio	Bexar	MH	$68,306,251.99	CONSTRUCT NEW ROAD	M	E S C P	Yes
San Antonio	Bexar	PS	$28,242,291.53	CONSTRUCT NEW ROAD	M	E S C P	Yes
San Antonio	Bexar	MH	$72,800,000.00	CONSTRUCT NEW ROAD	M	E S C P	Yes
San Antonio	Comal	FM 306	$1,696,006.74	WIDEN ROADWAY	S	E S C P	
Waco	Bell	I-35	$140,920,000.00	CONSTRUCT NEW ROADWAY LANES	C	E S C P	Yes
Waco	Bell	I-35	$94,016,000.00	CONSTRUCT NEW ROADWAY LANES	C	E S C P	Yes
Waco	Hill	I-35	$156,624,000.00	CONSTRUCT NEW ROADWAY LANES	C	E S C P	Yes
Waco	Hill	FM 933	$4,175,376.00	WIDEN ROADWAY	S	E S C P	
Waco	McLennan	I-35	$180,539,828.83	CONSTRUCT NEW ROADWAY LANES	C	E S C P	Yes
Waco	McLennan	I-35	$176,696,000.00	CONSTRUCT NEW ROADWAY LANES	C	E S C P	Yes
Waco	McLennan	I-35	$199,888,000.00	CONSTRUCT NEW ROADWAY LANES	C	E S C P	Yes
Selection Code	**R = Rehabilitation** **M = Mobility** **C = Corridor** **S = Safety**						
Benefits Code	**E = Economy** - Project that provides a positive economic impact for the community. **S = Safety** - Project that will eliminate or improve a known safety deficiency. **C = Connectivity** - Project that will complete or improve (balance lanes) on the State Highway System. **P = Pavement** - Project that will improve existing pavement conditions.						
Benefits Code Color Description	**Orange = Low Impact** **Green = Medium Impact** **Blue = High Impact**						

4.4 Intercity and Rural Public Transportation Improvements

Long-range forecasting and planning for future intercity and rural transit services are performed by FTA, TxDOT, and the transportation providers. The improvements to these systems are almost exclusively a function of the amount of local, state, and federal funding provided to the agency. The funding levels are determined by federal appropriations with distribution to transportation providers either by formula or competitive award based on established criteria. The following FTA federal programs (listed by section) provide the base funding that determines what the local and state matching funding amounts will be:

- Section 5303 – Metropolitan Planning
- Section 5307 – Urbanized Formula
- Section 5310 – Elderly and Individuals with Disabilities
- Section 5311 – Nonurbanized Formula
- Section 5316 – Job Access and Reverse Commute (JARC)
- Section 5317 – New Freedom (NF):

Program specific information for categories above can be accessed at http://www.fta.dot.gov/.

Public transportation program funding levels are discussed in more detail TxDOT's UTP which can be accessed at http://www.txdot.gov/txdot_library/publications/finance/unified_transportation.htm.

Information about intercity public transportation projects are included in an MPO's MTP and TIP. The most recent versions of each document can be found on the MPO websites listed in Table 4-2.

Information about rural public transportation projects is included in TxDOT's STIP which can be accessed at:

http://www.txdot.gov/business/governments/ stips.htm.

4.5 Non-highway Planned Improvements

TxDOT does not have direct influence over the operation and the performance of several modes that comprise the multimodal statewide transportation system that it does not manage; however, information regarding these modes can be obtained on the TxDOT website and other resource agency websites.

TxDOT has just updated the Texas Rail Plan. The 2010 Texas Rail Plan will address future and existing passenger and freight rail service in Texas. This plan may be accessed at http://www.txdot.gov/public_involvement/rail_plan/default.htm.

The 2010 TASP identifies airports and heliports that perform an essential role in the economic and social development of Texas. This plan may be accessed at http://www.txdot.gov/business/aviation/system_plan.htm .

Texas has a significant marine transportation system that is used commercially, for recreation and for tourism. TxDOT also operates ferries in Galveston and Port Aransas and sponsors the 423-mile Texas stretch of the Gulf Intracoastal Waterway. The Waterway is a key part of the department's multimodal transportation system that uses the state highway system, rail system, and ports to allow freight from around the world to enter or leave Texas. The Texas Ports 2010–2011 Capital Program may be accessed at ftp://ftp.dot.state.tx.us/pub/txdot-info/library/reports/gov/tpp/tpa_report10.pdf .

TxDOT does not own or operate oil or natural gas pipelines. Information regarding pipeline projects may be obtained from the RRC on their website http://www.rrc.state.tx.us/.

5.0 Priority Corridors

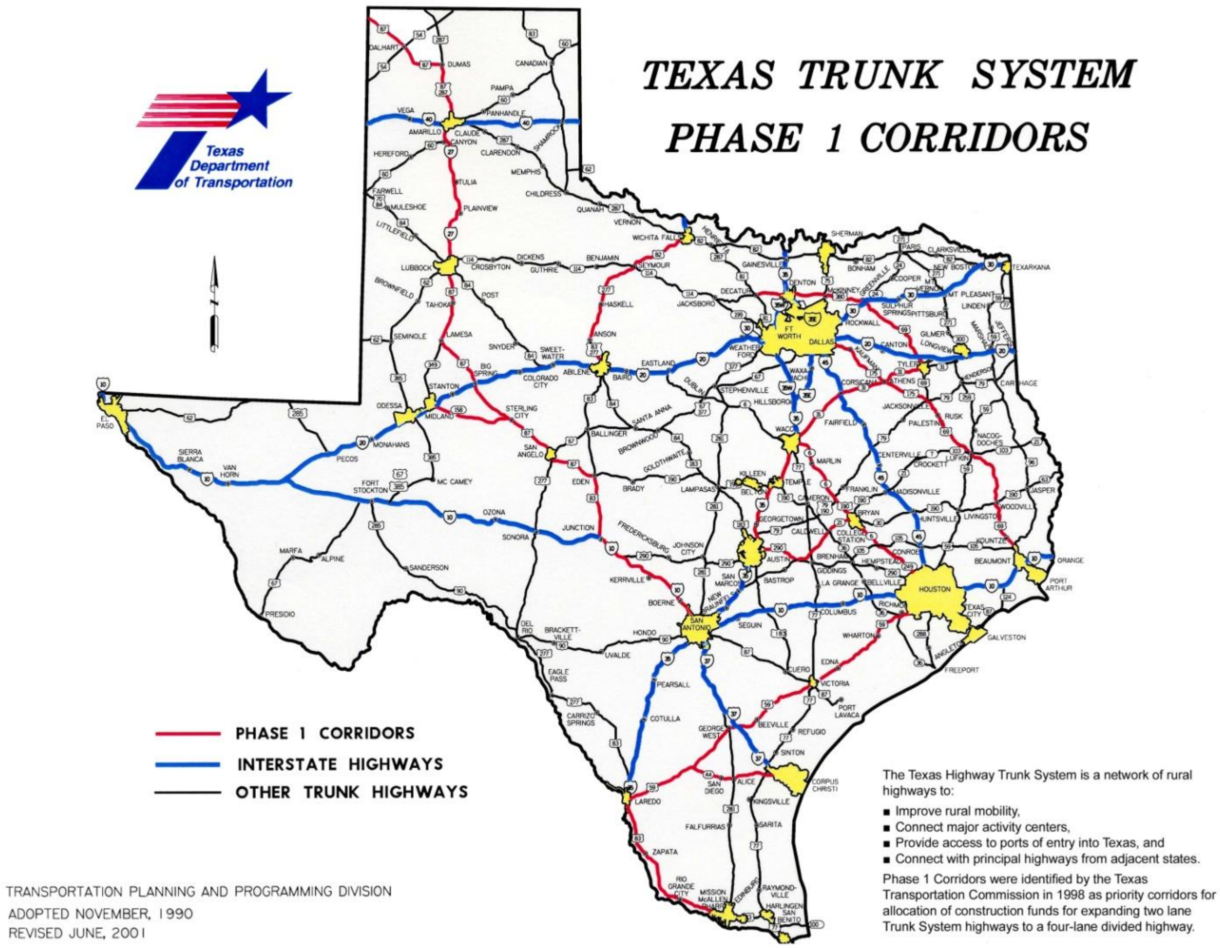
5.1 Introduction

The Texas Highway Trunk System was initially adopted by the Texas Transportation Commission in 1990 to establish a network of four-lane divided rural highways to improve rural mobility, connect major activity centers, and provide access to ports of entry into Texas. The Texas Highway Trunk System complements and includes the 3,233-mile Interstate Highway System. The original Texas Highway Trunk System designation included approximately 10,050 miles. The system was last amended in 2001 to add approximately 475 miles and is shown on Figure 5-1. The system mileage from 2001 represents approximately 13 percent of the state highway system.

The criteria used to evaluate candidate corridors for the Texas Highway Trunk System are provided in 43 Texas Administrative Code (TAC), Part 1, Subchapter D, §15.42, as follows:

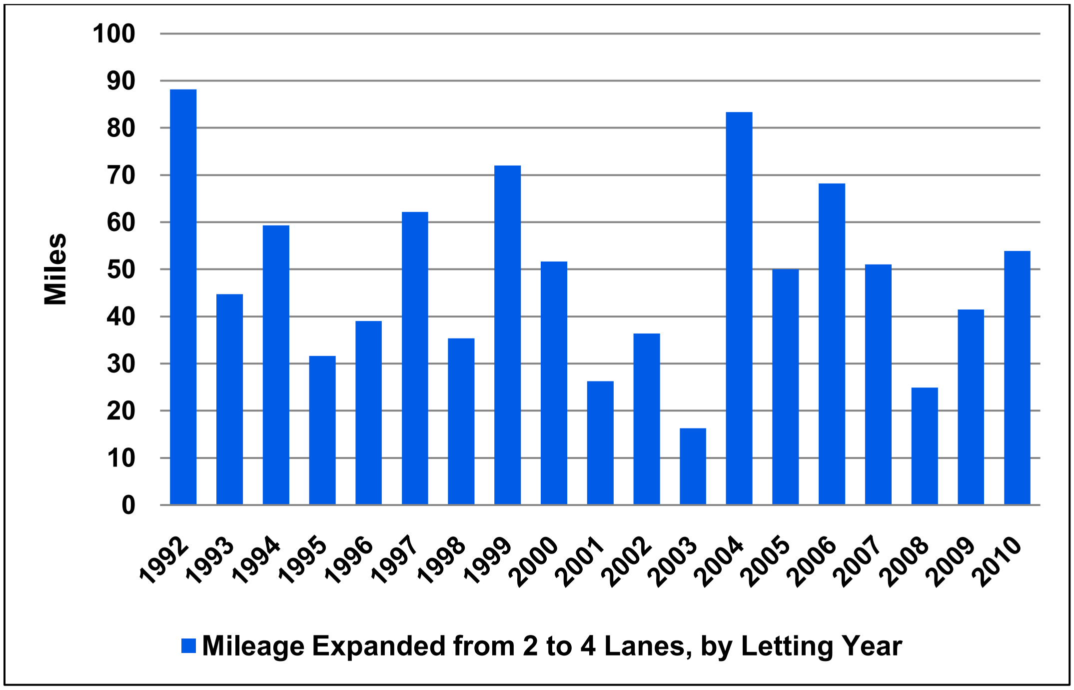
1. Maximize the use of existing four-lane divided roadways;
2. Minimize circuitous or indirect routing;
3. Connect principal roadways from adjacent states;
4. Connect with principal deep water ports with channel depths of 40 feet or more;
5. Connect with principal Mexican ports of entry (defined as crossings at or exceeding 5,000 vehicles per day);
6. Serve significant military or other national security installations;
7. Serve tourism and/or recreational areas;
8. Comprise major truck routes;
9. Be located within 25 miles or less of cities of 10,000 population or greater;
10. Close gaps in the existing Texas Highway Trunk System; and
11. Provide system connectivity.

Figure 5-1: 2001 Texas Highway Trunk System



A total of 936 centerline miles of the Texas Trunk System were widened from two to four lanes between 1992 and 2010 as shown on Figure 5-2.

Figure 5-2: Trunk System Expansion, 1992–2010[163]



5.2 Previous Prioritization of Texas Highway Trunk System Corridors

In 1998, the Texas Transportation Commission identified Phase 1 Corridors to prioritize a group of two-lane highways for expansion to the desired four-lane divided facility. The remaining corridors, identified as Other Trunk Highways on Figure 5-1, either have four lanes or are lower-priority two-lane corridors. Proposed improvements to the Texas Highway Trunk System are limited to the rural areas outside of MPO areas. MPO areas include fully or partially urbanized counties that are within the planning influence area of a major urban area. The MPO boundaries reflected on Figure 5-1 are those that existed in 2001.

The Texas Highway Trunk System criteria were reviewed in the year 2000. Two criteria were added (close the gaps in the existing Trunk System and provide system connectivity) resulting in approximately 500 miles being added to the system and 25 miles being removed. The population, employment and traffic volumes in Texas have

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increased dramatically since 1998, but not uniformly across the state. Consequently, it is appropriate to revisit the remaining needs and establish priorities for future improvements to the Phase 1 Texas Highway Trunk System based on the current distribution of overall traffic demand, roadway capacity, population, and gaps in the system.

Since inception of the Texas Highway Trunk System, 936 miles of the system have been widened to four lanes. This number includes projects under construction and scheduled for letting through August 2010.

Table 5-1 provides the definitions of the Phase 1 Corridors based on the current (2010) MPO boundaries as shown on Figure 5-3.

Table 5-1: Phase 1 Corridor Definitions

Highways	Corridor Limits
SH 31	Tyler MPO Boundary to McLennan county line
US 69	Tyler MPO Boundary to Hunt/Rains county line
US 277/US 82^/US 83	Wichita Falls MPO Boundary to Abilene MPO Boundary
US 59	Laredo MPO Boundary to Wharton/Fort Bend county line
US 83	Laredo MPO Boundary to Hidalgo county line
SH 44	Freer to Corpus Christi MPO Boundary#
US 69/US 175	Hardin/Tyler county line to Kaufman county line (Mabank)
SH 21	Brazos/Burleson county line to Lee/Bastrop county line, north of US 290
SH 6/US 190*/SH 105/FM 1774	McLennan/Falls county line to Robertson/Brazos county line, Brazos/Grimes county line to Grimes/Waller County Line
US 87/I-27/US 87/ US 83/I-10	New Mexico to Bexar/Kendall county line
SH 158/US 87	Midland-Odessa Transportation Organization Boundary to San Angelo MPO Boundary

Source: TxDOT; URS 2010

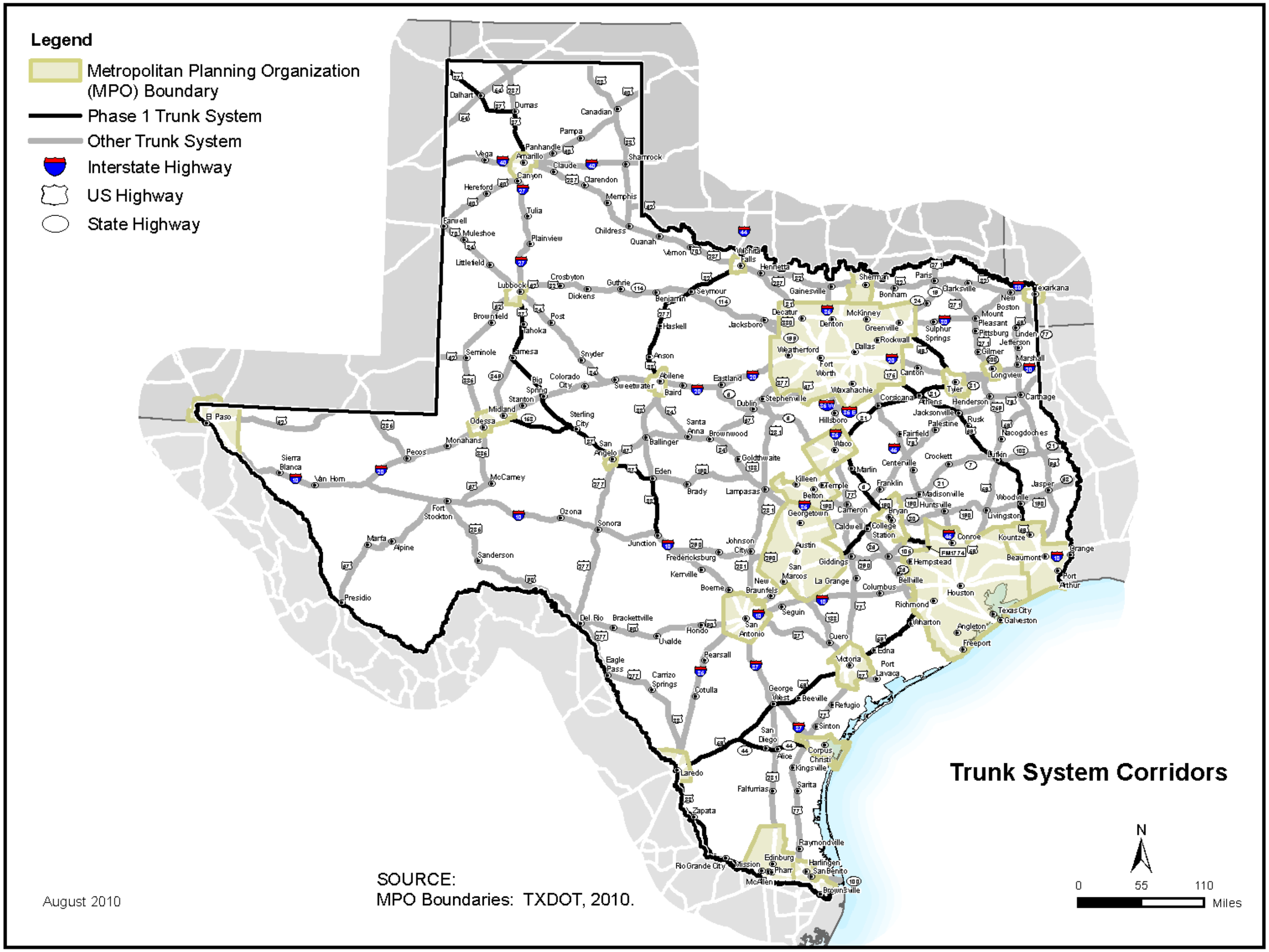
The current (2010) MPO boundaries were used to evaluate the rural needs in the SLRTP.

^The concurrent section of US 277 and US 82 between Seymour and Wichita Falls is coded in RHiNO as US 82.

#The western limit was adjusted to eliminate overlap with US 59.

*The concurrent section of SH 6 and US 190 between Hearne and Bryan is in RHiNO as US 190.

Figure 5-3: Texas Trunk System Revised MPO Boundaries



5.3 Potential Improvement Corridors

Texas Highway Trunk System routes are shown on Figure 5-3. The Texas Highway Trunk System routes and the interstate highways were evaluated from two perspectives. The first perspective identified highway corridors that do not meet the minimum roadway design criteria for a Texas Highway Trunk System corridor.[164] The second perspective identified highway corridors that need additional capacity to meet the needs of the projected 2035 traffic. The analysis used the 2008 RHiNO database, consequently improvements completed after 2008 are not reflected in the analysis.

5.3.1 Highway Groups

The Texas Highway Trunk System and interstate highways were evaluated in three groups with the same matrix and scoring criteria.

Phase 1 Corridors: Phase 1 Corridors consist of eleven corridors that have been a priority since 1998. The original corridor descriptions are provided in Table 5-1. Corridors that have been modified based on changes in MPO boundaries are identified. The goal of this analysis was to identify short sections, referred to as “gaps,” that are still two lanes or four lanes without medians and also need additional capacity based on projected 2035 traffic. This analysis may be used to develop a program of projects when funding becomes available.

Interstate Highways: Texas has nine interstate highways of widely varied length. While all of the interstates meet the Texas Highway Trunk System design criteria, this network of priority corridors provides the skeleton for interstate and intrastate commerce. This evaluation sorts those routes that need additional capacity in limited areas to the top of the ranking and then compares the rest of the corridors by primarily considering traffic volumes and size of the MPO areas served by each route.

Other Trunk System Corridors: These corridors include routes that already meet the minimum design criteria for substantial distances and routes with lower priority than the Phase 1 Corridors. As with the other two groups of highways, the goal was to identify and quantify gaps in the four-lane highways that warrant expansion based on anticipated traffic volumes.

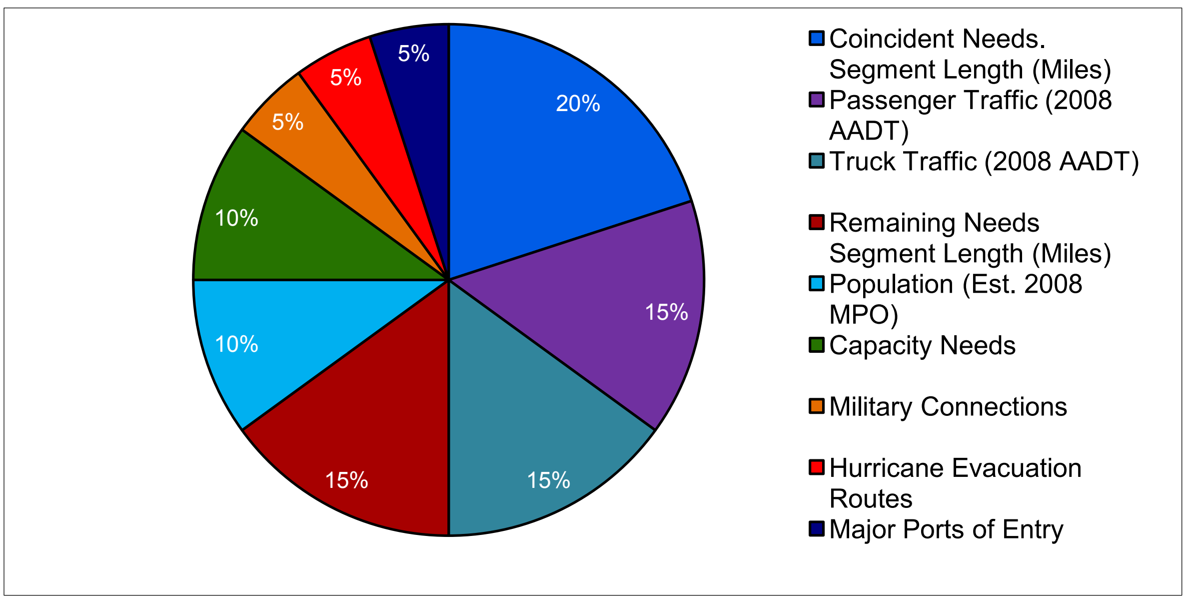
[164] The minimum roadway design criteria for the Texas Highway Trunk System specify that each highway should be at least a four-lane divided facility.

5.3.2 Evaluation Scoring

An evaluation methodology was developed using a combination of criteria from the 2001 reevaluation process as well as criteria based on the amount and type of improvements needed (i.e., two-lane to four-lane or four-lane undivided to four-lane divided) to bring a corridor up to the full standards of a four-lane divided highways. The process was quantitative, with ten points assigned to each criterion. Additionally, each criterion was assigned a weighting factor, with emphasis given to prioritize those corridors with comparatively short segments of two-lane highway on an otherwise four-lane highway facility.

The criteria used for the evaluation are a combination of those used to establish and expand the Texas Highway Trunk System and additional factors that relate to existing traffic volumes, predicted 2035 capacity needs, population, length of gaps in the corridor and identification of capacity needs on existing four-lane segments. Crash data were not evaluated for this effort but are recommended for subsequent analyses needed to prioritize specific projects to move forward into development. Figure 5-4 shows the weighting assigned to each criteria. The maximum score is 1,000 points.

Figure 5-4: Screening Criteria Weight Factor



Since rural interstate highways are at least four lanes with a median, the scoring for sub-standard design was not applicable. Scoring for the Other Texas Highway Trunk System was limited to evaluation of the individual highways which were not combined into corridors.

5.4 Evaluation Results

In order to meet the minimum design criteria for a Texas Highway Trunk System route, the roadway must have at least four lanes and a divided median. A divided median is defined as either a depressed grassy median, raised median or a flush median over 16 feet wide.

5.4.1 Phase 1 Corridor Needs

The Phase 1 Corridors were examined to determine those segments that either did not meet the minimum design criteria (i.e., four lanes and divided) or capacity criteria (i.e., need for additional lanes due to traffic volumes in 2035). In some cases, corridors met both conditions. All eleven Phase 1 Texas Highway Trunk System corridors require improvements over varying lengths of each route.

Table 5-2 depicts the eleven Phase 1 corridors evaluated to determine a priority ranking for improving the sections of each corridor that are below Trunk System standard design and/or have capacity needs. Some highways were evaluated in sections where there was a change in traffic characteristics such as significant change in truck volumes, or the Texas Highway Trunk System designation did not follow the entire length of the route, or because of the way corridors were defined between cities. For these highways, a letter was added to the route name to denote each defined segment.

Based on the screening analysis, the corridor from Waco to Houston-Galveston MPO along SH 6, US 190, SH 105, and FM 1774 ranked first, while the corridor between the Midland/Odessa MPO and the San Angelo MPO along SH 158 and US 87 ranked as the lowest priority.

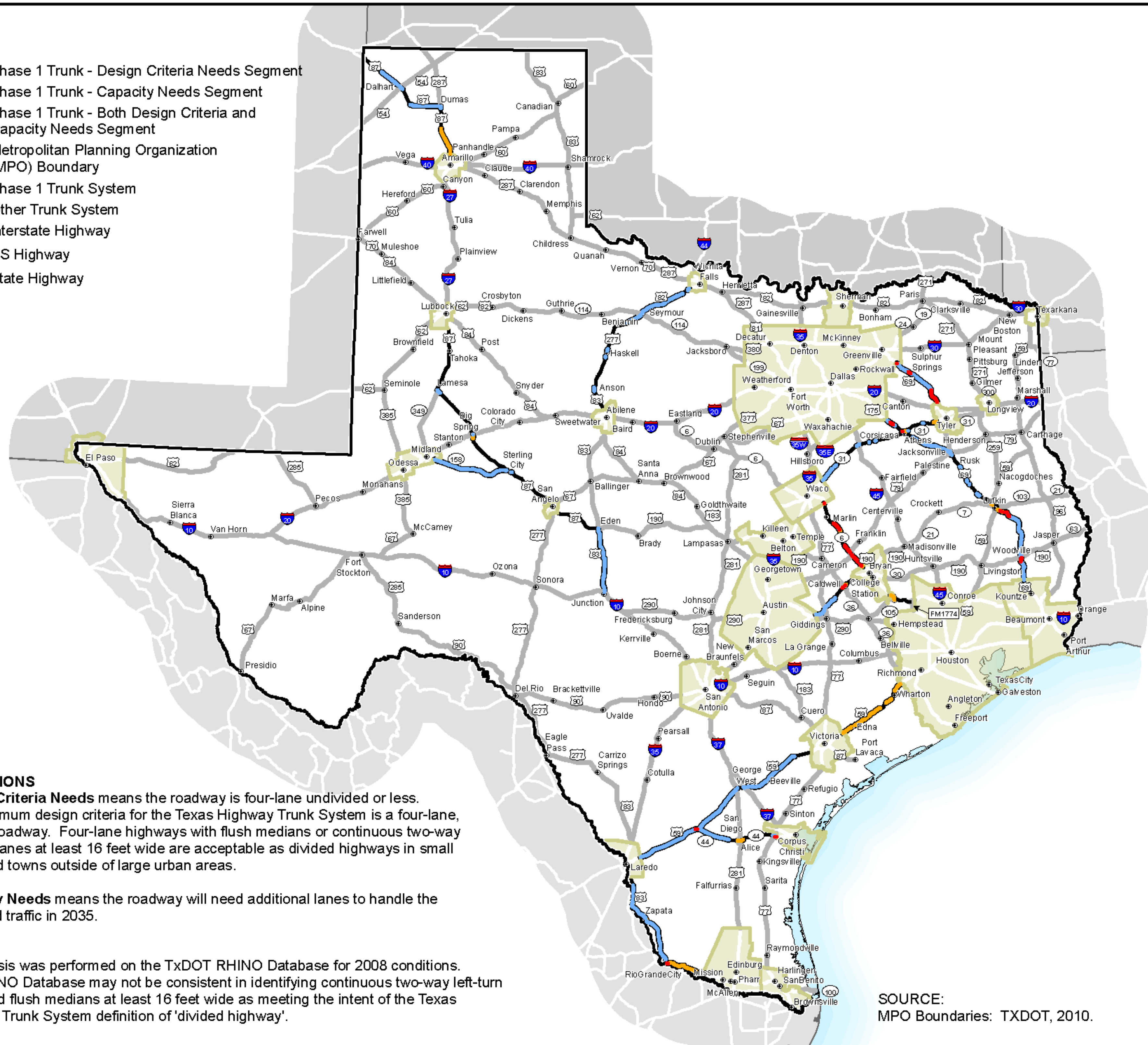
Table 5-2: Evaluation Results – Phase 1 Corridors

Highway(s)	Corridor Description	Improvement Needed			Priority Score	Ranking
		Length (miles)	Type of Improvement			
			Design Criteria	Capacity Needs		
SH 6, US 190, SH 105, FM 1774	McLennan County Line, southeast of Waco, to Bryan/College Station MPO; Bryan/College Station MPO to Navasota, Navasota to Houston-Galveston Area Council of Governments (MPO) at Montgomery County Line	35	✓	✓	650	1
US 59	Houston-Galveston Area Council of Governments (MPO) to Laredo MPO	164	✓	✓	590	2
US 83	Hidalgo County Line at Sullivan City to Laredo MPO	78	✓	✓	580	3
US 175, US 69	North Central Texas MPO at Mabank to Jacksonville and Jacksonville to Southeast Texas Regional Planning Council (MPO) at Tyler/Hardin County Line	104	✓	✓	530	4
SH 44	Corpus Christi MPO to Freer	30	✓	✓	500	5
US 69	North Central Texas MPO at Hunt/Wood County Line to Tyler MPO	39	✓	✓	480	6
SH 31	Tyler MPO to Waco MPO at McLennan/Hill County Line	20	✓	✓	455	7
SH 21	Bryan MPO to Capital Area MPO at Lee/Bastrop County Line, north of US 290	23	✓	✓	440	8
US 87, US 83 (excludes I-27 and I-10 links)	New Mexico State Line to Amarillo MPO, Lubbock MPO to San Angelo MPO , and San Angelo MPO to San Antonio MPO	117	✓	✓	405	9
US 277, US 82, US 83	Wichita Falls MPO to Abilene MPO	51	✓		275	10
SH 158, US 87	Midland-Odessa Transportation Organization to San Angelo MPO	59	✓		200	11

Source: URS 2010

Figure 5-5 shows the location of the specific roadway segments in need of improvement within each Phase 1 Texas Highway Trunk System corridor based on the 2008 RHiNO data. In most cases, the roadway segments that need improvement are not contiguous. The figure includes tables listing the Phase 1 improvements completed since 2008 and those currently under construction that are not reflected on the map.

Figure 5-5: Phase 1 Corridors – Roadway Segment Needs



PHASE 1 ADDED CAPACITY PROJECTS COMPLETED SINCE 2008

DISTRICT	COUNTY	HIGHWAY	PROJECT LENGTH (MILES)
BRYAN	ROBERTSON	SH 6	9.5
CORPUS CHRISTI	GOLIAD	US 59	13.2
	LIVE OAK	US 59	4.2
PHARR	STARR	US 83	0.9
	ZAPATA	US 83	3.2
SAN ANGELO	CONCHO	US 83	4.9
TYLER	HENDERSON	US 175	8.0
WACO	FALLS	SH 6	5.9
WICHITA FALLS	ARCHER	US 277	1.7
	BAYLOR	US 277	1.8
		TOTAL	53.3

Source: TxDOT, May 2010

PHASE 1 ADDED CAPACITY OR RECONSTRUCTION PROJECTS UNDER CONSTRUCTION OR LET THROUGH AUGUST 2010

DISTRICT	COUNTY	HIGHWAY	PROJECT LENGTH (MILES)
BRYAN	ROBERTSON	SH 6	1.4
PARIS	HUNT (Now in NCTCOG MPO)	US 380	4.2
PHARR	ZAPATA	US 83 (2 PROJECTS)	5.7
TYLER	HENDERSON	US 175	4.3
	WOOD	US 69	2.9
WACO	FALLS	SH 6	9.0
		TOTAL	27.5

Source: TxDOT, May 2010

Phase 1 Trunk System Corridors Roadway Segment Needs

DEFINITIONS

Design Criteria Needs means the roadway is four-lane undivided or less. The minimum design criteria for the Texas Highway Trunk System is a four-lane, divided roadway. Four-lane highways with flush medians or continuous two-way left-turn lanes at least 16 feet wide are acceptable as divided highways in small cities and towns outside of large urban areas.

Capacity Needs means the roadway will need additional lanes to handle the projected traffic in 2035.

NOTE:
All analysis was performed on the TxDOT RHINO Database for 2008 conditions. The RHINO Database may not be consistent in identifying continuous two-way left-turn lanes and flush medians at least 16 feet wide as meeting the intent of the Texas Highway Trunk System definition of 'divided highway'.

July 2010

SOURCE:
MPO Boundaries: TXDOT, 2010.

5.4.2 Rural Capacity Needs on Interstate Highways

The interstate highways were evaluated for future needs due to their importance to intrastate as well as interstate commerce. From the capacity analysis performed for the needs analysis, four corridors will need additional capacity by 2035. Future corridor studies will determine whether the needed capacity is to be provided by travel lanes, improved freight rail, or passenger rail.

The four corridors were evaluated and ranked using the same criteria as the Phase 1 Texas Highway Trunk System Corridors, with the exception of sub-standard design, to establish a priority ranking for these needs. As with the Phase 1 Corridors, interstates within the current MPO boundaries were not included in this analysis. The maximum score was 800 points.

Table 5-3 presents the priority score and overall ranking of each interstate highway corridor in need of additional capacity at specific locations in rural areas.

Table 5-3: Interstate Corridors Prioritization Evaluation

Highway	Generalized Limits	Improvement Needed			Priority Score	Ranking
		Length (Centerline Miles)	Type of Improvement			
			Design Criteria	Capacity Needs		
I-35	Oklahoma State Line to Laredo MPO	49	N/A	✓	715	1
I-10	El Paso MPO at El Paso County Line to Houston - Galveston Area Council at Waller/Ft. Bend County Line	33	N/A	✓	670	2
I-20	I-10 to Louisiana State Line	24	N/A	✓	645	3
I-45	North Texas MPO, north of Corsicana, to Houston-Galveston Area Council (MPO) at Walker/Montgomery county line	111	N/A	✓	615	4

Source: URS 2010

Except for I-45 which has capacity issues over the length of the corridor, the capacity needs associated with the interstates are identified in specific locations. On I-35, there are three sections that will need additional capacity: from San Antonio south towards Pearsall; between New Braunfels and San Marcos; and in Hill County, north of Waco. Additional capacity on I-10 will be needed east of Seguin and between Columbus and the Waller County Line. The need for additional capacity on I-20 is expected to extend from the Dallas/Fort Worth area MPO boundary to east of Canton.

5.4.3 Other Texas Highway Trunk System Highways

The remaining Texas Highway Trunk System highways not included in Phase 1 are labeled as Other Trunk Highways as shown on Figure 5-1. The same evaluation methodology was used to prioritize the Other Trunk System. Highways were not aggregated into corridors.

Table 5-4 provides a summary of the Other Trunk Highways rankings. Some highways were evaluated in sections where there was a change in traffic characteristics such as significant change in truck volumes, because a portion of a route is included in Phase 1, or because the Texas Highway Trunk System designation does not include the entire length of the route. For these highways, a letter was added to the route name to denote each defined segment.

Table 5-4: Other Trunk Highways Prioritization Evaluation

		Improvement Needed				
			Type of Improvement			
Highway	Generalized Limits	Length (miles)	Design Criteria	Capacity Needs	Priority Score	Ranking
US 59	Texarkana MPO Boundary to Houston-Galveston Area Council MPO Boundary at San Jacinto/Liberty C/L	165	✓	✓	720	1
US 79	Louisiana State Line to Thorndale	223	✓	✓	680	2
US 290	Houston-Galveston Area Council MPO Boundary at Waller/Washington C/L to Capital Area MPO Boundary at Bastrop/Lee C/L and Capital MPO Boundary at Hays/Blanco C/L to I-10	112	✓	✓	595	3
SH 36	Cameron to Houston-Galveston Area Council MPO Boundary at Austin/ Ft Bend C/L	75	✓	✓	595	3
US 77	Victoria MPO Boundary at Victoria/Refugio C/L to Harlingen – San Benito MPO Boundary	83		✓	590	5
SH 100	South Padre Island to Los Fresnos	5	✓	✓	575	6
US 281	Stephenville to San Antonio/Bexar County MPO Boundary at Comal/Bexar C/L and Three Rivers to Brooks/Hidalgo C/L	176	✓	✓	570	7
US 259	Longview MPO Boundary to Nacogdoches	19	✓	✓	570	7

Table 5-4: Other Trunk Highways Prioritization Evaluation

Highway	Generalized Limits	Improvement Needed			Priority Score	Ranking
		Length (miles)	Type of Improvement			
			Design Criteria	Capacity Needs		
US 69	Tyler MPO Boundary to Jacksonville	16	✓	✓	560	9
US 90	San Antonio/Bexar County MPO Boundary at Bexar/Medina C/L to Sanderson	201	✓	✓	560	9
US 87	Brady to Eden, San Antonio/Bexar County MPO Boundary at Bexar/Wilson C/L to Victoria MPO Boundary at Victoria/DeWitt C/L, and Victoria MPO Boundary at Victoria/Calhoun C/L to Port Lavaca	97	✓	✓	555	11
US 190	Brady to Lampasas, Central Texas MPO Boundary at Bell/Milam C/L to Cameron, Milano to Hearne, and Huntsville to Jasper	204	✓	✓	555	11
US 67 (G)	North Central Texas MPO Boundary at Johnson/Somervell C/L to San Angelo MPO Boundary	112	✓	✓	510	13
US 77 (H)	Waco MPO Boundary at McLennan/Falls C/L to Victoria MPO Boundary at Victoria/DeWitt C/L	163	✓	✓	510	13
US 277	San Angelo MPO Boundary to Carrizo Springs	246	✓	✓	495	15
SH 30	Huntsville to Bryan/College Station MPO Boundary at Brazos/Grimes C/L	37	✓	✓	490	16
US 287	North Central Texas MPO Boundary at Wise/Montague C/L to Amarillo MPO Boundary and Oklahoma State Line to Dumas	40	✓	✓	485	17
US 183	Goldthwaite to Capital Area MPO Boundary at Williamson/Burnet C/L and South of Capital Area MPO Boundary at Caldwell/Gonzales C/Lto Cuero	98	✓	✓	480	18
SH 105	Houston-Galveston Area Council MPO Boundary at Montgomery/Grimes C/L to Plantersville and Navasota to Brenham	29	✓	✓	480	18
US 82	Texarkana MPO Boundary to	260	✓	✓	465	20

Table 5-4: Other Trunk Highways Prioritization Evaluation

Highway	Generalized Limits	Improvement Needed			Priority Score	Ranking
		Length (miles)	Type of Improvement			
			Design Criteria	Capacity Needs		
	Henrietta and Seymour to Lubbock MPO Boundary					
US 96	Tenaha to South East Texas Regional Planning Council Boundary at Jasper/Hardin C/L	69	✓	✓	450	21
US 385	Seminole to Midland-Odessa Transportation Organization Boundary and Midland-Odessa Transportation Organization Boundary to McCamey	22	✓	✓	440	22
SH 31	Longview MPO Boundary to Tyler MPO Boundary	14	✓	✓	440	22
US 271	Oklahoma State Line to Longview MPO Boundary	77	✓	✓	425	24
US 84	Muleshoe to Lubbock MPO Boundary, Lubbock MPO Boundary to I-20 at Sweetwater and Abilene MPO Boundary to Goldthwaite	77	✓	✓	385	25
US 60	Oklahoma State Line to Amarillo MPO Boundary and Amarillo MPO Boundary to New Mexico State Line	73	✓	✓	380	26
SH 103	Milam to SH 7, West of Lufkin	62	✓	✓	365	27
SH 6	Waco MPO Boundary at McLennan/Bosque C/L to I-20 at Eastland	102	✓	✓	340	28
US 83 (C)	Oklahoma State Line to US 62	117	✓	✓	340	28
SH 300	Gilmer to Longview MPO Boundary	4	✓		325	30
US 70	Muleshoe to New Mexico state line	3	✓		315	31
US 377	North Central Texas MPO Boundary at Hood/Erath C/L to Stephenville	13	✓		310	32
US 83 (E)	Carrizo Springs to Laredo Urban Transportation Study Boundary	60	✓		305	33
US 62	Oklahoma State Line to US 83, Lubbock MPO Boundary to New Mexico State Line, and New Mexico State Line to El Paso MPO Boundary	125	✓		295	34

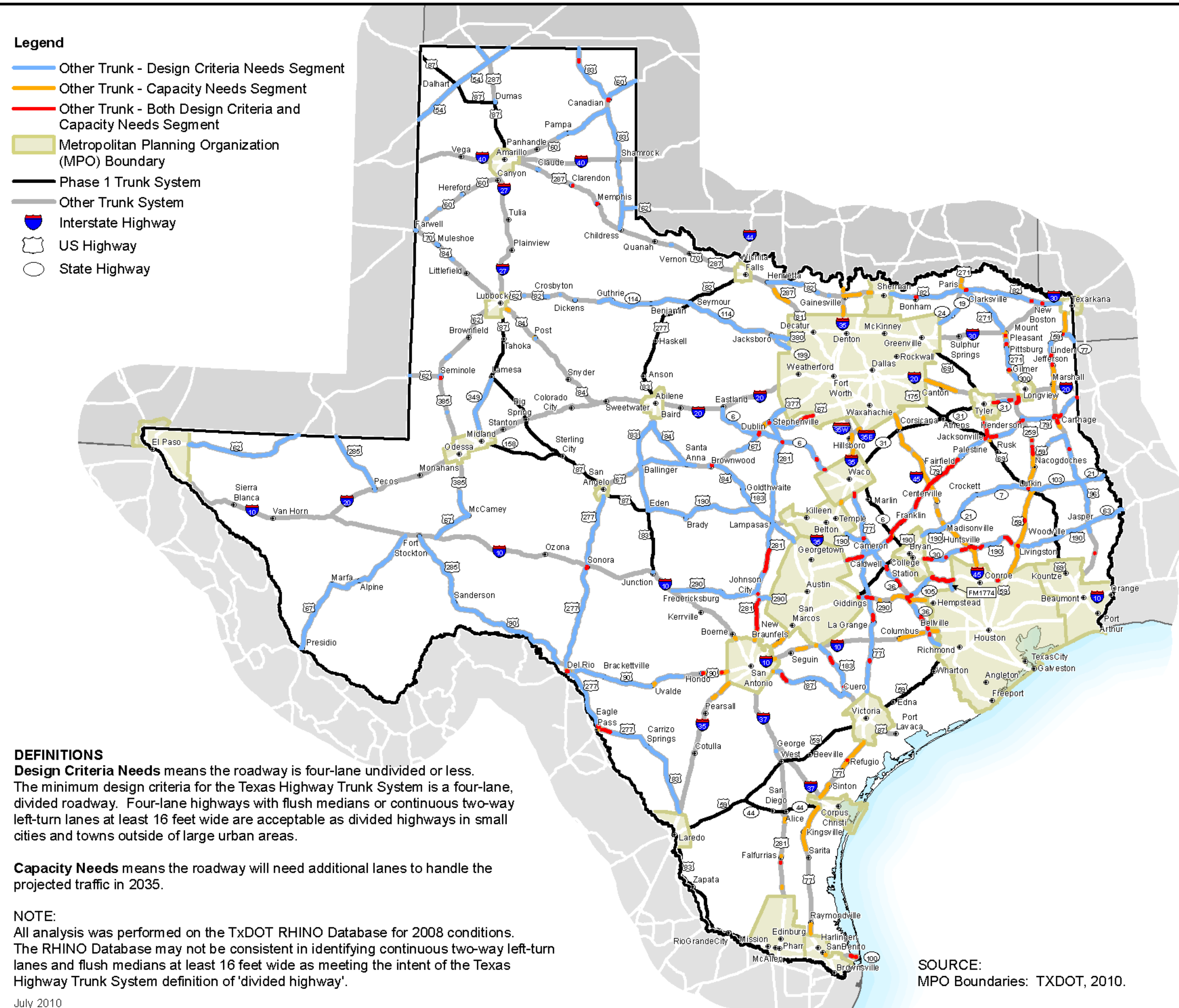
Table 5-4: Other Trunk Highways Prioritization Evaluation

Highway	Generalized Limits	Improvement Needed			Priority Score	Ranking
		Length (miles)	Type of Improvement			
			Design Criteria	Capacity Needs		
SH 24	SH 19/SH 24 Junction to Commerce	16	✓		290	35
SH 199	North Central Texas MPO Boundary at Wise/Jack C/L to Jacksboro	11	✓		280	36
SH 19	Paris to SH 24/SH 19 Junction	1	✓		275	37
US 380	North Central Texas MPO Boundary at Wise/Jack County Line to Jacksboro	13	✓		250	38
SH 114	Jacksboro to Seymour	65	✓		235	39
US 67 (F)	McCamey to Presidio	170	✓		225	40
SH 7	SH 103, West of Lufkin to Crockett	33	✓		210	41
US 54	Oklahoma State Line through Dalhart to New Mexico State Line	92	✓		205	42
SH 349	Lamesa to Midland-Odessa Transportation Organization Boundary	46	✓		200	43
SH 63	Louisiana State Line to Jasper	30	✓		200	43
US 83 (D)	Abilene MPO Boundary to Eden	73	✓		195	45
SH 21	Crockett to Madisonville	44	✓		180	46
SH 77	Louisiana State Line to Atlanta	10	✓		160	47
US 285	New Mexico State Line to Pecos and Ft. Stockton to Sanderson	116	✓		150	48

Based on the analysis, US 59 north of the Houston MPO boundary to the Texarkana MPO boundary was the highest rated corridor in need of improvement, while US 285 (from New Mexico State Line to Pecos and Ft. Stockton to Sanderson) was the lowest rated corridor.

Figure 5-6 shows the location of the specific roadway segments in need of improvement on these highways. In many cases, the identified needs are in multiple locations along the highway.

Figure 5-6: Other Trunk Highways – Roadway Segment Needs



OTHER TRUNK SYSTEM ADDED CAPACITY PROJECTS COMPLETED SINCE 2008

DISTRICT	COUNTY	HIGHWAY	PROJECT LENGTH (MILES)
CHILDRESS	KING	US 82	2.0
PARIS	DELTA	SH 24	6.4
WACO	HAMILTON	US 281	0.3
YOAKUM	COLORADO	IH 10	2.5
	LAVACA	US 77	1.2
		TOTAL	12.4

Source: TxDOT, May 2010

OTHER TRUNK SYSTEM ADDED CAPACITY OR RECONSTRUCTION PROJECTS UNDER CONSTRUCTION OR LET THROUGH AUGUST 2010

DISTRICT	COUNTY	HIGHWAY	PROJECT LENGTH (MILES)
ATLANTA	CASS	US 59	7.2
BROWNWOOD	COMANCHE	US 67	1.2
CORPUS CHRISTI	JIM WELLS	US 281	1.8
LUFKIN	ANGELINA	US 59	0.8
	SAN JACINTO	US 59	3.4
PHARR	BROOKS	US 281	1.6
WACO	HILL	IH 35	4.0
YOAKUM	AUSTIN	SH 36	4.9
		TOTAL	24.9

Source: TxDOT, May 2010

Other Trunk System Corridors Roadway Segment Needs

DEFINITIONS

Design Criteria Needs means the roadway is four-lane undivided or less. The minimum design criteria for the Texas Highway Trunk System is a four-lane, divided roadway. Four-lane highways with flush medians or continuous two-way left-turn lanes at least 16 feet wide are acceptable as divided highways in small cities and towns outside of large urban areas.

Capacity Needs means the roadway will need additional lanes to handle the projected traffic in 2035.

NOTE:
All analysis was performed on the TxDOT RHINO Database for 2008 conditions. The RHINO Database may not be consistent in identifying continuous two-way left-turn lanes and flush medians at least 16 feet wide as meeting the intent of the Texas Highway Trunk System definition of 'divided highway'.

July 2010

SOURCE:
MPO Boundaries: TXDOT, 2010.

5.5 Completion of the Texas Highway Trunk System

An estimated construction cost was developed for completing the network to four or more lanes with a median. For estimating purposes, a new parallel roadbed was assumed for each scenario to provide the additional safety associated with depressed (grassy) medians on rural low-volume, high-speed traffic. These costs for both the Phase 1 corridors and the other Trunk System corridors are provided in Table 5-5. Cost estimates for improving the four-lane without median are based on building a separate two-lane roadbed to provide the depressed grassy median. It should be noted the cost for upgrading any Trunk System highway that was let to construction as of August, 2010 is not included in the table.

Table 5-5: Estimated Cost to Complete Texas Highway Trunk System Sub-Standard Design Segments Only

Improvement Type	Centerline Miles*	Estimated Lane Miles	Estimated Cost ($ Millions, 2010)
Phase 1 Corridors			
Widen from 2 lanes to 4 lanes with median	480	960	873
Widen from 4 lanes without median to 4 lanes with median	77	0	140
Other Trunk System Corridors			
Widen from 2 lanes to 4 lanes with median	2,385	5,412	4,654
Widen from 4 lanes without median to 4 lanes with median	572	0	988
Total	**3,514**	**6,372**	**6,655**

Source: Data – TxDOT, Analysis –URS 2010

* Rounded to nearest mile

Table 5-6 provides the estimated cost to address the capacity needs on the Interstate System and on the Texas Highway Trunk System. Several roadway segments needed more than two additional lanes; therefore, the unit of measurement is lane-miles instead of centerline miles. The same unit costs as the capacity analysis were used to generate the estimated costs.

Table 5-6: Estimated Cost to Complete Texas Highway Trunk System Segments with Capacity Needs

Rural Highway Network Type	Centerline Miles*	Estimated Lane Miles Needed*	Estimated Cost ($ Millions, 2010)
Small urban (5,000 to 50,000 population)			
Interstate	20	41	92
Texas Trunk System – Phase 1	22	66	74
Texas Trunk System – Other	95	280	314
Rural			
Interstate	193	478	664
Texas Trunk System – Phase 1	145	353	304
Texas Trunk System – Other	490	1,355	1,165
Total	**965**	**2,573**	**2,613**

Source: Data – TxDOT, Analysis - URS, PBS&J

* Rounded to nearest mile

5.6 Ongoing Corridor Studies

TxDOT is currently facilitating citizen-led improvement studies on I-35 and the Congressionally designated I-69 corridor to get local decision makers involved early in the transportation planning process on these two vital trade corridors. Each route has Corridor Segment Committees to evaluate needs and make preliminary recommendations through a Corridor Advisory Committee to the Texas Transportation Commission.

The need for these corridor improvements is supported by the Texas Highway Trunk System needs analysis within the Interstate and the Other Trunk System Highways analysis.

5.6.1 Interstate 35

The I-35 Corridor Advisory Committee published a report in November 2008 that included numerous recommendations to improve the planning efforts for developing the needed capacity improvements to the I-35 corridor. Responding to the suggestion that local decision makers need to be involved throughout the planning process, the Texas Transportation Commission established four segment committees that cover the following areas:

- Oklahoma State Line to I-20 in Dallas-Fort Worth
- I-20 in Dallas-Fort Worth to Bell County

- Williamson County to I-10 in San Antonio
- I-10 in San Antonio to the Texas-Mexico border in Laredo

Named MY 35 (www.My35.org), the segment committees, organized in 2009, have been working since January 2010 and will be presenting concepts to the public in September 2010, with final segment reports being submitted to the Corridor Advisory Committee by the end of 2010. The Corridor Advisory Committee will consider the reports and then make overall corridor recommendations to the Texas Transportation Commission in the MY 35 Plan.

The I-35 Corridor Program is consistent with and compliments the strategic goals outlined in TxDOT's *2011-2015 Strategic Plan* as shown in Table 5-7.

Table 5-7: I-35 Program Outcomes

Project Outcomes	TxDOT 2011–2015 Strategic Plan Goals	Focus Area
Improve the international, interstate, and intrastate movement of goods and people through north, central and south Texas	2, 4, 5	Congestion, Safety
Address localized safety, congestion, and mobility problems experienced in many of the cities located along I-35	2, 4, 5	Congestion, Safety
Provide improved mobility along the I-35 Corridor to enhance accessibility for international trade, commercial, business, tourist, and personal travel	1, 5	Economic
Concentrate on utilizing and upgrading the existing I-35 corridor in an effort to preserve the value of existing transportation assets	3	Assets
Explore where the introduction of multimodal solutions can enhance regional access and mobility as part of the development of an I-35 Corridor Program	1, 4, 5	Congestion, Air Quality
Develop a program of individual transportation improvement projects tailored for utilizing a broad range of financing mechanisms and prioritized based on demand	1, 6	Assets

Source: TxDOT, A Citizens' Report on the Current and Future Needs of the I-35 Corridor

5.6.2 Interstate 69

I-69 was legislatively authorized by the United States Congress and signed into law under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). It is proposed to extend the existing I-69 (which currently exists from Indianapolis, Indiana to the Canadian border at Port Huron, Michigan) to the Texas-Mexico border. The I-69 Corridor Program being studied in Texas extends from Texarkana, Texas, and Stonewall, Louisiana, to Laredo and the Lower Rio Grande Valley of Texas. With Houston near the midpoint, Interstate 69 will improve regional mobility and provide new freight movement capacity accessing seaports at Houston, Freeport, Victoria, Point Comfort, Corpus Christi and Brownsville. It will extend the reach of Texas ports into new national and international markets.

Interstate 69 in Texas is being developed as a series of upgrades to existing highways in the corridor. Over time, these projects will bring the entire route to interstate highway standards. The process has been underway for two decades and TxDOT has been designing and building all new projects along these routes to interstate standards. More than 160 miles of freeway have been completed along these highway routes in anticipation of being added to the Interstate Highway System.

The Texas Transportation Commission appointed the I-69 Corridor Advisory Committee to evaluate the current and long-term needs for I-69 corridor. The committee published a report in December 2008 that provided similar recommendations as the I-35 analysis. TheI-69 program has five segment committees covering the corridor along US 59 from Texarkana to Laredo, and US 77 from Victoria to the Lower Rio Grande Valley (LRGV), and US 281 from Victoria via US 59 to the LRGV. The five segment committees cover the following geographic areas:

- Texarkana to Lufkin
- Lufkin to Houston
- Houston to Refugio and Goliad counties
- Live Oak and San Patricio counties to the LRGV
- Live Oak and San Patricio counties to Laredo

The segment committees have been working since spring 2009 with the primary emphasis on improving the existing highways with provisions for relief routes where needed. The segment committees have been tasked with identifying and prioritizing regional projects that will contribute to the completion of Interstate 69 in Texas. The committees plan to host public workshops on improvement concepts.

The I-69 Corridor Program is consistent with and compliments the strategic goals outlined in TxDOT's 2011–2015 Strategic Plan as shown in Table 5-8.

Table 5-8: I-69 Program Outcomes

Project Outcomes	TxDOT 2011–2015 Strategic Plan Goals	Focus Area
Improve the international, interstate, and intrastate movement of goods and people through south and east Texas on an officially designated interstate highway	2, 4, 5	Congestion, Safety
Address localized safety, congestion, accessibility, mobility, connectivity, and system continuity problems experienced in many of the towns located along US 59, US 77, US 281, SH 44, and US 84 in south and east Texas	2, 4, 5	Congestion, Safety
Provide improved connectivity and mobility along the Gulf Coast to enhance accessibility to existing and planned Texas ports thereby increasing the economic competitiveness of the ports to serve the increased cargo traffic associated with the Panama Canal Expansion	1, 5	Economic
Sustain and enhance the economic vitality of East Texas, the Gulf Coast of Texas, and the Rio Grande Valley by providing access to an interstate highway, as most of the towns in these regions do not presently have direct interstate access	5	Economic
Concentrate on utilizing and upgrading existing specified routes to interstate standards in an effort to preserve the value of existing transportation assets and to be responsive to the citizens of Texas' transportation needs	3	Assets
Explore where the introduction of multimodal solutions can enhance regional access and mobility as part of the development of an I-69 Corridor Program	1, 4, 5	Congestion, Air Quality
Develop a program of individual transportation improvement projects tailored for utilizing a broad range of financing mechanisms	1, 6	Assets

Source: TxDOT, *A Citizens' Report on the Current and Future Needs of the I-69 Corridor*

5.6.3 US 190 Corridor and Port Connectors to Support U.S. Army Forts

The US 190 Corridor connects Fort Bliss, Fort Hood and Fort Polk in Louisiana. A feasibility study of the US 190/I-10 Corridor is underway to evaluate future freeway projects. The public will have several opportunities to provide input and comment on proposed improvements. The US 190 Corridor segment across Central Texas is being studied as a connector to the Interstate 69 corridor and the I-35 corridor. Also, portions of the north-south route between Fort Hood and the Port of Corpus Christi are being evaluated as part of the I-35 corridor planning effort.

The U.S. Department of Defense is the largest single employer in Texas with more than 230,000 active duty military, civilian personnel, and Reserve and National Guard forces. Thousands more work in defense industries and total 2008 military expenditures in Texas were $65 billion. Fort Hood in Central Texas houses two Army divisions and has more than 50,000 troops supported by 12,000 civilian employees. After the full implementation of the 2005 BRAC realignments, Fort Bliss in West Texas will also house two divisions and is expected to have more than 37,000 soldiers and 6,000 civilian personnel. These two forts are designated as Army Power Projection Platforms that prepare forces for worldwide deployment and redeployment.

Fort Hood and Fort Bliss deploy and return their equipment mostly by rail through the designated Strategic Deployment Ports at Corpus Christi and Beaumont. Despite rail being the preferred mode for moving equipment, it is important to have efficient highway connectivity both as an alternative for moving equipment and for the movement of personnel.

6.0 Transportation Safety and Security

A safe and secure transportation system is the responsibility of all transportation stakeholders and users. Local, state, and federal transportation, law enforcement, and emergency response agencies work cooperatively to construct, maintain, and monitor transportation networks, and assist travelers in need, but each transportation user must be responsible for their actions and vigilant of the environment around them while traveling to help ensure their own safety and security.

6.1 Texas Homeland Security Strategic Plan

The first 5-year Texas Homeland Security Strategic Plan was published in 2005. With the implementation of the *Texas Homeland Security Strategic Plan 2005–2010,* Texas is better prepared to prevent, protect, respond, and recover from natural disasters and man-made threats. The following are a few of the many major accomplishments that are relevant to transportation in Texas as described in the Texas Homeland Security Strategic Plan:

- Texas has received national recognition for being able to handle multiple crises simultaneously with unsurpassed effectiveness. In less than 90 days during the summer and fall of 2008, Texas was hit with three hurricanes (including the third most destructive storm in United States history), a tropical storm, flooding on the Rio Grande, 3,900 wildland fires, and major criminal unrest in Mexican states bordering Texas. Texas' public-private partnership enabled the state to deal with all of these events in a manner that minimized the impact of each, and enabled rapid recovery.

- Texas sponsored or participated in 254 homeland security/emergency management exercises between September 11, 2001, and October 2009.

- Texas has enhanced the public-private partnership that incorporates the power of business and industry, private citizens, and all levels of government to achieve unprecedented synergies in all areas of homeland security, particularly in prevention and community resilience.

- Texas' ability to evacuate communities in advance of hurricanes is the national standard. More than 2 million people evacuated ahead of Hurricanes Gustav and Ike with unprecedented speed and efficiency. Evacuation planning capitalized on experience gained and lessons learned from 2005 storms, and enabled swift, orderly, evacuations that kept families (and their pets) together and accounted for all segments of the population. For example, local, state, and federal partners helped evacuate over 34,000 special needs residents in advance of Hurricanes

Ike and Gustav, maintaining 100 percent accountability and awareness. The state's radio interoperability and other communications capabilities played critical roles in these efforts.

- The Texas Legislature provided $110 million in the 80th session and $116 million in the 81st session to fund this evidence-based border security strategy. The funding included full-time positions, overtime, and operational costs for expanded local and state law enforcement patrol operations and four state-of-the-art Texas Department of Public Safety (DPS) helicopters to support patrol operations.
- The increased patrol capability along the Texas-Mexico border in the air, on the ground, and in the water disrupted drug and human smuggling operations and put the Mexican cartels on notice that Texas has zero tolerance when it comes to smuggling, and there would be an increased cost of doing business in Texas.
- In July 2009, Texas was a key player in the National Level Exercise (NLE 09), where Texas' critical infrastructure was targeted by national terrorist groups. In the exercise, Texas demonstrated the ability to discern intentions and take actions to prevent them. This ability to act was the result of unprecedented interagency coordination and synchronized actions made possible through the use of the state's geospatial information system, known as TxMAP. In addition to the key role it played during NLE 09, TxMAP greatly facilitated emergency response understanding and actions during Hurricane Ike in September 2008.

The *Texas Homeland Security Strategic Plan 2010–2015* serves as a high-level road map for the state's homeland security efforts for the next 5 years. This update builds on the foundation and momentum created by *The Texas Homeland Security Strategic Plan 2005–2010 and* supports officials at all levels in fulfilling the homeland security and emergency management responsibilities assigned them in Texas Government Code Chapters 411, 418, and 421.

The updated plan provides overarching guidance for state, regional, and local homeland security and emergency management plans and operations, and informs federal partners who support Texas' homeland security efforts. It recognizes the critical importance of public-private partnership in all aspects of homeland security, and is aligned with the national objectives laid out in the *U.S. Department of Homeland Security Strategic Plan Fiscal Years 2008–2013* and other federal guidance such as the *National Response Framework*.[165]

[165] Office of the Governor. *Texas Homeland Security Strategic Plan 2010–2015.*

6.2 TxDOT's Responsibilities

Several TxDOT Divisions are responsible for administering federal and state grant programs to improve safety and security on various modes of the transportation system in Texas. The following are brief descriptions of those divisions and their responsibilities:

- Maintenance Division is responsible for preservation, maintenance, and restoration of over 80,000 centerline miles of Texas highways and ensuring the safety of the state's ferry operations in Port Aransas and Galveston. In addition, this division oversees the safety rest areas, and provides support and guidance to TxDOT districts during natural disasters and emergencies.[166]

- Traffic Operations Division oversees programs in traffic management, engineering, and safety. This division is involved in planning for, and the maintenance of, signs, signals, pavement markings, and lighting. Finally, this division manages ITS, crash records, and safety initiatives to improve driver behavior, eliminate roadway hazards, and increase traffic law enforcement.[167]

- Motor Carrier Division is responsible for issuing permits with safe and efficient routing of vehicles transporting oversize/overweight loads on Texas highways. This division also coordinates with the DPS to enforce and ensure compliance with permit-related rules, conduct investigations, and when necessary, assess penalties for oversize/overweight violations.[168]

- Aviation Division administers routine airport maintenance grants and assists general aviation airports meet federal airport pavement management program requirements. The division also operates a fleet of state-owned aircraft for the transportation needs of state officials and employees, as well as providing maintenance and repair services to most state-owned aircraft.[169]

- Rail Division improves highway rail grade crossings by installing and maintaining signals and gates, improving crossing surfaces on state highways and consolidating crossings where possible. State rail safety inspectors coordinate investigative activities with federal authorities in the areas of hazardous materials, motive power and equipment, operating practices, signal and track

[166] TxDOT. Maintenance Division. http://www.dot.state.tx.us/about_us/administration/divisions/mnt.htm
[167] TxDOT. Traffic Operations Division. http://www.dot.state.tx.us/about_us/administration/divisions/trf.htm
[168] TxDOT. Motor Carrier Division. http://www.dot.state.tx.us/about_us/administration/divisions/mcd.htm
[169] TxDOT. Aviation Division. http://www.dot.state.tx.us/about_us/administration/divisions/avn.htm

control, and track structures— conducting safety inspections of railroad facilities and equipment with federal authorities as part of the rail safety program.[170]

- Public Transportation Division provides financial, technical and coordination assistance to the state's public transit providers. This division also represents public transit in the planning and programming process and prepares funding-needs projections.[171]

Safety and security for modes not under the direct responsibility of TxDOT will be discussed in the context of the plans, manuals, procedures, and guidelines prepared by each mode's providers and respective oversight agencies. Discussions of safety and security for these modes will include references to agencies and sources that can provide detailed information on these topics.

6.3 Highway Safety

TxDOT is committed to making travel as safe as possible for all users of the roadway system in Texas. Educating the travel public on what they can do to keep themselves safe, in conjunction with implementing existing safety plans and programs is enabling TxDOT to do just that.

6.3.1 Strategic Highway Safety Plan

TxDOT developed the first Strategic Highway Safety Plan (SHSP) in 2006 to identify key safety needs and provide data to guide investment decisions intended to lead to significant reductions in highway fatalities and serious injuries on all public roads. Since the adoption of the initial plan, TxDOT has updated and provided a status of its ongoing safety efforts twice—in 2007, and again in 2009.

State crash data, along with travel and population data, were used to provide estimates of various measures of roadway safety. Fatalities and fatality rates per 100 million VMT and per 100,000 population were computed for the state for the years 1999 through 2008. Serious injuries (incapacitating and nonincapacitating) and injury rates were computed for the same years. These data are presented in Table 6-1.

[170]TxDOT. Rail Division. http://www.dot.state.tx.us/about_us/administration/divisions/rail.htm
[171]TxDOT Public Transportation Division. http://www.dot.state.tx.us/about_us/administration/divisions/ptn.htm

Table 6-1: Summary of Texas Crash Trends (1999–2008)[172]

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Fatalities	3,519	3,775	3,739	3,823	3,821	3,699	3,559	3,521	3,461	3,468
Rate per 100M VMT	1.69	1.76	1.77	1.77	1.75	1.61	1.52	1.48	1.43	1.48
Rate per 100K Population	17.56	18.10	17.65	17.76	17.48	16.14	15.57	14.98	14.48	14.39
Serious injuries*	107,996	108,282	105,520	101,560	93,774	91,611	92,042	89,611	89,476	84,508
Serious injury rate per 100M VMT	51.95	50.41	49.87	47.05	44.81	39.94	39.30	37.89	37.01	37.02
Serious injury rate per 100K Population	538.79	519.29	494.82	466.30	442.05	407.34	402.63	381.20	374.31	350.58

*Incapacitating and nonincapacitating injuries.

According to the 2009 SHSP: *A Report of Progress for 2009*, while fatalities and serious injuries have declined over time, the goal of further reductions is desirable and that technological improvements in automobile and roadway engineering, enforcement methods, medical treatment and educational processes make this feasible. Strategic planning to enable these reductions has resulted in the establishment of the target goal of 1.40 fatalities and 41.2 serious injuries per 100 million VMT by 2010 (not reflected in Table 6-1)—the latter of which was actually exceeded ahead of schedule in 2004, and has remained below the target since.

Since the development of the initial 2009 SHSP: A Report of Progress for 2009, crash data for 2008 has become available and is now included in the report by the same name. In addition, the current plan also reflects the results of contributions from safety professionals and those interested in traffic safety from surveys and meetings arranged through MPOs located in the Bryan, Houston-Galveston, San Antonio areas, and the North Texas Council of Governments located in Arlington.

The participation of these various groups resulted in collective ownership of the SHSP, and was beneficial to ensuring that the Roadway Safety Emphasis Areas and countermeasures that were identified as a result of the collaboration were both comprehensive and representative of the stakeholders and organizations involved in the

[172]Sources: The 1999–2001 fatality and injury data are from the DPS, Texas Traffic Crash Database. The 2002–2006 fatality and injury data are from the TxDOT Crash Record Information System (CRIS) and were extracted and verified as of March 26, 2009. The 2007 and 2008 data was extracted as of August 30, 2009 and September 3, 2009, respectively. Travel data are from TxDOT and population data are from Texas State Data Center.

process. Subsequently, the 2009 Texas Legislature passed and signed into law several bills that relate to traffic safety.[173]

6.4 Traffic Safety Program

The mission of the Texas Traffic Safety Program (TTSP) is to identify traffic safety problem areas and implement programs to reduce the number and severity of vehicular crashes through the statewide traffic safety program.

The goal of the TTSP is to use information, data, technology, resources, and skills to identify priority traffic safety issues, plan initiatives, generate coordinated action, and evaluate and communicate results. The program objective is to operate the program in a manner that reduces crashes, injuries, deaths, and their related losses.[174]

6.4.1 TxDOT's Educational Efforts to Enhance Highway Safety

TxDOT has increased its efforts to educate and encourage roadway and highway users to travel safely. A few examples are:

- ★ ***Click It or Ticket*** campaign – Since 2002, increased seatbelt usage among Texans has saved nearly 2,000 lives and prevented an estimated 46,500 serious injuries.
- ★ ***Teens in the Driver Seat*** program is the first peer-to-peer driving safety program for young drivers in Texas. It has helped reduce the rate of fatal teen crashes, a rate that is declining faster and more steadily in Texas than in any other state.
- ★ ***Give us a BRAKE*** work zone warning signs, public safety announcements and work zone awareness handouts have helped raise awareness of safety precautions for workers and motorists in work zones.

TxDOT, in conjunction with local authorities, maintains emergency response plans to ensure the safety of Texans in the event of natural or man-made disasters. The threat of emergencies such as hurricanes, flash floods, and terrorist attacks underscores the importance of our highways to the state's emergency evacuation system.[175]

Hurricane season runs from June 1 through November 30 annually, and for the citizens of Texas, hurricane preparedness is paramount to safety. Hurricane Ike in 2008 resulted in the largest evacuation of Texans in the state's history and is an ever-present

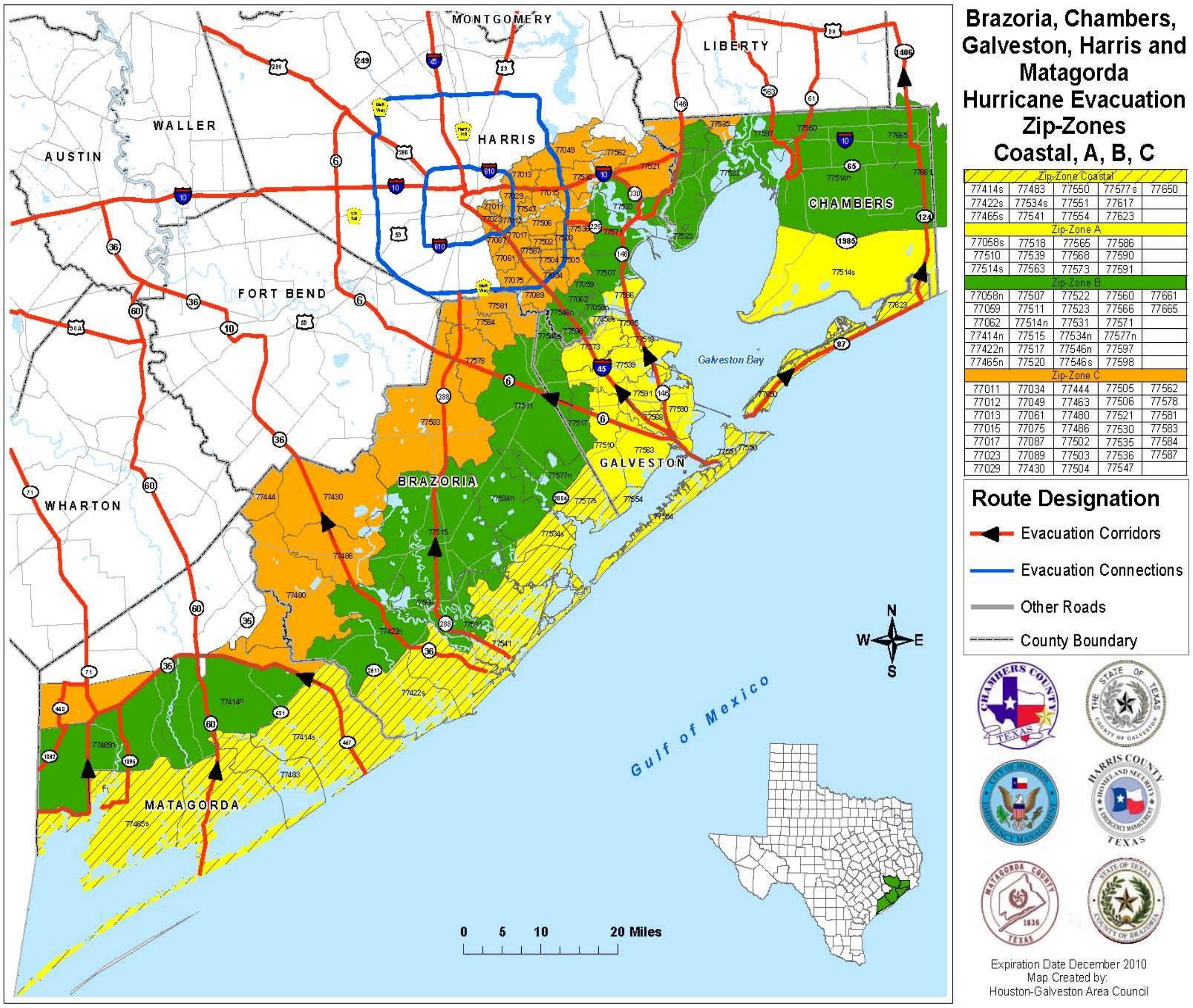
[173]TxDOT. Texas Strategic Highway Safety Plan: A Report of Progress for 2009. http://www.txdot.gov/txdot_library/publications/traffic_planning.htm

[174]TxDOT. Traffic Safety Program Manual. October 2008.

[175]TxDOT. TxDOT 2011–2015 Strategic Plan. http://www.dot.state.tx.us/txdot_library/publications

reminder of the need for effective local and regional evacuation route maps. Figure 6-1 is an example of a regional hurricane evacuation route and zone map from the Houston region.

Figure 6-1: Houston Region Evacuation Routes (Example)



Source: H-GAC

Statewide hurricane preparedness information and evacuation route maps can be found at:

- TxDOT: http://www.dot.state.tx.us/travel/hurricane.htm
- DPS: http://www.txdps.state.tx.us/dem/pages/weather_aware_hurricane.htm

Information about other highway-related safety programs and initiatives may be obtained on the TxDOT website at http://www.dot.state.tx.us/safety/.

6.5 Bicycle and Pedestrian Safety

Bicycle and pedestrian safety is addressed by MPOs in their MTPs or in stand-alone Bicycle and Pedestrian Plans. These plans may be obtained on an MPO or Council of Government (COG) website.

TxDOT develops and implements an annual Highway Safety Performance Plan (HSPP) under the provisions of the 1966 National Highway Safety Act and the Texas Traffic Safety Act of 1967. The purpose of plan is to reduce crashes and associated deaths, injuries and property damage. It includes goals, objectives and performance measures specific to bicycle and pedestrian safety.

Funds are allocated to program areas authorized under federal regulations as determined by a state problem identification process. Pedestrian and bicycle safety is one of the program areas included in the HSPP. A copy of the FY 2011 HSPP is available at the following link:

https://www.txdot.gov/apps/eGrants/eGrantsHelp/Reports/HSPP_FY11.pdf

6.6 Public Transportation Safety

Public transportation providers and their passengers are primarily responsible for the safety and security on buses and light rail. Some local transit providers such as DART have established their own police force to ensure a safe system for their riders.[176] Others have immediate access to local law enforcement and emergency response agencies.

Capital Metro in Austin educates the community about rail safety through public service announcements; presentations at school campuses within 2 miles of the MetroRail tracks; a rail safety radio message played on buses; partnerships with bicycle safety organizations, Central Texas emergency responders, and social service agencies working with area transient populations; and “block-walking” in neighborhoods located within 0.25 mile from the tracks.[177]

6.6.1 Rail Safety and Security Program

In 1995, the FTA published rules for the creation of a state safety and security oversight program that required states to oversee the safety of Rail Fixed-Guideway Systems (RFGS) not regulated by FRA. The goal of this program is to improve rail transit safety and security.

[176] DART. About DART Police. http://www.dart.org/about/dartpolice/dartpolice.asp
[177] Capital Metro. http://www.capmetro.org/

6.6.2 State Safety Oversight (SSO) Program

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; 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.[178]

Three RFGSs are currently subject to the provisions of the SSO Program: Dallas Area Rapid Transit, Galveston Island Transit, and Metropolitan Transit Authority of Harris County.

Detailed information about the program can be found in TxDOT’s 2006 State Safety and Security Oversight Program Standard.[179]

6.6.3 On-Site 3-Year Safety and Security Reviews

At least every 3 years, beginning with the initiation of passenger operations, TxDOT conducts an on-site review of the RTAs in Texas to ensure compliance with the agency’s system safety and security programs. A review team verifies crash reports, investigations, hazard management, corrective action plans, and compares TxDOT records with the RTA’s records for consistency. The review team may also use FTA Drug and Alcohol Audits, FTA Triennial Reviews, and Program Management Oversight Reports (monthly and spot) from the RTA to support its assessment of compliance in areas previously investigated by FTA.

6.7 Freight Rail Safety and Inspection Program

The Rail Safety Inspection Program is directed toward the enforcement of state and federal rail safety standards for track, locomotives, freight cars, signal and train controls, operating practices of employees, and the transportation of hazardous materials. This program is conducted in coordination with the FRA.

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[178] TxDOT. Rail Safety and Security Program. http://www.dot.state.tx.us/safety/rail_safety.htm

[179] TxDOT. State Safety and Security Oversight Program Standard. 2006. http://www.dot.state.tx.us/safety/rail_safety.htm

TxDOT rail safety inspectors conduct safety inspections of railroad facilities and equipment. They also monitor compliance with both state and federally mandated safety regulations in the areas of hazardous materials, operating practices, motive power and equipment, signal and train control, and track.

Texas is 1 of 30 states currently participating in the FRA's Rail State Safety Participation Program, which allows states to enter into a multi-year agreement with the FRA for the delegation of specified authority. This includes investigative and surveillance authority regarding all or any part of federal railroad safety laws.[180]

6.8 Airport Safety

Safety is the primary goal of the FAA. The FAA and its air traffic control system, along with pilots and airport operators, work together every day to ensure that procedures are followed, coordination of safe aircraft movement occurs, and that airport infrastructure is maintained. This creates a system of checks and balances designed to mitigate risk in the runway environment. The FAA also partners with aircraft operators, pilots, airport managers, and industry groups to proactively review the effectiveness of these checks and balances and identify additional means to improve safety.[181]

Runway safety is a critical component of that goal. Nowhere are aircraft in closer proximity to other aircraft and obstacles such as vehicles, pedestrians and airport structures and equipment than when on the airport surface. The agency aims to reduce the risk of runway incursions and wrong runway departures, as well as address the errors committed by pilots, air traffic controllers, vehicle operators, and pedestrians by focusing on outreach, awareness, improved infrastructure, and technology.[182]

6.9 Waterways, Ports and Border Safety and Security

Within months of the terrorist attacks on September 11, 2001, U.S. Customs Service had created the Container Security Initiative (CSI). CSI addresses the threat to border security and global trade posed by the potential for terrorist use of a maritime container to deliver a weapon.

In order to facilitate access to maritime facilities the Transportation Security Administration and USCG initiated the Transportation Worker Identification Credential (TWIC) program. The TWIC program provides a tamper-resistant credentials to maritime workers requiring unescorted access to secure areas of port facilities, outer

[180] TxDOT. Rail Safety Information. http://www.dot.state.tx.us/safety/rail.htm

[181] FAA. Annual Runway Safety Report. 2009. http://www.faa.gov/airports/runway_safety/publications/

[182] Ibid.

continental shelf facilities, and vessels regulated under the Maritime Transportation Security Act (MTSA) and all USCG credentialed merchant mariners. As of 2007, the program only addresses maritime facilities, but the program may be implemented across other transportation modes in the future.[183]

In addition to these initiatives, FEMA sponsors the Port Security Grant Program (PGSP). The purpose of the PSGP is to create a sustainable, risk-based effort to protect critical port infrastructure from terrorism, particularly attacks using explosives and nonconventional threats that could cause major disruption to commerce. The PSGP provides grant funding to port areas for the protection of critical port infrastructure from terrorism. The PSGP funds are primarily intended to assist ports in enhancing maritime domain awareness, enhancing risk management capabilities to prevent, detect, respond to and recover from attacks involving improvised explosive devices (IEDs), Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE), and other nonconventional weapons, as well as training and exercises and TWIC implementation.[184]

6.9.1 Container Security Initiative

CSI proposes a security regime to ensure all container contents that pose a potential terrorism risk are identified and inspected at foreign ports before they are placed on vessels destined for the United States, and Customs Border Protection (CBP) has stationed multidisciplinary teams of U.S. officers from both CBP and Immigration and Customs Enforcement (ICE) to work together with our host foreign government counterparts to that end. Their mission is to target and prescreen containers and to develop additional investigative leads related to the terrorist threat to cargo destined to the U.S.

The three core elements of CSI are:

- ★ Identify high-risk containers. CBP uses automated targeting tools to identify containers that pose a potential risk for terrorism, based on advance information and strategic intelligence;
- ★ Prescreen and evaluate containers before they are shipped. Containers are screened as early in the supply chain as possible, generally at the port of departure; and
- ★ Use technology to prescreen high-risk containers to ensure that screening can be done rapidly without slowing down the movement of trade. This technology

[183] U.S. Department of Homeland Security, Available at: https://twicprogram.tsa.dhs.gov/TWICWebApp/AboutTWIC.do
[184] FEMA, Port Security Grant Program, Available at: http://www.fema.gov/government/grant/psgp/index.shtm

includes large-scale X-ray and gamma ray machines and radiation detection devices.[185]

6.9.2 Safety and Security at Texas-Mexico Border Points of Entry

Texas' border with Mexico is 1,254 miles long.[186] There are 26 international border crossings joining Texas and Mexico. Twenty-three are bridges, two are dam crossings, and one is a hand-drawn ferry (the La Linda Bridge and Roma International Suspension Bridge are not included because they are currently closed).[187]

Border security is largely a function of the federal government. During the creation of the Department of Homeland Security, the U.S. Border Patrol, along with the Immigration and Naturalization Service (INS) inspection division (now Immigration and Customs Enforcement [ICE]), the U.S. Customs inspection division, and the Department of Agriculture's plant and animal inspection service, were merged into a new agency called U.S. Customs and Border Protection, also known as CBP. As the single, unified border agency of the United States, CBP's mission is to protect U.S. borders and global trade.[188]

TxDOT's responsibilities involving the transport of goods and people through border Points of entry include planning and designing border transportation projects; issuing and recording Texas and Mexico commercial vehicle registrations; improving coordination of U.S.-Mexico and Texas border transportation infrastructure planning; and approving international bridge construction projects before bridge sponsors request a Presidential Permit.[189]

6.10 Pipeline Safety

Energy industry stakeholders consider pipelines to be the safest method for transporting energy products.[190] As with any infrastructure, factors such as aging infrastructure, lack of maintenance, and damage caused by subterranean excavation do cause ruptures that pose serious, if not life-threatening, health risks depending on the products being transported.

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[185] Department of Homeland Security. CSI in Brief. http://www.cbp.gov/xp/cgov/trade/cargo_security/csi/csi_in_brief.xml

[186] The Comptroller of Public Accounts. Window on State Government. http://www.window.state.tx.us/border/ch09/ch09.html

[187] TxDOT. Texas-Mexico Border Crossings Study – Crossings. http://www.txdot.gov/project_information/projects/border_crossing/crossings.htm

[188] Department of Homeland Security. U.S. Customs and Border Protection. http://www.cbp.gov/

[189] The Comptroller of Public Accounts. State Functions at the Texas-Mexico Border and Cross-Border Transportation. http://www.window.state.tx.us/specialrpt/border/sfatb2.html

[190] Texas Regulatory Services. Pipeline Safety. http://www.texas-pipeline.com/.

Virtually all aspects of the energy transportation pipeline industry—construction, operation, and maintenance—are regulated to some extent by federal, state, and local agencies. The PHMSA is the primary federal regulatory agency responsible for ensuring that pipelines are safe, reliable, and environmentally sound pursuant to rules Title 49 CFR Parts 191–199.

PHMSA shares these responsibilities with the RRC—its state regulatory counterpart responsible for oversight pursuant to TAC, Title 16, Chapter 8-Pipeline Safety Regulations and Chapter 18-Underground Pipeline Damage Prevention.[191]

For question regarding pipeline locations or to report pipeline emergencies (e.g., leaks or damages lines), RRC provides the following call center information on its website: Lone Star Notification Center Texas Excavation Safety System Texas One Call.

6.11 Intelligent Transportation Systems

One of the primary goals for the implementation and use of ITS is safety. TxDOT and local transportation agencies have employed the use of ITS to reduce congestion, enhance safety, monitor incident management and communicate hazardous weather conditions persons. Some examples of ITS are:

- **Traffic Management Centers (TMCs)** are central hubs where highway, transit, incident, and weather information are collected and disseminated to the traveling public, law enforcement agencies, and emergency responders.
- **Closed-Circuit Television (CCTV)** cameras monitor traffic conditions and incidents by providing real-time video to the TMC that the general public can access through websites. This allows the TMC to apply the necessary measures to warn the road-user of the impending condition and notify the appropriate emergency personnel.
- **Dynamic Message Signs (DMS)** – both portable and permanent – are utilized by TxDOT to advise motorists of work zones and lane restrictions, detours, upcoming construction or lane closures, unexpected traffic or weather, detours, upcoming construction, and alert the public to missing persons.
- **Red Light Cameras** on state highways are being used for traffic signal enforcement to improve safety at their intersections. Although TxDOT does not

191 Railroad Commission of Texas. Pipeline Safety. http://www.rrc.state.tx.us/safety/pipeline/index.php

install or operate these cameras, they do allow cities to install them on state highways under certain conditions.[192]

- **Roadway Weather Information Systems** such as flood warning systems and weather sensors warn drivers of adverse weather conditions. Information on wind, rainfall, hurricane, ice, and snow conditions can allow drivers and emergency officials to take the appropriate precautions during a weather event.

6.12 Agency Partnerships to Ensure Safety and Security

TxDOT partners and coordinates safety and security on modes not under its direct purview with many federal, state and local transportation, law enforcement, and emergency response agencies, as well as private stakeholders. This network of groups has devoted extensive resources to establishing, promoting, and continuously enhancing the safety, security, efficiency, and cost-effectiveness of the multimodal transportation system in Texas.

The extent to which TxDOT partners with so many agencies demonstrates the magnitude of collaboration and coordination on, as well as the implementation and execution of, plans, programs, regulations, and corrective processes to ensure the collective safety and security of the visitors and citizens of Texas.

More information about TxDOT's safety and security initiatives can be accessed at http://www.dot.state.tx.us/.

192 TxDOT. Red Light Safety Cameras. http://www.dot.state.tx.us/safety/red_light_cameras.htm

7.0 Stakeholder and Public Outreach

7.1 Purpose

Promoting transparency with the public is a fundamental tenet of TxDOT's vision. Well-informed stakeholders can provide valuable input to the transportation planning and decision-making process. During the public outreach for the SLRTP, TxDOT:

1. Provided a clearly defined purpose and objective for initiating public dialogue and soliciting input in the transportation planning process.
2. Provided notice of opportunities for the public to participate in cooperative dialogue, in an adequate and timely manner to allow sufficient time for stakeholders and interested parties to prepare their written or oral responses.
3. Provided venues (e.g., forums, meetings and hearings) open to all members of the public that allow stakeholders to be heard and to present evidence supporting their views and positions.
4. Engaged in a transportation planning process that is transparent and provided stakeholders with access to educational materials and all information used (e.g., documents, exhibits, schematics, maps, photographs, etc.) in the planning process.
5. Engaged stakeholders and listened thoughtfully to comments and input during meetings held around the state.

The comments received during the public outreach process will be summarized later in this chapter.

7.2 The Public Outreach Plan

A Public Outreach Plan was developed specifically for the public involvement activities carried out during the development of the SLRTP. TxDOT's outreach effort:

1. Established early and continuous public involvement opportunities that provide timely information about transportation issues and planning processes to all interested citizens and transportation stakeholders;
2. Provided access to technical and policy information used in the development of the long-range statewide transportation plan;

3. Provided ample public notice of public involvement activities and time for public review and comment at key points, including, but not limited to, a reasonable opportunity to comment on the proposed long-range statewide transportation plan;

4. Conducted public meetings that were held at convenient and accessible locations and times (to the maximum extent practicable);

5. Used visualization techniques to describe the proposed long-range statewide transportation plan and supporting studies;

6. Made public information available in electronically accessible format and means, such as the world wide web, as appropriate to afford reasonable opportunity for consideration of public information;

7. Demonstrated explicit consideration and response to public input during the development of the long-range statewide transportation;

8. Included a process for seeking out and considering the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services; and

9. Provided for the periodic review of the effectiveness of the public outreach process to ensure that the process provides full and open access to all interested parties and revised the process when necessary.

7.3 Public Outreach Tools

7.3.1 Newsletters

TxDOT issued three newsletters electronically and via U.S. Postal Service to federal, state, and local elected officials, transportation stakeholders, and all parties on a contact list maintained and updated by the Government and Public Affairs (GPA) Division. Throughout the public outreach process, interested parties were added to the distribution list upon request, allowing for follow-up and continued involvement in the process.

The contact distribution/mailing list used for newsletter distribution and meeting notification included regional planning commissions, councils of government, metropolitan planning organizations, regional mobility authorities, rail districts, federal and state elected officials (and chiefs of staff), federal transportation staff members, congressional district directors, state district directors, local elected officials, civic and community leaders, organized state transportation groups and advisory committees, Indian tribal government representatives, and business and economic interest groups. Also included were transportation stakeholders, including industry representatives for each mode (this includes freight shippers, private providers of transportation, public transit user representatives, and freight transportation service providers), and public agency representatives.

The newsletters were also available on TxDOT's SLRTP webpage (www.txdot.org). This series of letters notified interested parties about the initiation of the project, advertised public meetings, solicited stakeholder input, and provided study results and proposed content for the SLRTP.

7.3.2 Questionnaire

An optional, informal questionnaire was made available to the public during the initial round of statewide public meetings held in each TxDOT District and on TxDOT's SLRTP webpage (http://www.txdot.gov/txdot_library/publications/transportation_plan.htm). The questionnaire was simple and straightforward with check-offs or priority listing for each question. Respondents were able to complete it on-line, at the TxDOT District offices, at the public meetings, or complete and mail/fax it in. The results are not statistically representative of a large sample of transportation users, but rather represent the responses of those who opted to complete the questionnaire—approximately 245 were received.

Figure 7-1: Modes of Personal Transportation

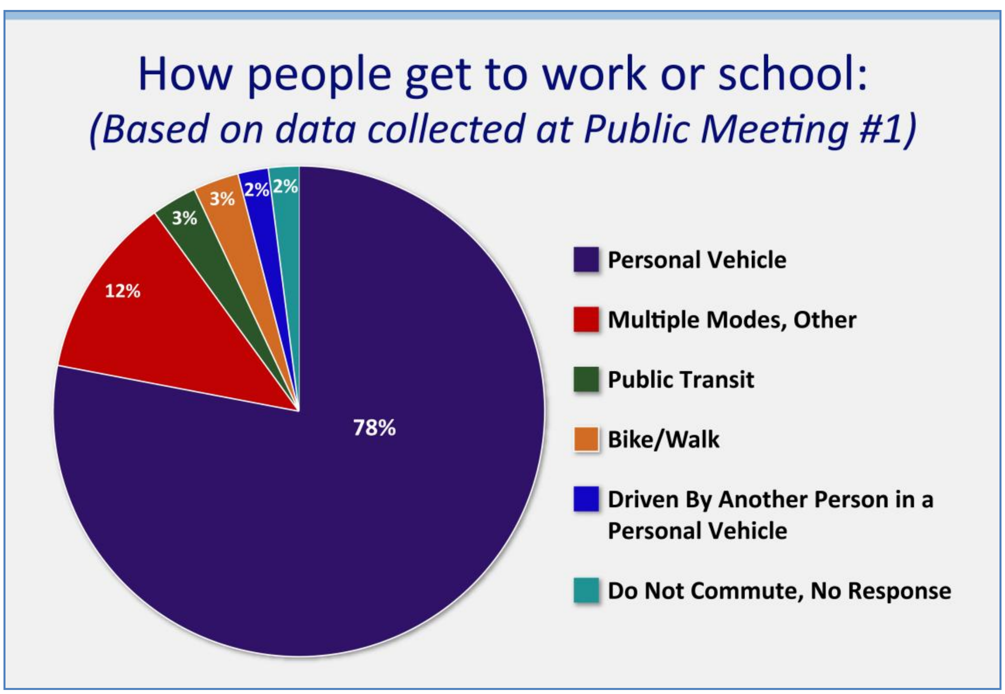


Figure 7-2: Rating Transportation Problems

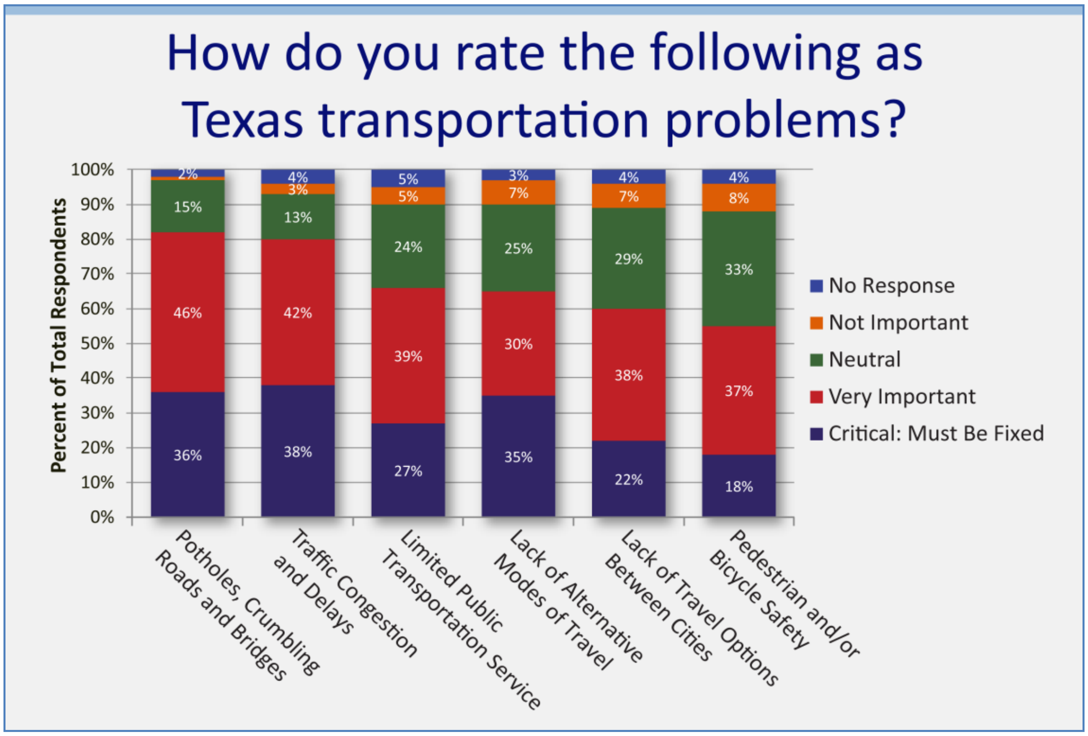


Figure 7-3: Rating Potential Solutions for Roads

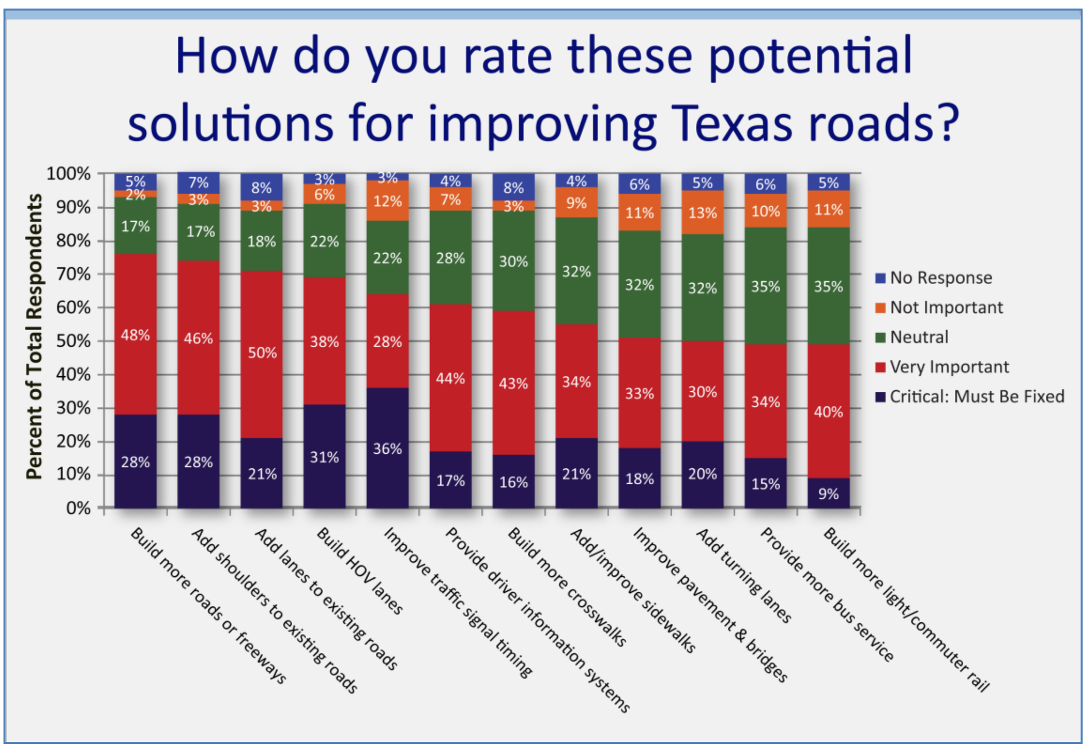


Figure 7-4: Rating Potential Solutions for Travel between Cities

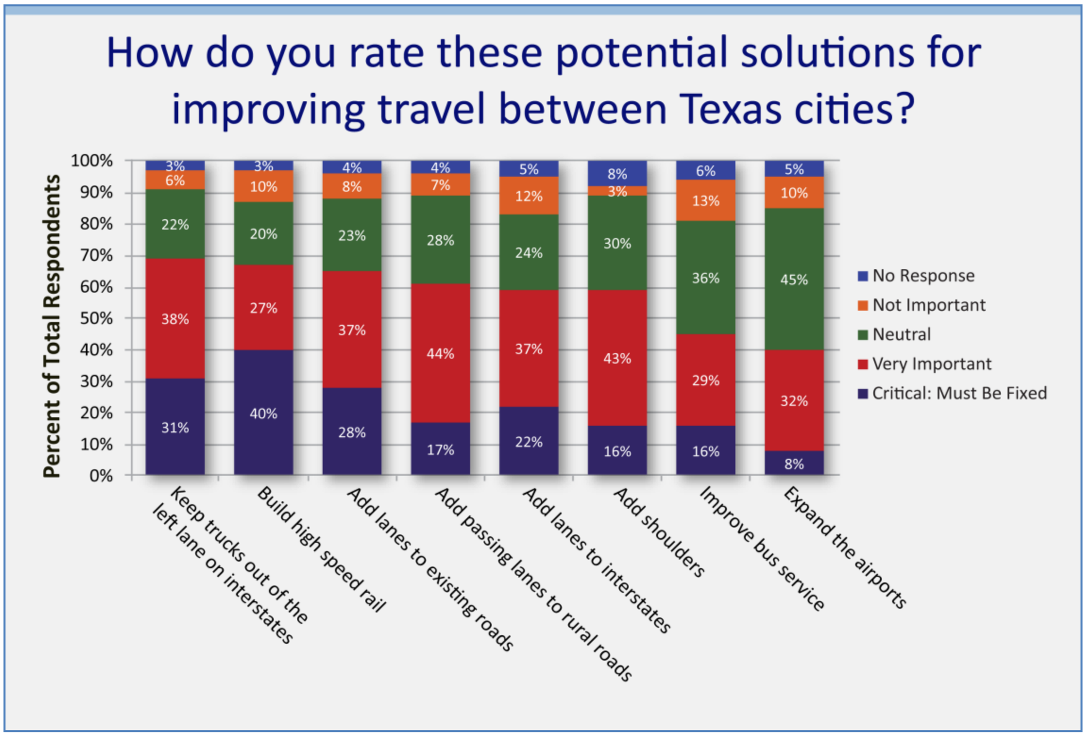
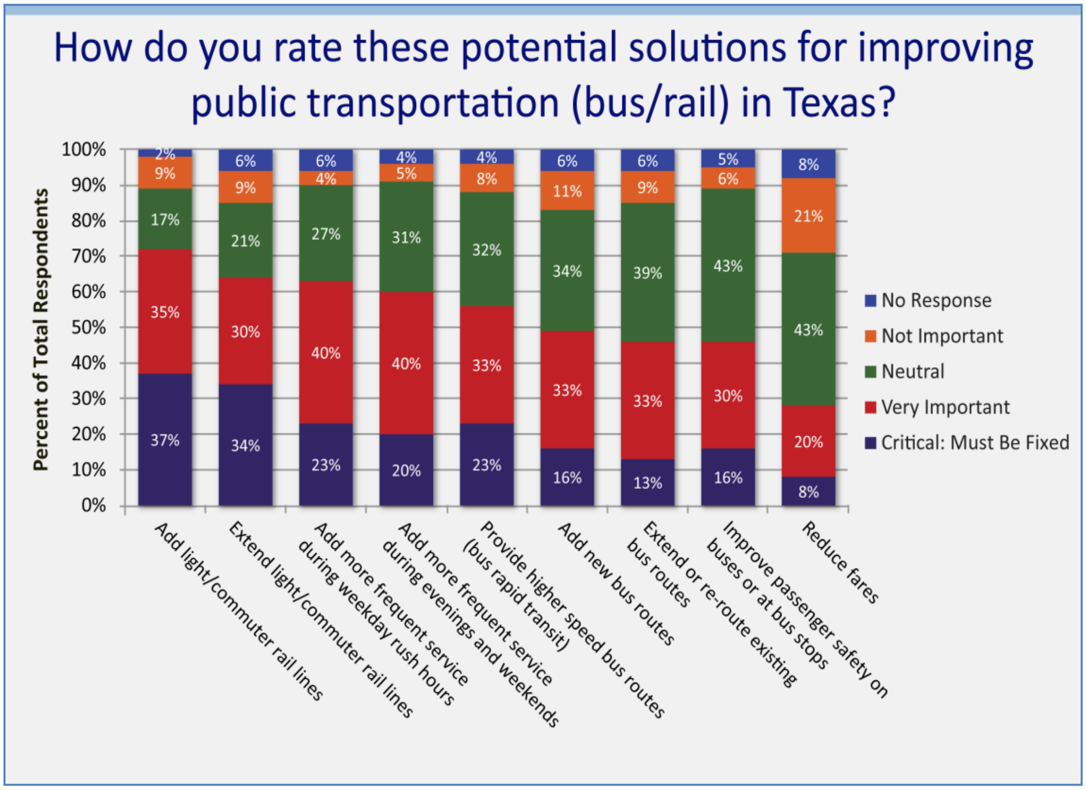


Figure 7-5: Rating Improvements to Freight

Figure 7-6: Rating Potential Solutions for Public Transportation



7.3.3 TxDOT Website

TxDOT created an SLRTP webpage on their website to provide information regarding the status of the project and present opportunities for the public and interested stakeholders to become involved in the process of developing the SLRTP. The website included an electronic comment box on the TxDOT web page accessible 24 hours a day, 7 days a week.

7.3.4 Visualization Tools

The materials included video and electronic presentations, maps, informational boards, surveys, comment sheets, and visual content all posted on the SLRTP webpage on TxDOT's website.

7.3.5 Innovative Social Networking Tools

TxDOT used a variety of tools to communicate with and inform the public including social media such as Facebook, Twitter, and YouTube.

7.3.6 Toll Free Telephone Line

A toll free telephone number and voice mailbox, monitored during business hours and accessible 24 hours a day, 7 days a week, was designed for the public to leave input, feedback or general comments. It will remain operational until October 29, 2010. The toll-free number for the project – 1-888-5-Texas-PLAN (1.888.589.7526)—was published in all newsletters, advertisements, meeting materials, public website, and social media channels.

7.4 Stakeholder Meetings

TxDOT conducted two rounds of regional (Houston, San Antonio, Lubbock, Fort Worth, Corpus Christi, and El Paso) stakeholder meetings in April and July of 2010.

Figure 7-7: San Antonio Stakeholder Meeting, Round 1

Figure 7-8: Fort Worth Stakeholder Meeting, Round 2

7.5 Public Meetings

Two rounds of open-house-style public meetings were conducted in each of TxDOT's 25 districts in May and August of 2010 in conjunction with their respective Metropolitan Planning Organizations (MPOs) when applicable, and according to each TxDOT District's Rural Consultation Process as outlined In TxDOT's Public Involvement Plan.

Figure 7-9: Wichita Falls Public Meeting Round 1

Figure 7-10: El Paso Public Meeting Round 2

7.6 Public Hearing

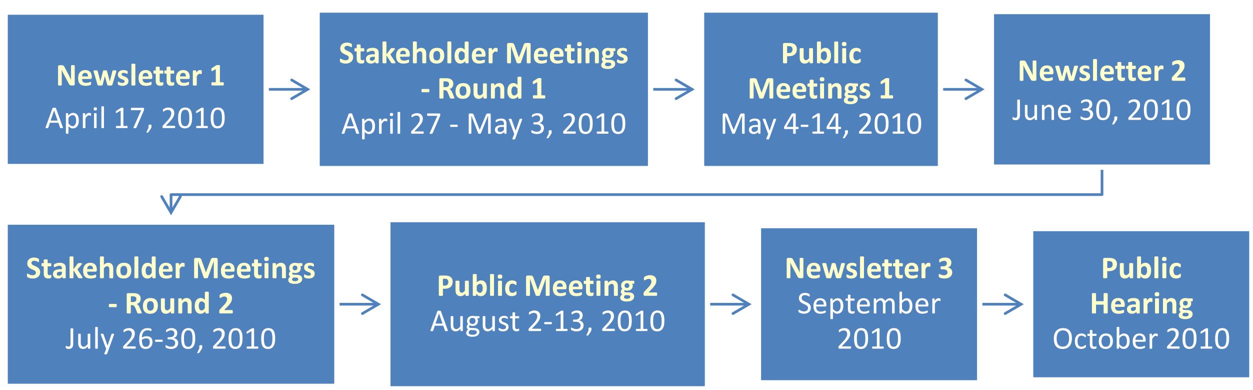
One formal public hearing was held on October 1, 2010, at 200 Riverside Drive in Austin, Texas, to solicit public input on the SLRTP draft before presenting it to the TxDOT Commission for adoption on November 18, 2010. TxDOT posted notice of this meeting in the Texas Register and on the TxDOT website on September 17, 2010.

One oral comment was received at the meeting and 24 written comments were received between October 1 and November 1, 2010. A copy of the public hearing transcript and all written comments are included in the Appendix.

7.7 SLRTP Public Outreach Activity Schedule

All outreach materials including newsletters, meeting notifications, survey results, meeting summaries and summaries of public comments/responses, are included in the electronic notebook.

Figure 7-11: Public Outreach Activities and Dates



7.8 Stakeholder Meeting Summaries

Each TxDOT region was responsible for drafting a list of both public and private stakeholders appropriate for participation in the SLRTP process.

Table 7-1: Stakeholder Meeting Dates

Region	Round	City	Meeting Date
East	Round 1	Houston	April 27, 2010
East	Round 2	Houston	July 26, 2010
North	Round 1	Fort Worth	April 28, 2010
North	Round 2	Fort Worth	July 28, 2010
South	Round 1	San Antonio	May 3, 2010
South	Round 2	Corpus Christi	July 29, 2010

Table 7-1: Stakeholder Meeting Dates

West	Round 1	Lubbock	April 29, 2010
West	Round 2	Lubbock	July 27, 2010
West	Round 2	El Paso	July 30, 2010

East Region: In Houston, concerns were focused primarily on freight movement and added capacity needs due to the growth of tonnage coming in and out of the port. It was stated by many stakeholders that the movement of freight should not be focused on merely trucks but short-line rail and the use of barges in the GIWW. Better coordination among the rail, truck, and port mode is desirable. Interconnectivity at the Port of Houston will help handle the increase of container traffic predicted from the expansion of the Panama Canal and other trade possibilities. A multi-modal approach with heavy coordination with the Houston Galveston Area Council was discussed. Representatives from pipelines discussed the need for better multi-modal coordination as natural gas is one of the biggest commodities. High-speed rail was mentioned to alleviate congestion concerns between major metropolitan areas. A discussion in Round 2 was that needs ought to be calculated to represent all modes. Current highway needs does not reflect the whole story. Innovative financing to bridge the difference is necessary. A further discussion of movement of freight by rail and barges continued. Stakeholders would like to see the SLRTP to make clear recommendations to the Commission

North Region: In Fort Worth, concerns came from a rural and urban perspective. Consensus from the group was that freight movement by rail needs to be expanded and include rural rail lines. Representatives from rail discussed support of innovative financing. The bicycle/pedestrian mode was also highly represented. A desire to include bike lanes in highway projects and additional TxDOT funding received much debate.

South Region: In San Antonio (Round 1), port representatives discussed increase in rail and barge loads to accommodate port growth. Traffic management via ITS through signs and smart phones could assist with congestion on I-35 and SH 130. Innovative financing away from gas tax could help funding concerns and commuter rail/expansion of other modes could assist higher demand on highways. In Corpus Christi (Round 2), concerns were similar to San Antonio, specifically with expansion of rail in port areas. The desire for commuter rail between large urban cities was discussed. The need for a social/cultural change away from personal vehicles could help the demand on current transportation. Suggestions were made to shift funding from highways to bicycle/pedestrian facilities as a way to encourage this change.

West Region: In Lubbock (rounds 1 and 2), concerns were focused on rural needs and lack of available state funding to rural communities. Stakeholders spoke of the growing elderly population and the need for safety programs to assist their transportation needs. Rail representatives spoke of the need to establish a rural rail system. Pipelines representatives spoke of the right of way for energy services originating in the area. In El Paso (Round 2), funding options were the main focus. Innovative financing by the use of tolls and the development of impact fees were options shared by stakeholders.

7.9 Public Meeting Summaries

A total of 968 persons signed in at the two rounds of public meetings held throughout the state on the SLRTP. Table 7-2 *shows the draft attendance numbers at the SLRTP public meetings.*

Table 7-2: Public Meetings

Public Meeting #1		Public Meeting #2	
District	**Sign-In Attendance**	**District**	**Sign-In Attendance**
Abilene	23	Abilene	12
Amarillo	13	Amarillo	11
Atlanta (Jefferson)	10	Atlanta	11
Austin	34	Austin	28
Beaumont	22	Beaumont	22
Brownwood	4	Brownwood	3
Bryan	46	Bryan	12
Childress	18	Childress	12
Corpus Christi	18	Corpus Christi	6
Dallas (Farmers Branch)	30*	Dallas (DeSoto)	11
El Paso (Alpine)	19	El Paso	13
El Paso	16	El Paso (Marfa)	17
Fort Worth	30	Fort Worth	6
Houston	93	Houston	105
Laredo	5	Laredo	6
Lubbock	7	Lubbock (Levelland)	3
Lufkin	27	Lufkin	12
Odessa	9	Odessa	9

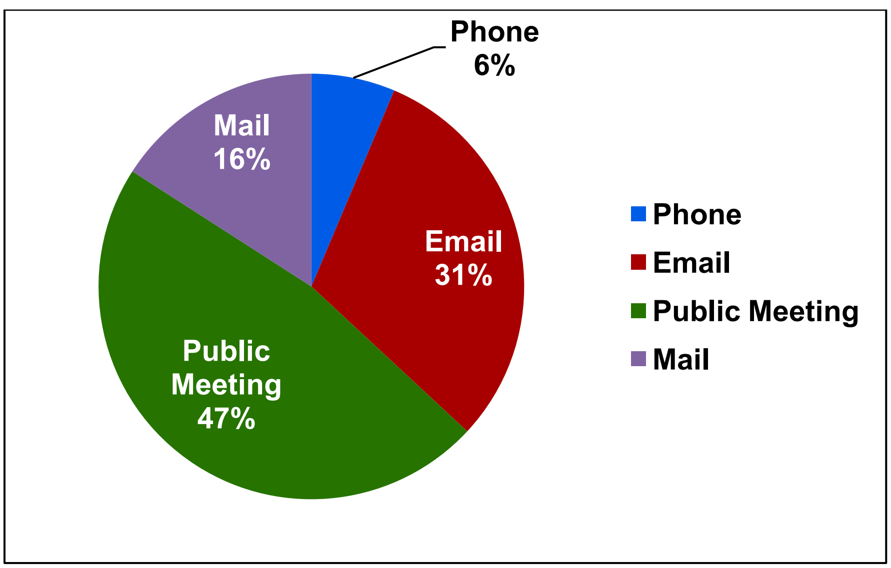
Table 7-2: Public Meetings

Public Meeting #1		Public Meeting #2	
District	**Sign-In Attendance**	**District**	**Sign-In Attendance**
Paris (Commerce)	17	Paris (Commerce)	22
Pharr	13	Pharr	7
San Angelo	13	San Angelo	11
San Antonio	23	San Antonio	41
Tyler (Longview)	7	Tyler	20
Waco	9	Waco	10
Waco (Belton)	23	Waco (Belton)	21
Wichita Falls	13	Wichita Falls	9
Yoakum	9	Yoakum	7
Total	**521**		**447**

7.10 Public Comments

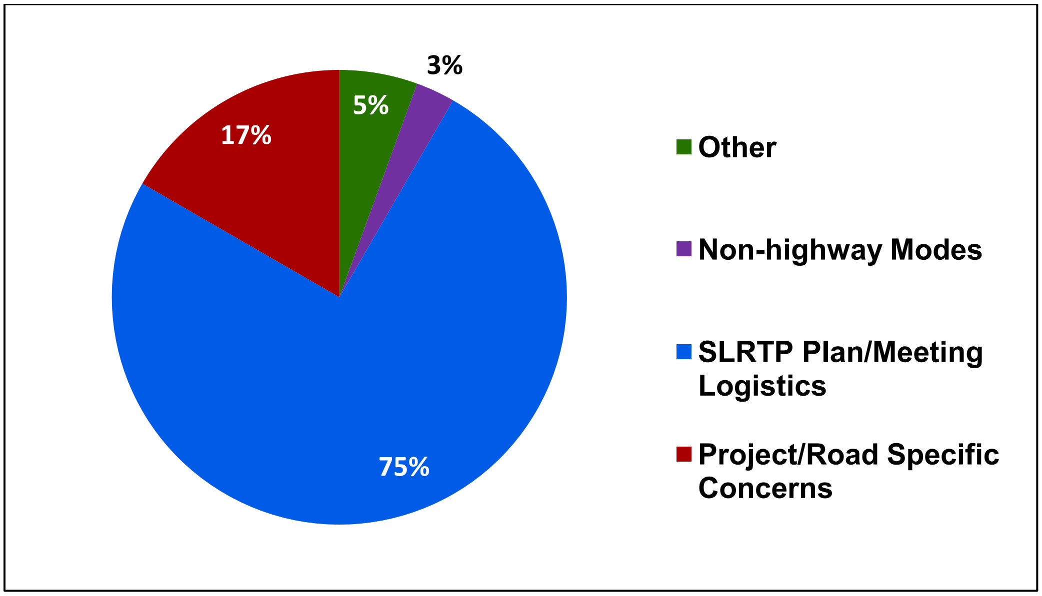
During the period of the public outreach that encompassed two rounds each of stakeholder and public meetings (not including the period between September 17 and November 1, 2010), TxDOT received a total of 566 comments regarding the SLRTP. Figure 7-12 represents the percentage of comments received by source.

Figure 7-12: Comments Received During Public Outreach Activities (% By Source)



The 566 comments received include comments from stakeholder and public meetings, as well as comments received by telephone, electronic mail, and regular mail. Figures Figure **7-13** throughFigure 7-17 summarize the generalized comment topics by source.

Figure 7-13: Telephone Comments (% By Generalized Topic)

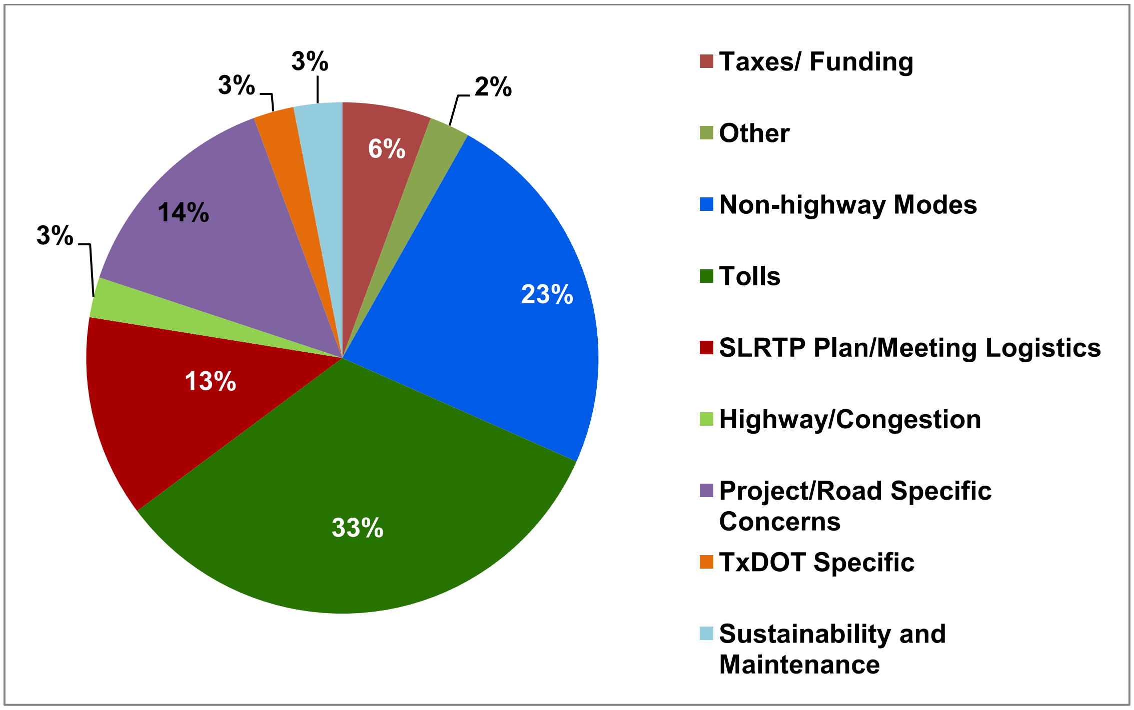


Note: There were no telephone comments for the following categories Rural vs Urban Issues, Taxes/ Funding, Highway/Congestion, TxDOT Specific, Sustainabilty and Maintenance, and Tolls

A majority of the comments and questions received via the toll free telephone line regarded the SLRTP meeting logistics (i.e., date, time, location, etc.). Those were responded to with either a call back or e-mail as appropriate.

Comments received for the second ranking topic were those having to do with specific TxDOT projects (e.g., overpass construction in Amarillo, roadway projects in Levelland, FM 715 in the Abilene District, etc.). Project specific comments were forwarded to the appropriate TxDOT District Office for response.

Figure 7-14: Electronic Mail Comments (% By Generalized Topic)



Note: There were no electronic comments for Rural vs Urban Issues.

A majority of the comments received via electronic mail were related to toll roads; more specifically many were in opposition of toll roads or were requests to remove toll roads from the SLRTP.

Comments received for the second ranking topic were those regarding non-highway modes (e.g., more transit for the disabled, more high-speed commuter rail, request for a broader rail system, more bicycle/pedestrian facilities, advocate for a more robust multi-modal system, etc.).

Comments received for the third ranking topic were those having to do with specific TxDOT projects (e.g., maintaining roadside parks and rest areas, widen and extend FM 552 and US 190 in the Dallas District, widening of FM 521 in the Houston District, requests for the widening and use of various construction materials on various facilities for safety reasons, etc.). Project specific comments were forwarded to the appropriate TxDOT District Office for response.

Comments and questions received for the fourth ranking topic regarded the SLRTP meeting logistics (i.e., date, time, location, etc.). Those were responded to with either a call back or e-mail as appropriate.

Figure 7-15: Round 1 Public Meeting Comments (% By Generalized Topic)

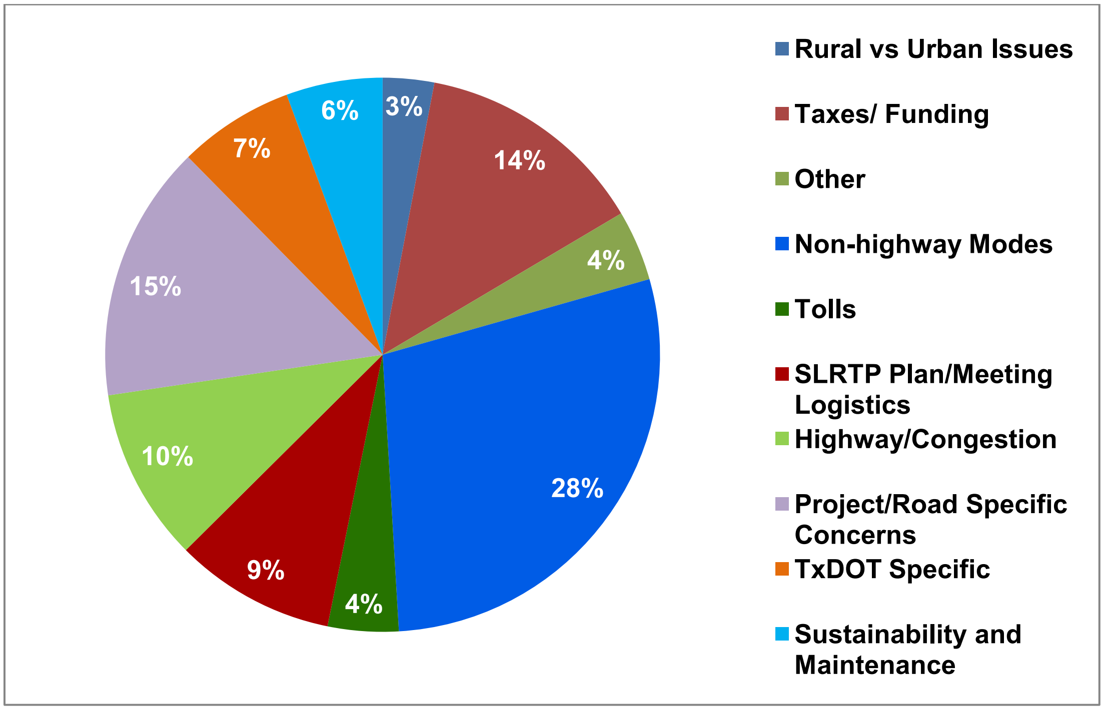
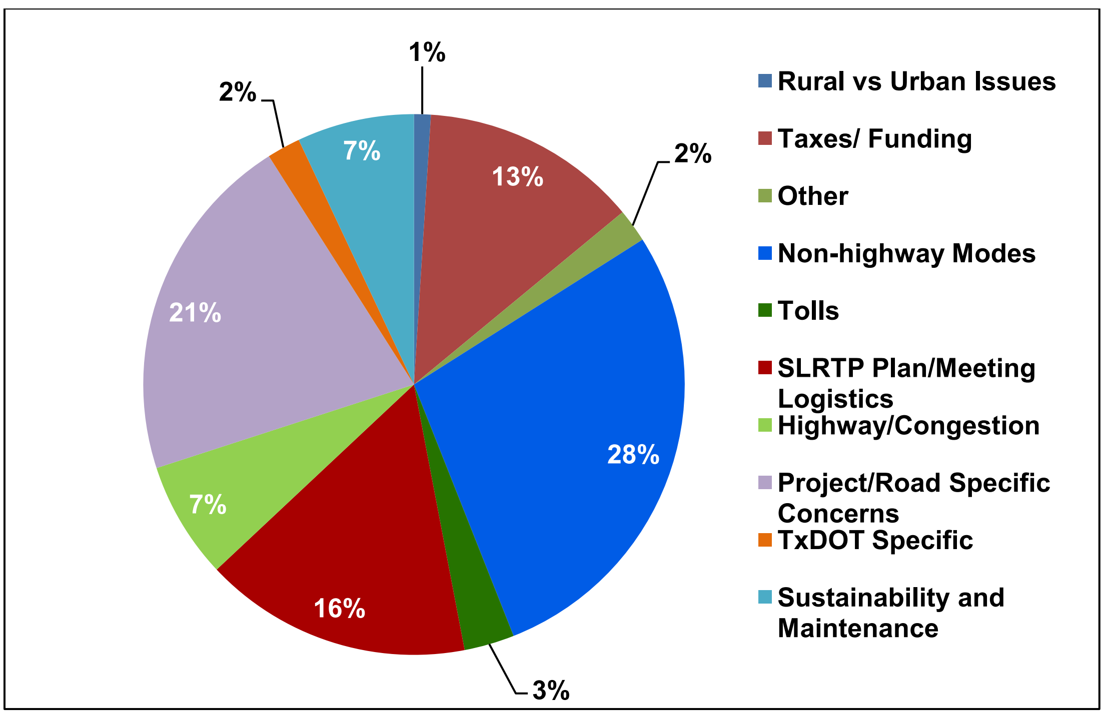


Figure 7-16: Round 2 Public Meeting Comments (% By Generalized Topic)



In both Rounds 1 and 2 of the public meetings the topic receiving the highest percentage of comments (provided at the meetings on comment forms) was Non-highway modes (e.g., several comments advocating high-speed rail and more transit in rural areas, request for rapid bus routes, request that TxDOT shift away from highway-centric planning, requests for environmental sustainability, several comments from urban and rural areas advocating bicycle and pedestrian facilities, a request from the Houston area that TxDOT work with other agencies to work toward a multimodal plan, etc.).

The second ranking topic in Rounds 1 and 2 of the public meetings was specific TxDOT projects (e.g., the expansion and designation of US 277 in Wichita Falls as a high-priority corridor, completion of State highways 19 and 24 as a priority in the Paris District, completion of SH 45 SW in Austin, the removal of US 67 in El Paso from the Texas Trunk System, the widening of FM 1463 in the Houston District, improvement of US 83 in the Laredo District, etc.). Project specific comments were forwarded to the appropriate TxDOT District Office for response.

The topic of taxes and funding was ranked third in the Round 1 public meetings and fourth in the Round 2 meetings. There were many comments (statewide) opposing the use of tolls to finance transportation, with several requests to remove all toll projects and those funded through public-private partnerships from the SLRTP. Others advocated for public-private partnerships to fund transportation. Some comments supported raising the fuel tax and fees for overweight trucks to increase revenue. Other suggestions included:

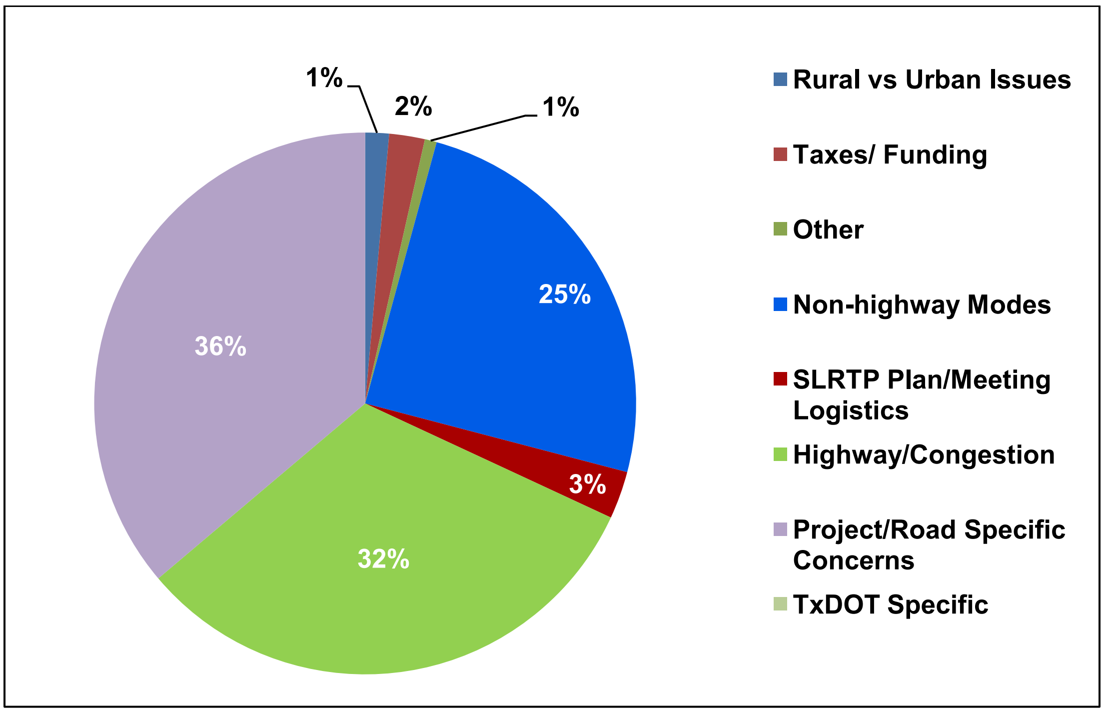
- Taxing diesel and hybrid electricity
- Gaming (legalized gambling) as a source of transportation revenue
- Increased funding for small multimodal facilities
- Equal funding for rail and roads
- Ceasing the use of fuel taxes for education
- The return of more federal dollars to Texas
- More money shifted to mid-sized cities
- Lack of state appropriations for ten years while operations have escalated
- Less money used to increase infrastructure, and more used to manage demand

- More education to the public and decisions-makers regarding funding options
- Reduced funding to other state agencies and focus on transit needs

TxDOT also received numerous comments requesting or advocating for the exploration of unique and innovative funding sources, but with no specific source for the funds named.

In both rounds, there were comments focused specifically on congestion, including comments advocating TxDOT spending more money on reducing congestion, widening roadways, shifting freight to rail, and the use of other modes to reduce congestion, improve air quality, and provide a more sustainable transportation system.

Figure 7-17: Mailed Comments (% By Generalized Topic)



Note: There were no telephone comments for the following categories Tolls, TxDOT Specific, and Sustainability and Maintenance.

The majority of comments that were mailed to TxDOT – in paper form – covered three topics. The highest ranking topic was specific project concerns for various roadway and bridge projects across the state. As with similar comments from other sources, project-specific comments were forwarded to the appropriate TxDOT District Office for response.

The second ranking topic was Highway congestion. Some comments were general in nature (i.e., non-facility specific requests to reduce congestion), and others requested the reduction of congestion via other modes or modal facilities.

The third ranking topic was Non-highway modes. An overwhelming majority of the comments received for this topic were requests for the inclusion of the Northeast Texas Rural Recreation Trail from New Boston, Texas to Farmersville, Texas.

Across all sources of comments, there were numerous comments related to three specific corridors or corridor systems that interested parties wanted to see included, promoted or completed as a part in of the SLRTP:

- IH 69 (Statewide);
- The Gulf Coast Strategic Highway System (all corridors); and
- The Northeast Texas Rural Recreational Trail System (from New Boston, Texas to Farmersville, Texas).

Comments that were received during the official public review period of the Draft SLRTP (September 17 to November 1, 2010), and at the public hearing, were addressed separately as a function of the process by which the Texas Transportation Commission considers the adoption of the SLRTP. Those letters, electronic comments and comment forms, and TxDOT responses, are included in the document Appendix.

Due to the number and content of the hundreds of comments received by TxDOT related to the SLRTP, not all of them could be included specifically in this chapter. However, every comment (regardless of source) and all proceedings related to the public outreach efforts for the SLRTP will be included in an electronic notebook, the contents of which are available for viewing via request to the Transportation Planning and Programming Division of TxDOT. Public meetings and hearings are not archived, but a copy of the public hearing transcript is available upon request.

Video of the TxDOT Commission Meeting at which the SLRTP will be presented for adoption will be archived on TxDOT's website at: http://www.txdot.gov/.

8.0 Transportation Planning and the Environment

The SLRTP includes discussion of potential environmental mitigation activities and potential areas to carry out these activities, but content focuses on policies, programs, and strategies by mode (23 CFR 450.214(j)), rather than the more extensive mitigation activities carried out and documented at the project level. Information regarding project level mitigation for highways can be obtained on TxDOT's website or by contacting the Environmental Affairs (ENV) Division.

Engaging in the necessary environmental planning and public involvement processes according to the National Environmental Policy Act of 1969 (NEPA), allows TxDOT to meet the increasing environmental requirements and concerns, plan for sustainability, and develop projects that avoid and minimize environmental impacts to the greatest extent practicable and as needed implement cost effective mitigation.

While NEPA requires the evaluation of natural, human and cultural resources, there are several areas that were considered in the development of the SLRTP and which will potentially impact planning and decision making for future transportation plans and projects. These include air quality, consideration of low income and minority populations and longer term potential climate changes.

8.1 Air Quality

The Clean Air Act Amendments (CAAA) created nonattainment areas for criteria pollutants and established mechanisms for these areas to achieve compliance with the National Ambient Air Quality Standards (NAAQS). State and local air pollution agencies are responsible for carrying out the CAAA. They are able to develop solutions for pollution problems that require special understanding of local industries, geography, housing, and travel patterns, as well as other factors.

Nonattainment areas are areas that have failed to meet federal standards for ambient air quality. The nonattainment areas in Texas are described in Table 8-1, and a map of the nonattainment and near nonattainment areas in Texas is provided on Figure 8-1. Near nonattainment areas currently meet federal standards but are at risk of violating standards.

Texas meets federal air quality standards with the following exceptions:

- ★ Particulate matter in El Paso; and

- 8-hour ground-level ozone (O_3) in Houston-Galveston-Brazoria and Dallas-Fort Worth.

Maintenance areas are areas that were once designated as nonattainment, but which have since been redesignated in attainment of those standards. Areas operating under maintenance SIP remain subject to transportation conformity.

Table 8-1: Nonattainment and Maintenance Areas in Texas

Nonattainment Area	Counties	Classification	Attainment Date Required by EPA
1997 8-Hour Ozone Nonattainment and Maintenance Areas			
Houston-Galveston-Brazoria (HGB)	Brazoria Chambers Fort Bend Galveston Harris Liberty Montgomery Waller	Severe	June 15, 2019
Dallas-Fort Worth (DFW)	Collin Dallas Denton Tarrant Ellis Johnson Kaufman Parker Rockwall	Moderate ★	June 15, 2010
Beaumont-Port Arthur (BPA)	Hardin Jefferson Orange	Maintenance	N/A
Ozone Early Action Compact (EAC) Areas			
Austin-San Marcos (AUS)	Travis Williamson Bastrop Hays Caldwell	Attainment	December 31, 2007
San Antonio (SA)	Bexar Comal Guadalupe Wilson	Attainment	December 31, 2007
Northeast Texas (NET)	Rusk Smith Upshur	Attainment	December 31, 2007

Table 8-1: Nonattainment and Maintenance Areas in Texas

Nonattainment Area	Counties	Classification	Attainment Date Required by EPA
	Gregg Harrison		
CO Nonattainment and Maintenance Areas			
El Paso (ELP)	El Paso	Maintenance	N/A
PM_{10} Nonattainment Areas			
El Paso (ELP)	El Paso	Moderate	December 31, 1994

Source: TCEQ

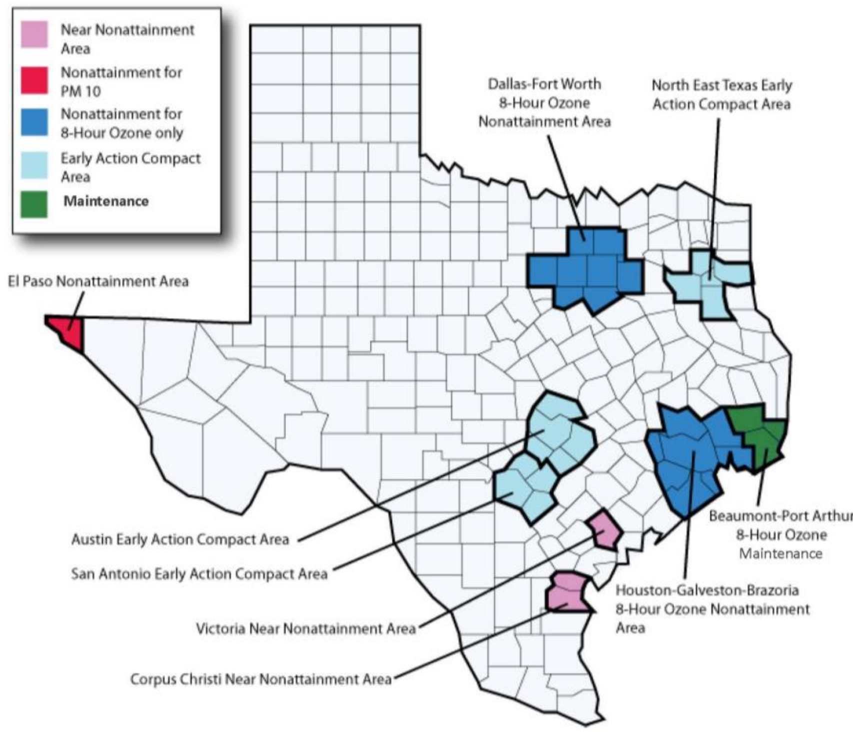
★On 8/15/2010 EPA proposed to reclassify DFW to "serious" for failing to attain the standard by 6/15/2010. This proposal is anticipated to be finalized in December 2010. The pending attainment date is 6/15/2013.

Texas also has three Early Action Compact (EAC) Areas: Austin, San Antonio, and Northeast Texas. These are areas that have submitted ozone EAC plans, which were used to develop SIP strategies to reduce emissions and adopted into the SIP on November 17, 2004.[193]

On October 13, 2010 Governor Perry recommended a small portion of Collin County to be designated nonattainment for the 2008 Lead NAAQS. Transportation conformity does not apply o the Lead NAAQS.

[193]TCEQ, http://www.tceq.state.tx.us/implementation/air/sip/texas-sip

Figure 8-1: Map of Texas' Nonattainment and Near-nonattainment Counties



8.1.1 New Federal Standard for Ozone

In January of 2010, the EPA proposed lowering the primary ozone standard and creating a separate secondary standard based on cumulative seasonal average ozone concentrations. The proposed 8-hour ozone standard, which decreases from >75 parts per billion (ppb) to <70 ppb (approximately 60 to 70 ppb), may be finalized by EPA in late 2010. Metropolitan and urban areas that are already officially nonattainment for this pollutant include Dallas-Fort Worth and Houston-Galveston. Based on information from TCEQ shown in

Table 8-2, additional urban areas that may exceed the standard, based on monitoring, include Austin, Corpus Christi, Victoria-Goliad, and Waco-Temple.

An area is in nonattainment of the 8-hour ozone standard if the design value (3-year average of the annual fourth highest 8-hour ozone monitor reading at any single monitor) is at or above the level of the standard.

Table 8-2: 2010 Exceedance of Potential 70 ppb 8-hour Average Ozone Standard

Region	March	April	May	June	July
Dallas-Fort Worth			X	X	
Tyler-Longview			X	X	
El Paso				X	
Waco		X	X		
Beaumont-Port Arthur	X		X		X
Austin				X	
Houston-Galveston-Brazoria	X	X	X	X	X
San Antonio				X	
Corpus Christi-Victoria				X	
Lower Rio Grande Valley					
Laredo					

Source: TCEQ; based on 2008-2010 design value using monitored data through July 8, 2010

8.1.2 State Implementation Plan (SIPs)

States must develop SIPs that outline how it will control air pollution under the CAAA. A SIP consists of regulations, programs, and policies that a state will implement and enforce to clean up polluted areas.[194]

The state agency responsible for the development of the SIP in Texas is the Texas Commission on Environmental Quality (TCEQ). The SIP is developed as a cooperative effort between state and local transportation agencies, and must be vetted by TCEQ through a public involvement process that provides industries and the public with an opportunity to provide input and have that input considered during the planning process. The Texas SIP outlines the control strategies and measures to be implemented to reduce emissions from stationary, area, and mobile sources, and demonstrate

[194]EPA. A Plain English Guide to the Clean Air Act. April 2007.

attainment and maintenance of air quality standards statewide, but particularly in the nonattainment areas.

Nonattainment area boundaries are set by the State and the EPA, and define the geographic area subject to SIP controls and conformity. Commuting and travel patterns are important elements in setting the boundaries, and transportation agencies, such as TxDOT and MPOs, are the best sources for this information.

TxDOT and nonattainment MPOs are involved with decisions made in the air quality planning process and during SIP development because this process directly affects state and local transportation plans and projects. TCEQ, in coordination with TxDOT and the MPOs, develops a motor vehicle emissions budget, which is that portion of allowable emissions defined in a SIP allocated to on-road (highway and transit) vehicle emissions.

Since travel and transportation factors are key elements of on-road mobile source emissions inventory development, TxDOT and MPOs ensure that current and accurate transportation data (e.g., traffic volumes, VMT, emissions, etc.) are developed, used and interpreted correctly, and that travel data or projections are representative of the local area. The accuracy of this data is important because it is used initially to define the baseline conditions and thereafter to measure the progress of reductions in pollutants from motor vehicles in order to comply with transportation conformity and SIP requirements.

TxDOT and the MPOs may also work cooperatively with the TCEQ to determine what transportation control measures (TCMs), or emission reducing projects, are practical, implementable, and best serve the needs of an area. These decisions are crucial since both transportation agencies will be required by federal law to implement these TCMs if they have committed to and have included them in the Texas SIP.

Transportation conformity ensures that federal funding and approval are given to those transportation projects and activities that are consistent with air quality goals. If transportation conformity cannot be determined or the SIP measures are not implemented on schedule, there are significant impacts on the transportation planning process with plans, programs, and projects being delayed.[195]

[195] FHWA, Air Quality Planning for Transportation Officials: An Introduction. http://www.fhwa.dot.gov/environment/aqplan/aqintro.htm

8.2 Environmental Justice

Environmental justice refers to groups in our population that have been traditionally underserved by limited access to decision making for transportation solutions. These populations include low income, the elderly, and minority groups. Within the low income and minority groups are also those segments of the population with limited-English-proficiency and low-literacy. Considering these groups are important to future transportation decisions as their needs for transportation services may be different from the population as a whole.

As a federal-aid recipient, TxDOT works to ensure nondiscrimination in their programs and activities under Title VI of the Civil Rights Act of 1964 and many other related laws, regulations and policies. Presidential Executive Order 12898 directed every federal agency, and its sub-recipients, to address the effects of all programs, policies, and activities on minority and low-income populations. In 1997, the USDOT issued its DOT Order to Address Environmental Justice in Minority Populations and Low-Income Populations to summarize and expand upon the requirements of Executive Order 12898 to:

- Avoid, minimize or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction in or significant delay in the receipt of benefits by minority and low-income populations.

If issues are addressed early in the planning process, environmental justice principles and procedures—properly implemented—improve all levels of transportation decision making, the results of which are the avoidance of disproportionately high and adverse impacts on minority and low-income populations, and projects that meet the needs of the entire community. [196]

The department successfully integrates Title VI and environmental justice into its programs and activities by:

- Developing and enhancing its technical capabilities to assess the benefits and adverse effects of transportation activities among different population groups and

[196] TxDOT. An Overview of Environmental Justice. June 2009.
http://www.txdot.gov/txdot_library/consultants_contractors/publications/environmental_resources.htm

using those capabilities to develop appropriate procedures, goals and performance measures in all aspects of its mission.

- Ensuring that STIP findings of statewide planning compliance and NEPA activities satisfy the letter and intent of Title VI requirements and environmental justice principles.
- Enhancing its public involvement activities to ensure the meaningful participation of minority and low-income populations.
- Working with federal, state, local, and transit planning partners to create and enhance intermodal systems, and support projects that can improve the natural and human environments for low-income and minority communities.

To engage these populations during the development of SLRTP, TxDOT district public information officers crafted and distributed media advisories targeted to the population makeup of each district. To ensure broad distribution of the information, issuance of media advisories were not limited to just major print and television outlets. They included non-English language publications and publications with smaller circulations, or more specific target audiences than mainstream media.

8.3 Climate Change

Discussion of climate change is becoming more common in transportation planning documents. Many states recognize the role that transportation policies and investments play in contributing to climate change and conversely, the potential impact of climate change on transportation systems. Long-range transportation plans in particular are beginning to highlight climate change among a new generation of environmental and sustainability issues that shape transportation planning.

At present, there is no federal regulatory requirement to consider climate change in transportation plans. The federal government has just recently recognized greenhouse gases (GHGs) such as methane and water vapor as pollutants and has begun the process to inventory and regulate them.

8.3.1 Federal Focus on Climate Change Policy

The anticipated federal transportation reauthorization and accompanying planning regulations are expected to address climate change as a focus area of long-range planning. There remains uncertainty about both the potential legislation and the effects of climate change on Texas. Current planning regulations already include a number of requirements that generally align with climate change mitigation and adaptation.

TxDOT already responds in some way to these issues as part of its normal course of business. For example, planning factors that relate to efficient management and operation of the transportation system, coordination with land use plans, and congestion mitigation can all be related to reducing green house gas (GHG) emissions. Adaptive responses, including infrastructure preservation and maintenance, as well as corridor preservation and connectivity of the system, can provide direct avenues for mitigation of the effects of climate change. In addition, addressing the environment and energy conservation are already among the eight federally required statewide planning factors.

8.3.2 Vulnerabilities in Texas as a Result of Climate Change

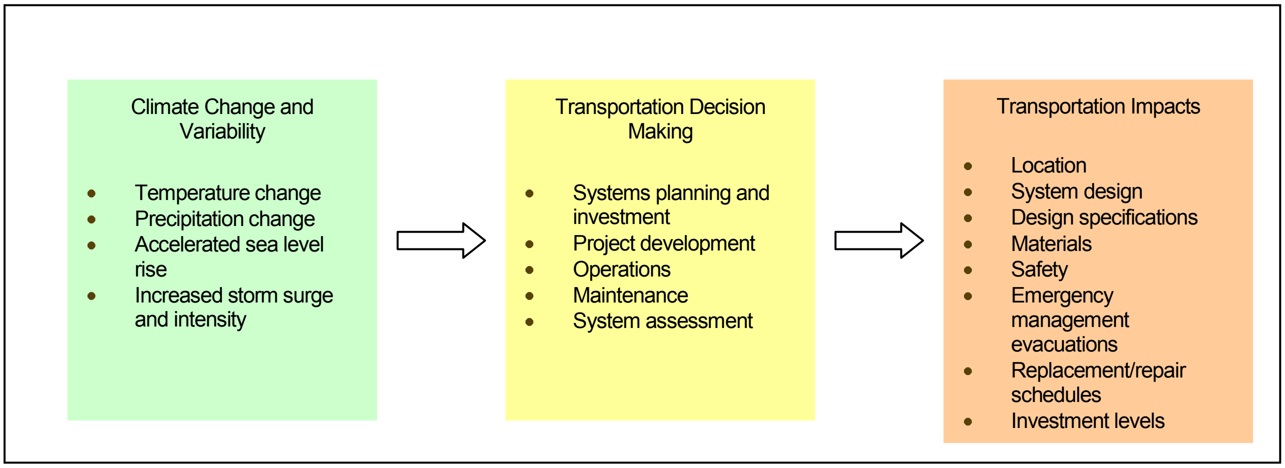
A recent report by the U.S. Climate Change Science Program[197] examined in detail the potential effects of climate change on the Texas Gulf Coast, perhaps the most vulnerable region in the state. The analysis included the effects on the transportation system (Figure 8-2) as follows:

- Inundation from Relative Sea Level Rise – Anticipating a rise in sea level, a large portion of the Galveston to Mobile, Alabama, region's road, rail, and port network is at risk of permanent flooding. The crucial connectivity of the intermodal system in the area means that the services of the network can be threatened even if small segments are inundated.
- Flooding from Storm Activity – The Gulf Coast and its transportation infrastructure is already vulnerable to hurricanes. Models indicate potentially increasing major storm frequency and intensity. Intensified wind speed, flying and water borne debris, and storm surges put a great deal of the coastal area's infrastructure at risk of temporary flooding.
- Temperature Increase – Maintenance costs will increase for some types of infrastructure because they deteriorate more quickly at temperatures above 32 °C (90 °F). Increase in daily high temperatures could increase the potential for rail buckling in certain types of track. Construction costs could increase because of work crew deployment restrictions on days above 32 °C (90 °F). Concrete strength is affected by the temperature at which it sets. Increases in daily high temperatures affect aircraft performance and runway length.
- Average Precipitation – Transportation infrastructure and services may be impacted by changes in average precipitation; however, current models are unclear as to whether a wetter or a drier climate in the area is more probable.

[197] U.S. Climate Change Science Program. Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: Gulf Coast Study, Phase I. Synthesis and Assessment Product 4.7. March 2008.

★ Extreme Precipitation Events – Of more concern is the potential for short-term flooding due to heavier downpours. Even if average precipitation declines, intense storms can lead to temporary flooding as culverts and other drainage systems are overloaded. Prolonged flooding may also damage pavement substructure.

Figure 8-2: How Climate Change Affects Transportation Decisions



8.4 Overview of the NEPA Process

NEPA (42 U.S. Code §4321) established a national environmental policy intentionally focused on federal activities and the desire for a sustainable environment balanced with other essential needs of present and future generations of Americans. NEPA established a supplemental mandate for federal agencies and federal-aid recipients—such as TxDOT—to consider the potential environmental consequences of proposed projects, document the analysis, and make this information available to the public for comment prior to the construction or implementation of a project.

NEPA forms the basic framework for federal decision-making for transportation projects. The NEPA process is managed by federal agencies as an "umbrella," under which all-applicable environmental laws, executive orders (EOs), and regulations are considered and addressed prior to the final project decision and document approval. During the process, a wide range of partners and stakeholders including the public, businesses, interest groups, and representatives of Tribal, state, and local government agencies, provides input into project and environmental decisions.

The NEPA process allows transportation officials to make informed decisions that balance engineering and transportation needs with social, economic, and natural environmental factors, and to compensate for the impacts of constructing and maintaining the transportation system.

Documentation is an essential component of the NEPA process, which supports and complements public involvement and interagency coordination. It provides for complete disclosure to the stakeholders and public by allowing them an opportunity to provide input and comment on proposals, alternatives, and environmental impacts. Finally, it provides the appropriate information for the decision-maker to make a reasoned choice among alternatives.

Requirements for the preparation of environmental documents vary, depending on the complexity of the project and the anticipated impacts. There are three primary levels of environmental review, which are referred to as "classes of action": Categorical Exclusions (CEs), Environmental Assessments (EAs), and Environmental Impact Statements (EISs).[198]

While each transportation organization is responsible for complying with NEPA, the specific processes vary by lead federal or state agency. Outlined below is a brief discussion of the environmental processes by mode of transportation and the agency involved in decision making.

8.4.1 Roadways and Highways

Federally funded roadway and highway projects are coordinated through the FHWA as described under 23 CFR Part 771. FHWA provides oversight and approval of environmental responsibilities with TxDOT, including possible reevaluations of the decision documents and implementation of mitigation plans. Additionally, FHWA also serves as the lead agency on rail projects such as highway/rail intersection grade separations, and as directed by the FHWA Administrator. Projects that are funded with even $1 of federal funds must be coordinated through FHWA.

State-funded (i.e., no federal funding) roadway and highway projects are coordinated by TxDOT in accordance with 43 TAC Chapter 2, Subchapter C to provide comprehensive regulations for environmental analyses in project development, regardless of mode or funding source. These sections mirror FHWA's regulations found in 23 CFR Part 771.

8.4.2 Bicycle and Pedestrian

Bicycle and pedestrian projects are coordinated though similar processes as federally and state-funded roadways and highways because most projects are adjacent to or on roadways. Federally funded projects that are located within state parks are coordinated with FHWA through the TPWD.

[198] National Environmental Policy Act (NEPA). The NEPA Process. EA and EIS Components. http://www.epa.gov/oecaerth/basics/nepa.html

8.4.3 Rail (Freight and Transit)

Federally funded rail projects are coordinated through several agencies depending upon the type of project and location of facility, including the Surface Transportation Board (STB), FRA, and FTA. The type of planned rail activity or project determines which federal agency or agencies are consulted during the project development/environmental process.

8.4.3.1 Surface Transportation Board

The STB regulates rail mergers, line sales, line construction, and line abandonment, and is the lead agency for new freight rail construction projects and rail abandonment projects. The STB must consider the environmental impacts of its actions, but it completes a slightly different environmental process than FHWA and other agencies responsible for actions involving rail. The STB's *Procedures for Implementation of Environmental Laws* are included in 49 CFR 1105. Environmental documentation may be in the form of an EA or EIS. The STB maintains ultimate responsibility for the environmental process for projects requiring its approval.

8.4.3.2 Federal Railroad Administration

The FRA enforces rail safety regulations, administers railroad assistance programs, conducts research and development in support of improved railroads, and plays an active role in the development of the country's inter-city rail passenger system. The FRA also serves as the lead agency on all high-speed rail development proposals and freight rail operations, and must consider the environmental impacts of its actions, similar to the environmental process that the FHWA uses. The FRA's environmental process is completed under different environmental rules, but is procedurally similar to that of the FHWA.

The FRA's agency specific environmental procedures[199] outline specific policies, application tools, the level of environmental review required, and are pursuant to the Council on Environmental Quality's) (CEQ) Regulations for implementing NEPA. The FRA's *Railroad Corridor Transportation Plans – A Guidance Manual,* provides additional guidance regarding the environmental process.

8.4.3.3 Federal Transit Administration

The FTA regulates mass transit, which includes buses, subways, light rail, commuter rail, monorail, passenger ferryboats, trolleys, inclined railways, and people movers. tThe

[199] Federal Register, Vol. 64, Number 101, Page 28545. May 26, 1999.

FTA must consider the environmental impacts of its actions, similar to the environmental process used by the FHWA. The FTA and FHWA operate under the same NEPA implementing regulation (23 CFR 771). This regulation is supported by 49 USC, Subtitle III, Chapter 53, Transportation, *General and Intermodal Programs – Mass Transportation*, which specifically pertains to mass transit projects and programs implemented under the FTA.

The FTA maintains agency-specific requirements for the analysis and assessment of noise and vibration that differ from roadway projects. FTA projects frequently require an in-depth analysis of socioeconomic and Environmental Justice (EJ) issues because mass transit projects are often located in urban areas.

8.4.3.4 State-funded Rail Projects

State-funded rail projects are coordinated through the TxDOT Rail Division, which oversees railroad planning, inspection, at-grade rail crossings, rail public transit safety, and manages the 382-mile South Orient Railroad line in West Texas. Environmental analysis is outlined in 43 TAC Chapter 2, Subchapter C, which mirror FTAs regulations found in 23 CFR Part 771 (with additional sections for mass transit rail projects).

TxDOTs 2008 *Guidance on Environmental Documentation for Texas Rail Projects* outlines the specific policies, application tools, and level of environmental review required for rail projects in Texas. TxDOT's programmatic agreements with the THC and FHWA do not apply to FTA-regulated rail projects.

8.4.4 Airports

Federally funded commercial service airport projects are coordinated through the FAA. The FAA must consider the environmental impacts of its actions under different environmental rules and agency-specific procedures,[200] but the process is procedurally similar to that of the FHWA.

State-funded, noncommercial service airport projects (i.e., general aviation airports) are coordinated through the TxDOT Aviation Division, which assists cities and counties applying for, receiving and disbursing federal and state funds for reliever and general aviation airports. The Aviation Division completes environmental reviews of aviation

[200] FAA Order 1050.1E Environmental Impacts: Policies and Procedures and FAA Order 5050.4B National Environmental Policy Act Implementing Instructions for Airport Actions.

projects in accordance with FAA Orders[201] and CEQ's Regulations for implementing NEPA.

8.4.5 Waterways and Ports

Federally funded waterway and port projects are coordinated through several agencies depending upon the type of project and location of facility, including the USACE and the USCG. The type of activity or project determines which federal agency or agencies will conduct and oversee the environmental process.

8.4.5.1 USACE

The USACE is responsible for waterway navigation projects and implements environmental processes under agency-specific environmental procedures—Environmental Operating Principles and Implementation Guidance—but is procedurally similar to FHWA.

8.4.5.2 USCG

The USCG has five missions: maritime safety, security, mobility, national defense, and the protection of natural resources. USCG must consider the environmental impacts of its actions, similar to the environmental process that FHWA uses. USCG's environmental process operates under different agency-specific environmental procedures,[202] but is procedurally similar to FHWA.

State-funded waterway and port projects, including those associated with the Gulf Intracoastal Waterway, are coordinated through TxDOT's Transportation Planning and Programming (TPP) Division. TxDOT fulfills the non-federal sponsorship requirements for the waterways in Texas described in Chapter 51 of the Transportation Code. TPP provides environmental reviews of waterway and port projects in accordance with the USACE and USCG policies and CEQ's Regulations for implementing NEPA.

8.4.6 Pipelines

Pipeline projects are coordinated through several federal oversight agencies depending upon the type of project and location of facility, including the FERC, USDOT–PHMSA, and the U.S. Bureau of Land Management (BLM). The type of planned pipeline activity

[201] FAA Order 1050.1E Environmental Impacts: Policies and Procedures and FAA Order 5050.4B National Environmental Policy Act Implementing Instructions for Airport Actions.

[202] Commandant's Manual Instruction M16475.1 for National Environmental Policy Act Procedures and Commandant's Manual Instruction M16590.5A Bridge Administrative Manual.

or project determines which federal agency or agencies are consulted during the project development/environmental process.

8.4.6.1 FERC

FERC is an independent agency that regulates the interstate transmission of electricity and natural gas, and also reviews proposals to build liquefied natural gas terminals and interstate natural gas pipelines as well as licensing hydropower projects. FERC must consider the environmental impacts of its actions, but it uses a slightly different environmental process than FHWA, which is contained within its Guidance Manual for Report Preparation. The resource reports differ from a typical EA or EIS, but contain similar information.

8.4.6.2 PHMSA

The USDOT – PHMSA has jurisdiction over intra-state hazardous liquid pipelines under 49 CFR Part 100-1085 and Part 195. PHMSA's mission is to protect people and the environment from the risks inherent in transportation of hazardous materials—by pipeline and other modes of transportation. PHMSA must consider the environmental impacts of its actions, similar to the environmental process that FHWA uses. PHMSA's environmental process operates under agency-specific environmental procedures (*National Operations Manual*), but is procedurally similar to FHWA pursuant to CEQ's Regulations for implementing NEPA.

8.4.6.3 U.S. BLM

The U.S. BLM reviews and approves permits and licenses from applicants to explore, develop, and produce both renewable and nonrenewable energy on federal lands. The BLM ensures that proposed projects meet all applicable environmental laws and regulations – 43 CFR 2880, Section 2881.11 and 43 CFR 2880, Section 2881.7(b)(2). If BLM lands (or two or more federal lands) are crossed by an interstate pipeline project, then the project applicant must have a BLM grant under 30 USC 185. The BLM must consider the environmental impacts of its actions under agency-specific environmental procedures (*BLM National Environmental Policy Act Handbook H-1790-1*), but is procedurally similar to FHWA.

8.4.6.4 Texas Railroad Commission Oversight

State oversight of pipeline projects is coordinated through the RRC (under Texas Natural Resources Code Section 111.013 [Vernon, 1978][203]), which provides environmental reviews of pipeline projects in accordance with the FERC, PHMSA, and

[203] Original version at 1917 Texas General Laws, Ch. 30, Texas Rev. Civ. Stat. art. 6019 (Vernon 1962).

BLM policies, pursuant to CEQ's Regulations for implementing NEPA. Additionally, pipeline projects are coordinated through the TCEQ for permits related to air quality and water quality, the TPWD for permits related to threatened and endangered species, and the THC for permits related to cultural resources.

8.5 Environmental Mitigation

Planned improvements may result in impacts to humans, and various natural, cultural or historical resources. These impacts may require mitigation measures to ensure projects are implemented in an environmentally sound manner, and when required, are planned and implemented as part of the NEPA process.

Mitigation measures are defined in the CEQ Regulations (40 CFR Part 1508.20 – *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*) in five ways: avoid, minimize, rectify, reduce or eliminate, and compensate. Typically, the implementation of mitigation measures follows a process based on these five mitigation methods or steps to determine what level of mitigation may be appropriate for a project. Whether in planning or project delivery, the process begins by identifying opportunities to "avoid" or "minimize" environmental impacts. Examples of actions that illustrate each of the five steps are:

- **Avoid:** Avoid the impact altogether by not taking certain actions or parts of action (example: find ways to avoid disturbance to existing vegetation, wildlife, wetlands, creeks, water bodies and nest sites).
- **Minimize:** Minimize impacts by limiting the degree or magnitude of the action and its implementation (example: build retaining walls or limit surface grading, topsoil stripping, and excavation).
- **Rectify:** Rectify the impact by repairing, rehabilitating, or restoring the affected environment (example: immediately clean up spills using proper remediation procedures).
- **Reduce or Eliminate:** Reduce or eliminate the impact over time by preservation and maintenance during the life of the action (example: no-idling policy for vehicles where appropriate).
- **Compensate:** Compensate for the impact by replacing or providing substitute resources or environments (example: revegetation or on-site wetland creation will be undertaken on disturbed sites).

As each project—regardless of mode—advances through project development, designs must recognize the unique needs and culture of the community, utilize community cohesion and preservation techniques, and feature community mitigation and enhancement measures as necessary. As each project is different, in terms of design, scope, and the surrounding area affected, mitigation will be considered on a case-by-case basis. It should be noted that following the above hierarchy of mitigation steps may provide significant savings in project delivery time due to a reduction in coordination time with resource agencies as well as cost savings.

8.6 Potential Mitigation Sites and Programs

The utilization of Geographic Information System (GIS) databases is one of the best methods for advanced planning for mitigation. This early planning approach provides the ability to predict mitigation needs and establish availability and location where the use of credit-based compensation is appropriate. Available GIS data consists of a combination of where important resources are located as well as where potential mitigation sites are located. Current available databases are available from the TPWD, THC, USACE, U.S. Fish and Wildlife Service (USFWS), and EPA. Many counties and cities also have GIS data that can be useful when searching for potential mitigation sites and partners.

This information permits planners to practice the most effective mitigation measure of all, avoidance, by determining that certain sites are prohibitively impacted, and planning to move construction projects away from those sensitive and unique locations. Ultimately, this effort will help leverage funds and form agreements with other agencies to create better plans and acquire land or easements that would mitigate the combined impacts of multiple projects in a given area or affecting any given resource.

For the SLRTP, an assessment was conducted to identify existing mitigation banks, habitat conservation plans (HCPs), federal and state parks, and wildlife refuges that might be available for mitigation purposes. Privately held land owned or controlled by such entities as The Nature Conservancy and The Trust for Public Lands are generally considered as constraints, but may provide an opportunity for mitigation on a case-by-case basis. In addition to these sources, counties and cities may offer partnering opportunities where improvements to their properties could be used to serve as mitigation for a project within the same geographical area.

Some of the environmental data is not suitable for mapping on a statewide basis. There are 300,000 identified cultural resources throughout the state, as catalogued by the THC in the Texas Historic Atlas.[204] Mapping of those resources is typically done at the project level and is difficult to display effectively at a statewide scale. While details may

[204] THC, Texas Historic Sites Atlas, http://atlas.thc.state.tx.us/

be lost when providing maps at this scale, biological constraints and hydrologic regions are provided on Figures 8-3 and 8-4. The Texas Highway Trunk System, with the segments identified for future improvements, are included on the figures to show proximity of the various environmental features.

The Priority 1 Texas Highway Trunk System corridors and the various potential sites and programs that might be considered to mitigate project impacts are provided in Table 8-4 by region.

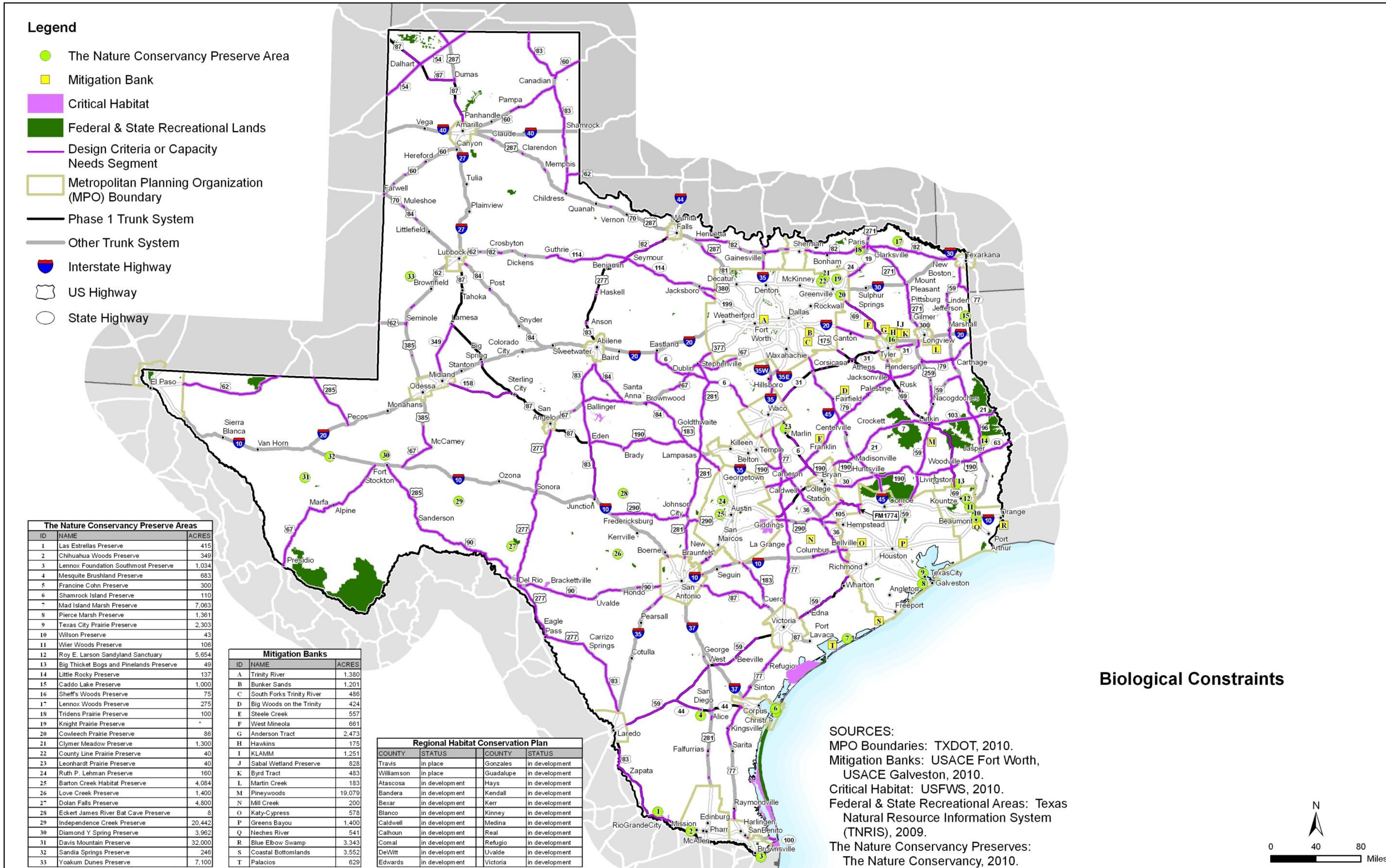
Table 8-3: Potential Mitigation Areas by Region

Region	Priority 1 Corridors Improvement	Potential Mitigation Banks for Hydrologic Resource Mitigation	Potential Sites/Programs for Biological Resource Mitigation
East Texas	SH 7 SH 31 US 69 US 175	• West Mineola • Anderson Tract • Hawkins • KLAMM • Sabal Wetland Preserve • Byrd Tract • Martin Creek • Pineywoods	• Caddo Lake Preserve • Sheff's Woods Preserve • Lennox Woods Preserve • Tridens Prairie Preserve • Knight Prairie Preserve • Cowleech Prairie Preserve • Clyner Meadow Preserve • County Line Prairie Preserve • Big Woods on the Trinity
North Central Texas	US 83 US 277	• Trinity River • Bunker Sands • South Forks Trinity River	-
West Texas	US 82 US 83 US 87	-	• HCP in development for Real and Edwards Counties. • Independence Creek Preserve • Diamond Y Spring Preserve • Davis Mountain Preserve • Sandia Springs Preserve
Panhandle	US 87	-	• Yoakum Dunes Preserve
Central Texas	SH 6 SH 21 US 190	-	• Williamson County HCP • HCP in development for Caldwell, Hays and Blanco Counties • Leonhardt Prairie Preserve • Ruth P. Lehman Preserve • Barton Creek Habitat Preserve • Eckert James River Bat Cave Preserve

Table 8-3: Potential Mitigation Areas by Region

Region	Priority 1 Corridors Improvement	Potential Mitigation Banks for Hydrologic Resource Mitigation	Potential Sites/Programs for Biological Resource Mitigation
			• Big Woods on the Trinity • Steele Creek
South Texas	, SH 44 US 59 US 83	-	• HCP in development for Guadalupe, Comal, Kendall, Bexar, Atascosa, Medina, Uvalde, Bandera, Kinney, and Kerr Counties. • Mesquite Brushland Preserve • Love Creek Preserve • Dolan Falls Preserve
Coastal	FM 1774 SH 44 SH 105 US 59 US 69 US 83	• Mill Creek • Katy-Cypress • Greens Bayou • Neches River • Blue Elbow Swamp • Coastal Bottomlands • Palacios	• HCP in development for Refugio, Calhoun, Victoria and Gonzales Counties. • Las Estellas Preserve • Chihuahua Woods Preserve • Lennos Foundation Preserve • Mesquite Brushland Preserve • Francine Cohn Preserve • Shamrock Island Preserve • Mad Island Marsh Preserve • Pierce Marsh Preserve • Texas City Prairie Preserve • Wilson Preserve • Wier Woods preserve Roy E. Larson Sandyland Sanctuary • Big Thicket Bogs and Pinelands Preserve • Little Rocky Preserve

Figure 8-3: Biological Constraints



The Nature Conservancy Preserve Areas

ID	NAME	ACRES
1	Las Estrellas Preserve	415
2	Chihuahua Woods Preserve	349
3	Lennox Foundation Southmost Preserve	1,034
4	Mesquite Brushland Preserve	683
5	Francine Cohn Preserve	300
6	Shamrock Island Preserve	110
7	Mad Island Marsh Preserve	7,063
8	Pierce Marsh Preserve	1,361
9	Texas City Prairie Preserve	2,303
10	Wilson Preserve	43
11	Wier Woods Preserve	106
12	Roy E. Larson Sandyland Sanctuary	5,654
13	Big Thicket Bogs and Pinelands Preserve	49
14	Little Rocky Preserve	137
15	Caddo Lake Preserve	1,000
16	Sheff's Woods Preserve	75
17	Lennox Woods Preserve	275
18	Tridens Prairie Preserve	100
19	Knight Prairie Preserve	*
20	Cowleech Prairie Preserve	86
21	Clymer Meadow Preserve	1,300
22	County Line Prairie Preserve	40
23	Leonhardt Prairie Preserve	40
24	Ruth P. Lehman Preserve	160
25	Barton Creek Habitat Preserve	4,084
26	Love Creek Preserve	1,400
27	Dolan Falls Preserve	4,800
28	Eckert James River Bat Cave Preserve	8
29	Independence Creek Preserve	20,442
30	Diamond Y Spring Preserve	3,962
31	Davis Mountain Preserve	32,000
32	Sandia Springs Preserve	246
33	Yoakum Dunes Preserve	7,100

*Unavailable

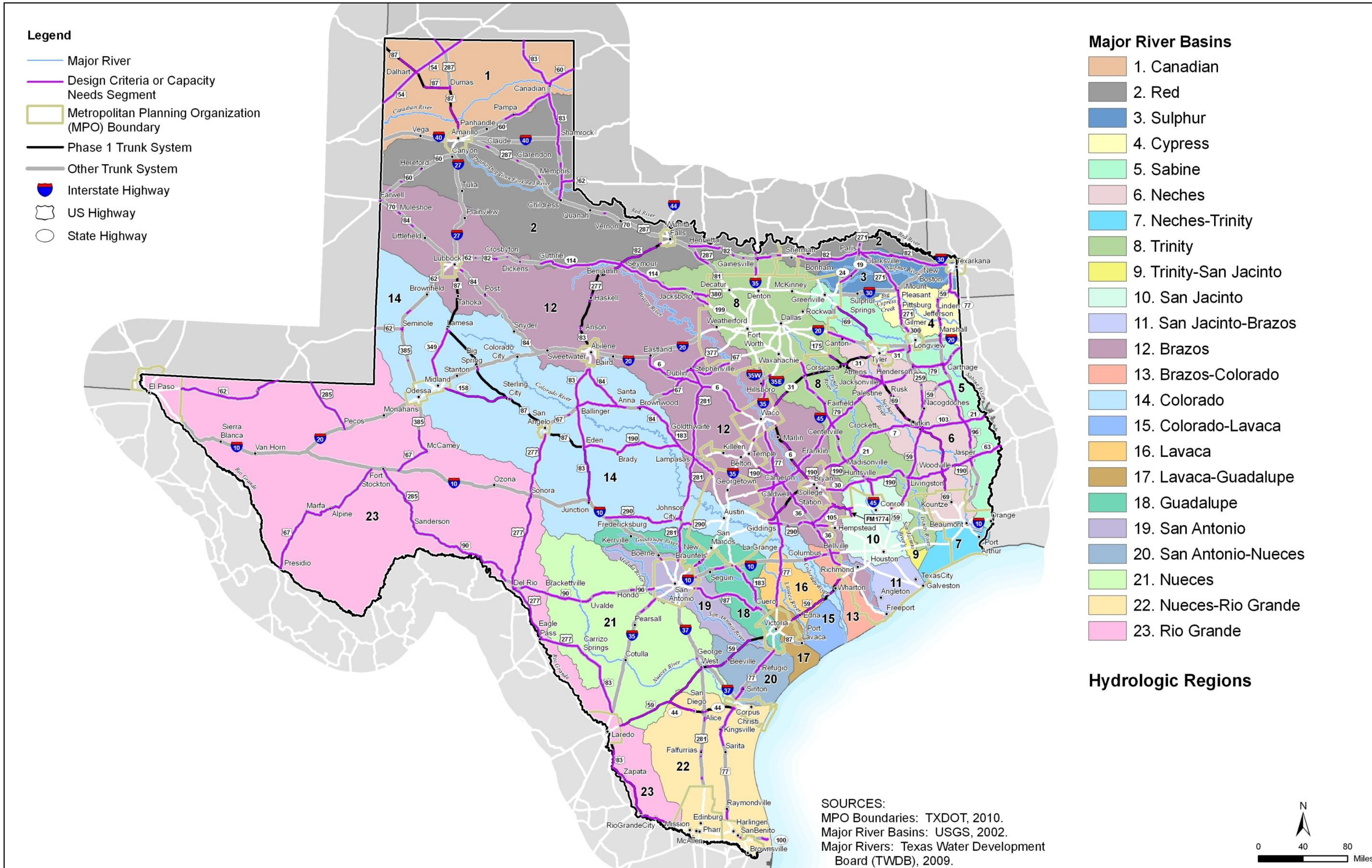
Mitigation Banks

ID	NAME	ACRES
A	Trinity River	1,380
B	Bunker Sands	1,201
C	South Forks Trinity River	486
D	Big Woods on the Trinity	424
E	Steele Creek	557
F	West Mineola	661
G	Anderson Tract	2,473
H	Hawkins	175
I	KLAMM	1,251
J	Sabal Wetland Preserve	828
K	Byrd Tract	483
L	Martin Creek	183
M	Pineywoods	19,079
N	Mill Creek	200
O	Katy-Cypress	578
P	Greens Bayou	1,400
Q	Neches River	541
R	Blue Elbow Swamp	3,343
S	Coastal Bottomlands	3,552
T	Palacios	629

Regional Habitat Conservation Plan

COUNTY	STATUS	COUNTY	STATUS
Travis	in place	Gonzales	in development
Williamson	in place	Guadalupe	in development
Atascosa	in development	Hays	in development
Bandera	in development	Kendall	in development
Bexar	in development	Kerr	in development
Blanco	in development	Kinney	in development
Caldwell	in development	Medina	in development
Calhoun	in development	Real	in development
Comal	in development	Refugio	in development
DeWitt	in development	Uvalde	in development
Edwards	in development	Victoria	in development

Figure 8-4: Hydrological Constraints



9.0 Meeting the Challenges

9.1 SLRTP Goals

The SLRTP is built around the six TxDOT Strategic Plan goals.

1. Develop an organizational structure and strategies designed to address the future multimodal transportation needs of all Texans;
2. Enhance safety for all Texas transportation system users;
3. Maintain the existing Texas transportation system;
4. Promote congestion relief strategies;
5. Enhance system connectivity; and
6. Facilitate the development and exchange of comprehensive multimodal transportation funding strategies with transportation program and project partners.

Figure 9-1: SLRTP Goals

9.2 Strategy Options and Recommendations

In order to meet the challenge of limited funding, growing demand, and very large transportation needs in the SLRTP, three strategies are proposed to address the transportation needs and funding differences identified in the SLRTP. These strategies represent a complementary, multi-pronged approach designed to

1. Focus available transportation funds on the most cost-effective investments,
2. Manage our transportation system in ways that encourage cost-effective shifts in how we travel, and
3. Develop partnerships for providing transportation improvements

The first strategy aims to maintain the current system and expand it where possible; the second seeks to manage the system in ways that reduce peak-period demand; and the third would provide funding to help carry out the first two approaches.

Even an aggressive application of these strategies will not close the funding difference between our indentified needs and the projected available funding, but they do offer an opportunity to meet the state's most important economic and social transportation needs. Each strategy includes a series of recommendations.

Transportation needs are a result of successful economic growth. Conversely, transportation investment is one of several major drivers of the economy. Not meeting the predicted needs for transportation can have a negative impact on the quality of the state's transportation service and a negative impact on the state's economy. It is predicted that Texans will be faced with a lower level of performance of the transportation system. This lower level of performance can mean increased congestion, decreased reliability, and reduced economic productivity.

9.2.1 Strategy 1 – Maximize Available Resources

TxDOT, along with most other state and local transportation agencies, is experiencing a shrinking amount of revenues from traditional sources. These trends are likely to continue for the foreseeable future. At the same time, the demand for travel continues to grow. The current imbalance between demand for transportation and available resources creates significant risks about sustainability of past trends in economic growth.

This combination of limited funds and increasing demand makes it essential to use available funds in ways that maximize the return on these resources. This calls for operating the transportation system as efficiently as possible. For example:

- ★ What can be done to maximize existing roadway capacity in the most congested areas?
- ★ What can be done to ensure a safe and reliable multimodal statewide transportation network?
- ★ How can Texas take advantage of the strengths offered by nonhighway modes of travel?
- ★ How can Texas take advantage of new technologies to achieve more efficient and coordinated use of all modes of transportation?

The focus of this strategy is to make the most of available transportation funds by targeting transportation investments that offer the greatest return for Texans, regardless of mode, type of investment, or location.

Recommendation A. TxDOT should refine current project selection procedures to investigate comprehensive multimodal options.

This recommendation recognizes the vital need for TxDOT to allocate limited resources as effectively as possible. This refinement would provide a comprehensive supplement to TxDOT's current decision-making process and would assist the Transportation Commission in making its decisions.

The traditional benefit-cost technique offers an opportunity to illustrate how such a project decision process might work. A benefit-cost ratio measures the dollar value of benefits generated by a project for every dollar spent on that project—the higher the ratio the greater the return on investment. For example, benefits for a highway project typically include some combination of travel time savings, reduced operating costs (such as fuel saved), and improvements in safety (such as fewer fatalities). When calculated on a consistent basis, the benefit-cost ratio offers one way to rank projects, making it easier to identify the most attractive investments.

In addition to measures of cost effectiveness, the decision process should also consider qualitative impacts, perhaps using cost-effectiveness rankings. Since quantitative benefits are based on forecasts of future traffic flows that are subject to uncertainty, the process should include a risk analysis. Qualitative benefits should also be considered, particularly as part of multimodal alternatives analysis. Any decision process should consider the six SLRTP goals.

Recommendation B. MPOs should implement similar project selection procedures to improve consistency in the overall statewide planning process. While TxDOT can refine its own project selection procedures, the process effectiveness will be enhanced if other transportation agencies have similar processes. Some MPOs already have a robust process in place, but this is not consistent across the state. This would make it possible to adopt a broad, inclusive approach to transportation investment decisions for all modes, congruent to the six SLRTP goals.

Recommendation C. Increase investment in technology that improves system efficiency.

Texas has already made significant investments in ITS, particularly in large metro areas. Evidence from across the nation suggests that a high rate of return can be achieved by investing in relatively low cost measures such as traffic signal coordination, ramp metering, access management, and signal preemption for buses.

9.2.2 Strategy 2 – Manage Demand

This strategy considers ways to meet transportation needs through managing demand, with an emphasis on reducing demand on highway assets during peak periods and on enhancing highway management and operations.

A trend already exists in Texas towards travel other than by a single occupant vehicle. More than 20 percent of urban work trips are by other modes (with carpools accounting for most of this travel—between 11 and 13 percent of work trips). About 400,000 workers work at home in Texas. This equates to 3.6 percent of commuting trips—more than double transit's share.

Recommendation A. Encourage shifts in mode, departure times, and/or route.

This recommendation seeks to encourage individual Texans to adjust their personal travel behavior. There is a desire, and often an unavoidable need, for single-occupant driving in metropolitan areas where people do not live near where they work—indeed 23 percent of Texans live in one county and work in another. This behavior is often the only choice in order to meet work schedules and family responsibilities. However, this behavior comes with a high cost in the form of traffic congestion.

During peak periods (in some urban areas, these include midday peak periods and weekends, not just the traditional morning and afternoon rush hour), increased use of transit, carpools, vanpools, biking, and walking will reduce the number of SOVs. Telecommuting can have a similar effect by eliminating work trips. Alternate work locations that provide high-speed internet and high-definition video conferencing can help people relocate travel to locations or times of day with less traffic congestion.

Recommendation B. Consider capital investments that support modal shifts during peak hours.

This recommendation seeks to implement innovative approaches to encourage Texans to adjust their personal travel behaviors. One approach involves public-private partnerships that invest in telecommuting centers (offices where space is unassigned but available on an hourly/daily basis with shared resources, such as reproduction services and high quality tele/video-conferencing). Such centers could be co-located at transit hubs.

Another innovation is to adopt a corridor level approach to planning for bicycling routes and facilities. Typically bike trails are developed in a piecemeal fashion, with little regard to trip making patterns, signage, bicycle priority at traffic signals, continuous dedicated bike trails/lanes that avoid traffic congestion entirely, and bike parking.

Recommendation C. Implement active traffic management to smooth traffic flow and add to effective capacity.

Active traffic management is a relatively new operational concept that holds the promise of greater efficiencies and throughput on congested facilities via a host of real-time, dynamic traffic management techniques. International experience has found that these methods can increase capacity by proactively managing shoulders as peak running lanes, and smooth traffic flow by using variable speed limits.

Recommendation D. Coordinate with local communities to develop land use plans that support existing and future sustainable transportation systems.

TxDOT should work with local communities to identify and encourage more sustainable approaches to development that are consistent with the existing or planned transportation system.

Recommendation E. Explore real-time location information to assist with traveler decisions.

The recent expansion of personal and fleet-owned devices with GPS capability has resulted in an explosion of real time location information, including speed data. Several private sector companies have begun to use these data to develop commercial traffic information systems, including travel time predictions.

Recommendation F. Explore and encourage demand-based pricing that improves the level of performance for travelers.

One of the most powerful mechanisms for influencing travel behavior is to charge for using it at a level that is consistent with its scarcity. This is the business model that is seen in most commercial businesses. Transportation stands out as an exception in that anyone in Texas can use most of the state's highway system for the same cost at all times. In return, travelers receive no assurance about expected travel time and reliability.

Many rail and transit systems charge higher fares for traveling at peak times. Most airlines charge more to travel when there are only a few seats available. Delivery companies charge more to deliver urgent packages than those that are not time sensitive. Apart from a few toll roads and some high occupancy toll (HOT) lanes, most of the Texas highway system is available to anyone to use at anytime. In practice the only "charge" for using the highway system at peak times is traffic congestion and uncertainty about when one will reach their destination.

9.2.3 Strategy 3 – Leverage Partnerships

TxDOT faces severe financial constraints, along with most state and local transportation agencies, as well as the USDOT. Regardless of the growth in future demand for new transportation system capacity and for preserving transportation assets, transportation funds are trending downward. Long-term factors will maintain downward trends in transportation revenues. State and federal fuel taxes are a fixed amount per gallon so that as vehicles become more fuel efficient, less revenue is raised per mile driven. In addition, fuel taxes are not indexed to the rate of inflation, so that fuel-related transportation revenues lose value over time relative to the cost of preserving, enhancing, or expanding the transportation system.

Transportation investments provide tangible benefits to local communities, individual travelers, and business. There are several active programs that attempt to leverage these benefits as ways to help generate additional funds. Examples include:

- Pass-through financing is a technique where TxDOT provides repayment of a portion of facility cost incurred by local or regional entities (including toll roads) or private firms based on usage.
- The Texas State Infrastructure Bank (SIB) provides loans and loan guarantees to local or regional entities and private firms, repaid in full with interest.

- ★ The private sector funds freight rail, pipelines, and many port facilities and represent another source of capital.
- ★ Regional Mobility Authorities (RMAs) are independent agencies formed to finance, design, construct, operate, maintain, and expand the full range of transportation facilities, including roads, airports, intermodal facilities, etc.
- ★ Local tolling authorities have been established as financially independent bodies, such as the North Texas Toll Authority, while others are formed by counties, such as Harris County Toll Road Authority and Fort Bend County Toll Road Authority.
- ★ Private Activity Bonds (PABs) provide private developers and operators of transportation facilities access to tax-exempt interest rates.
- ★ The Buy America Bonds (BABs) program is designed to provide a federal subsidy of 35 percent of the interest payment for state and local governments. BABs can be issued through the end of December 2010.
- ★ A Transportation Reinvestment Zone (TRZ) provides a way to capture a portion of property taxes from increased value in real estate resulting from a highway improvement. In Texas, this mechanism is only available to municipalities and counties that are planning to execute a pass through finance agreement to fund a highway project.

9.3 Performance Measures

Performance measures are indicators that enable decision makers to monitor changes in system condition and performance against established visions, goals, and objectives. These measure the progress of the implementation of TxDOT's future improvements to the system to ensure the most productive and beneficial use of available transportation funding and provide TxDOT with the means to update the SLRTP for all modes to meet the challenges ahead.

TxDOT's Mission and Vision, as established in the Strategic Plan, have two elements. One shows how TxDOT will act as an agency, and the other shows how the state's transportation system will function. Both components are relevant to this plan—the first because it relates to how the plan will be implemented, and the second because it characterizes how the transportation system will eventually look and function.

Table 9-1: TxDOT 2011–2015 Strategic Plan Mission and Vision

Source	TxDOT	Transportation System
Mission	*…maintaining existing roadways and collaborating with private and local entities to plan, design, build, and maintain expanded transportation infrastructure.*	*… safe and efficient movement of people and goods, enhance economic viability, and improve the quality of life for the people that travel in the state of Texas*
Vision	*To be a trusted performance-driven organization committed to collaborating with internal and external partners…*	*… modern, interconnected, and multimodal transportation system that enhances the quality of life for Texas citizens and increases the competitive position for Texas industry.*

The six goals established for the SLRTP are consistent with federal requirements for long-range planning, TxDOT's 2010 Unified Transportation Program, and earlier work undertaken by the 2030 Committee. These other efforts also highlight increasing economic growth, which will be an outcome of congestion relief and system connectivity.

The list of performance measures below focus on a core group of measures that reflect TxDOT's priorities for the transportation system and which offer the greatest value to Texans and Texas businesses. Candidate performance measures for inclusion in the core group are shown below.

Table 9-2: Performance Measures

Goal	Performance Measure
Develop an organizational structure and strategies designed to address the future multimodal transportation needs of all Texans	• Percentage of projects let on time and completed within budget • Overall customer satisfaction rate (external customers & partners) • Number of projects let to construction with more than one mode of transportation
Enhance safety for all Texas transportation system users	• Injuries and fatalities (number and rate) • Percentage of two-lane highways with improved shoulders • Reduction of work zone incidents • Percentage of general aviation airports with safety improvements • Percentage of railroad crossings with signalization
Maintain the existing Texas transportation system	• Percent of transportation facilities in good or better condition, or Texas Condition Assessment Program (TxCAP) score • Percentage of targets met in 4-year pavement management plans

Table 9-2: Performance Measures

Goal	Performance Measure
Promote congestion relief strategies	• Reduction in large- and small urban area congestion (total travel delay, travel delay per commuter, and congestion costs) • Effectiveness of multimodal congestion management projects and strategies in large urban areas • Progress on top 100 congested roadway segments • Fraction of work trips that use SOVs
Enhance system connectivity	• Satisfaction rates on industry access to international markets and gateways via the Texas transportation system • Percentage of Texas population within a 30-minute drive of an airport supporting business jet aircraft • Percent of Texas communities of 50,000 or more with public transportation services • Percent of Texas population with access to rural public transportation services • Reduction in the number of bottlenecks on economically critical road and freight corridors • Percentage of high volume rural roads with super-2 or 4-lane divided facilities
Facilitate the development and exchange of comprehensive multimodal transportation funding strategies with transportation program and project partners	• Percentage of projects and programs using alternative financing

TxDOT Internet E-Mail

From : Wed, Sep 22, 2010 12:07 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Address:
Texarkana, TX 75503

Comment: I attended the 8/10/2010 Public Meeting in Atlanta, TX. As a bicyclist and board member of the Texarkana Bicycle Club and president of the Partnership for the Pathway, I can't stress enough how important safe trails and highways are for everyone. I would like to see you include in your plan: smoother, wider (4' to 6') shoulders with appropriate markings, marked bike lanes, a break in rumble strips, more signage "Watch for Bikers", and more public meetings to not only invite public comment, but to educate the public. I also support the Northeast Texas Rural Recreation Trail System (NTRRTS)and ask that you include this 130 mile trail in your planning. This rails-to-trails will run from New Boston to Farmersville, Texas. Trails promote community improvement and healthy lifestyles, benefiting local residents and visitors. They are free to use, open to the public and perfect for promoting outdoor activities and improve everyone's quality of life. Maintenance costs are nominal and offset by volunteers and increased sales tax revenues. This trail will put Northeast Texas on the map. It will go through 19 Northeast Texas towns and 7 counties. It will be the longest in Texas and the 5th longest in the USA. It will increase tourism and visitors into our towns. People love trails. By having this trail system, many recreational activities can be made possible such as walking, biking, hiking, jogging, in-line skating, wheel chair accessibility and even horseback riding. The NTRRTS will conserve our environment, promote nature and preserve Texas heritage. This trail will preserve historic Texas railway corridors and bridges and serve as a wildlife conservation corridor. Let's make this Dream and Reality.
Thank you.

Last Page:
http://www.txdot.gov/txdot_library/publications/transportation_plan.htm

TxDOT Response:

We appreciate your suggestions. We will work with our District offices, Metropolitan Planning Organizations (MPOs), and cyclists to implement mutually beneficial solutions to address your comments.

TxDOT Internet E-Mail

From : Thu, Sep 23, 2010 03:39 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
Texarkana, Texas 75503

Comment: I would like to see more off road pedestrian and bike paths along with bike lanes in urban settings where it is not possible to put an off road trail. Additionally, I would like to see you include in the Transportation Plan the Northeast Texas Rural Trail that is a rails-to-trails right of way that runs from New Boston, Texas to Farmersville, Texas. A Tiger II Grant has been applied for paving and bridges. This would be a low cost way to expand your transportation network.

Last Page:
http://www.txddc.state.tx.us/resources/publications/fyi/fyimay10/fyistate05-10.asp

TxDOT Response:

We appreciate your suggestions. We will work with our District offices, MPOs, and cyclists to implement mutually beneficial solutions to address your comments. We will also consider broader coverage of the numerous transportation initiatives, such as the Northeast Texas Rural Recreation Trail System, in future updates to the SLRTP.

Statewide Long-Range Transportation Plan 2035

Texas Department of Transportation

OPEN-HOUSE STYLE PUBLIC MEETING 2

Statewide Long-Range Transportation Plan 2035

COMMENT FORM

This form is provided to receive your comments regarding the Statewide Long-Range Transportation Plan 2035. Please use the space provided below, attaching additional pages if necessary. Either leave this form at the meeting, or mail it to the address provided. You may also submit comments through the TxDOT website, www.txdot.gov using keywords: transportation plan 2035, or by email to TPP_TxTranPlan@dot.state.tx.us. We appreciate your interest and value your input.

Did you attend a Public Meeting? (circle one) No Yes Meeting Location? ____________

Comments: ____________

Mail your comments to:

Peggy Thurin, P.E.
Project Manager
Statewide Transportation Plan 2035
4544 Post Oak Place, #224
Houston, Texas 77027

Please Print:

Your Name ____________

Address ____________

____

TxDOT Response:

We appreciate your comment and encourage your continued support for projects that support economic growth and enhance and expand our transportation system.

Stamp
Here

Peggy Thurin, P.E.
Project Manager
Statewide Transportation Plan 2035
4544 Post Oak Place, #224
Houston, Texas 77027

Fold Here -- Fold Here --

TxDOT Internet E-Mail

From : Mon, Sep 27, 2010 11:01 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
Austin, TX 78701

Comment: Hello,

I am very much against the idea of tolling existing roadways, even for adding managed lanes or expanding capacity or expanding right of way.

Please do not toll existing roadways such as:
- [completed] RR 620 at Parmer lane -- non-tolled capacity reduced by 2 lanes in each direction
- Loop 1 from Parmer to Cesar Chavez
- HWY 290 at 183
- HWY 183

My secondary request is that we find a new way to pay for these roads. For example, we should reduce the diversions of the gas tax, or increase it.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your comment and your suggestions regarding ways to increase revenues.

TxDOT Internet E-Mail

From : Mon, Sep 27, 2010 03:43 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
Houston, TX 77084

Comment: In the SLRTP newsletter, under the heading "What Transportation Stakeholders Had to Say", there is a statement reading "Social/cultural change away from personal vehicles and single occupancy vehicles". I do not know where the people making that comment live, but they cannot live in Houston Texas. There is absolutely no evidence of such a shift here. We in Houston, I am guessing the vast majority of the State of Texas, love our automobiles and will continue to do so for many more decades.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your comment.

TxDOT Internet E-Mail

From : Mon, Sep 27, 2010 03:54 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:

Austin, TX 78745

Comment: The 2035 Plan focuses on Mobility and Air Quality. I saw nothing that pertains to the pedestrian access needs such as sidewalks. The minimum requirements made by TXDOT are curb ramps along the right of way. Ramps that lead to ditches, grass, mud, stone, all barriers for pedestrians. In Austin, this lack of sidewalks have led to gaps along major public transit routes, barriers to businesses by pedestrians and safety concerns for visually impaired and wheelchair users alike. I would like to know, in all the infrastructure plans if and when sidewalks will be installed to aid the non-vehicular traffic. Not everyone drives a car. And if TXDOT wants to talk safety, try getting along 290W once dropped off by a bus when using a wheelchair...actually having to dodge traffic to reach your destination in Oak Hill. Why is this not addressed? Sidewalks are a needed segment to integrate the mobility needs of all Texans--not just those who drive.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your suggestions. We will work with our District offices and MPOs to implement mutually beneficial solutions to address your comments. We will also consider broader coverage of the safety aspects of sidewalks in future updates to the SLRTP.

TxDOT Internet E-Mail

From : Mon, Sep 27, 2010 08:52 AM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
Texarkana, TX 75503

Comment: Trails are good for the environment, the economy, citizen's health and property values. The proposed Northeast Texas Trail from New Boston to Farmersville will help 19 Texas small towns with their high unemployment and low per capita income.

Last Page:
http://www.txdot.gov/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your comment and encourage your continued support for projects that support economic growth and enhance and expand our transportation system.

TxDOT Internet E-Mail

From : Mon, Sep 27, 2010 01:43 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:

Cibolo, Tx 78108

Comment: A connection between IH35 and IH10 has already been talked about and a proposed route has been recommended. However no one wants to talk about it! FM1103, in Cibolo, is probably the best plan to connect the two Interstates, simply because the land south of FM 78 is still undeveloped and still reasonably cheap compared to any other plan now in effect. This route would allow traffic heading South beyond San Antonio, to go to IH10 and bypass an extremely busy portion of IH 35, namely that section starting at FM3009 through the center of San Antonio.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your comment and will share it with our San Antonio District office. We encourage you to work and share your suggestions about this project with your local district office to ensure that your voice is heard by those making decisions regarding projects in your area.

TxDOT Internet E-Mail

From : Mon, Sep 27, 2010 08:54 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:

Austin, TX 78730

Comment: In the future, you should not use toll roads as a source of revenue. As you can see, the public will not use toll roads. If you build them, we will not come! I will go miles and hours out of my way to avoid toll roads. Public roads should be free - funded my gasoline tax, sales tax, registration fees, etc.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your comments.

TxDOT Internet E-Mail

From : Fri, Oct 01, 2010 04:08 PM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
Nacogdoches, TX 75965

Comment: The number one priority must be alternative transportation in the form of bicycle and pedestrian routes, for multiple reasons: ozone alerts, national/global obesity and heart disease epidemic, increased costs of auto roads and parking garages over bike trails, decreased quality of life from traffic jams, on and on...Texas and the US lose global competitiveness due to these costs.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

Bicycle and pedestrian facilities are types of facilities that, along with others, compose the multimodal transportation system in Texas. We appreciate your comment in support of these facilities and we strive to enhance transportation for users of all modes in the system.

Paragraph on the Bayou Greenway Initiative for TxDOT's Statewide Long-Range Transportation Plan 2035

Fri, Oct 01, 2010 05:14 PM

1 attachment

From :

Subject : Paragraph on the Bayou Greenway Initiative for TxDOT's Statewide Long-Range Transportation Plan 2035

To :

Cc :

Reply To :

Hello Rakesh! Thanks again for meeting with GHP and Coalition members yesterday. As we discussed, below and attached is a brief paragraph on the *Bayou Greenway Initiative* for inclusion in the TxDOT's Statewide Long-Range Transportation Plan 2035. Thank you for your assistance in submitting this language into the Plan under Section 2.9.1 (MPO Bicycle and Pedestrian Plans) during the final drafting period that continues this month. Please let us know if you need any additional information in this regard. All the best! *Deborah*

Paragraph on the *Bayou Greenway Initiative:*

In 2010, civic and business leaders in the Houston Region came together with Harris County, the City of Houston and HGAC (the Houston/Galveston COG) to develop a comprehensive "hike and bike� �� master trail plan that develops miles of land along Harris County's 10 major bayous, creating an enormous system of "linear parks." These 10 bayous all flow from west to east into Galveston Bay after meandering through multiple neighborhoods all over the region. This *Bayou Greenway Initiative* for the Houston Region includes almost 250 miles of new or upgraded hike-and-bike trails, miles of canoe/paddle trails and more than 50 new parks that also serve flood-retention basins and wetlands that improve the quality of the region's groundwater and flood runoff. The *Bayou Greenway Initiative* will also serve as the trunk line for an even larger network of trails and linear parks that will provide park and trail access to almost every community within Houston and Harri s County and provide connectivity between communities, businesses and retail establishments. The Initiative will create a substantial alternative transportation source for urban residents and visitors alike.

Houston, Texas 77002

Paragraph on the Bayou Greenway Initiative for TxDOT Statewide Transp Plan (Oct 1 2010).docx
54 KB

TxDOT Response:

We appreciate your comment and have included much of your suggested wording into the document. We encourage your continued support for projects that will enhance and expand our transportation system.

TxDOT Internet E-Mail

From : Fri, Oct 01, 2010 10:25 AM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
College Station, Texas 77842

Comment: Within you priotity corrdiors list, key interchange or grade seperated railroad crossing were not mentioned. Yes these key interchange locations my not be part of a priority corridor but the function of these key intrchange locations have an effect on safety and traffic operations. One such interchange that the City of College Station whishes to be put on a pririty list is the George Bush (FM 2347) Wellborn Rd (FM 2154) Interchange Project. This is a mutimodal project that would improve rail operations, vehicle, transit pedestrian and bicyclist operations. Plase consider putting this project on the priority corridor project list.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your comment and will share it with our Bryan District office. The District office will work with the Bryan-College Station MPO to evaluate your suggestion.

TxDOT Internet E-Mail

From : Fri, Oct 01, 2010 10:09 AM

Subject : TxDOT Internet E-Mail

To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
Lubbock, Tx 79424

Comment: In the Executive Summary discussing the various MPO offices throughout the state, the Amarillo region was ommitted, even though it has more popultation than the Abilene, and other smaller areas.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

Thank you. Errors to the list of MPOs have been corrected.

TxDOT Internet E-Mail

From : Fri, Oct 08, 2010 10:07 AM
Subject : TxDOT Internet E-Mail
To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:
Cypress, TX 77433

Comment: Hello Peggy -

I noticed in your newsletter that the number of bike riders have increased by 38%.

What does that really mean? Would you say there are 1,000 people riding bikes to work or less?

This is just for my information only.... Thanks!

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

Based on U.S. Census data from 1990 and 2000, and American Community Survey (ACS) data from the years 2005, 2006, and 2007; in 1990, 18,460 persons in Texas bicycled to work. In 2007, 25,483 persons bicycled to work. The percentage increase or change from 1990 to 2007 is 38%.

Re: TxDOT Internet E-Mail

From : Mon, Oct 11, 2010 12:39 PM

Subject : Re: TxDOT Internet E-Mail

To :

It came from the Alliance for Biking and Walking *Bicycling and Walking in the United States 2010 Benchmarking Report page 172 of 196.*

In 1990 18,400 people biked to work, by 2007 it had increased to 25,483. This is a statewide number.

Peggy Thurin

www. peoplepoweredmovement.org/site/

>>> On 10/8/2010 at 9:07 AM, in message <TXDOT-INETpQq5pneeF0000038a@www.dot.state.tx.us>, <mary@cyfairchamber.com> wrote:

> Name:
> Address:
> Cypress, TX 77433
>
> Comment: Hello Peggy -
>
> I noticed in your newsletter that the number of bike riders have increased by 38%.
>
> What does that really mean? Would you say there are 1,000 people riding bikes to work or less?
>
> This is just for my information only.... Thanks!
>
> Last Page:
> http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

===================

Texas Transportation Forum
www.texastransportationforum.com

TxDOT Internet E-Mail

From : Sat, Oct 30, 2010 05:31 PM
Subject : TxDOT Internet E-Mail
To : TPP TXTRANPLAN <TPP_TXTRANPLAN@txdot.gov>

Name:
Address:

League City, Texas 77573

Comment: The Texas Long Range State Transportation Plan should forbid statewide taxes and/or fees for high speed intercity rail. Also, the Plan should require that any high speed rail in Texas be self-supporting in regards to both its capital and operational costs. Otherwise, Texans get another unsustainable project with its own constituency of self-serving special interests.

The number of personal vehicles will increase with the gradual adoption of electric power. With its large land area and southern location, Texas has abundant solar energy to supply the grid for building as well as vehicular use. Therefore, highway construction and maintenance should not be neglected, nor should resources be diverted.

Exhortations for increased public transportation and cultural change should be met with skepticism. Since small, dense city cores do not exist in Texas as they do on the east and west coasts, their solutions should not be forced upon Texas. Urban utopia junkies who demand mass transit, and who despise personal vehicles, should take their single track minds elsewhere.

Last Page:
http://www.dot.state.tx.us/public_involvement/transportation_plan/default.htm

TxDOT Response:

We appreciate your comments.

CITY OF KILLEEN

OFFICE OF THE MAYOR

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*RESPOND

RECEIVED
SEP 09 2010
TEXAS DEPT. OF TRANS.
WACO DISTRICT

September 7, 2010

9/13/2010
→ Andy,
Pls. submit to TPP and prepare draft response for my signature to Mayor acknowledging receipt of letter. (RLS)

Richard Skopik, P.E.
Waco District Engineer
Texas Department of Transportation
100 South Loop Drive
Waco, Texas 76704-2858

While the Statewide Long-Range Transportation Plan 2035 must address the growing congestion in our states' metropolitan regions, it must also address the linkage to and from those regions. We must continue to upgrade our interstate system to facilitate regional mobility, freight movement and economic development.

It has been almost twenty years (1991) since the U.S. Congress designated U.S. 59, 77 and 281 as part of I-69, an interstate corridor from Indiana to and through Texas to our state's Gulf ports and U.S./Mexico border. The Interstate 69 corridor is vital to the movement of people and freight in Texas. Because the Long-Range Plan provides the foundation for other federal, state and local planning efforts, it is essential that I-69 and component projects be specifically listed and included in Plan 2035 analysis.

The proposed Gulf Coast State Highway (GCSH)/I-14 should be included in the Long-Range Plan as a connector to and component project of I-69 in Texas. These North/South and East/West routes provide an efficient alternate way for traffic to travel from the international port of entry at Laredo in southwest Texas to I-69 at Livingston and on to Texarkana in northeast Texas without entering the air sheds of either Houston/Galveston or Dallas/Fort Worth, both of which are in non-attainment under the Federal Clean Air Act.

These same routes can be used to link the Port of Corpus Christi to Fort Hood, Fort Bliss and Fort Polk in Louisiana outside of the non-attainment regions of both states. For that reason the GCSH route provides statewide benefits, which can be included in the ongoing environmental studies for I-69. The largest employer in Texas is the United States Department of Defense. Infrastructure that supports our largest employer should be made part of the Statewide Long-Range Transportation Plan 2035.

The Long-Range 2035 Plan must focus on developing low carbon-emitting freight transportation facilities, such as the Universal Fright Shuttle being developed through the Texas Transportation

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WWW.CI.KILLEEN.TX.US

Institute. Texas currently leads the nation in exports. Our imports and exports have been doubling every 10 years. Three Texas metro areas - Houston, Dallas-Fort Worth and Austin - were recently ranked as among the top fifteen cities for economic growth in the nation. In order to maintain this growth, the State must have an efficient means of moving freight to and from these population centers while at the same time providing economic opportunities in rural areas of the state. This system would also support U.S. Department of Defense facilities. The system could move containers and vehicles from Fort Hood, Fort Bliss and Fort Polk to and from the state's strategic military ports at Corpus Christi and Beaumont as well as between the three forts for training exercises.

The Statewide Long-Range Transportation Plan should clearly identify strategies to develop low carbon-emitting freight transportation facilities, such as the Universal Freight Shuttle, as well as how to complete essential roadway projects, like I-69 and GCSH, to ensure a seamless freight system that will maintain the economic competitiveness of the State.

Thank you for your consideration.

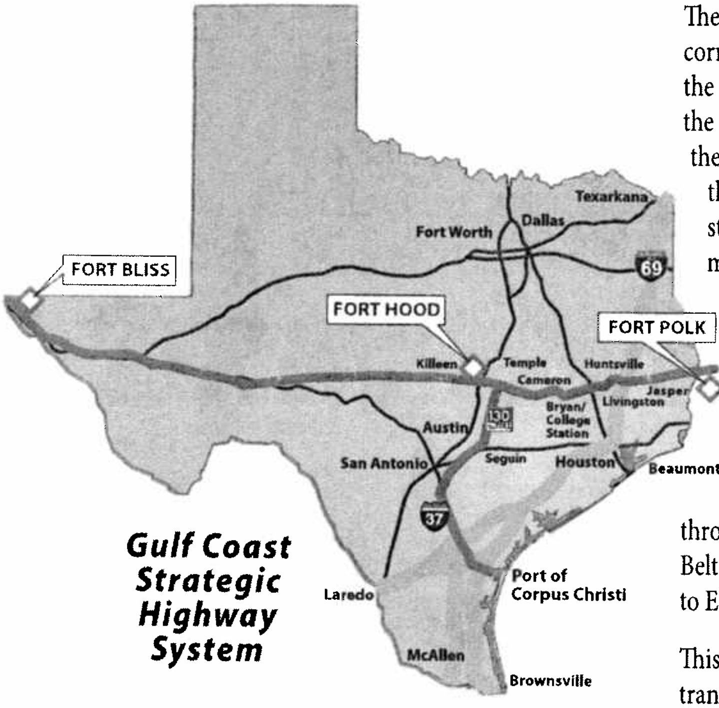
Timothy L. Hancock

Timothy L. Hancock
Mayor

TxDOT Response:

We appreciate your comment and encourage your continued support for projects that will enhance and expand our transportation system. We will also consider broader coverage of the numerous transportation initiatives in future updates to the SLRTP.

Public Comment on the Statewide Long-Range Transportation Plan 2035



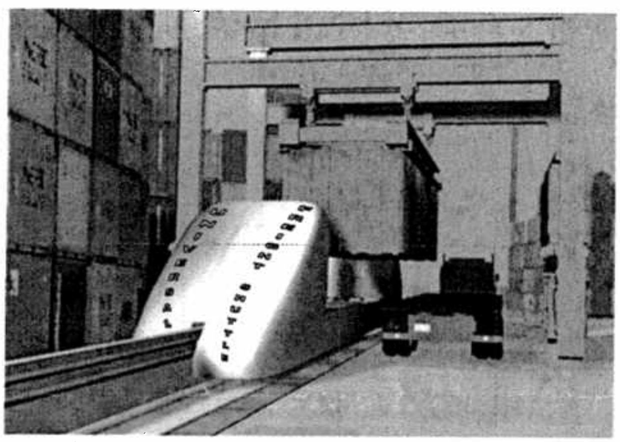
The Gulf Coast Strategic Highway System transportation corridors from Fort Bliss to Fort Polk and from Fort Hood to the Port of Corpus Christi should be prominently included in the Long-Range Transportation Plan under development by the Texas Department of Transportation. Improvement of the existing highways in this corridor to interstate highway standard and creating appropriate connectors is essential to meeting the current and future mobility and connectivity needs of several of the state's economic regions.

This corridor takes advantage of the existing Interstate 37 and US 181 in South Texas and follows SH 130 and I-35 in Central Texas. The east-west route follows SH 63 from the Sabine River, becoming US 190 at Jasper and then extending westward generally along US 190 through Livingston, Huntsville, Bryan-College Station, Temple-Belton and Killeen. To the west it connects to I-10 and then on to El Paso and Fort Bliss.

This system will be an important part of the statewide transportation system in the coming decades. The components provide vital connectivity for interstate commerce, international trade and for the vital needs of U.S. Department of Defense installations.

Additionally, the 2035 Plan should address how the State will take advantage of new efficient freight movement concepts such as the Universal Freight Shuttle being developed by the Texas Transportation Institute. Specifically, the plan should address how the State can provide leased air rights in public rights of way for such systems.

Please consider these comments in preparing the Final Report of the Long-Range Transportation Plan 2035.



Universal Freight Shuttle concept

Gulf Coast
Strategic Highway Coalition

Name Timothy L. Hancock

Representing City of Killeen

Contact Info: 254-501-7700
P O Box 1329
Killeen, TX 76540-1329

TxDOT Response:

We appreciate your comment and have included much of your recommended language. We encourage your continued support for projects that will enhance and expand our transportation system. We will also consider broader coverage of the numerous transportation initiatives, such as the Gulf Coast Strategic Highway System, in future updates to the SLRTP.

Peter Wang
League Cycling Instructor
7711 Silent Star Ct
Houston, TX 77095
October 9, 2010
pwang@ctchouston.org
(281) 630-8255

Comments on Draft Texas Statewide Long-Range Transportation Plan 2035 as it pertains to bicycle accommodations

Section 2.9, page 2-89

"Bicycle and pedestrian modes are not, however, appropriate for most trips. According to national data, the bicycle mode is most often utilized for trips shorter than 2 miles and the pedestrian mode is most often utilized for trips shorter than one-quarter of a mile, considerably shorter than the average 12-mile commute to work. While these modes may be appropriate for short trips near home, such as errands to local stores or visits to nearby friends and family, three-quarters of trips shorter than 1 mile are currently made with motor vehicles."

The observation is approximately correct, that bicycles are most often used for trips of 2 miles or shorter, but the report then jumps to the wrong conclusion.

It's the same intellectual mistake one would make if upon going to a poor African country, where the average lifespan is 45 years, one were to conclude that the national health system should only take measures to support human health up to age 45, because that's all we see actually exhibited in the population. Obviously, you could find exceptional individuals, or well cared for individuals, who age much better. This would tip you off that there is a whole lot of potential for lifespan improvement for everyone, if widespread improvements were made to health care.

Similarly, Texas bicycling behaviors are suppressed by a lack of good infrastructure, by unsafe and hostile motorist behaviors, and also by cultural factors. It's cool to bike to work in Denver, but not so much in Houston, but these cultural norms are changing rapidly, and TxDOT needs to plan on where transportation demand is going to be in the future, not on where it's been. It is definitely strongly going in a two-wheeled, human-powered direction, all over the USA. Texas lags the rest of the Nation by a few years, but we will get there eventually.

In the case of the bicyclist population, if you look what somewhat (but not very) exceptional individuals do right here in Texas, or if you look at bicyclist behavior in other cities, you will find that people ride much farther than 2 miles very commonly. Last week I rode 5 miles one-way to get my hair cut. That's an easy thing to do, and I do it every three weeks. Three times a week, I ride 9 miles one-way with a friend to work. And I'm a little bit overweight right now, and have hardly ridden my bike at all in 2010 due to work demands, and I'm going to be 50 years old in 2011, and I'm a slow bike rider compared to, say, all riders who ride the MS150 (I'm in the slower 50%, definitely).

People ride from Katy, TX along the George Bush Park trail to employment at BP (British Petroleum) at the Energy Corridor in Houston, which is about 10 miles. BP estimates that they have more than 100 people who routinely bike to work, and 200 - 300 people show up every year for the Energy Corridor's Bike To Work Day celebration in May. Their bike rack in the parking garage is several hundred feet long (I have been there, I parked there myself in order to attend a business meeting at BP).

TxDOT should really plan not on the 2 mile trip radius assumption, but 5 mile at the absolute minimum, and 10 miles in special cases (like where a residential subdivision is located 10 miles from a particularly valuable destination, like a major employment center or transit facility). "If you build it, they will come".

<u>3.3.1 Bicycle and Pedestrian (needs forecasting), page 3-8</u>

"There is no reliable method for forecasting either needs or available funding. Planned facilities will be included in an MPO's MTP, but may or may not have funding for implementation. Bicycle and pedestrian projects being funded in the next 4 years in MPOs and in the rural areas of the state can be found in the MPO TIPs and TxDOT's STIP (http://www.txdot.gov/business/governments/stips.htm)"

This is a very critical problem that TxDOT needs to come to grips with, because it is unacceptable that TxDOT just says, "We don't know how to measure this" (which often is just another way of saying "We don't have the money or desire to measure this"), therefore we won't plan for it. Not planning for bicycle mode demand means that bicyclists, who have a legal right enshrined in State Law to be on the road, are endangered and dying. Just looking at best practices and behaviors in other U.S. States, one can clearly see that there is pent-up demand in the population for bicycle access, and that Texas' efforts lag far behind those of other States, like Colorado, or Washington State.

A few years I went to MPO planning meetings for an FM-529 rebuild, and I was shocked to find out that zero bike demand was forecast. Digging further, I found that they put a zero in because they just didn't do any kind of bike study at all. In lieu of real data, they made up data, and the easiest data to put in was, you guessed it, zero. Teri Kaplan of TxDOT, however, worked very hard and FM-529 was made bike-accessible after all, and cyclists do use it, and pedestrians as well… student going to Langham Creek High School in the Cy-Fair District.

Instead of a traffic study with vehicles being counted by optical counters or by tire strikes, which isn't going to capture bikes at all, why not ask local bike clubs and organizations which roads are most utilized in their areas? Why not ask volunteers to do a bike count? Asking real live people is a perfectly legitimate way to collect data, and probably cheaper and more effective than buying and field deploying some fancy, costly gadget. Lots of bike riders map their bike routes on the Internet, and share them with other bike riders. There is data out there, often for free… TxDOT just has to think outside of the box to figure how to get it and use it and apply it.

6.5 - Bicycle and Pedestrian Safety, page 6-8

“Bicycle and pedestrian safety is addressed by MPOs in their MTPs or in stand-alone Bicycle and Pedestrian Plans. These plans may be obtained on an MPO or Council of Government (COG)website. TxDOT safety objectives and countermeasures for bicyclists and pedestrians are included in the 2009 update to the SHSP.”

This is an unacceptable minimization of the importance of pedestrian and bicyclist safety. Bicyclist and pedestrian safety goals have to be explicitly in the Plan 2035, and not just delegated down to MPOs / MTPs. As a State, we do such a poor job of bike/ped safety, we have to be a better and more consistent job of it, and make sure best practices are implemented wherever they are needed. We should have State goals like a 10% reduction in bike/ped fatalities, year-on-year, and a 40% reduction over five years... and not just by forcing people bike or walk less by building worse and worse infrastructure.

We have in excess of 400 pedestrian fatalities per year in Texas. If this doesn't constitute a State emergency, I don't know what qualifies. If 400 innocent Texans were killed every year by narco-gangs in the border regions of Texas, we'd be living in a police state right now; the Government would react. Why should it be any different when more than 400 innocent men, women, and children get mown down by motor vehicles every year?

Why do we have almost 92% more per-capita pedestrian fatals than Washington State? Why 78% more per-capita pedestrian fatals than Colorado? That's obscene, and it doesn't make sense, and it can't continue.

We have to measure and track bike/ped safety performance on a State-wide basis. People in TxDOT need to have accountability, namely annual evaluations, promotions, bonuses, and career advancement opportunities based on how well the fatality rates come down over time. If they don't come down dramatically over time... why are we taxpayers paying them?

In these times, Tea Party-leaning taxpayers want to pay for government to perform, or we want that ineffectual arm of government reformed or done away with. TxDOT is not working on the side of bicyclist and pedestrian users at present as regards safety, and user / taxpayers are completely fed up about it.

<u>General comments on CMAQ Funding, and why it should be used to fund more bicycle projects</u>

CMAQ funding gets used to de-bottleneck roadways, so that cars & trucks and get through without slowing, which kills fuel mileage and increases air pollution.

However, this short-term tactic generates a longer-term problem, which is **induced demand**.

When you create a new resource (the added capacity at a de-bottlenecked location), and you don't charge money for this resource (that's why we call them FREEways), then demand will quickly increase to consume all of the resource you've added. So instead of 10,000 delayed cars, after you debottleneck, in ten years you have 20,000 delayed cars. This is a short-term tactic which fails to deliver long-term results.

CMAQ funding should be strongly diverted instead to those modes which by their very inherent nature cannot cause incremental air pollution and congestion via induced demand. Induced bicycle demand creates no added pollution and little added congestion; many bikes can fit in the same space consumed by a car and the buffer space in front and behind it; maybe 10 bikes.

Induced transit demand creates no added congestion (a full train takes up same space as any empty train), and little added pollution (a full train takes incrementally more energy to move than an empty train, but not much more).

Sincerely,
Peter Wang

TxDOT Response:

We appreciate your comments. Some of your issues were addressed in the final document.

CITY OF COLLEGE STATION
Office of the Mayor

October 22, 2010

Peggy Thurin, P.E.
Texas Department of Transportation
Statewide Transportation Plan 2035
4544 Post Oak Place, Suite 224
Houston, TX 77027

Re: Texas Statewide Long-Range Transportation Plan 2035

Dear Ms. Thurin:

Thank you for allowing the City of College Station the opportunity to comment on this long-range transportation plan that is vital to the transportation needs of our state and specifically our region. To address some of our current and future transportation needs, I've described two projects below that are needed for regional mobility in the College Station area. One of these projects is currently on the plan, but is currently listed in the Development stage.

SH 6 & Rock Prairie Road interchange

Rock Prairie Road through College Station is a major regional roadway that crosses over SH 6. The interchange of these two major arterials is in the heart of the city's medical corridor. College Station Medical Center, which is west of the interchange, is developing expansion plans. Additionally, Scott & White Health Center is developing plans to construct a medical center (a 140-bed hospital and 255,000 square feet of medical and dental office space), which will also have commercial pad sites on the east side of the interchange. The Rock Prairie Road bridge is a five-lane bridge section with minimal lane widths. Widening the bridge structure will create needed capacity for the facility. Additionally, bicyclists are routinely seen using this bridge to cross SH 6. Providing bike lanes and sidewalks will improve safety of these transportation modes and increase these uses in the area. To address some of the mobility issues at the interchange, the City of College Station is working on plans to widen Rock Prairie Road to improve the capacity of the roadway approaching the bridge. Because these improvements are greatly needed, this project should be moved from the "Development" list to the "Construction" list.

FM 2154 and FM 2347 intersection

The intersection of FM 2154 (Wellborn Road) and FM 2347 (George Bush Drive) is adjacent to Texas A&M University. Therefore there are a significant number of buses, bicyclists, and pedestrians that use this intersection traveling to and from the University.

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COLLEGE STATION • TEXAS • 77842
979.764.3541

www.cstx.gov

As if conflicts with vehicles aren't enough, the intersection is adjacent to the Union Pacific Railroad, with FM 2347 intersecting the tracks via an at-grade crossing. With approximately 26 trains per day crossing at this intersection, safety and mobility are significantly compromised. The Texas Department of Transportation has already completed some preliminary designs and public meetings, environmental clearance has been issued with a finding of no significant impact (FONSI) related to the interchange improvement, so TxDOT, the City, and the community are aware of this great need to eliminate the at-grade crossing and grade separate FM 2154, FM 2347, and the railroad. For these reasons, this project should be included in the plan.

Because of the significant improvement to safety and mobility that this project will make, the City has tried other avenues to get funding, including the 2009 TIGER grant process; however, the project was not selected.

I urge you to consider these changes to the Texas Statewide Long-Range Transportation Plan 2035 to help address some of the regional mobility limitations experienced in the College Station area. Thank you for your time and consideration.

Sincerely,

Nancy H Berry

Nancy Berry
Mayor

TxDOT Response:

We appreciate your comments and will share them with our Bryan District office and the Bryan-College Station MPO. We encourage you to work and share your suggestions about this project with them as well and encourage your continued support for projects that enhance and expand our transportation system.

File: TPP(S)

Terri Beth Carter
Sherman County Judge
P.O. Box 165 • Stratford, Texas 79084
(806) 366-2021 • (806) 366-3011 Fax

October 25, 2010

Mr. James L. Randall, P.E.
Transportation Planning & Programming Division
118 East Riverside Drive
Austin TX 78704

Dear Mr. Randall:

I would like to comment on the Long-Range Transportation Plan for Texas Department of Transportation. As County Judge of a small county in the Texas panhandle, I receive comments on a regular basis from residents of this agriculture-based county about the condition of our highways.

The main concern is the volume of semi-truck traffic that we see all day, everyday. Two major highways for interstate commerce pass through the county seat of Stratford. Of the 4 highways entering town, only one is 4-lane divided. The large volume of truck traffic, particularly during harvest, causes congestion and jockeying for position among the trucks leaving town. There are school crossings on both of these highways through town which causes a safety concern.

A second concern is that we seem to be losing our rest stops. Stratford is a small town with limited parking for semi-trucks. The closing of area rest stops creates another safety issue because truckers have no adequate place to stop. I have seen many very nice, even elaborate, rest areas on other highways. It always strikes me as excessive to build "show case" rest areas along one highway and totally eliminate the rest areas on another highway. It would seem fiscally reasonable to make <u>more</u> practical rest areas and <u>fewer</u> elaborate rest areas.

Third, the only public transportation in this area is Panhandle Transit District which mostly serves elderly people for medical day trips. There are 2 railroads that parallel the 2 highways in the county, but there is no passenger service. We are totally dependent on the highway system for all of our transportation needs. Therefore, I sincerely request that the small towns and remote areas not be ignored as you develop the long-range plans for transportation in Texas.

Sincerely,

Terri Beth Carter

Terri Beth Carter
Sherman County Judge

RECEIVED TPP
0224 OCT 27 10

TPP Received 10/27/10

TxDOT Response:

We appreciate your comments. We will share them with our Amarillo District office, Maintenance Division, and Public Transportation Division as they work to improve transportation in Sherman county and Texas.

October 27, 2010 Sent by Email

Ms. Peggy Thurin, P.E.
Statewide Long-Range Transportation Plan 2035
Texas Department of Transportation (TxDOT)
4544 Post Oak Place, Suite 224
Houston, TX 77027

Re: BikeTexas Review of and Comments on Draft TxDOT Statewide Long-Range Transportation Plan 2035 as follow-up to BikeTexas Testimony at TxDOT Public Hearing on October 1, 2010, Austin, Texas

Dear Ms. Thurin,

Thank you and the many TxDOT professionals who have contributed to the September, 2010 draft TxDOT Texas Statewide Long-Range Transportation Plan 2035 (Long Range Plan) and the comprehensive public outreach effort that has surrounded this process.

BikeTexas greatly appreciates this opportunity to make further comments on the draft plan. As you know, BikeTexas is the statewide advocacy and safety education non-profit organization for both bicycling and walking for adults and children with support from over 30,000 individuals and a wide range of organizations across Texas.

BikeTexas views this plan as a living guide in achieving an optimized transportation system for the current 25 million Texans and the many new Texans expected to join us in the next 25 years. Through this plan, TxDOT is well-positioned to provide leadership to Texas communities large and small to help make decisions that support this optimization of mode shares.

The positive economic impact of development of infrastructure for motor vehicles in Texas and the nation since the first federal highway act and the formation of the Texas Highway Department in 1917 by the 35th Texas Legislature is obvious. However, federal transportation experts now observe that the return on investment of a maturing highway infrastructure is declining and is not sufficient to address our projected increases in population and transportation capacity needs[1]. As stated in the current draft of the Long Range Plan, a multi-modal system must be optimized per resources available and carrying capacity delivered to meet of transportation needs.

The positive economic impact of bicycling and walking for both individuals and the community is not often presented in a quantitative manner but is very substantial. For example, AAA reports an annual cost of $8430 annually for operation of a mid-sized sedan for 15,000 miles[2]. The IRS grants a maximum of $240/year deduction for bicycle

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mail@biketexas.org - www.biketexas.org

commuting costs[3]; actual cost is frequently much lower. Annual cost of for obesity-related disease alone in Texas is at least $11 billion in 2001 and is projected up to $40 billion in 2030, according to the Texas Department of State Health Services[4]. The economic benefits of a transportation system that better facilitates daily physical activity to reduce this cost are just as real as the economic benefits from a transportation system that facilitates efficient movement of food and medicine. The individual savings through both vehicle operation cost reduction and a reduction of health care costs can translate into a significant benefit to the local economy.

BikeTexas commends the inclusion of many references to a bicycling and walking mode shift in the draft Long Range Plan, but believes mechanisms should be further outlined to actually drive this mode shift. BikeTexas staff offers the following comments on the draft Long Range Plan and is available for a continued productive dialogue on the development and implementation of the plan.

Comments on Section 9.2.2

BikeTexas strongly concurs with the statement in <u>Section 9.2.2 Strategy Demand; Recommendation B: Consider capital investments that support modal shifts during peak hours</u>: "Another innovation is to adopt a corridor level approach to planning for bicycling routes and facilities. Typically bike trails are developed in a piecemeal fashion, with little regard to trip making patterns, signage, bicycle priority at traffic signals, continuous dedicated bike trails/lanes that avoid traffic congestion entirely, and bike parking."

BikeTexas agrees that a "corridor level approach" for bicycle and pedestrian routes is critical to a shift for a more effective balance of all transportation modes. Because of the nation-wide and state-wide trend over the past 60 years to prioritize motor-vehicle infrastructure over bicycle and pedestrian infrastructure, BikeTexas believes a specific mechanism must be implemented if sufficient momentum is to be attained for a bicycle-pedestrian mode shift that effectively delivers capacity and service to the overall transportation system.

To initiate this momentum, BikeTexas requests that the Long Range Plan include action items for development of a statewide bicycle and pedestrian mode shift plan. For this purpose, pedestrians include persons with disabilities. To help facilitate this plan development, BikeTexas respectfully submits the following draft action items for inclusion in the Long Range Plan.

Proposed Long Range Plan Action Items:

A. TxDOT shall develop a statewide bicycle and pedestrian mode shift plan to facilitate a significant mode shift for bicycle and pedestrian trips in Texas communities. This process will involve Metropolitan Planning Organizations (MPO) and other regional and local organizations and the public.

B. TxDOT shall adopt a corridor level approach to planning for bicycling routes and facilities, with focus on factors including but not limited to trip-making patterns, signage, bicycle priority at traffic signals, continuous dedicated bike trails/lanes that avoid traffic congestion entirely, and bike parking.

C. TxDOT shall set goals for 2035 for bicycling and walking based on a public input process, a review of the transportation research literature and a review of work and experience including benefits in other communities and regions. [Note: Based on review of bicycle and pedestrian mode share in other cities, BikeTexas submits the preliminary goals in the following table. BikeTexas staff will be glad to further discuss its rationale for these preliminary goals with TxDOT staff.]

Population Center	Percent Bicycle Mode Share	Percent Pedestrian Mode Share including Combination with Public Transit
Large Urban	20	30
Medium Urban	15	15
Rural Centers	10	5

D. TxDOT shall review existing and emerging technology to secure measurement systems for bicycle and pedestrian trips that meet data quality objectives comparable to systems used to measure motorized traffic.

E. TxDOT shall adopt a "Complete Streets Policy" for on-system roadways and shall encourage use of such policy for regional and local roadway networks by counties, municipalities and other transportation authorities.

F. TxDOT shall provide funding for projects supporting bicycle and pedestrian mode shift through project funds directed to incremental bicycle and pedestrian improvements in existing projects pursuant to implementation of a Complete Streets Policy and through existing programs such as Transportation Enhancements, Congestion Mitigation and Air Quality (CMAQ) Improvement Program, Safe Routes to School and other appropriate funding sources that may be designated through federal, state or local initiatives.

G. TxDOT shall use available in-house resources to assist District and Area Engineers to employ effective seal coat methods and strategies to the greatest extent practicable to accommodate safe bicycle travel along on-system roads and shall serve as a resource to the greatest extent practicable for employment of these methods and strategies to counties, municipalities, and other entities with authority and responsibility for road and street maintenance[5,6].

H. TxDOT shall develop and implement a specific statewide bicyclist and pedestrian safety plan with set objectives to educate cyclists, pedestrians and motorists to reduce risk of injury or death to an established attainable and acceptable residual and to provide a realistic sense of safety with vigilance for all road users. This plan shall seek to affect roadway user attitudes as well as to facilitate education in techniques and practices for use by bicyclists, pedestrians and motorists in a wide range of traffic situations. To this end, TxDOT shall engage other Texas transportation safety professionals promoting a Traffic Safety Culture as outlined in the research literature[7,8,9].

BikeTexas is prepared to provide assistance as needed to TxDOT to develop these action items.

TxDOT incorporation of U.S. Department of Transportation (USDOT) Policy Statement on Bicycle and Pedestrian Accommodation, Regulations and Recommendations, March 11, 2010[10]

BikeTexas respectfully requests that TxDOT outline in the Long Range Plan how the USDOT March 11, 2010 policy statement on bicycle and pedestrian accommodation is to be incorporated to attain a substantial bicycling and pedestrian mode shift.

Comments on Section 2.9 Texas Bicycle and Pedestrian Plans

BikeTexas strongly disagrees with the first sentence of the third paragraph of Section 2.9: "Bicycle and pedestrian modes are not, however, appropriate for most trips." The observation in the following sentence refers to current bicycling/walking data but does not note that the low percent mode share is a direct function of many decades of priority of investment in movement of motor vehicles at the expense of bicycling and pedestrians accommodations to the extent that these modes are excluded in practice. Experience in many communities across the nation and around the world clearly demonstrates when the commitment is made, bicycling and pedestrian modes rise toward levels that will provide great benefit to communities[11,12,13].

BikeTexas respectfully submits the following language to replace the third paragraph.

"Bicycle and pedestrian modes are appropriate for many "short trips" of three miles or less that are currently made 72% of the time by motor vehicles[14]. Of all driving trips, 43% are three miles or less, or a 20-minute bike ride[14]. Of all driving trips, 20% are one mile or less, or a 20-minute walk[14]. If half of these short motor vehicle trips were replaced with bicycling and pedestrian trips in congested urban areas, significant reduction in motor vehicle traffic in the 15 to 20% range could be realized. Bicycle and pedestrian modes are also appropriate for destinations involving longer distances. Bicyclists frequently commute for distances greater than five and even 10 miles. A 1997 University of Washington analysis of bicycle commuting practices of 2374 voluntary survey respondents from across the country reported an average bicycle commute distance of 7.2 miles[15]. Persons of average but not exceptional physical fitness can easily cover these distances, even up to and beyond the 12-mile average motor vehicle commute distance. Investment in infrastructure, education and encouragement for bicycling in communities such as Seattle, WA; Portland, OR; Minneapolis, MN and Copenhagen, Denmark has resulted in significant increases in the number of bicyclists and increase in trip distances for transportation purposes. Copenhagen currently has 36% bicycle commuters[12] with a goal of 50% for 2015[13]. Public transportation systems, especially those with bicycle accommodations, facilitate even greater pedestrian and bicycle commuting distances."

Relationship of Transportation and Recreational Bicycling and Pedestrian Modes

BikeTexas believes the relationship between recreation and transportation of all modes needs to be addressed and respectfully requests the insertion of the following text in Section 9.

"Recreational motoring, in terms of travel as well as destinations, has for nearly one hundred years been recognized in Texas as a significant economic generator for great personal and community benefit. Highway infrastructure investment has effectively supported the multiple purposes of commuting, business travel, commercial transportation and recreational motoring. A similar relationship exists between both transportation and recreational bicycling and pedestrian activities. For example, recreational cycling can help generate the motivation and skill to begin bicycle commuting, and vice versa. Also, charity fundraising challenges depending on cyclists, runners and walkers will benefit greatly if those persons have daily venues through which they can condition and train themselves for these events. Roadway infrastructure investment projects shall take recreational cycling, running and walking into consideration as a legitimate use of the roadway."

Comments on Section 2.9.1 MPO Bicycle and Pedestrian Plans

Section 2.9.1 Paragraph 7 outlines the challenges of "the lack of documentation on usage and demand" of bicycle and pedestrian modes. Documentation methods and technology for bicycle and pedestrian use are being developed and implemented in Texas and other communities[16]. BikeTexas respectfully requests insertion of the following sentence at the beginning of the seventh paragraph.

"Effective methods for counting bicyclists and pedestrians have been and continue to be developed and refined that can now be implemented in Texas to help facilitate a significant increase in bicycling and pedestrian modes in Texas."

Proposed Section 2.9.2.3 Texas Bicycle Tourism Trails Act

BikeTexas respectfully requests insertion of the following language into a new Section 2.9.2.3.

"The Texas Bicycle Tourism Trails Act took effect September 1, 2005. The act created Section 201.9025 of the Texas Transportation Code to facilitate development of an on-road and off-road statewide network of bicycle trails that 'reflect the geography, scenery, history, and cultural diversity of this state' and may include multiuse trails to accommodate pedestrians and equestrians. This infrastructure can serve local bicycle and pedestrian transportation network needs."

Comments on Section 3.3.1 Other Modal Needs: Bicycles and Pedestrians

BikeTexas respectfully submits the following language to replace the first sentence of the paragraph Under Section 3.3.1.

Replace "There is no reliable method for forecasting either needs or available funding" with "Using data and methods developed from communities that made significant investment and have seen significant increases in bicycle and pedestrian mode share, goals for optimal levels of bicycle and pedestrian mode share shall be determined so that needed levels for future funding can be better determined than as is currently."

BikeTexas believes the Action Items in the above-recommended Bicycle and Pedestrian Mode Shift Plan will help to address this problem.

Photograph of Cyclists on Cover of Long Range Plan

BikeTexas commends the use of a photograph of cyclists riding with motorized traffic on the cover with photographs of other transportation modes as an endorsement by TxDOT of the importance of achieving a bicycling and pedestrian mode shift. BikeTexas respectfully requests two technical modifications of the photograph.

First, BikeTexas requests the cover photograph be reversed (i.e. flipped) back to the original orientation as seen on page 25 of the draft Executive Summary. There are several scenarios by which the cyclists could be legally riding on the left side of the road. However, in most situations pursuant to Texas Transportation Code (TTC) Section 551, cyclists are to ride in the rightmost lane. BikeTexas is concerned that the photo will be misinterpreted in its current configuration.

Second, BikeTexas requests that the rear-most cyclist be cropped from the photo. It is difficult to tell if the cyclists are riding two abreast or three abreast. While there are valid arguments that cyclists can safely ride three abreast in a lane, current Texas law pursuant to TTC Section 551 permits no more than two abreast. Again, BikeTexas is concerned that the photo will be misinterpreted in its current configuration.

This is a good photo, showing persons of apparent average physical conditioning in everyday clothing riding safely with motorized vehicles in a city, and BikeTexas believes it should be used. Please contact BikeTexas if we can be of any assistance in modifying this photo.

Schedule for Long Range Plan Update

BikeTexas commends the commitment by TxDOT to update this plan every four years. We believe goals in each plan should be clearly stated, based on the strategy for the future, and an evaluation report reviewing performance in relation to these goals should be developed as each plan update is prepared.

Conclusion

Thank you for your consideration of these comments. BikeTexas is committed to working with TxDOT toward the goal of a successful Long Range Plan. Please contact me at any time at 512-694-9158 (cell) or robin@biketexas.org or BikeTexas Special Projects Manager Mark Stine at 512-921-0581 (cell) or mark@biketexas.org if we can be of further assistance.

Sincerely,

Robin Stallings

Robin Stallings
Executive Director

cc: Mr. Paul Douglas, TxDOT Statewide Bicycle and Pedestrian Coordinator

References

1. *Economic Returns from Transportation Investment*, Eno Transportation Foundation, Inc., Lansdowne, VA, 1996. http://www.fhwa.dot.gov/policy/otps/060320a/060320a.pdf

2. *Your Driving Costs: How much are you really paying to drive?*, 2010, American Automobile Association, Heathrow, FL, Stock 2717, 2010. http://www.aaaexchange.net/Assets/Files/201048935480.Driving%20Costs%202010.pdf

3. *Taxable Fringe Benefit Guide,* Federal, State and Local Governments [and] The Internal Revenue Service, January 2010. http://www.irs.gov/pub/irs-tege/fringe_benefit_fslg.pdf

4. *The Burden of Overweight and Obesity in Texas, 2000-2040, Executive Summary*, Texas Department of Health (now Texas Department of State Health Services), 2004, http://www.dshs.state.tx.us/obesity/pdf/Cost_Obesity_ExecSumm.pdf.

5. *Accommodating Bicyclists in Seal Coat Construction,* Memorandum to TxDOT District Engineers, John A. Barton, P.E., Assistant Executive Director, Engineering Operations, TxDOT, April 13, 2009.

6. *Verbal presentation on outline of practicable processes for seal coat applications that can accommodate bicyclists*, Jerry Peterson, P.E., TxDOT Materials Branch Manager, TxDOT Bicycle Advisory Committee Meeting, Austin, Texas, June 29, 2010.

7. *Moving toward a Culture of Safety*, Robert Quinn Brackett, Ph.D., Texas Transportation Institute, Texas Transportation Researcher, Vol. 44, No. 4, 2008. http://tti.tamu.edu/publications/researcher/newsletter.htm?vol=44&issue=4&article=1&year=2008

8. *Improving Traffic Safety Culture in the United States – The Journey Forward*, (summary and synthesis), AAA Foundation for Traffic Safety, December 2007. http://www.aaafoundation.org/pdf/SafetyCultureSummaryAndSynthesis.pdf

9. *Improving Traffic Safety Culture in the United States – The Journey Forward, (full compendium)*, AAA Foundation for Traffic Safety, April 2007. (22 solicited papers, 378 pages.) http://www.aaafoundation.org/pdf/SafetyCultureReport.pdf

10. *United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation, Regulations and Recommendations, March 11, 2010.* http://www.dot.gov/affairs/2010/bicycle-ped.html

11. *American Community Survey*, U.S. Census Bureau, 2008 (city commuting trends data compiled into on-line report by Bike Pittsburgh, Pittsburgh, PA, 2009). http://bike-pgh.org/2009/09/2008-city-commuting-trends-are-in-how-does-pittsburgh-stack-up-nationally/

12. *Livable Copenhagen: The Design of a Bicycle City*, Center for Public Space Research, Copenhagen, Denmark and University of Washington, Seattle, WA, 2009. http://www.sightline.org/research/sprawl/res_pubs/Livable_Copenhagen_reduced.pdf

13. *Copenhagen: City of Cyclists; Bicycle Account 2008*, Traffic Department, City of Copenhagen, Denmark, 2008. http://www.kk.dk/sitecore/content/Subsites/CityOfCopenhagen/SubsiteFrontpage/CitizenInformation/CityAndTraffic/CityOfCyclists/~/media/F9FC02F424F84FFEAFC5428085F4AF05.ashx

14. *National Household Travel Survey*, Federal Highway Administration Office of Policy, 2009 (summary of “Mode Share” and “Short Trips” compiled into on-line report by League of American Bicyclists and America Bikes, Washington, D.C., 2010). http://www.bikeleague.org/resources/reports/pdfs/nhts09.pdf

15. *A Survey of North American Bicycle Commuters*, William E, Noritz, Ph.D., University of Washington, Seattle, WA, 1997. http://www.bicyclinglife.com/library/moritz1.htm

16. *Current status of installation of imbedded bicycle counting devices in Austin and other Texas cities; verbal report and follow-up personal communication with BikeTexas staff*, Joan Hudson, Texas Transportation Institute, College Station, TX, Greg Griffin, Capital Area Metropolitan Planning Organization (CAMPO), TxDOT annual public hearing at Austin Cycling Association Meeting, Austin, TX, October 4, 2010.

TxDOT Response:

We appreciate your comments. Many of your comments were incorporated into the final document.

The Alliance for I-69 Texas

Encouraging Cooperation and Seeking Solutions Since 1994

October 28, 2010

Peggy Thurin, P.E.
Statewide Transportation Plan 2035
4544 Post Oak Place, Suite 224
Houston, Texas 77027

REF: Recommended Text for State Long-Range Transportation Plan 2035

Thank you for this opportunity to offer proposed additions to provisions relating to the I-69 Corridor in the Statewide Long-Range Transportation Plan 2035 (SLRTP).

Recognizing that the SLRTP is a blueprint for the planning process that will guide future collaborative planning efforts, we find that Section 5.6 dealing with Ongoing Corridor Studies is a concise summary of the current status of the planning process for the Interstate 69 Corridor.

Below we offer a couple of minor edits and recommend inclusion of language we believe will provide additional context. It is important to help readers understand that Interstate 69 in Texas is not a single massive project that might be undertaken at some point in the future. Rather, it is a system made up of many projects to upgrade existing highways. Readers are likely unaware that this process is well underway with more than 160 corridor miles in 17 counties already having been improved to interstate highway standard.

Thank you for your consideration.

Sincerely,

John P. Thompson

Judge John P. Thompson
County Judge, Polk County
Chairman, Alliance for I-69 Texas

1200 Smith Street, Suite 700 • Houston, TX 77002-4309
713.844.3657 • FAX 713.844.0257 • E-mail: I69@houston.org

(Recommended Additions to 5.6.2, page 5-19, shown in blue)

5.6.2 Interstate 69

I-69 was legislatively authorized by the United States Congress and signed into law under the Transportation Equity Act for the 21st Century (TEA-21) in 1991. It is proposed to extend the existing I-69 (which currently exists from Indianapolis, Indiana to the Canadian border at Port Huron, Michigan) to the Texas-Mexico border. The I-69 Corridor Program being studied in Texas extends from Texarkana, Texas, and Stonewall, Louisiana, to Laredo and the Lower Rio Grande Valley of Texas. With Houston near the midpoint, Interstate 69 will improve regional mobility and provide new freight movement capacity accessing seaports at Houston, Freeport, Victoria, Point Comfort, Corpus Christi and Brownsville. It will extend the reach of Texas ports into new national and international markets.

Interstate 69 in Texas is being implemented as a series of upgrades to existing highways including US 59, US 77, US 281, SH 44, US 83 and US 84. Over time, these projects will bring the entire route to interstate highway standard. The process has been underway for two decades and TxDOT has been designing and building all new projects along these routes to interstate standard. More than 160 miles of freeway has been completed along these highway routes in anticipation of being added to the Interstate Highway System. This includes a 75-mile-long continuous section of US 59 through Montgomery, Harris and Fort Bend counties.

The Texas Transportation Commission appointed the I-69 Corridor Advisory Committee to evaluate the current and long-term needs for the I-69 Corridor. The committee published a report in December 2008 that provided similar recommendations as the I-35 analysis. The I-69 program has five segment committees covering ~~a broad~~ the corridor along US 59 from Texarkana to Laredo, and the legs along US 77 and US 281 from Victoria to the Lower Rio Grande Valley (LRGV). The five committees cover the following geographic areas:

1. Texarkana to Lufkin
2. Lufkin to Houston
3. Houston to Refugio and Goliad counties
4. Refugio County to LRGV
5. Goliad County to Laredo

To deal more effectively with regional issues, four South Texas counties are included in both segments 4 and 5. The committees have been working since spring 2009 with the primary emphasis on improving the existing highways with provisions for relief routes where needed. The segment committees have been tasked with identifying and prioritizing regional projects that will contribute to the completion of Interstate 69 in Texas. The committees plan to host public meetings on improvement concepts. ~~in late 2010.~~

The I-69 Corridor Program is consistent with and compliments the strategic goals outlined in TxDOT's 2011–2015 Strategic Plan as shown in Table 5-8.

Communities and Organizations Which Provided Letters of Support
For Alliance for I-69 Texas Recommendation

Bowie County
Panola County
City of Carthage
Shelby County
City of Nacogdoches
City of Lufkin
City of Center
Center Economic Development Board
Angelina County
Polk County
Liberty County Commissioner, Norm Brown
Port of Houston Authority
Greater Fort Bend County Economic Development Council
City of Wharton
Wharton Economic Development Corp.
Port of Victoria
Refugio County
San Patricio County
Nueces County
City of Corpus Christi
Jim Wells County
Kleberg County
City of Kingsville
Greater Kingsville Economic Development Council
Kingsville Area Industrial Foundation
Cameron County
Harlingen Area Chamber of Commerce
The Alliance for I-69 Texas

TxDOT Response:

We appreciate your comments. Your comments were incorporated into the final document.

Gulf Coast
Strategic Highway Coalition
Polk County Courthouse ● 101 West Church Street, Suite 300 ● Livingston, Texas 77351
(936) 327-6813 ● Fax (936) 327-6891 ● www.gulfcoaststrategichighway.org

October 28, 2010

Peggy Thurin, P.E.
Statewide Transportation Plan 2035
4544 Post Oak Place, Suite 224
Houston, Texas 77027

REF: Additions to Long-Range Transportation Plan 2035

Thank you for this opportunity to offer recommendations on the Statewide Long-Range Transportation Plan 2035.

The U.S. Department of Defense is the largest single employer in the state with more than 230,000 military and civilian personnel. A primary objective of the Gulf Coast Strategic Highway Coalition is to assist in meeting the military transportation needs of U.S. Army and National Guard facilities in Texas and the Gulf Coast seaports that serve them to deploy and return combat equipment.

We believe it is appropriate that a third corridor be added to Section 5.6 of the Draft Plan. The US 190 Corridor is a connector to and component project of Interstate 69 in Texas. The upgrade of US 190 plus the upgrade of connectors to strategic seaports at Corpus Christi and Beaumont are vital to supporting the core missions of Fort Hood, Fort Bliss and Fort Polk.

Below is our recommended addition to Section 5.6 along with a list of communities and organizations which filed comments in support of this recommendation.

We hope you will agree that an important objective for the State of Texas is to plan corridor elements – including dedicated freight elements – that support national security and the state's economic wellbeing. Thank you for your consideration.

Sincerely,

John P. Thompson

Judge John P. Thompson
County Judge, Polk County
Chairman, Gulf Coast Strategic Highway Coalition

RECOMMENDATON

(New subsection starting on Page 5-21)

5.6.3 US 190 Corridor and Port Connectors to Support U.S. Army Forts

The U.S. Department of Defense is the largest single employer in Texas with more than 230,000 active duty military, civilian personnel, and Reserve and National Guard forces. Thousands more work in defense industries and total 2008 military expenditures in Texas were $65 billion. Fort Hood in Central Texas houses two Army divisions and has an assigned troop strength of more than 50,000 supported by 12,000 civilian employees. After the full implementation of the 2005 BRAC realignments, Fort Bliss in West Texas will also house two divisions and is expected to have more than 37,000 soldiers and 6,000 civilian personnel. These two forts are designated as Army Power Projection Platforms that prepare forces for worldwide deployment and redeployment.

Fort Hood and Fort Bliss deploy and return their equipment mostly by rail through the designated Strategic Deployment Ports at Corpus Christi and Beaumont. Despite rail being the preferred mode for moving equipment, it is important to have efficient highway connectivity both as an alternative for moving equipment and for the movement of personnel.

The US 190 Corridor connects Fort Bliss, Fort Hood and Fort Polk in Louisiana. A feasibility study of the US 190/I-10 Corridor is underway to evaluate future freeway projects. The public will have several opportunities to provide input and comment on proposed improvements. Upgrading portions of the north-south route between Fort Hood and the Port of Corpus Christi is being evaluated as part of the I-35 Corridor planning effort.

The US 190 Corridor segment across Central Texas has been proposed as a connector to and mobility component of the Interstate 69 Corridor. Upgrading US 190 to interstate highway standard from Livingston to the Interstate 35 Corridor is proposed as an efficient alternative route for travel to and from Northeast Texas and South Texas without entering the air quality zones of either Houston/Galveston or Dallas/Fort Worth. It is being considered in the Interstate 69 environmental clearance process because it would provide statewide benefits in the form of enhanced air quality, travel safety and mobility. This corridor segment will serve to better connect Bryan-College Station and industries in the Research Valley with the I-35, I-45 and I-69 corridors.

Communities and Organizations Which Provided Letters of Support For Gulf Coast Strategic Highway Coalition Recommendation

City of Corpus Christi
Port of Corpus Christi Authority
Coastal Bend Council of Governments
San Patricio County
Bee County
Killeen EDC
Greater Killeen Chamber of Commerce
Killeen Industrial Foundation
Research Valley Partnership
City of College Station
Walker County
City of Huntsville
Huntsville Chamber of Commerce
Polk County
Polk County Industrial Economic Corp.
City of Livingston
Tyler County
City of Jasper
Deep East Texas Council of Governments
Gulf Coast Strategic Highway Coalition

TxDOT Response:

We appreciate your comment and have included much of your recommended language. We encourage your continued support for projects that will enhance and expand our transportation system. We will also consider broader coverage of the numerous transportation initiatives, such as the Gulf Coast Strategic Highway System, in future updates to the SLRTP.

Houston-Galveston Area Council

October 29, 2010

Ms. Peggy Thurin, P.E.
Statewide Planning Coordinator
Texas Department of Transportation
Statewide Transportation Plan 2035
4544 Post Oak Place, Suite 224
Houston, TX 77027

Dear Ms. Thurin:

The Houston-Galveston Area Council (H-GAC) would like to offer the following comments concerning the Texas Department of Transportation (TXDOT) Statewide Long-Range Transportation Plan 2035:

1. **Regarding Recommendation B (p.9-4):** This recommendation has direct impacts on H-GAC, as well as on regional planning entities throughout the state. This recommendation proposes that a uniform TXDOT-mandated project selection process should be adopted by all MPOs to ensure consistency in transportation decisions and preferred solutions. H-GAC posits that a uniform process may not allow sufficient flexibility to meet the needs of widely differing regions across the state.

2. **Regarding the Performance Measures (p.9-7, 9-8, 9-9):** These performance measures may not provide the needed flexibility or create the most desirable outcomes, in light of the prior comment.

3. **General Comment regarding the document:** The long-range plan does not address the needs of differing regional entities, such as Rural Planning Organizations, nor does it take into account the different make-up of metropolitan communities (e.g. primarily urban, primarily urban/suburban, or primarily urban/suburban/rural). The generic nature of the document may restrict flexibility and therefore applicability.

4. **General Comment regarding the document:** The discussion of multimodalism is very vague throughout the document and does not provide a definition or operational framework of the concept. This document does not provide adequate direction for mulit-modal activities and further development of relationships between modes of transportation.

5. **General Comment regarding the document:** The long-range plan does not establish the connection between land-use planning and transportation. In particular, the plan

does not identify how changes in land-uses can affect transportation needs and issues. In order to maximize all available resources in order to meet future transportation infrastructure needs, land-use tools must be explored as a feasible option to relieve congestion and alleviate maintenance demands.

This long-range planning document is an important step for TXDOT that benefits transportation stakeholders, regional and local planning entities, as well as the general public. Our commitment to improving the quality of life of our citizens through the transportation planning process is complemented by state efforts to do the same. As an interested stakeholder, H-GAC remains committed to providing input during this valuable long-range planning process.

Should you or your staff have any questions regarding our review or if we can be of further assistance, please contact me at 713.993.4585.

Sincerely,

Alan C. Clark
Director, Transportation and Air Quality

AC/lm

TxDOT Response:

We appreciate your comments. Some of your issues were addressed in the final document.

Citizens' Transportation Coalition

PO BOX 66532 HOUSTON TX 77266-6532

November 1, 2010

To: James Randall, Director
Transportation Planning & Programming

Peggy Thurin, Project Manager
2035 Statewide Long-Range Transportation Plan (SLRTP)

Texas Department of Transportation (TxDOT)
125 E. 11th St., Austin, TX 78701-2483

Cc: Honorable James Patterson, Chair
Honorable Ed Emmett, Vice Chair
Transportation Policy Council

Alan Clark, Director of Transportation Planning, H-GAC
PO Box 22777, Houston, Texas 77227-2777

Dear Mr. Randall and Ms. Thurin:

Please find below formal comments regarding the 2035 Statewide Long-Range Transportation Plan (SLRTP) from the members of the Citizens' Transportation Coalition (CTC). We sincerely appreciate the opportunity to communicate regarding this important document.

Thanks and best regards,
Robin Holzer, Chair
Citizens' Transportation Coalition (CTC)
rholzer@ctchouston.org
m (713) 301-5716

CTC COMMENTS – TXDOT 2035 SLRTP

Our state's transportation agencies are tasked not only with identifying transportation needs, but also with prioritizing those needs in the context of today's economic reality. Here are just a few of the most-important aspects of our current situation:

- **Fuel costs and construction costs** are likely to rise.
- **Transportation funding is limited** and access to capital is limited.
- **One in five adult Texans cannot drive**. In Harris County alone more than 100,000 households have no car, and across Texas, more than 280,000 workers have no access to a car. All of these Texans must travel by other means.

Until now, TxDOT's mission has remained narrowly focused on finding ways to build more, expensive highways despite rising costs and shrinking funds. Given rising energy costs and changing demographics, we respectfully urge you to reconsider *what* TxDOT is charged to do.

Principles for 21st Century Transportation

Members of the Citizens' Transportation Coalition (CTC) recognize that the public investments we make today will determine the transportation options we have tomorrow. We have identified ten principles to ensure our transportation investment builds the 21st century transportation infrastructure our state needs:

1. Fix it first. Before building new roads, that will themselves have to be maintained, we must restore our crumbling bridges, roadways, and transit systems. We must protect the investments we have made in existing communities.

2. Invest scarce transportation dollars where the people are now. 70% of all Texans live in the Texas Triangle of Houston, Dallas, Fort Worth, Austin, and San Antonio, and that's where the majority of state tax revenue is collected. TxDOT can best serve taxpayers by focusing investment on existing activity centers – the economic engines of our state – to strengthen our economy and improve quality of life.

3. Provide access for all. Across the Houston region and the state, Texans want our transportation system to provide safe and affordable access to jobs and neighborhoods for all travelers. Many young people, seniors, and individuals with disabilities need safe alternatives to achieve desired mobility. One in five adult Texans cannot drive, and across Texas, more than 280,000 workers have no access to a car. We must invest in transit, bike paths, sidewalks, and other transportation alternatives – complete streets – that provide access for all.

CTC articulated our support for complete streets in our Resolution of Support for Transportation Alternatives (attached) which concludes:

> RESOLVED, that all transportation agencies must invest in infrastructure to provide excellent access to neighborhoods, jobs, and other destinations using all travel modes, including walking, biking, and mass transit.

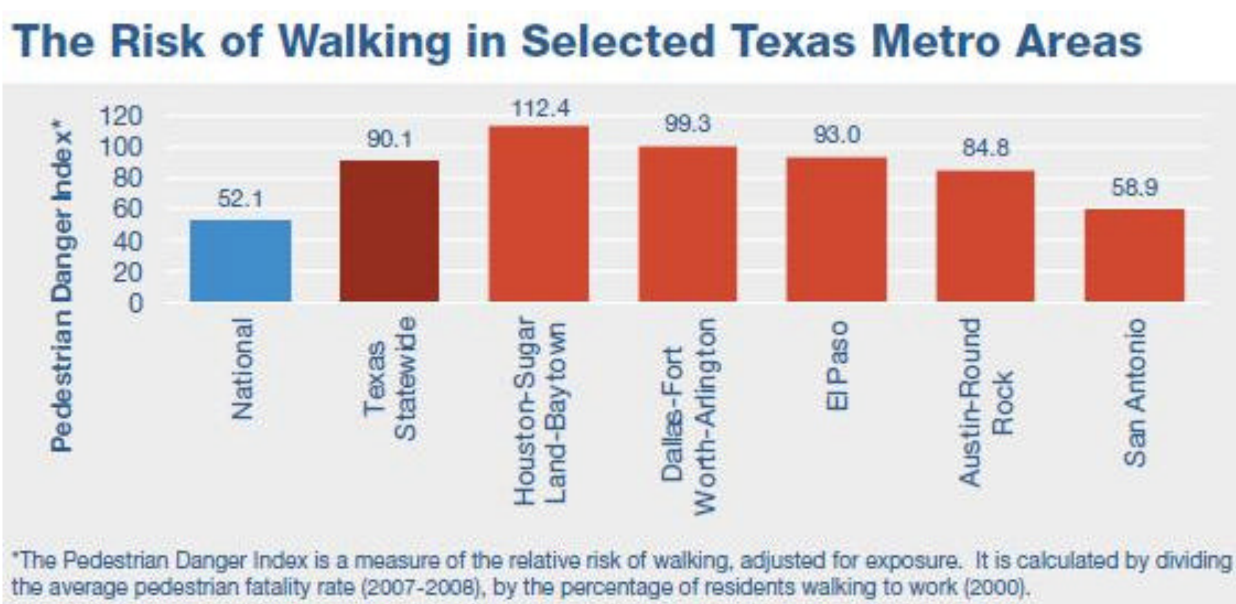
Already, two dozen business and civic organizations from across the City of Houston have formally adopted CTC's resolution of Support for Transportation Alternatives:

- Air Alliance Houston (as GHASP),
- Bolton Place HOA
- Cottage Grove Civic Association
- Eastwood Civic Association
- First Ward Civic Council
- Greater Fondren Super Neighborhood # 36
- Houston Pedestrian & Bicycle Advisory Committee
- Houston Sierra Club
- Houston Super Neighborhood Alliance
- Hyde Park United
- Lafayette Place, section IV HOA
- Midtown Management District
- Montrose Boulevard Conservancy
- RichmondRail.org
- Spring Branch Democrats
- Spring Branch West Super Neighborhood
- Sustainable Living in Houston
- Museum District Business Alliance (MDBA)
- Washington Avenue Super Neighborhood #22
- Westchase District
- Wheeler Place HOA
- Woodcrest Neighborhood Civic Association
- Woodland Heights Civic Association

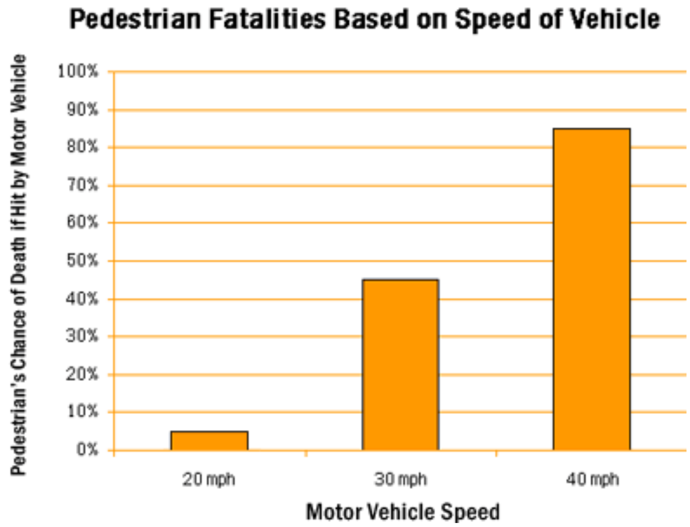
Together, these organizations represent thousands of Houstonians, and they are indicative of widespread public support across the state for transportation that supports all users.

4. Design Main Street to be safe for people. In small towns and big cities all across Texas, roadways serve the heart of local community and commerce. However, current design standards often require these roadways to be built like highways instead of functional city streets, ignoring community needs for safe access by all transportation modes. Consider where US-290 passes through downtown Hempstead or Giddings as examples.

As a result of this design mismatch, Texas ranks among the worst in the nation for pedestrian roadway fatalities and injuries. The Houston region, which includes Baytown and Sugarland, ranks as the eighth most dangerous area in the country for pedestrians, according to the report, *Dangerous by Design: Solving the Epidemic of Preventable Pedestrian Deaths (and Making Great Neighborhoods)*. Houston is also the most-dangerous region in Texas.



In 2007-2008, 823 Texans were killed while walking, comprising 12.2% of all traffic fatalities. In the Houston area, 206 pedestrians were killed, comprising 17.4% of all traffic deaths. That's compared to 183 pedestrian fatalities in Dallas-Fort Worth-Arlington, 57 in Austin-Round Rock, and 56 in San Antonio. Interestingly, the data show that in the Texas cities where walking is less dangerous, a greater share of home-to-work trips occur on foot.



Speed is a major factor in fatal crashes. At 20 mph, 80% of pedestrians will survive a crash with a vehicle. At 40 mph, only 20% of pedestrians will live.

According to the *Dangerous by Design* report, many pedestrian deaths occur on arterial roadways, designed for 45 mph or higher. By designing complete streets for moderate speeds, reserving right of way for pedestrians and cyclists, and including safe pedestrian crossings, Texas can reduce crash risk for everyone.

SAFETEA-LU is the federal statute which controls federally-funded surface transportation projects. CTC members strongly support the aggressive safety goals found in SAFETEA-LU, and we also urge full utilization of the 10% funding set aside for transportation enhancements to assist in reaching that goal. The FHWA notes in its SAFETEA-LU summary:

> SAFETEA-LU continues a strong fundamental core formula program emphasis coupled with targeted investment, featuring:
>
> Safety – SAFETEA-LU establishes a new core Highway Safety Improvement Program that is structured and funded to make significant progress in reducing highway fatalities. It creates a positive agenda for increased safety on our highways by almost doubling the funds for infrastructure safety and requiring strategic highway safety planning, focusing on results. Other programs target specific areas of concern, such as work zones, older drivers, and pedestrians, including children walking to school, further reflect SAFETEA-LU's focus on safety.
>
> *http://www.fhwa.dot.gov/safetealu/summary.htm*

In 2009, TxDOT incorporated ITE's context-sensitive solutions for walkable thoroughfares into its design manual. CTC supports TxDOT's effort and urges you to go even further, to ensure that Texas roadway design standards always prioritize safety and community access for all users, and ensure that all TxDOT engineers are aware of these concepts.

FM roads don't have to be deadly. At left, FM 2920 near Spring has no safe place for cyclists or pedestrians. At right, FM 2920 in Tomball is designed to support local commerce.

5. Fair share from trucks. Truck traffic is a significant cause of roadway congestion, and large trucks are the primary cause of roadway damage. TxDOT should increase truck permits and fees to capture a fair share of the costs caused by trucks. Further, designing all roadways bigger, wider, and stronger for trucks drives up construction costs. TxDOT has the opportunity to adopt a roadway hierarchy in which a subset of state roads are designated for the largest trucks, while other roads are designed at a more modest scale for the majority of other vehicles.

6. Invest in the advantages of freight rail. Each rail car takes as many as three trucks off Texas highways, and one train can move one ton of cargo 436 miles on 1 gallon of fuel. Enabling more freight to move by rail will reduce congestion, improve safety on our roadways, reduce pollution, and minimize right-of-way requirements. Texas voters authorized the Freight Rail Relocation & Improvement fund in 2005 and it's time to fund it.

The 2035 SLRTP includes freight forecasts by mode for truck and rail. However, this freight mode forecast is rooted in assumptions about what kind of capacity will be available for each. The plan apparently assumes that TxDOT will continue to build new roadway capacity for trucks with little or no investment in rail capacity. The plan does not go far enough to address the merits of investing in freight rail, the shift in mode split that's likely if we do, or identify the many cost, congestion, and environmental benefits of that mode shift. We urge TxDOT to do more to " take advantage of the strengths offered by non-highway modes of travel."

7. Provide for passenger rail. Texas must develop and modernize rail capacity, for passengers as well as freight. Commercial airline travel uses at least six times more energy than passenger rail for trips of fewer than 600 miles. National studies rank the Houston <> Dallas city-pair in the top 10 US corridors for high speed rail implementation. Rail service will improve energy efficiency, reduce pollution, and improve utilization of existing highway capacity.

8. Support creation of livable centers. Transportation infrastructure affects land use and health. The most cost-effective strategy for reducing congestion is to develop walkable, mixed-use communities where Texans can live closer to where they work, shop, and play. Across our state, the market is creating "livable centers" that bring office, commercial, residential, and entertainment uses into close proximity. Despite the short distances, many Texans must still use cars to access these jobs, homes, and destinations because the streets between them are not safe for walking or bicycling.

Enabling non-car trips in and among livable centers may be the most cost-effective strategy for reducing congestion and vehicle miles traveled. These communities use energy more efficiently, save Texans money, support economic development, and provide excellent access for travelers despite increasing congestion. Texas can support private development of livable centers by designing streets that are safe and convenient for walking, biking, and transit, thereby enabling travel without a car.

9. Reduce our dependence on foreign oil. By planning our transportation system in conjunction with land use, and by utilizing the most-efficient transport modes available, we can reduce our dependence on foreign oil to help ensure our future security, economic success, and personal as well as planetary health.

10. Increase transparency and project accountability. TxDOT must inextricably link project planning and public participation to make better projects. By engaging neighborhood leaders as planning partners, TxDOT can build infrastructure that meets community goals and improves quality of life in our neighborhoods. At the same time, all transportation projects must meet key performance metrics, including measurable improvements in safety, air quality, and access.

CTC members identified these ten principles to ensure that our transportation investments build the 21st century transportation infrastructure Texas needs. We respectfully urge you to revise the 2035 SLRTP and all of TxDOT's strategic plans to align state transportation efforts with these principles.

Thank you for the opportunity to share our views,

Robin Holzer, Chair
rholzer@ctchouston.org
m (713) 301-5716

Jon Boyd, Vice Chair
jboyd@ctchouston.org
m (713) 515-1872

About the Citizens' Transportation Coalition

The Citizens' Transportation Coalition (CTC) is an all-volunteer, grassroots advocacy organization based in Houston, with members across the 8-county Houston-Galveston region. Since 2004, CTC volunteers have worked to engage neighborhood leaders in the planning of transportation projects that affect our neighborhood.

TxDOT Response:

We appreciate your comments. Many of these recommendations are currently being addressed and we encourage your continued support for transportation.

File: S (JF, PT)
cc: JLR

★ TEXAS BORDER COALITION

October 1, 2010

James L. Randall, P.E.
Director, Transportation Planning and Programming Division
118 East Riverside Drive
Austin, Texas, 78704.

Dear Mr. Randall:

The Texas Border Coalition appreciates this opportunity to share our suggestions for improvement of the Texas Department of Transportation's Texas Statewide Long-Range Transportation Plan 2035.

TxDOT's has major responsibilities for Texas land ports of entry, including the planning and design of border transportation projects; issuing and recording Texas and Mexico commercial vehicle registrations; improving coordination of U.S.-Mexico and Texas border transportation infrastructure planning; and approving international bridge construction projects before bridge sponsors request a Presidential Permit.

As you know, in 2009 President of the United States Barack Obama promised President of Mexico Felipe Calderon that the United States would fight the southbound cross-border transport of bulk cash and weapons, two of the most important contributions U.S. residents make to the drug cartels in Mexico that President Calderon is fighting to defeat.

Nearly all of the southbound cash and arms exiting the United States to Mexico crosses the border via a land port of entry, the same way most of the illegal drugs enter our nation.

While spot southbound checks are mostly the responsibility of the Federal government, the State of Texas maintains the authority to enforce state laws within her territory. Because our land ports of entry infrastructure did not anticipate the necessity of southbound spot inspections, our physical facilities for southbound checks are nearly non-existent.

Under current law, TxDOT is authorized to plan and design border transportation projects. TxDOT could help facilitate southbound inspection by engineering and executing, together with federal law enforcement officials, improved southbound facilities.

The Texas Border Coalition suggests that before the Texas Statewide Long-Range Transportation Plan 2035 is published in its final form, provisions be included for the construction of facilities that would enhance the ability of law enforcement officials to prevent the smuggling of bulk cash and firearms out of the United States.

Our nation's ability to effectively secure our borders depends more every day on the success of President Calderon's effort to defeat the drug cartels operating in both of our countries. TxDOT has the opportunity to contribute to that success, and the Texas Border Coalition urges you to join the fight.

Thank you for your consideration.

Sincerely,

Monica Weisberg-Stewart
Chairman, Immigration and Ports of Entry Committee
Texas Border Coalition

100 S. Monroe St. Eagle Pass, TX 78852 P: 830-773-1111 F: 830-773-9170

TxDOT Response:

We appreciate your comments on ways to enhance the safety of our citizens. We will share it with our border district offices, border MPO's, and local ports of entry. We encourage you to work and share your suggestions with them as well and encourage your continued support for transportation.

TEXAS DEPARTMENT OF TRANSPORTATION

STATEWIDE LONG-RANGE TRANSPORTATION PLAN
PUBLIC HEARING

Room 1A.2
TxDOT Riverside Campus
200 E. Riverside Drive
Austin, Texas

Friday,
October 1, 2010
10:15 a.m.

BEFORE:

ANGIE PARKER

ORIGINAL

I N D E X

P R O C E E D I N G S

MS. PARKER: I will now open this hearing. It is approximately 10:15 in the morning, Friday, October 1, 2010. My name is Angie Parker, and I'm an attorney with the Texas Department of Transportation. I've been appointed as the presiding officer for this hearing.

With me this morning is James Randall, director of the department's Transportation Planning & Programming Division, and Mr. Randall has a couple of people that he would like to introduce.

MR. RANDALL: Well, primarily Peggy Thurin. Stand up.

She's our project manager for the statewide plan. I want to acknowledge her for the tremendous amount of work she's done on this.

And Jack Foster -- I think he's outside right now. Anyway, thank you.

MS. PARKER: We're here this morning to consider public comment, written on oral, on the Statewide Long-Range Transportation Plan.

This hearing is being held pursuant to 23 United States Code Section 135, which calls for an opportunity for public comment during the development of the plan.

I will enter into the record Exhibit 1, a copy of volume 35, *Texas Register*, pages 8541 to 8542, from the *Texas Register* of September 17, 2010, which was the published announcement of this proceeding. The court reporter has that exhibit, and it is now in the record.

(The document marked for identification as Exhibit 1 was received in evidence.)

MS. PARKER: At this time I'll go over a few procedures for this hearing. The purpose is to receive comments from the public. Questions from the floor will not be entertained, nor will any debate be entered into during this hearing.

All interested persons may offer comments, either orally or in writing, and written comments will also be accepted for the record today or may be submitted to Mr. James Randall, PE, Director of the Transportation Planning & Programming Division, 118 East Riverside Drive, Austin, Texas 78703. And the deadline for the receipt of any written comments is 4:00 p.m. on November 1, 2010.

All interested persons that wish to make comments or presentation today for the record should have registered or may register at any time during this hearing at the table that's by the door.

And every interested person who is registered will be granted an opportunity to present their comments, but I reserve the right to restrict testimony in terms of time and any repetitive content. And questioning of persons making oral comments will reserve to me as the presiding officer.

We do have a court reporter transcribing these proceedings, and if you wish to receive a transcript of this hearing, you can make arrangements with her after the hearing is concluded.

If you represent a group, I would please ask you to appoint a spokesperson for that group rather than have all members of your group repeat the same comments.

And if you have not registered to speak, I please ask that you do so at this time. That is the only way that I'll know that you wish to make written [sic] comments today for the record.

I do have several people who have scheduled to speak, and I'll call their names as they are on the list.

Mr. Jafar?

MR. JAFAR: I think we signed up wrong. We thought we were --

MS. PARKER: So you don't want to make oral comments?

MR. JAFAR: No.

MS. PARKER: Okay. Same for Mr. Esmail?

MR. ESMAIL: Yes.

MS. PARKER: Okay. Mr. Curtis Toews?

MR. TOEWS: No, no comment.

MS. PARKER: All right.

And, finally, Mr. Mark Stine.

MR. STINE: Right here.

MS. PARKER: All right. Please go ahead and take a seat. And if you would please state your name for the record and who you represent, if it's an organization.

MR. STINE: Good morning. My name is Mark Stine. I'm special projects manager with BikeTexas. We are the statewide bicycle and pedestrian advocacy group, and we do a lot of safety work around Texas, including contracts with TxDOT over the last 12 years.

First I want to say thank you to Peggy Thurin and her staff for all the great work they've done in bringing this craft together. We can understand what a tremendous effort it's been. And I'm sure that it's been a lot of long hours.

I'd also like to thank Ms. Thurin for the interaction -- opportunity to submit comments to this point, and I will have more detailed written comments to submit by November 1.

I do want to just touch on one item, having read the draft. We'd like to submit more information to show that pedestrian and bicycle trips can be much longer than a couple miles, especially pedestrian trips in conjunction with transit. And there are plenty of data around the country for this.

There are tremendous gains to be made from pedestrian and bicycling in terms of the overall economic picture of transportation. For example, Copenhagen, Denmark, which has made a tremendous investment, has 37 percent bicycle commuters.

I'm not sure that we'll get to that in any Texas city, but we can certainly look for double-digit commuting for pedestrians and bicyclists.

So, again, thank you very much, and I'll submit my comments, and I appreciate the opportunity to work with you.

MS. PARKER: Thank you.

I don't have anyone else on this list. Is there anyone else in attendance that would like to testify this morning?

(No response.)

MS. PARKER: I also remind you that you can also submit written comments today before you leave, if you have any, or you also have an opportunity to submit them after this hearing, as I previously stated.

If there isn't anyone else here to testify, then I will declare this hearing adjourned.

Thank you very much.

(Whereupon, at 10:20 a.m., the public hearing was concluded.)

<u>C E R T I F I C A T E</u>

IN RE: Statewide Long-Range Transportation Plan public hearing

LOCATION: Austin, Texas

DATE: October 1, 2010

I do hereby certify that the foregoing pages, numbers 1 through 9, inclusive, are the true, accurate, and complete transcript prepared from the verbal recording made by electronic recording by Penny Bynum before the Texas Department of Transportation.

Laurel H. Stoddard 10/7/2010
(Transcriber) (Date)

On the Record Reporting
3307 Northland, Suite 315
Austin, Texas 78731

munications Service (LDMTS) Tariff, Sections 2 and 4. The Applicant also proposed to remove the obsolete Service charges for Operator, Station-to-Station, Collect, Fully Automated, and Billed to Third Number, Fully Automated, that are no longer provided by the Cooperative's Operator Service Provider, AT&T Texas in the LDMTS Tariff.

The Applicant has also filed an affidavit and revised tariff sheets from John Staurulakis, Inc. withdrawing Central Texas Telephone Cooperative, Inc., as an issuing carrier in its LDMTS Tariff. The Applicant also submitted its LDMTS Tariff Sheets to replace in its entirety the current LDMTS Tariff Services and rates on file with the commission, with an approval date of December 1, 2010 In the Applicant's revisions, they are requesting minor text changes to remove and update information in its General Exchange Tariff and LDMTS Tariff.

The proposed effective date for the proposed rate changes is December 1, 2010. The estimated annual revenue increase recognized by Cooperative is $26,154.14 or less than 0.48% of Cooperative's gross annual intrastate revenues. Cooperative has 6,491 access lines (residence and business) in service in the state of Texas.

If the commission receives a complaint(s) relating to this application signed by 5% of the affected local service customers to which this application applies by October 31, 2010, the application will be docketed. The 5% limitation will be calculated based upon the total number of customers of record as of the calendar month preceding the commission's receipt of the complaint(s).

Persons wishing to comment on this application should contact the Public Utility Commission of Texas by October 31, 2010. Requests to intervene should be filed with the commission's Filing Clerk at P.O. Box 13326, Austin, Texas 78711-3326, or you may call the commission at (512) 936-7120 or toll-free at 1-800-735-2989. Hearing and speech-impaired individuals with text telephones (TTY) may contact the commission at (512) 936-7136. All correspondence should refer to Tariff Control Number 38598.

TRD-201005204
Adriana A. Gonzales
Rules Coordinator
Public Utility Commission of Texas
Filed: September 7, 2010

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Texas Department of Transportation

Aviation Division - Request for Proposal for Professional Engineering Services

The City of Corsicana, through its agent the Texas Department of Transportation (TxDOT), intends to engage an aviation professional services firm for services pursuant to Government Code, Chapter 2254, Subchapter A. TxDOT Aviation Division will solicit and receive proposals for professional services as described below:

Airport Sponsor: City of Corsicana C. David Campbell Field-Corsicana Municipal Airport. TxDOT CSJ No. 11MPCORSI. Scope: Prepare an Airport Master Plan which includes, but is not limited to, information regarding existing and future conditions, proposed facility development to meet existing and future demand, constraints to develop, anticipated capital needs, financial considerations, management structure and options, as well as an updated Airport Layout Plan. The Airport Master Plan should be tailored to the individual needs of the airport.

There is no HUB goal. TxDOT Project Manager is Michelle Hannah.

Interested firms shall utilize the Form AVN-551, titled "Aviation Planning Services Proposal." The form may be requested from TxDOT Aviation Division, 125 East 11th Street, Austin, Texas 78701-2483, telephone number, 1-800-68-PILOT (74568). The form may be emailed by request or downloaded from the TxDOT web site at http://www.txdot.gov/business/projects/aviation.htm. The form may not be altered in any way. All printing must be in black on white paper, except for the optional illustration page. Firms must carefully follow the instructions provided on each page of the form. Proposals may not exceed the number of pages in the proposal format. The proposal format consists of seven pages of data plus two optional pages consisting of an illustration page and a proposal summary page. A prime provider may only submit one proposal. If a prime provider submits more than one proposal, that provider will be disqualified. Proposals shall be stapled but not bound in any other fashion. PROPOSALS WILL NOT BE ACCEPTED IN ANY OTHER FORMAT.

ATTENTION: To ensure utilization of the latest version of Form AVN-551, firms are encouraged to download Form AVN-551 from the TxDOT web site as addressed above. Utilization of Form AVN-551 from a previous download may not be the exact same format. Form AVN-551 is a PDF Template.

Please note:

Five completed, unfolded copies of Form AVN-551 **must be received** by TxDOT Aviation Division at 150 East Riverside Drive, 5th Floor, South Tower, Austin, Texas 78704 no later than October 12, 2010, 4:00 p.m. Electronic facsimiles or forms sent by email will not be accepted. Please mark the envelope of the forms to the attention of Edie Stimach.

The consultant selection committee will be composed of Aviation Division staff members. The final selection by the committee will generally be made following the completion of review of proposals. The committee will review all proposals and rate and rank each. The criteria for evaluating consultants for airport planning projects can be found at http://www.txdot.gov/business/projects/aviation.htm. All firms will be notified and the top rated firm will be contacted to begin fee negotiations The selection committee does, however, reserve the right to conduct interviews for the top rated firms if the committee deems it necessary. If interviews are conducted, selection will be made following interviews.

If there are any procedural questions, please contact Edie Stimach, Grant Manager, or Michelle Hannah, Project Manager for technical questions at 1-800-68-PILOT (74568).

TRD-201005187
Joanne Wright
Deputy General Counsel
Texas Department of Transportation
Filed: September 3, 2010

♦ ♦ ♦

Public Hearing Notice - Statewide Long-Range Transportation Plan

The Texas Department of Transportation (department) will hold a public hearing on Friday, October 1, 2010 at 10:00 a.m. at the Texas Department of Transportation, 200 East Riverside Drive, Room 1A-2, Austin, Texas to receive public comments on the Texas Statewide Long-Range Transportation Plan (SLRTP). The SLRTP is the 24-year long-range multimodal plan for the state of Texas.

Transportation Code, §201.601, requires the department to develop a statewide transportation plan that contains all modes of transportation.

Title 23, United States Code, §135 requires the state to develop a long-range plan as a condition to securing federal funds for transportation projects under Title 23 or the Federal Transit Act (49 U.S.C. §5301, et

Exhibit 1

seq.). Sections 135(a) and (e) require the state to develop its long-range plan to provide for the development and integrated management and operation of transportation systems and facilities (including accessible pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system for the state and an integral part of an intermodal transportation system for the United States, taking into consideration the concerns of affected local officials, Indian tribal governments, and Federal land management agencies. Section 135(f) requires the state to develop a SLRTP for all areas of the state in cooperation with the designated metropolitan planning organizations and, with respect to non-metropolitan areas, in consultation with affected local officials, and further requires an opportunity for participation by interested parties.

A copy of the proposed SLRTP will be available for review, at the time the notice of hearing is published, at each of the department's district offices, at the department's Transportation Planning and Programming Division offices located in Building 118, Second Floor, 118 East Riverside Drive, Austin, Texas, and on the department's website at.

www.txdot.gov

Persons wishing to review the SLRTP may do so online or contact the Transportation Planning and Programming Division at (512) 486-5036.

Persons wishing to speak at the hearing may register in advance by notifying Peggy Thurin, Transportation Planning and Programming Division, at (512) 486-5036 not later than Thursday, September 30, 2010, or they may register at the hearing location beginning at 9:00 a.m. on the day of the hearing. Speakers will be taken in the order registered. Any interested person may appear and offer comments or testimony, either orally or in writing; however, questioning of witnesses will be reserved exclusively to the presiding authority as may be necessary to ensure a complete record. While any persons with pertinent comments or testimony will be granted an opportunity to present them during the course of the hearing, the presiding authority reserves the right to restrict testimony in terms of time or repetitive content. Groups, organizations, or associations should be represented by only one speaker. Speakers are requested to refrain from repeating previously presented testimony. Persons with disabilities who have special communication or accommodation needs or who plan to attend the hearing may contact the Government and Public Affairs Division, at 125 East 11th Street, Austin, Texas 78701-2483, (512) 463-9957. Requests should be made no later than three days prior to the hearing. Every reasonable effort will be made to accommodate the needs.

Further information on the SLRTP may be obtained from Peggy Thurin, Transportation Planning and Programming Division, 118 East Riverside Drive, Austin, Texas, 78704, (512) 486-5036. Interested parties who are unable to attend the hearing may submit written comments to James L. Randall, P.E., Director, Transportation Planning and Programming Division, 118 East Riverside Drive, Austin, Texas, 78704. In order to be considered, all written comments must be received at the Transportation Planning and Programming office by Monday, November 1, 2010 at 4:00 p.m.

TRD-201005233
Leonard Reese
Associate General Counsel
Texas Department of Transportation
Filed: September 8, 2010

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Public Hearing Notice - Texas Rail Plan

The Texas Department of Transportation (department) will hold a public hearing on Wednesday, October 6, 2010, at 1:30 p.m. at the Texas Department of Transportation, 200 East Riverside Drive, Auditorium 1A-1, Austin, Texas to receive public comments on the Texas Rail Plan. The Texas Rail Plan serves as a policy document that establishes a state vision and objectives for freight and passenger rail service in the state. The plan includes details about the current state of passenger and freight rail as well as establishes a short and long-range investment program which will guide improvements and expansion of the state rail transportation system.

A copy of the Texas Rail Plan will be available for review, at the time this notice of hearing is published, at the department's Rail Division offices located in Building 118, Second Floor, 118 East Riverside Drive, Austin, Texas, and on the department's website at: www.txdot.gov (keywords: rail plan). Persons wishing to review the Texas Rail Plan may do so online or contact the Rail Division at (512) 486-5230.

Persons wishing to speak at the hearing may register at the hearing location beginning at 1:00 p.m. on the day of the hearing. Speakers will be allowed three minutes each, and will be taken in the order registered. Any interested person may appear and offer comments or testimony, either orally or in writing; however, questioning of witnesses will be reserved exclusively to the presiding authority as may be necessary to ensure a complete record. While any persons with pertinent comments or testimony will be granted an opportunity to present them during the course of the hearing, the presiding authority reserves the right to restrict testimony in terms of time or repetitive content. Groups, organizations, or associations should be represented by only one speaker. Speakers are requested to refrain from repeating previously presented testimony. Persons with disabilities who have special communication or accommodation needs or who plan to attend the hearing may contact the Government and Public Affairs Division, at 125 East 11th Street, Austin, Texas 78701-2483, (512) 463-9957. Requests should be made no later than three days prior to the hearing. Every reasonable effort will be made to accommodate the needs.

Further information on the Texas Rail Plan may be obtained from Jennifer Moczygemba, Rail Division, 118 East Riverside Drive, Austin, Texas 78704, (512) 486-5127. Written comments on the Texas Rail Plan may be submitted to William E. Glavin, Director, Rail Division, 118 East Riverside Drive, Austin, Texas 78704. Comments may also be submitted on-line at www.txdot.gov (keywords: rail plan). The deadline for receipt of comments is 5:00 p.m. on Friday, November 5, 2010.

TRD-201005234
Leonard Reese
Associate General Counsel
Texas Department of Transportation
Filed: September 8, 2010

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Stephen F. Austin State University

Notice of Consultant Contract Award

In compliance with the provisions of Chapter 2254, Subchapter B, Texas Government Code, Stephen F. Austin State University furnishes this notice of contract award to University's contract with URS Corporation, 10550 Richmond Avenue, Suite 155, Houston, Texas 77042. The contract is not to exceed $50,052. The original contract availability notice was published in the June 4, 2010, issue of the *Texas Register* (35 TexReg 4765).

No documents, films, recording, or reports of intangible results will be required to be presented by the outside consultant. Services are provided on an as-needed basis.

For further information, please contact Diana Boubel, Director of Procurement, at (936) 468-4037.