

Texas' Top 100 Transportation Challenges and Improvements Needed to Address Them

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Founded in 1971, [TRIP](#)® of Washington, DC, is a nonprofit organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

Executive Summary

Texas' extensive system of roads, highways and bridges provides the state's residents, visitors and businesses with a high level of mobility. As the backbone of the Lone Star State's economy, Texas' surface transportation system plays a vital role in the state's economic well-being, and is an integral part of what makes Texas an attractive place to live, work and do business.

However, increasing roadway and bridge deterioration, traffic safety concerns and growing congestion threaten to stifle economic growth and negatively impact the quality of life of the state's 26 million residents. Due to insufficient transportation funding at the federal, state and local level, Texas faces numerous challenges in providing a road, highway and bridge network that is smooth, well-maintained, as safe as possible, and that affords a level of mobility capable of supporting the state's economic goals.

As Texas looks to build and maintain a thriving and diverse economy, it will need to modernize its transportation system by improving the physical condition of its roads, highways and bridges, and enhancing the system's ability to provide efficient, safe and reliable mobility to the state's residents, visitors and businesses. Making needed improvements to Texas' roads, highways and bridges would provide a significant boost to the state's economy by stimulating short and long-term economic growth.

Numerous segments of Texas' transportation system have significant deterioration, are congested or crowded, lack some desirable safety features, and do not have adequate capacity to provide reliable mobility, creating challenges for Texas' residents, visitors, businesses and state and local governments. This report looks at the condition and use of Texas' system of roads, highways and bridges and provides information on the state's top 100 transportation challenges and the improvements needed to address these challenges.

Deficient roads, highways and bridges and crowded or congested routes in Texas are posing mounting challenges to the state's residents, visitors and businesses in the form of lost time, increased vehicle operating costs and the financial burden of making needed transportation improvements.

- Texas' top 100 transportation challenges as ranked by TRIP include: 38 segments of the state's major roads and highways that have significant levels of traffic congestion; seven sections of major roads or highways that have significant pavement deterioration and need to be reconstructed; 11 segments of state roadways that need safety improvements; 11 major bridges in the state that have significant deficiencies and need to be rebuilt or reconstructed; and, 33 roadway facilities in the state that have multiple needs, including congestion, safety, pavement or bridge challenges. (Some of the segments identified have multiple challenges, including congestion, safety and road and bridge deficiencies.)

- TRIP ranked Texas' top transportation challenges by giving each segment or facility an overall score, based on a scale that included points for the following categories: current volume of daily travel or ridership; the challenge posed to the public based on the significance of the problem or deficiency; the importance of the route or facility to regional, interstate or international travel patterns; the importance of the route or facility to the regional economy; and, the cost to repair the deficiency.
 - The following list details the top 10 transportation challenges in Texas. Further details about each challenge, as well as the full list of 100 challenges, can be found in the Appendix.
1. **Deterioration and Congestion on IH 30 in Dallas-Fort Worth.** IH 30 in Dallas County, a critical route for regional and statewide connectivity, is significantly congested and deteriorated from Jefferson to SL 12 East. The freeway would need to be reconstructed and widened, with two to four managed lanes added to relieve congestion.
 2. **Deterioration and Congestion on a section of IH 45 in Houston.** IH 45 is a critical route for hurricane evacuation in the greater Houston-Galveston area as well as a major freight route connecting to the Port of Houston. However, from IH 610 to SL 8, IH 45 experiences significant congestion and lacks adequate mobility to support economic development opportunities. Some segments of this roadway, as well as the bridges it traverses, will need to be widened, reconstructed or replaced to improve mobility on the corridor.
 3. **Congestion on IH 35 in San Antonio.** IH 35 acts as the primary route for vehicle and truck traffic from the Texas border to San Antonio, Austin and Dallas/Fort Worth. This section of IH 35, from IH 410 to FM 3009, carries significant truck traffic due to numerous industrial companies located nearby. Because the current traffic volume exceeds the capacity of the current roadway, significant bottlenecks form at the IH 35/IH 410N and IH 35/410S interchanges. Congestion could be eased by expanding the existing six to eight-lane facility to 14 lanes (6 Managed Lanes) from US 281/IH 37 to FM 3009. While the corridor is currently undergoing a Planning and environmental study, no funding has been identified.
 4. **IH 35W Congestion in Dallas/Fort Worth.** This section of I 35W, from SH 183 to US 81 in Tarrant County, experiences severe congestion due to inadequate capacity and obsolete interchanges. In order to ease congestion, the roadway would need to be reconstructed to add managed HOV lanes.
 5. **Congestion on IH 410 in San Antonio.** This section of IH 410, from US 281 to IH 35, is the primary connection between San Antonio International Airport and IH 35. The current traffic volume exceeds the capacity of the roadway, leading to chokepoints on IH 35 where EB 410 merges with NB 35. Needed improvements to the IH 35/IH 410 Interchange would ease the existing bottleneck from EB 410 to IH 35.

6. **Deteriorated Pavement Conditions on Statewide Secondary Roads serving the state's energy sector.** Throughout the state, secondary rural and urban roads are becoming increasingly deteriorated. These routes are critical to the development and growth of Texas' energy extraction sector. However, many are in need of major repairs and added structural capacity to handle the increased traffic, mainly from large trucks as a result of the growth in the state's energy sector.
7. **Congestion on US 75 in Dallas/Fort Worth.** This section of US 75, from SH 190 to IH 635 experiences significant congestion and has already been built to maximum capacity. Congestion on this route could be eased by the addition of six elevated managed HOV lanes and Intelligent Transportation System (ITS) improvements.
8. **Deterioration and Congestion on a section of IH 45 in Houston.** IH 45 is a vital route for hurricane evacuation in the Greater Houston-Galveston area as well as a major route for transporting goods to and from the Port of Houston. From IH 10 to IH 610, this route experiences significant congestion and contains roadway segments and bridge facilities that need to be reconstructed or replaced. In order to improve road and bridge conditions and relieve congestion, this portion of IH 45 and various interchanges would need to be widened and reconstructed.
9. **Congestion on US 290 in Austin.** As a major commuter route, US 290 between SL 1 and RM 1826 experiences severe congestion. This area has seen high residential growth without corresponding transportation improvements that would facilitate the convergence of three major highways: US 290, SH 71 and Loop 1 (about three miles east). During peak periods there is no access for emergency vehicles due to congestion, lack of shoulders and no alternative route. To ease congestion, the route would need to be reconstructed to add a six-lane toll road with frontage roads.
10. **Bridge Deficiency, Safety and Congestion on US 181 at the Corpus Christi Ship Channel.** US 181 connects Corpus Christi and the Port facilities to communities and facilities north of the ship channel. The current route is congested, needs safety improvements and includes a deficient bridge. However, because a replacement structure that would meet modern design standards does not fit in the current footprint, a new location is needed. A new structure would address the steep climb, sharp approach curves and lack of shoulders on the current structure.

Growth in population and vehicle travel has far outstripped the current capacity of Texas' transportation system. The state's population and economy will continue to grow in the future, bringing mounting challenges for the existing network of roads and bridges.

- From 1990 to 2011, Texas' population increased by 51 percent, from approximately 17 million to approximately 25.7 million. Texas' population is expected to increase to 37.3 million by 2030.
- From 1990 to 2010, annual vehicle-miles-of-travel (VMT) in the state increased by 44 percent, from approximately 162.2 billion VMT to 234 billion VMT. Based on travel and

population trends, TRIP estimates that vehicle travel in Texas will increase another 35 percent by 2030, reaching approximately 304 billion VMT.

- In 2013, Texas is projected to have a 3.9 percent rate of economic growth, measured in real Gross State Product (GSP), which is factored for price changes. This rate of growth is higher than the forecast three percent increase in national real GSP in 2013.
- Every year, \$1.167 billion in goods are shipped from sites in Texas and another \$1.246 billion in goods are shipped to sites in Texas, mostly by trucks. Sixty percent of the goods shipped annually from sites in Texas are carried by trucks and another nine percent are carried by parcel, U.S. Postal Service or courier services, which use trucks for part of their deliveries.

Texas' extensive transportation system has some road and bridge deficiencies, lacks some desirable safety features and experiences severe congestion in key areas, which represents a significant cost to the state's motorists. Improvements to the condition and efficiency of the state's transportation system would enhance quality of life, roadway safety and economic development.

- Texas' population and economy will continue to grow in the future, bringing mounting challenges for the existing network of roads and bridges. The state will need to expand key roads, highways and bridges to increase mobility and ease traffic congestion, make needed road and bridge repairs, and improve roadway safety.
- Texas' system of 311,249 miles of roads and 51,862 bridges carries 234 billion vehicle miles of travel annually.
- In 2010, 18 percent of Texas' major urban roads were in poor condition and an additional 27 percent were in mediocre condition.
- The pavement data in this report is provided by the Federal Highway Administration, based on data submitted annually by the Texas Department of Transportation (TxDOT) on the condition of major state and locally maintained roads and highways in the state.
- Three percent of Texas' bridges were rated structurally deficient in 2011. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Structurally deficient bridges are often posted for lower weight or closed to traffic, restricting or redirecting large vehicles, including commercial trucks, school buses and emergency services vehicles.
- In 2011, 15 percent of Texas' bridges were rated as functionally obsolete. Bridges that are functionally obsolete no longer meet current highway design standards or are inadequate to accommodate current traffic levels, often because of narrow lanes, inadequate clearances or poor alignment.

- Texas' urban roads are becoming increasingly congested, hampering commuting and commerce while reducing economic opportunities and quality of life in the state. Unless Texas' transportation system is improved and enhanced, congestion will worsen dramatically in the coming years.
- Congestion is more than just a headache for commuters. The Texas Transportation Institute (TTI) estimates that congestion will cost the state's economy an average of \$20 billion per year through 2025, rising from a current cost of approximately \$10.8 billion per year to almost \$30 billion in 2025.
- If roadway efficiency and capacity needs are not addressed, the average annual congestion-related delay in Texas' urban and metropolitan areas will double in 15 years from 37 hours per motorist each year to 74 hours per motorist.
- Roadway features are likely a contributing factor in approximately one-third of traffic fatalities. There were 2,998 traffic fatalities in 2010 in Texas. A total of 16,448 people died on Texas' highways from 2006 through 2010.
- Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design.
- Texas' traffic fatality rate of 1.28 fatalities per 100 million vehicle miles of travel in 2010 was higher than the national average of 1.11.
- Where appropriate, highway improvements can reduce traffic fatalities and crashes while improving traffic flow to help relieve congestion. Such improvements include removing or shielding obstacles; adding or improving medians; improved lighting; adding rumble strips, wider lanes, wider and paved shoulders; upgrading roads from two lanes to four lanes; and, better road markings and traffic signals.
- A 2012 TRIP report found that Texas' roadways that lack some desirable safety features, have inadequate capacity to meet travel demands or have poor pavement conditions cost the state's residents approximately \$23.2 billion annually in the form of traffic crashes, additional vehicle operating costs and the cost of lost time and wasted fuel due to traffic congestion.

Unless transportation funding is increased, Texas' roads and bridges will become increasingly deteriorated and congested and needed safety improvements will remain unfunded. The state faces a significant funding shortfall in the amount needed just to maintain the transportation system in its current condition.

- Over the past decade, roadway maintenance and capacity in Texas have been largely funded through bond proceeds. However, all bonding programs have now been exhausted, resulting in a 50 percent drop in funding levels from a decade ago and leaving no funds available for new construction.

- A report issued by the 2030 Committee calculated that an annual statewide investment of \$9.9 billion was needed just to maintain road and bridge conditions and congestion at 2010 levels. However, after fiscal year 2014, annual state highway investment is anticipated to average just \$2.4 billion annually.
- Under current funding scenarios, overall pavement quality is projected to decrease by 43 percent by 2022. Failing to address pavement deterioration in a timely manner increases repair costs over time. In Texas, underfunding maintenance on the state's roads will increase the cost to preserve and restore the pavement by \$6.5 billion over the next ten years when comparing to the minimum funding amount.
- While the growth and expansion of Texas' oil, gas and wind energy sectors has been beneficial for the state's economic well being, increased traffic (especially by heavy trucks) has had a significant impact on the condition of the state's roads and highways. A new report by the Texas Transportation Institute found that the cost of additional road repairs needed as a result of the energy boom's wear and tear on state and county roads in Texas is estimated to be an additional \$2 billion each year for the next 20 years.

Transportation projects that improve the efficiency, condition or safety of a highway provide significant economic benefits by reducing transportation delays and costs associated with a deficient transportation system. Some benefits of transportation improvements include the following.

- Improved business competitiveness due to reduced production and distribution costs as a result of increased travel speeds and fewer mobility barriers.
- Improvements in household welfare resulting from better access to higher-paying jobs, a wider selection of competitively priced consumer goods, additional housing and healthcare options, and improved mobility for residents without access to private vehicles.
- Gains in local, regional and state economies due to improved regional economic competitiveness, which stimulates population and job growth.
- Increased leisure/tourism and business travel resulting from the enhanced condition and reliability of a region's transportation system.
- A reduction in economic losses from vehicle crashes, traffic congestion and vehicle maintenance costs associated with driving on deficient roads.
- The creation of both short-term and long-term jobs.
- Transportation projects that expand roadway or bridge capacity produce significant economic benefits by reducing congestion and improving access, thus speeding the flow of people and goods while reducing fuel consumption.

- Transportation projects that maintain and preserve existing transportation infrastructure also provide significant economic benefits by improving travel speeds, capacity, load-carry abilities and safety, and reducing operating costs for people and businesses. Such projects also extend the service life of a road, bridge or transit vehicle or facility, which saves money by either postponing or eliminating the need for more expensive future repairs.
- Site Selection magazine's 2010 survey of corporate real estate executives found that transportation infrastructure was the third most important selection factor in site location decisions, behind only work force skills and state and local taxes.
- A 2007 analysis by the Federal Highway Administration found that every \$1 billion invested in highway construction would support approximately 27,800 jobs, including approximately 9,500 in the construction sector, approximately 4,300 jobs in industries supporting the construction sector, and approximately 14,000 other jobs induced in non-construction related sectors of the economy.
- The Federal Highway Administration estimates that each dollar spent on road, highway and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs, and reduced emissions as a result of improved traffic flow.

Sources of data for this report include the Texas Department of Transportation (TxDOT), the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the U.S. Bureau of Transportation Statistics (BTS), the Bureau of Economic Analysis, the Texas Transportation Institute (TTI), and the U.S. Census Bureau. All data used in the report is the latest available.

Introduction

Texas' system of roads, highways and bridges forms a vital transportation network for the state's residents, visitors and businesses, providing daily access to homes, employment, shopping, recreation and customers. The modernization of Texas' transportation system could play an important role in the state's economic wellbeing by providing critically needed jobs in the short term and by improving the productivity and competitiveness of the state's businesses in the long term. Improving the state's roads and bridges also enhances quality of life, making Texas a more attractive place to live, work, visit and do business.

Deteriorated roads, highways and bridges are a detriment to the state's residents, visitors, businesses and governments because they hamper mobility and cause delays, reduce economic productivity and competitiveness, and increase costs of operating vehicles for individuals and businesses because of the increased wear and tear caused by deficient pavements.

This report examines the condition, use and safety of Texas' roads, highways and bridges and looks at the sections of the state's roads, highways and bridges that pose the biggest challenges because of deterioration, traffic congestion, overcrowding, traffic crash rates or lack of adequate capacity to meet the state's need for reliable mobility. Sources of data for this report include the Texas Department of Transportation (TxDOT), the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the U.S. Bureau of Transportation Statistics (BTS), the Bureau of Economic Analysis, the Texas Transportation Institute (TTI), and the U.S. Census Bureau. All data used in the report is the latest available.

Population, Travel and Economic Trends in Texas

Texas residents rely on a high level of personal and commercial mobility. Even throughout the recent economic downturn, the state experienced population and economic growth, resulting in an increase in the demand for mobility and a large increase in vehicle miles of travel in the Lone Star State. To maintain and improve the quality of life in Texas and assist in the state's economic growth, it will be critical that the state invest in a well-maintained, modern transportation system that can accommodate future growth in population, tourism, vehicle travel and economic development.

Texas' population increased by 51 percent between 1990 and 2011, increasing from approximately 17 million residents in 1990 to approximately 25.7 million residents in 2011.¹ The population of Texas is projected to increase to approximately 37.3 million residents by 2030.²

Population and economic growth in Texas have resulted in a significant increase in vehicle travel in the state. From 1990 to 2010, annual vehicle miles of travel in Texas increased by 44 percent, from 162.2 billion miles traveled annually to 234 billion miles traveled annually.³ Based on population and other lifestyle trends, TRIP estimates that travel on Texas' roads and highways will increase another 35 percent by 2030, to approximately 304 billion miles of travel.⁴

Texas is projected to have a 3.9 percent rate of economic growth in 2013, measured in real Gross State Product (GSP), which is factored for price changes.⁵ This rate of growth is higher than the forecast three percent increase in national real GSP in 2013.⁶

Condition of Texas' Roads

Texas' extensive network of roads, highways and bridges has some deficiencies and experiences severe congestion in key areas. Improvements to the condition and efficiency of the state's transportation system would enhance quality of life and economic development. The state's system of 311,249 miles of roads and 51,862 bridges, maintained by local, state and federal governments, carries 234 billion vehicle miles of travel annually.⁷

The life cycle of Texas' roads is greatly affected by the state's ability to perform timely maintenance and upgrades to ensure that road and highway surfaces last as long as possible. The pavement condition of the state's major roads is evaluated and classified as being in poor, mediocre, fair or good condition.

According to the Federal Highway Administration (FHWA), in 2010, nearly half of Texas' urban state and locally maintained roads and highways were deteriorated. The FHWA pavement data in this report is based on data submitted annually by the Texas Department of Transportation (TxDOT) on the condition of major state and locally maintained roads and highways in the state. Eighteen percent of Texas' major urban roads were rated in poor condition, providing motorists with a rough ride.⁸ Roads rated poor may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced but often are too deteriorated and must be reconstructed. An additional 27 percent of Texas' major urban roads were rated in mediocre condition.⁹ Most pavements in mediocre condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition. An additional 22 percent of the state's major urban roads were in fair condition and 33 percent were in good condition.¹⁰

Texas Bridge Conditions

In addition to deteriorated pavement condition, nearly one-fifth of Texas' bridges are in need of repair or replacement.¹¹ The state's bridges form key links in Texas' highway system, providing communities and individuals access to employment, schools, shopping and medical facilities, and facilitating commerce and access for emergency vehicles.

In 2011, 18 percent of Texas' bridges (20 feet or longer) were rated as structurally deficient or functionally obsolete.¹² Approximately three percent of Texas' bridges were rated structurally deficient.¹³ A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid posted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

Fifteen percent of Texas' bridges were rated functionally obsolete in 2011.¹⁴ Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment or lack adequate capacity to accommodate current traffic levels.

The service life of bridges can be extended by performing routine maintenance such as resurfacing decks, painting surfaces, ensuring that a facility has good drainage and replacing deteriorating components. However, most bridges will eventually require more costly reconstruction or major rehabilitation to remain operable.

Traffic Congestion in Texas

Texas' urban roads have become increasingly congested, hampering commuting and commerce while reducing economic opportunities and quality of life in the state. Unless the state's transportation system is improved and enhanced, congestion will worsen dramatically in the coming years.

If roadway efficiency and capacity needs are not addressed, the average annual congestion-related delay in Texas' urban and metropolitan areas will double in 15 years from 37 hours per motorist per year to 74 hours per year.¹⁵ The TTI estimates that congestion will cost the state's economy an average of \$20 billion per year over the next 15 years, rising from a current cost of approximately \$10.8 billion per year to almost \$30 billion in 2025.¹⁶

Roadway Safety in Texas

In addition to deteriorated and congested roads and bridges, some segments of Texas' transportation system lack needed safety improvements that would make the driving environment safer and reduce the occurrence of crashes and fatalities.

TRIP estimates that roadway features are likely a contributing factor in approximately one-third of traffic fatalities. Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design.

There were 2,998 traffic fatalities in 2010 in Texas.¹⁷ A total of 16,448 people died on Texas' highways from 2006 through 2010.¹⁸ Texas' traffic fatality rate of 1.28 fatalities per 100

million vehicle miles of travel is higher than the national average of 1.11.¹⁹

Where appropriate, the severity of serious traffic crashes could be reduced through roadway improvements such as adding turn lanes, removing or shielding obstacles, adding or improving medians, improving lighting, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals.

The Cost of an Inadequate Transportation System in Texas

In a 2012 report TRIP calculated the annual cost to Texas' residents of driving on roads that are deteriorated, congested and lack some desirable safety features.

The TRIP report found that Texas roadways that lack some desirable safety features, have inadequate capacity to meet travel demands or have poor pavement conditions cost the state's residents approximately \$23.2 billion annually in the form of traffic crashes, additional vehicle operating costs and the cost of lost time and wasted fuel due to traffic congestion.

Texas' Top 100 Transportation Challenges

Deteriorated roads, deficient bridges, roads that lack desirable safety features and congested highways create challenges for a state's residents, visitors, businesses and local and state governments. Deficient or congested transportation routes or facilities result in delays, reduce economic efficiency, limit economic development opportunities and represent an economic liability in the form of the cost of correcting a deficiency.

To determine which portions of the state's transportation system cause the biggest challenges in Texas, TRIP gathered information from the Texas Department of Transportation about sections of roadways. Information requested by TRIP for each section of road, highway or bridge included the severity of the problem, the improvement needed to resolve the problem, and the level of importance of the facility to regional, interstate and international travel patterns.

TRIP then gave each transportation segment or facility an overall score, based on a scale that provided points for categories, including:

- ✓ volume of daily travel;
- ✓ the severity of the problem or deficiency;
- ✓ the importance of the route or facility to regional, interstate or international travel patterns;
- ✓ the importance of the route or facility to the regional economy
- ✓ and, the cost to repair the deficiency.

By giving each surface transportation route or facility a numerical score in each category, TRIP was then able to rank Texas' top 100 transportation challenges.

TRIP's ranking of Texas' top 100 surface transportation challenges includes the following: 38 segments of the state's major roads and highways that have significant levels of traffic congestion; seven sections of major roads or highways that have significant pavement deterioration and need to be reconstructed; 11 segments of state roadways that need safety improvements; 11 major bridges in the state that have significant deficiencies and need to be rebuilt or reconstructed; and 33 roadway facilities in the state that have multiple needs, including congestion, safety, pavement or bridge challenges.

The following list describes Texas' top 20 surface transportation challenges. Additional information for each route, as well as the full list of 100 challenges, can be found in [Appendix A](#).

- 1. Deterioration and Congestion on IH 30 in Dallas-Fort Worth.** IH 30 in Dallas County, a critical route for regional and statewide connectivity, is significantly congested and deteriorated from Jefferson to SL 12 East. The freeway would need to be reconstructed and widened, with two to four managed lanes added to relieve congestion.
- 2. Deterioration and Congestion on IH 45 in Houston.** IH 45 is a critical route for hurricane evacuation in the greater Houston-Galveston area as well as a major freight route connecting to the Port of Houston. However, from IH 610 to SL 8, IH 45 experiences significant congestion and lacks adequate mobility to support economic development opportunities. Some segments of this roadway, as well as the bridges it traverses, will need to be widened, reconstructed or replaced to improve mobility on the corridor.
- 3. Congestion on IH 35 in San Antonio.** IH 35 acts as the primary route for vehicle and truck traffic from the Texas border to San Antonio, Austin and Dallas/Fort Worth. This section of IH 35, from IH 410 to FM 3009, carries significant truck traffic due to numerous industrial companies located nearby. Because the current traffic volume exceeds the capacity of the current roadway, significant bottlenecks form at the IH 35/IH 410N and IH 35/410S interchanges. Congestion could be eased by expanding the existing six to eight-lane facility to 14 lanes (6 Managed Lanes) from US 281/IH 37 to FM 3009. While the corridor is currently undergoing a Planning and environmental study, no funding has been identified.
- 4. IH 35W Congestion in Dallas/Fort Worth.** This section of I 35W, from SH 183 to US 81 in Tarrant County, experiences severe congestion due to inadequate capacity and obsolete interchanges. In order to ease congestion, the roadway would need to be reconstructed to add managed HOV lanes.

- 5. Congestion on IH 410 in San Antonio.** This section of IH 410, from US 281 to IH 35, is the primary connection between San Antonio International Airport and IH 35. The current traffic volume exceeds the capacity of the roadway, leading to chokepoints on IH 35 where EB 410 merges with NB 35. Needed improvements to the IH 35/IH 410 Interchange would ease the existing bottleneck from EB 410 to IH 35.
- 6. Deteriorated Pavement Conditions on Statewide Secondary Roads serving the state's energy sector.** Throughout the state, secondary rural and urban roads are becoming increasingly deteriorated. These routes are critical to the development and growth of Texas' energy extraction sector. However, many are in need of major repairs and added structural capacity to handle the increased traffic, mainly from large trucks as a result of the growth in the state's energy sector.
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- 9. Congestion on US 290 in Austin.** As a major commuter route, US 290 between SL 1 and RM 1826 experiences severe congestion. This area has seen high residential growth without corresponding transportation improvements that would facilitate the convergence of three major highways: US 290, SH 71 and Loop 1 (about three miles east). During peak periods there is no access for emergency vehicles due to congestion, lack of shoulders and no alternative route. To ease congestion, the route would need to be reconstructed to add a six-lane toll road with frontage roads.
- 10. Bridge Deficiency, Safety and Congestion on US 181 at the Corpus Christi Ship Channel.** US 181 connects Corpus Christi and the Port facilities to communities and facilities north of the ship channel. The current route is congested, needs safety improvements and includes a deficient bridge. However, because a replacement structure that would meet modern design standards does not fit in the current footprint, a new location is needed. A new structure would address the steep climb, sharp approach curves and lack of shoulders on the current structure.
- 11. Congestion on IH 35 in Dallas/Fort Worth.** IH 35, from IH 30 to SH 183, is a critical route for regional and statewide travel. However, the lack of capacity and obsolete interchanges have led to increasing congestion. In order to relieve the congestion, the

route would need to be reconstructed from four/six lanes to eight lanes, to include managed lanes, collector distributors and multi-lane frontage roads.

12. Road and Bridge Deterioration and Congestion on IH 35E in Dallas/Fort Worth.

Stretching from US 67 to Jefferson, IH 35E is significantly congested with severe pavement and bridge deterioration. In order to ease congestion and repair deterioration, the freeway would need to be reconstructed and widened to include managed lanes. The bridge over the Trinity River and levees would also need to be rebuilt.

13. Need for Additional Bridge to South Padre Island to Improve Access and Relieve Congestion. South Padre Island is a major tourist destination that has only a single point of access with the mainland. The addition of a second access point to the island would provide enhanced local and regional mobility, improve safety and support economic development.

14. Deficient Bridge at South Padre Island/Port Isabel. The bridge on PR 100 provides the only connection to South Padre Island. The partial collapse of the bridge in 2001 illustrated its importance to the local economy. The bridge, built in 1974 and nearing the end of its service life in the harsh salt environment, needs to be replaced with a new structure.

15. Congestion on IH 35 in Austin. IH 35, between SH 71 and US 183, is a critical component of the primary North/South corridor for both the Austin region and the state. This section of IH 35 is extremely congested and operates at an unacceptable level of service throughout most of the day. It is located within the Austin Central Business District, causing multiple constraints for expansion and construction. Congestion relief would require operational improvements (including auxiliary lanes, intersection improvements, ramp revisions, frontage road improvements and ITS applications) and the probable addition of one express lane in each direction.

16. Congestion on IH 635 in Dallas/Fort Worth. This section of IH 635, from SH 78 to IH 20, experiences severe congestion. In order to alleviate the congestion, numerous freeway improvements would need to be made, including the addition of managed lanes and the reconstruction of I 30, US 80 and I 20 interchanges.

17. Congestion on US 83 and US 281 in McAllen, Pharr and Edinburg. Significant congestion occurs at the intersection of the two most important highways in the Rio Grande Valley, both of which are to become designated as Interstate highways in the near future. The current single-lane connectors cause traffic congestion during peak hours. The expansion of direct connectors from one-lane to two-lanes, as well as associated overpass and ramp improvements, would ease congestion on these facilities.

18. Deficient Bridge on IH 610 at US 59 in Houston. The current bridge carrying IH 610 over US 59 in Houston is deficient and needs to be rebuilt. The existing interchange will need to be replaced while maintaining traffic movement.

- 19. Deteriorated US 59 Bridge over Rice Avenue in Houston.** The heavily traveled U.S. 59 northbound and southbound bridge at Rice Avenue has significant deterioration and needs to be replaced.
- 20. Deterioration and Congestion on IH 345 in Dallas/Fort Worth.** This section of IH 345, from US 75 to IH 30, experiences severe congestion and contains a bridge that has significant fatigue deterioration. The overhead freeway bridge would need to be reconstructed or rehabilitated, including the replacement or repair of steel elements that have been subject to fatigue. Congestion would be relieved by the addition of capacity on adjacent facilities.
- 21. Deterioration and Congestion on SH 288 in Houston.** SH 288, which is critical to regional connectivity and provides access to the Texas Medical Center, experiences significant congestion from IH 610 to SL 8. The construction of four toll lanes is needed to relieve congestion in this corridor and support economic development opportunities in the region.
- 22. Congestion on SL 1 in Austin.** SL 1 is a critical component of the primary North/South corridor in the Austin region, serving as a major commuter route and providing connections to the US 183, US 290 and IH 35 corridors that are critical to statewide travel. This segment of SL 1, from US 183 to US 290, is north of the Austin Central Business District (CBD) and has severely limited right-of-way because of its close proximity to long established neighborhoods and a major freight corridor. The reconstruction of the segment from US 183 to the Austin CBD, which would add a one-lane managed lane in each direction, is set to begin in 2013. An environmental study to extend the managed lanes from the Austin CBD south to US 290 will begin in 2013.
- 23. Congestion on SL 1604 in San Antonio.** This section of SL 1604, from SH 16 to FM 471, is the primary access point to IH 10 for numerous large subdivisions and businesses in the area. Because the northwest side of San Antonio has experienced significant growth in recent years, the current traffic volume now exceeds the capacity of the roadway. The current long-range plan includes expanding Loop 1604 from a four-lane divided highway to a six/eight lane expressway to include both toll and non-toll elements.
- 24. Safety Deficiencies on RM0337 in Real County.** RM0337, from 426 to 434, in Real County is critical to rural connectivity. However, the narrow roadway poses significant safety challenges. In order to increase safety on the roadway and reduce crashes and fatalities, the roadway would need to be widened.
- 25. Congestion on SL 360 in Austin.** Loop 360 from US 290 to RM 2244 is the only Western bypass loop in the area, as well as a major commuter route that experiences significant congestion. The construction of grade separations at major intersecting roadways is needed to relieve traffic congestion on this corridor.

Transportation Funding in Texas

Texas faces a significant funding shortfall in the amount needed just to maintain the transportation system in its current condition, let alone make needed expansions or undertake new projects. Unless transportation funding is increased at the local, state and federal level, Texas' roads and bridges will become increasingly deteriorated and congested.

Over the past decade, roadway maintenance and capacity in Texas have been funded largely through bond proceeds. However, all bonding programs have now been exhausted, resulting in a 50 percent drop in funding levels from a decade ago and leaving no funds available for new construction.²⁰

A report issued by the 2030 Committee calculated that an annual statewide investment of \$9.9 billion was needed just to maintain road and bridge conditions and congestion at 2010 levels. However, after fiscal year 2014, annual state highway investment is anticipated to average just \$2.4 billion annually.²¹

Under current funding scenarios, overall pavement quality is projected to decrease by 43 percent by 2022.²² Failing to repair pavement deterioration in a timely manner will increase repair costs over time. In Texas, underfunding maintenance on the state's roads will increase the cost to preserve and restore the pavement by \$6.5 billion over the next ten years when comparing to the minimum funding amount.²³

While the growth and expansion of Texas' oil, gas and wind energy sectors has been beneficial for the state's economic wellbeing, increased traffic (especially by heavy trucks) has had a significant impact on the condition of the state's roads and highways. A recent report by the Texas Transportation Institute found that the cost of additional road repairs needed as a result

of the energy boom's wear and tear on state and county roads in Texas is estimated to be an additional \$2 billion each year for the next 20 years.²⁴

Importance of Transportation to Texas' Economy

The condition and efficiency of a region's transportation system can be a critical factor in the extent and rate of a region's economic growth. The level of mobility provided by a region's network of roads, bridges and highways has a significant impact on the productivity of local businesses. The physical condition of an area's transportation infrastructure also has a significant impact on the cost of transportation to individuals and businesses and provides an important signal to potential employers of a region's commitment to maintaining its local transportation system

Every year, \$1.167 billion in goods are shipped from sites in Texas and another \$1.246 billion in goods are shipped to sites in Texas, mostly by trucks.²⁵ Sixty percent of the goods shipped annually from sites in Texas are carried by trucks and another nine percent are carried by parcel, U.S. Postal Service or courier services, which use trucks for part of their deliveries.²⁶

Because it impacts the time it takes to transport people and goods, as well as the cost of travel, the level of mobility provided by a transportation system and its physical condition play a significant role in determining a region's economic effectiveness.

Texas' businesses are dependent on an efficient, safe and modern transportation system. Today's business culture demands that an area have a well-maintained and efficient system of roads, highways, bridges and public transportation if it is to be economically competitive. The advent of modern national and global communications and the impact of free trade in North

America and elsewhere have resulted in a significant increase in freight movement.

Consequently, the quality of a region's transportation system has become a key component in a business's ability to compete locally, nationally and internationally.

Businesses have responded to improved communications and the need to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and by accepting customer orders through the Internet. The result of these changes has been a significant improvement in logistics efficiency as firms move from a push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system, which relies on smaller, more strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

The economic benefits of a well-maintained, efficient and safe transportation system can be divided into several categories, including the following.

Improved competitiveness of industry: An improved transportation system reduces production and distribution costs by lowering barriers to mobility and increasing travel speeds. Improved mobility provides the manufacturing, retail and service sectors improved and more reliable access to increased and often lower-cost sources of labor, inventory, materials and customers.²⁷ An increase in travel speeds of 10 percent has been found to increase labor markets by 15 to 18 percent. A 10 percent increase in the size of labor markets has been found to increase productivity by an average of 2.9 percent.²⁸

Improved household welfare: An improved transportation system gives households better access to higher-paying jobs, a wider selection of competitively priced consumer goods, and additional housing and healthcare options. A good regional transportation system can also

provide mobility for people without access to private vehicles, including the elderly, disabled and people with lower incomes.²⁹

Improved local, regional and state economies: By boosting regional economic competitiveness, which stimulates population and job growth, and by lowering transport costs for businesses and individuals, transportation improvements can bolster local, regional and state economies. Improved transportation also stimulates urban and regional redevelopment and reduces the isolation of rural areas.³⁰

Increased leisure/tourism and business travel: The condition and reliability of a region's transportation system impacts the accessibility of activities and destinations such as conferences, trade shows, sporting and entertainment events, parks, resort areas, social events and everyday business meetings. An improved transportation system increases the accessibility of leisure/tourism and business travel destinations, which stimulates economic activity.³¹

Reduced economic losses associated with vehicle crashes, traffic congestion and driving on deficient roads: When a region's transportation system lacks some desirable safety features, is congested or is deteriorated, it increases costs to the public and businesses in the form of traffic delays, increased costs associated with traffic crashes, increased fuel consumption and increased vehicle operating costs. Transportation investments that improve roadway safety, reduce congestion and improve roadway conditions benefit businesses and households by saving time, lives and money.

Transportation investment creates and supports both short-term and long-term jobs. A [2007 analysis by the Federal Highway Administration](#) found that every \$1 billion invested in highway construction would support approximately 27,800 jobs, including approximately 9,500 in the construction sector, approximately 4,300 jobs in industries supporting

the construction sector, and approximately 14,000 other jobs induced in non-construction related sectors of the economy.³²

Needed transportation projects that expand capacity and preserve the existing transportation system generate significant economic benefits. Transportation projects that provide additional roadway lanes, expand the efficiency of a current roadway (through improved signalization, driver information or other Intelligent Transportation Systems), or provide additional transit capacity, produce significant economic benefits by reducing congestion and improving access, thus speeding the flow of people and goods.³³

Similarly, transportation projects that maintain and preserve existing transportation infrastructure also provide significant economic benefits. The preservation of transportation facilities improves travel speed, capacity, load-carry abilities and safety, while reducing operating costs for people and businesses.³⁴ Projects that preserve existing transportation infrastructure also extend the service life of a road, bridge or transit vehicle and save money by postponing or eliminating the need for more expensive future repairs.³⁵

The [Federal Highway Administration estimates](#) that each dollar spent on road, highway and bridge improvements results in an average benefit of \$5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.³⁶

Conclusion

Texas' residents, visitors and businesses are faced with numerous transportation challenges every day as they travel to work, go to school, shop, or move products. Eliminating these challenges by improving the condition and efficiency of the state's roads, highways and bridges will be an effective step in growing the state's economy, enhancing quality of life and making Texas an attractive place to live, work and play.

However, without additional transportation funding, many of the projects needed to ease congestion, improve road and bridge conditions and support the state's growing economy will not be completed. It is imperative that Texas adequately fund its system of roads, highways and bridges in order to address the challenges currently faced by the state's residents and businesses.

As Texas looks to build a thriving, growing and dynamic state, it will be critical that it is able to provide a 21st century network of roads, highways and bridges that can accommodate the mobility demands of a modern society.

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Endnotes

¹ U.S. Census Bureau. www.census.gov.

² [Texas State Data Center](#).

³ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2010, 1990. www.fhwa.dot.gov.

⁴ TRIP calculation based on U.S. Census and Federal Highway Administration data.

⁵ USgovernmentspending.com. Comparison of State and Local Government Spending and Debt in the United States Fiscal Year 2012.

⁶ [Ibid.](#)

⁷ U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2010. www.fhwa.dot.gov

⁸ TRIP Analysis of 2010 Federal Highway Administration data. The data includes 2010 International Roughness Index (IRI) data for urban Interstates, other freeways and expressways, other principal arterials and minor arterials. 2008 Present Serviceability Ratings (PSR) data for urban minor arterials was also included because Texas 2010 PSR data is not yet available.

⁹ [Ibid.](#)

¹⁰ [Ibid.](#)

¹¹ U.S. Department of Transportation - Federal Highway Administration: National Bridge Inventory 2011.

¹² [Ibid.](#)

¹³ [Ibid.](#)

¹⁴ [Ibid.](#)

¹⁵ Texas Transportation Institute (2012). Mobility Investment Priorities Project: Early Recommendations Report. <http://mobility.tamu.edu/mip/pdfs/MIP-Early-Recommendations-Report.pdf>

¹⁶ [Ibid.](#)

¹⁷ National Highway Traffic Safety Administration. 2010 data.

¹⁸ [Ibid.](#)

¹⁹ TRIP analysis of National Highway Traffic Safety Administration and Federal Highway Administration data, 2010.

²⁰ The Cost of Doing Nothing: An Informational Reference. June 2012. www.infrastructuretexas.org

²¹ It's About Time: Investing in Transportation to Keep Texas Economically Competitive. 2030 Committee. March 2011. Additional analysis provided by TRIP.

²² The Cost of Doing Nothing: An Informational Reference. June 2012. www.infrastructuretexas.org

²³ [Ibid.](#)

²⁴ Texas Energy Development and TxDOT Right-Of-Way." 2012. Texas Transportation Institute. <http://tti.tamu.edu/2012/09/17/tti-study-estimates-roadway-damage-of-the-texas-energy-boom/>

²⁵ Bureau of Transportation Statistics, U.S. Department of Transportation. 2007 Commodity Flow Survey, State Summaries.

²⁶ [Ibid.](#)

²⁷ National Cooperative Highway Research Program. Economic Benefits of Transportation Investment (2002). p. 4.

²⁸ The Transportation Challenge: Moving the U.S. Economy (2008). National Chamber Foundation. p. 10.

²⁹ [Ibid.](#)

³⁰ [Ibid.](#)

³¹ [Ibid.](#)

³² Federal Highway Administration, 2008. Employment Impacts of Highway Infrastructure Investment.

³³ The Transportation Challenge: Moving the U.S. Economy (2008). National Chamber Foundation. p. 5.

³⁴ [Ibid.](#)

³⁵ [Ibid.](#)

³⁶ FHWA estimate based on its analysis of 2006 data. For more information on FHWA's cost-benefit analysis of highway investment, see the 2008 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance.