It's About Time:
Investing in Transportation to Keep Texas Economically Competitive

2030 COMMITTEE

MARCH 2011

2030 Committee

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Table of Contents

Preface

About the 2030 Committee

In 2008, Texas Transportation Commission Chair Deirdre Delisi appointed members of the original 2030 Committee. The initial charge of this committee made up of experienced and respected business leaders was to provide an independent, authoritative assessment of the state's transportation infrastructure and mobility needs from 2009 to 2030. The report that emerged from the first 2030 Committee, entitled *2030 Committee Texas Transportation Needs Report*, was released in February 2009 and can be found, along with its executive summary, on the Committee's website: http://texas2030committee.tamu.edu.

In July 2010, Chair Delisi reconvened the 2030 Committee, which includes most of the original Committee members, and charged it with developing a forecast for alternative levels of service for the four elements of the Texas transportation system—pavements, bridges, urban mobility and rural connectivity—along with analyzing potential sources of transportation revenue and determining the economic effects of under-investing in the system.

The 2030 Committee's charge was forecasting alternative levels of service for the Texas transportation system, analyzing revenue sources and determining the economic effects of under-investing in the system.

About the Research Team

The Committee provided guidance and direction to a nationally renowned research team of transportation experts at the Texas Transportation Institute (TTI), a member of The Texas A&M University System; the Center for Transportation Research at The University of Texas at Austin; and The University of Texas at San Antonio. Staff at the Texas Department of Transportation (TxDOT) provided input and support for the research team.

About the Report

This current report, *It's About Time: Investing in Transportation to Keep Texas Economically Competitive*, updates the February 2009 report by providing an enhanced analysis of the current state of the Texas transportation system, determining the household costs of under-investing in the system and identifying potential revenue options for funding the system. However, the general conclusion has not changed. There are tremendous needs and high costs associated with "doing nothing new."

The updated 2030 Committee report provides more details about transportation challenges in Texas and the possible solutions to those challenges:

- This report examines mobility and infrastructure conditions for 2015, 2019 and 2035 to give a near-term as well as a longer-term view.
- The 2030 Committee recommends that an overarching set of action principles be used to make project selections.
- The Committee identified a number of low-cost strategies that can be used to address the challenges. These strategies will not "solve" the problems, but many can be started quickly, provide benefits to many users and reduce the total cost to achieve desirable outcomes.
- The Committee estimated current infrastructure and mobility trends and compared them to goals. This resulted in an estimated funding gap between expected conditions and desirable outcomes.
- The Committee listed revenue options and the funding that each approach might generate.

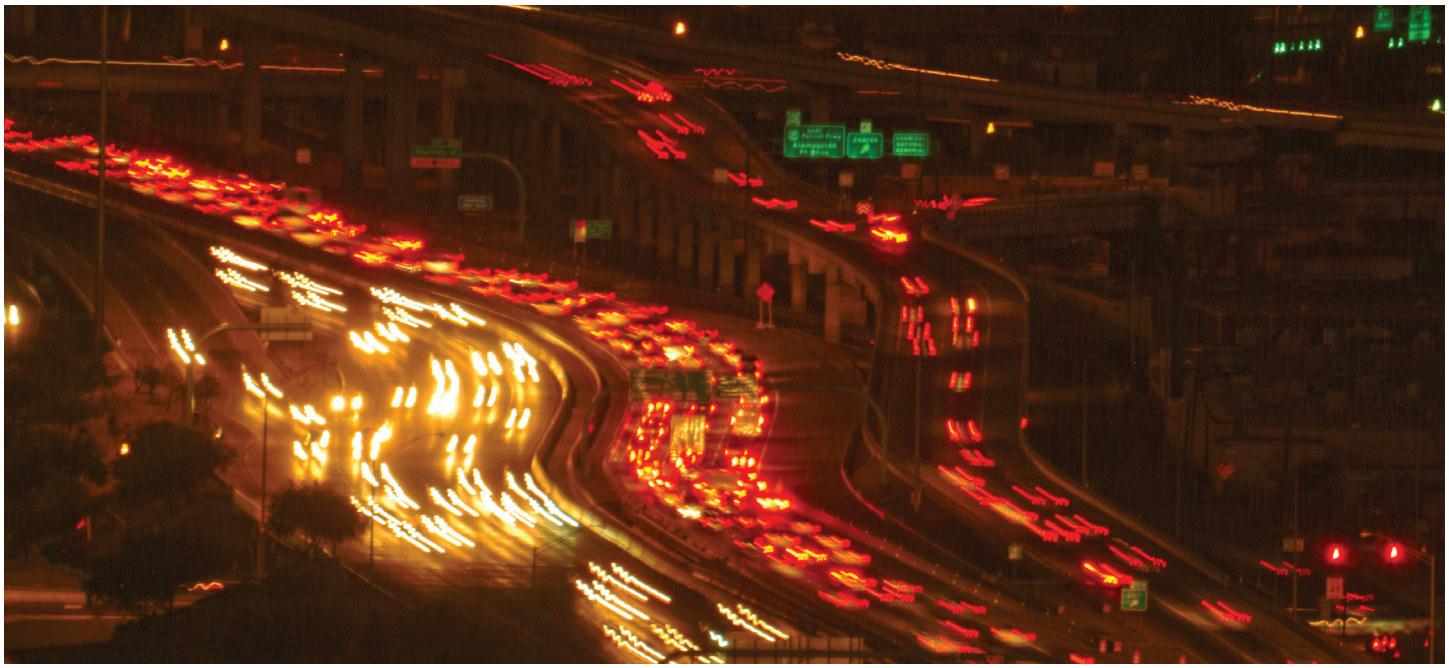
The costs of moving people and goods efficiently and how we deal with it now will have a profound effect on the future of our state.

— David Marcus, Vice Chair
2030 Committee

Why Are the Numbers Different from the 2009 Report?

This report is not an estimate of needs in the same manner as the 2009 report. Some of the scenarios are similar, and the same four transportation system elements—pavements, bridges, urban mobility and rural connectivity—are examined, but the reader should be aware of the significant differences between the two reports. In addition, this report:

- Estimates costs and conditions to 2035.
- Describes the very real choices that Texas and Texans face over the next 25 years and the options for improving their transportation.
- Develops new scenarios to illustrate the effect of not adopting new policies or funding programs.
- Emphasizes the importance of pavement maintenance.
- Focuses on remedies for deficient bridges.
- Uses updated regional estimates of funding and congestion levels.
- Incorporates the recent congestion decline in most urban regions.
- Includes an estimate of revenue projections for current policies.
- Calculates the gap between likely funding and the amount required to meet a range of goal conditions.



The Challenge Facing Texans

Texas has experienced more than 40 years of strong economic growth. Strategic transportation investments have played a significant role in enabling Texans to live and work where they choose and efficiently transport goods to markets and manufacturers. Unfortunately, transportation investments have not kept pace with the state's growth. Subdivisions, office buildings, schools and other travel destinations are often built without sufficient facilities to accommodate the travel created by these developments. Increasing traffic problems in rush hours—and even in the middle of the day in some cities—are only one symptom of the investment gap.

Factors impacting the quality of Texas transportation include:

- **Burgeoning population and job growth**—The 15 million new Texans projected to arrive over the next 25 years mean Texans will need to make more transportation investments in cities and rural areas.
- **More freight being moved**—Freight traffic is expected to grow at twice the rate of passenger vehicle traffic (miles traveled by truck will increase by 120 percent) as the Texas economy grows over the next 25 years. Trucks and trains in rural and urban corridors are a key part of the economy and must travel on reliable timetables. If freight does not move efficiently in Texas, the state will lose jobs to areas where freight moves more easily.
- **Road preservation concerns**—It is cheaper to keep roads in good condition than to fix them after they deteriorate. Maintaining transportation facilities is similar to maintaining a vehicle; it is easier and cheaper to change the oil and filter than to burn out the motor and then replace it. Since roads deteriorate under traffic loading and will eventually reach their design life, the projections show that many road miles will require costly rebuilding even if the best efforts are made to preserve them through the most cost-effective maintenance programs.
- **Increased time and costs for system improvement**—Waiting until transportation problems escalate will mean higher costs for transportation system improvements. Major transportation projects can take years to plan, design and build.

Examining the various elements of the Texas transportation system is like standing on a burning platform. The state's investment in transportation has not kept pace with the significant growth we have experienced. Our state leaders must recognize and address this problem before it's too late.

— C. Michael Walton, Chair
2030 Committee

The congestion of our roadways is well-known by drivers in the metropolitan areas. Our deteriorating roadways are just becoming apparent. One of the 2030 Committee's greatest accomplishments is outlining the cost of doing nothing if we fail to maintain our transportation system.

—Tom Johnson
2030 Committee

- **Deficient bridges**—Addressing current bridge deficiencies would require $3 billion. Most deficient Texas bridges (designated structurally deficient or unable to carry a legal load) do not collapse completely. Instead, they have weight restrictions placed on them, which cause inconvenience to the traveling public. Restrictions increase the likelihood of additional costs and travel delays for commuters and freight shippers due to poor ride quality and detours. Without continued and enhanced funding, more of the state's bridges will fall into this category and affect mobility in urban and rural areas of the state.
- **Significant erosion in traditional funding**—Income from traditional transportation funding sources (taxes and fees) is no longer sufficient to keep pace with current and projected highway construction and maintenance cost increases.
- **Recent one-time funding infusions breed complacency**—Recent one-time funding infusions from a variety of sources have enabled road and bridge conditions to be maintained, even while traditional funding sources have declined. Urban traffic congestion grew during the last decade; it recently declined with the economic recession but is on the rise again. The one-time funding infusions make it easy to overlook the problems coming in the near future.

It is certain that Texans will need to pay more to keep reliable transportation in the future, but there are several questions that need to be answered to determine how much funding will be needed and how it will be generated.

- Will Texans pay taxes and fees sufficient to fix the problems?

Or, will they pay:

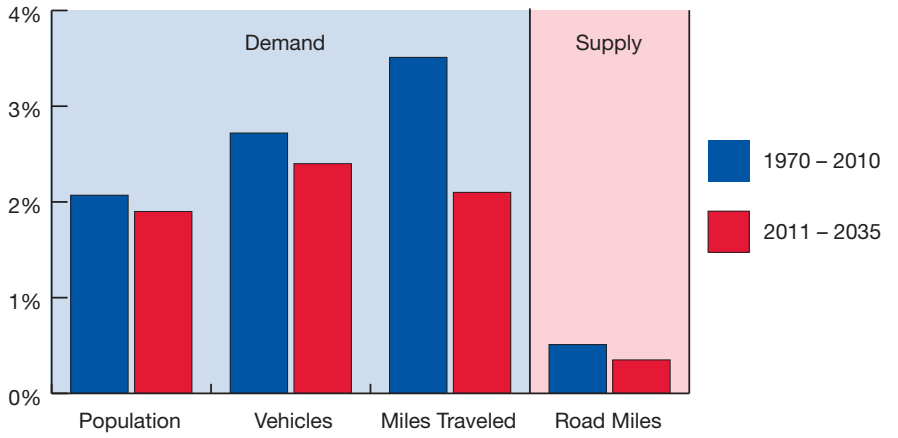
- Higher vehicle maintenance costs due to driving on poor roads and bridges?
- For more fuel they must use in stop-and-go traffic?
- More for goods and services due to traffic delays or increased maintenance costs resulting from travel on poor roads?
- In lost time with families and businesses due to fewer commuting options and longer rush hours?

Growth—Celebrate the Trend but Address the Difficulties

Texas' transportation needs are a product of the state's good business environment, quality of life and relatively low cost of living in the urban and rural areas. Since 1970, growth in population, the number of vehicles on Texas roads and the number of miles traveled have increased much more rapidly than the Texas transportation system has expanded. Texas is predicted to grow from 25 million people now to 40 million people by 2035. Population and job growth will bring more congestion to urban areas, increase the stress on roads and bridges and place greater demand on rural highways to support freight movement and travel connections between farms, ranches, homes, jobs and markets.

Exhibit 1 compares the trends in the past and the future. The reader's first reaction may be "growth will be slower, and problems will not be as bad." While the growth will be slower in the future, all the demand indicators continue to increase faster than the roadway capacity that is needed to handle all of this growth. And, in contrast to 1970, the state has several regions that began the second decade of the 21st century with significant congestion problems.

Exhibit 1. Texas Growth Trends—Past and Future (Annual Percent Increase)



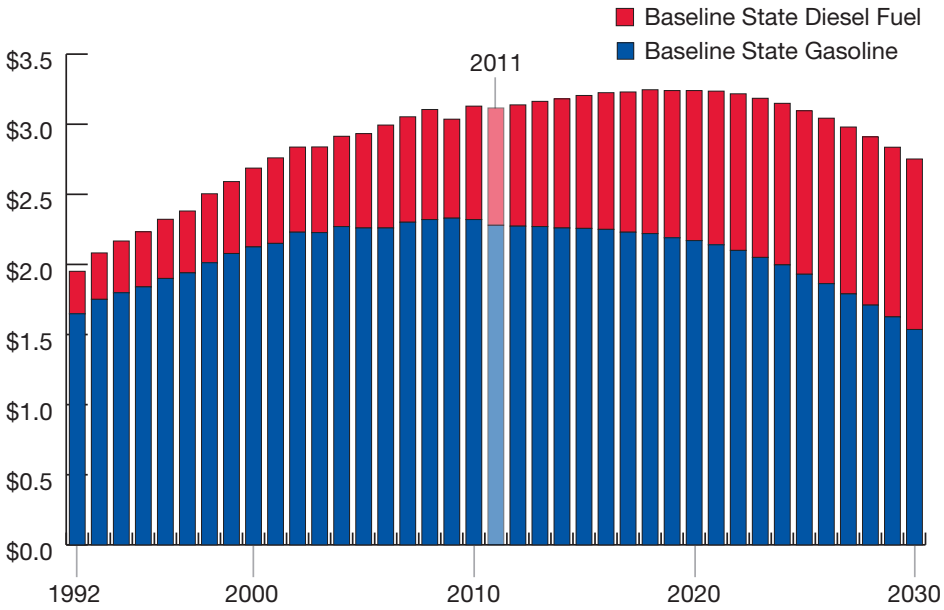
Source: State Data Center (Population), Federal Highway Administration (FHWA) Highway Statistics Publications (Vehicles and Miles Traveled), and TxDOT's District and County Statistics (DISCOS) (Road Miles).

The imbalance between transportation demand and supply will remain; therefore, congestion will continue to grow rapidly.

Adding to the funding and growth challenges, today's more fuel-efficient cars and trucks pay lower fuel taxes per mile than when the tax rates were set almost two decades ago. While these vehicles offer benefits, such as leaving a smaller carbon footprint and allowing Texans to travel further per gallon, increasingly fuel-efficient vehicles (plus hybrid and alternative-fuel vehicles) generate less income from motor fuel taxes to fund the rising demands on Texas roadways as we move further into the 21st century. As Exhibit 2 shows, Texans will not be able to count on ever-increasing fuel tax revenues as they have in the past.

The combination of these two trends—increased demand on our roadway network and reduced revenue from the motor fuel tax—defines the transportation challenge facing Texans.

Exhibit 2. Motor Fuel Revenue (Billions of $2010)



Source: Texas Comptroller of Public Accounts and the TxDOT TRENDS Model.

Texas Transportation Action Principles

Our state's economic future will depend upon our ability to move goods and people. Good logistics require good infrastructure. This report lays a foundation for the infrastructure that will secure a sound future.

—Harris County Judge Ed Emmett
2030 Committee

Local and regional leaders know the transportation needs and are highly accountable to the public. The 2030 Committee encourages TxDOT to continue improving methods for including regional and local leaders in assessing and determining transportation priorities. The recent planning rules adopted by the Texas Transportation Commission (Minute Order 112374, August 2010) that include more public input and coordination are a good step in that direction. However, the Committee believes that certain principles should guide investments in transportation programs. The Committee used these principles to:

- Identify methods to select transportation projects (without choosing individual projects).
- Identify appropriate funding levels.
- Ensure accountability with Texans.

These principles recognize the link between two questions: "How much funding should be spent on transportation?" and "How should that funding be spent?" If Texans are not persuaded that their taxes and fees are well spent, they are not likely to view transportation programs as worthy investments. The Committee recommends that the following principles guide decision makers regarding investments in transportation programs:

- **First and foremost, preserve Texas' substantial investment in transportation infrastructure**—Existing roads, bridges and other transportation facilities must be maintained to operate efficiently. In the same way that drivers regularly change the oil and filter instead of running the car motor until it stops completely, regular maintenance of the transportation system is much cheaper and easier to accomplish than rebuilding a road that has disintegrated. Poor roads also drive up trucking costs, which in turn are passed on to companies and their customers, affecting economic development, jobs and retail costs of all types.

- **Ensure Texas is getting "bang for the buck" from its transportation system**—Agencies should get as much out of the current system and funding levels as possible. Several technologies and strategies have proven to increase the number of travelers that can be handled and improve the average road speed. Rapidly clearing crashes, timing traffic signals to provide green time to facilitate rush-hour traffic flows, designing roads that provide safe access to developments and allow high-speed traffic flow on major streets, and complementing road systems with well-designed fixed-route bus and rail systems are only a few of these techniques.
- **Involve transportation users and employers in transportation solutions**—Mobility strategies include several actions that all transportation users can take:
  - Telecommuting (using computers, telephones and other electronic methods).
  - Flexible work hours that allow employees to change their commute times.
  - Programs that support ridesharing and transit ridership.
  - Incentive programs that persuade peak-period travelers to change the way they use the transportation system.
  - Re-working business practices so that freight movement avoids peak traffic hours.

These and many other programs can provide cheaper methods to address the travel demands of growing urban regions. (See Appendix C for more information.)

- **Attack problems and seize opportunities**—Transportation projects, policies and programs should focus on locations where problems are the largest and where improvements will provide long-term benefits. This may involve revisions to current plans—such as revisiting road designations in the Texas Trunk System or identifying new priorities.
- **Display results and support accountability**—Regular reporting of transportation spending and the results achieved through the investments will improve the visibility of transportation programs and help ensure that improvement projects gain broad support.
- **Require users to pay for services they "consume"**—Fuel taxes, vehicle registration fees and other transportation levies should be used to provide roadway maintenance, operation and new capacity. For example, special licenses for oversized and overweight vehicles could be priced according to the road damage those vehicles have proven to produce.
- **Make timely decisions about transportation investment levels**—Decision makers need to recognize how transportation decisions are connected to the expectations that Texans have for travel conditions. Potential action strategies should be analyzed as rapidly as possible and adapted to the funds available.
  - **Pavement and bridge quality**—The condition of roads, bridges, rail lines and other infrastructure should be closely monitored. If conditions fall below levels that provide acceptable service to the movement of people and goods, corrective actions should be taken quickly.
  - **Urban mobility and rural connectivity**—Many of the projects to address mobility issues require a long time to plan and design. Congestion relief and connectivity projects must also have public support and available funding because many of them are key aspects of economic development efforts. A range of planning efforts should continue even if funding is not available for all of the projects.

Responding to the dual challenges of decreasing congestion and improving air quality will require creative thinking and a commitment to use every transportation tool available to us—including trains and buses—to keep Texas and Texans moving.

—Gary Thomas
2030 Committee

Texas' Deteriorating Transportation System: Background and Measurement

At BNSF, we understand the importance of infrastructure to the economic health and well-being of our state and country. Our infrastructure must be properly maintained and have adequate capacity to meet current and future needs. The 2030 Committee has focused on these same issues across all modes for Texas and presents policymakers and the public with some alternatives and their consequences.

— Roger Nober
2030 Committee

Four transportation system elements—pavements, bridges, urban mobility and rural connectivity—are examined in this report. The report addresses problems that relate to:

- The age of the Texas transportation system.
- The way in which Texans use the network.
- The expectations that Texans have for the state's transportation system.

Poorly Maintained Facilities Are Expensive to Repair

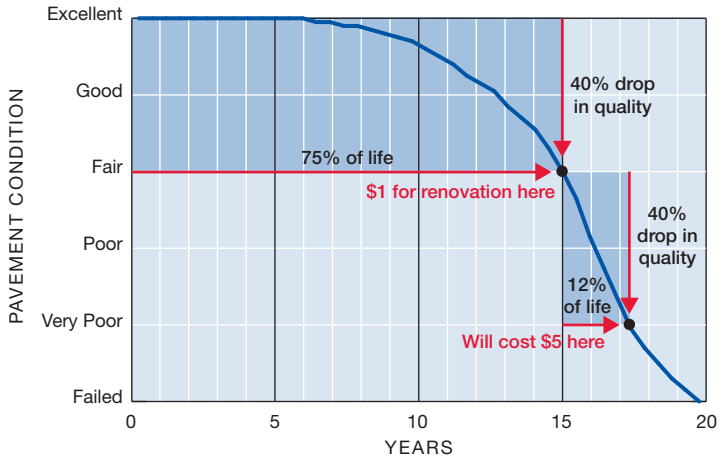
Pavement quality is more important than just providing a smooth ride; trucks carrying freight are designed to run on smooth roads. If pavements get rougher, trucks must be designed with more structure to withstand bumpier rides, reducing the amount of cargo they are able to carry and using more fuel to carry the same amount of goods.

Texas built the majority of the state's 147,500 lane-miles of Farm to Market roads and primary State Highway routes in the 1940s, 1950s and 1960s. These roads have a typical design life of 15 to 20 years. Although TxDOT uses preventive maintenance treatments to get the most out of the state's highways, when the roads reach the end of their design life, they require more extensive and more costly reconstruction. The state built the first segment of Interstate highway in Texas in 1962 and completed construction on the last stretch of it in 1992. Interstate highways have a typical design life of 30 years. Even these 47,000 lane-miles of higher quality Interstate and U.S. Highway roads will require costly reconstruction when they reach the end of their design life. In 2010, approximately 2 percent of the state's roadways were reaching the end of their design life and will likely require reconstruction rather than simply preventive maintenance.

Exhibit 3 presents a general description of how maintenance and repair costs increase when pavement condition declines. Pavements with good and very good quality are relatively inexpensive to treat because the pavement structure remains adequate. Low-cost and easily applied surface treatments are sufficient to repair the distress on these pavements. Pavement repair costs dramatically increase when conditions decline to

poor or very poor. At these conditions, the pavement structure must be restored with major repairs, often requiring road lanes to be closed. Regular maintenance with frequent low-cost treatments can keep condition levels in the good and very good ranges with relatively modest funding amounts.

Exhibit 3. The Importance of Pavement Maintenance*



**Time varies depending on traffic, climate, pavement design, etc.*

Source: The Pothole Report: An Update on Bay Area Pavement Conditions. *Metropolitan Transportation Commission, Oakland, Calif., March 2000.*

Key Measure: Percent of pavement in fair or worse condition
Goal: Less pavement area in fair, poor or very poor condition

Bridges in Bad Condition Result in Restricted Load Weights and Detours

Bridges have many of the same problems as pavements, but the remedies are different. If funding is available, a bridge can be strengthened. Unlike pavements, however, if a bridge fails its bridge inspection, it is either closed or restricted to lighter-weight vehicles. These actions mean that heavy vehicles, such as cargo-carrying trucks or school buses, must be rerouted to roads and bridges that can handle their loads. As a result, these vehicles (with weights that are legal on other roads) travel longer distances to deliver goods and services, thereby increasing travel time and costs. The deficiency measure includes the bridge areas that are classified as structurally deficient and bridges that cannot carry legal loads. The report does not address functionally obsolete bridge conditions; while this is an important challenge facing the state, the focus is on the more critical structural challenges facing our bridge system.

Texas bridge surface area, excluding culverts, is close to 430 million square feet of on-system (state-managed) and off-system (managed by cities and counties) bridges. These bridge assets are valued at over $83 billion in today's dollars. Bridges have a typical design life of 50 years. After 50 years, bridges usually require major maintenance interventions that require heavy rehabilitation or replacement, many times with costs close to or above new bridge construction. In 2010, 13 percent of the bridge surface area in Texas was over 50 years of age and will require major investment in the next 20 years.

Key Measure: Percent of bridge surface area that is deficient
Goal: Less bridge area in deficient condition

Transportation is an engine of economic development. If we fail to respond to the need to maintain and develop our transportation infrastructure, we will choke the growth of Texas.

— Drew Crutcher
2030 Committee

The size and growth of our state requires reliable connectivity between our cities and towns and high-quality roads and bridges. Transportation must be a top priority to support the vibrant international commerce that is vital to the Texas economy.

—Cullen Looney
2030 Committee

Traffic Congestion Is about More than Extra Time to Get to Work; It's about Quality of Life

Urban mobility is the ability to move people and goods within large and small cities to get to work, school, leisure, health-care or other destinations. Traffic congestion is the result of too many vehicles trying to move at the same time on a network that cannot handle these demands. Congestion costs include the extra travel time and additional fuel that is required to drive in stop-and-go conditions.

Solutions include both traditional road and public transportation projects that increase the capacity for travel. There are also a number of techniques that use advanced technology or innovative policies to move more people and goods using the same roadway space and the same transit vehicles. Incentive programs can encourage people to travel at different times of day, in carpools or on buses and trains—or to not travel at all, accomplishing their trips using computers, telephones or other electronic methods. All of these techniques are designed to allow people to improve their quality of life by moving when and where they wish, getting to jobs that pay well and/or they enjoy, patronizing stores with good value, accessing health-care facilities and traveling to a range of other desired destinations.

Key Measure: Hours of extra travel time each year for the average peak-period commuter
Goal: Less travel delay time

Rural Connectivity Is Vital to the Economy of Small Communities

Major rural Texas highways should provide a high-quality network between cities and towns, points of entry, tourism areas, ports and other vital destinations for people and freight. The Texas Trunk System has been identified as the road network that should consist of four-lane divided highways to enable people and freight shippers to support the economy. This road design allows faster vehicles to pass slower vehicles and reduces the number of serious head-on traffic collisions. The transportation quality scenarios in this report prioritize improvements to the Texas Trunk System and other rural roads with higher traffic volumes as a way to estimate the costs of adding needed rural road capacity. Rural road improvements should focus on projects that support the economic goals of cities and the state. These improvements may include upgrades of state roadway standards to match Interstate roadway standards to gain the additional economic development benefits of being adjacent to a designated Interstate route.

Key Measure: Percent of major rural roads with high traffic volumes
Goal: Fewer miles of road with high traffic volumes

Household Transportation Costs – Two Factors

Two cost components are paid by the average Texas household for the 2030 Committee scenarios. "Taxes and fees" include all costs required to fund pavement and bridge maintenance, reduce urban congestion and improve rural connectivity. "Vehicle use and maintenance costs" include the extra time, fuel and oil needed as a result of traffic congestion as well as detours around closed bridges and additional vehicle operating costs, such as new tires and other maintenance costs that result from rough roads and bridges. Taxes, fees, use and maintenance costs associated with commercial vehicle operations are not included in the household costs.

Baseline Scenario: Unacceptable Conditions Due to Expected Funding

Income from our traditional transportation funding sources (taxes and fees) is no longer sufficient to keep pace with current and projected highway construction and maintenance cost increases. Recent one-time funding infusions from a variety of sources have masked the problem, enabled road and bridge conditions to be maintained and slowed the growth of urban traffic congestion. So why is this report important to Texas? The past, unfortunately, does not predict the future. Most of the trends are not sustainable, and future conditions will be worse.

How We Got Here

The relatively good conditions were achieved by several one-time funding infusions and events:

- **Texas used the "credit card approach"** by obtaining voter approval for bonds to fund transportation projects. These funds provided $6 billion in improvements, but as of January 2011, less than $700 million of that funding remained. The funds will be depleted by 2012. Paying off the debt will require an average annual expenditure of over $400 million during the next 20 years. In addition, other mobility-related financial obligations will increase to almost $530 million per year by 2014. Combined, these payments will consume over 6 cents of the 15-cent portion of the fuel tax dedicated to transportation between now and 2014.
- **The American Recovery and Reinvestment Act** resulted in $2.24 billion in highway projects in 2009 and 2010. These funds are not likely to be available in future years.
- **The payments for the rights to develop three large toll road projects** in the Dallas-Fort Worth region were used to fund approximately $2 billion in other freeway and street mobility improvement projects. However, there are few remaining funds for additional projects.
- **The economic slowdown of the past three years** temporarily reduced the congestion problem. Fewer people traveled to work or school in the peak travel periods, thereby reducing urban congestion levels by 5 to 10 percent. Congestion is expected to return to its normal pattern of growth, however, as the economy recovers, particularly in areas with rapid job growth.
- **Statewide pavement conditions have been stable over the last several years** with substantial investment in maintenance funding. Some of these funds have been drawn from future years through a federal program that provides flexibility in spending patterns. But those funds must be paid back, which will result in reduced maintenance funding in the next few years.

Where We Are and Where We Are Going

With expected funding over the next 10 years, road and bridge conditions will get worse, congestion will increase, and people and freight will encounter travel problems in rural areas. The Committee studied and assigned letter grades to four transportation scenarios to illustrate the choices that Texans will face between 2011 and 2035. The Committee deemed the trend associated with the current revenue estimates as "Unacceptable Conditions," and it received a failing grade of "F."

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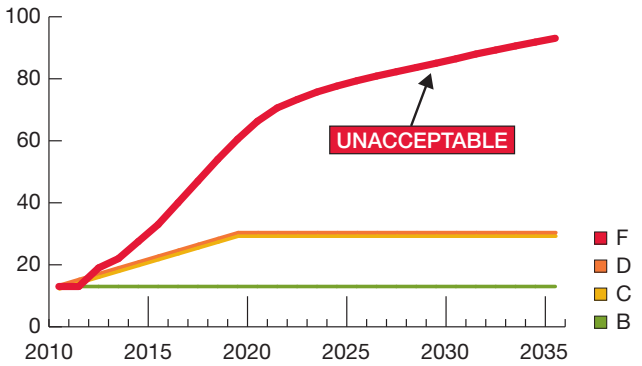
GRADE F: Unacceptable Conditions Scenario with Expected Funding

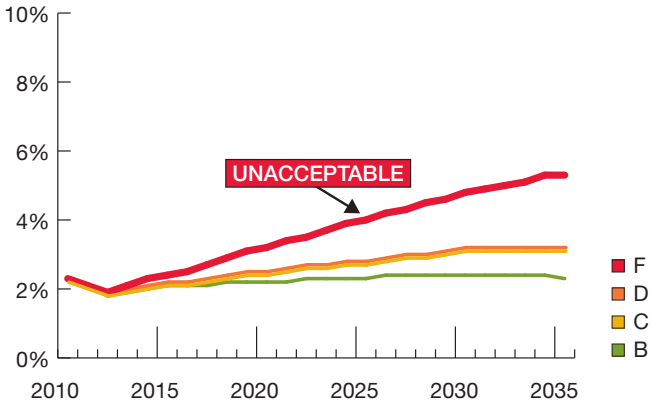
Bridge surface area rated as deficient will decline over the next two years as a result of projects underway.

Exhibit 4. Percent of Pavement in Fair or Worse Quality



See Appendix A for more information.

Exhibit 5. Percent of Deficient Bridges



See Appendix B for more information.

The future appears to consist of one trend—road quality deterioration and mobility decline that will result in unacceptable conditions for Texans.

- Funding (in 2010 dollars) will decrease as fuel-efficient vehicles contribute lower tax revenues per mile of travel.
- Road and bridge conditions, urban traffic congestion and connections between rural communities will worsen.
- Texans will pay more for transportation beginning in the next few years. The taxes and fees paid will be low, but total transportation costs will go up.

Pavement Quality

The pavement maintenance budgets projected over the next 25 years under the current funding trend are expected to result in significantly poorer pavement quality (Exhibit 4).

- Bumpier roads will result in higher maintenance costs for personal vehicles as well as for commercial delivery vehicles and cargo trucks.
- The rapid rise in substandard pavements between 2011 and 2019 is the result of good pavements not being properly maintained due to insufficient funding. While some of the pavements are old, deterioration can be slowed if they are maintained.
- By 2035, almost all of the pavements in Texas will be rated as fair, poor or very poor. Last year's inspection revealed only 13 percent of road miles in that condition.
- If transportation officials decided in 2035 to restore the pavement condition to current levels, Texans would pay $54 billion (2010 dollars) to bring the pavement conditions to 2010 levels.

Bridge Quality

The surface area of bridges rated as deficient will decline over the next two years as a result of projects underway (Exhibit 5). As Texas bridges age, however, more maintenance and rehabilitation will be needed. If current funding levels are maintained, the off-system bridges (those not maintained by TxDOT) will be in worse condition than the bridges on TxDOT's road network.

- By 2019, deficient bridge surface area will increase from a statewide total of 2.3 percent to 3.1 percent. The bridge deficiencies will affect 6 million vehicles per day.
- By 2035, deficient bridge surface area will increase to a statewide total of 5.3 percent. More than 18 percent of off-system bridges will have this condition. The bridge deficiencies will affect 15 million vehicles per day.
- The cost to repair the backlog of deficient bridges will increase from $3 billion in 2010 to $7 billion in 2035 (in 2010 dollars).

Urban Traffic Congestion

If this funding trend continues, growth in jobs and people will not be addressed by new transportation projects.

- Urban congestion is projected to rise from 37 extra hours of travel today to 44 hours in 2015 and 50 hours in 2019. This represents the equivalent of 4½ days of vacation today and more than 6 days of vacation by 2019 (Exhibit 6).
- Many of the benefits from one-time funding sources will slow congestion growth through 2019.
- The projections are worse from 2020 to 2035. Congestion will grow to an average of 130 hours of extra travel time; transportation investments will not keep pace with the growth in jobs and people over this period.
- More travel time means less productive time at work, less time with family and friends and larger delivery and service fleets to handle the same number of customers.

Rural Connectivity

There are almost 20,000 miles of freeways and arterial roads in rural Texas. In 2010, 1,400 miles (7 percent) of these main rural roads had high traffic volumes.

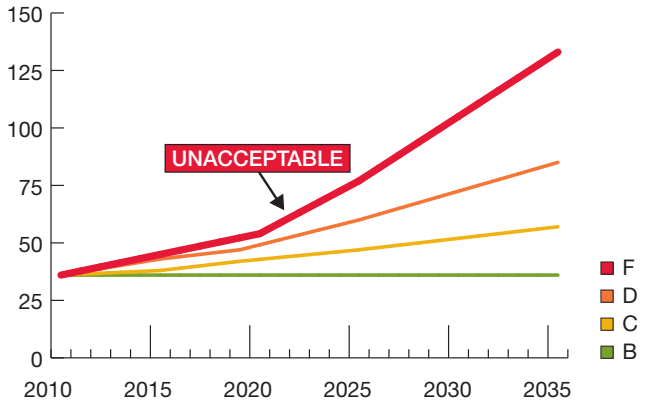
- The amount of rural Texas roadway that has high passenger vehicle and truck volume, particularly on undivided roadways, will increase to approximately 2,600 miles (13 percent) in 2019 under this funding trend (Exhibit 7).
- Another 2,400 miles will enter that category by 2035, bringing the total to 25 percent of major rural roads.

Household Transportation Costs

Exhibit 8 highlights the annual transportation taxes and fees that will be paid by the average Texas household with the Unacceptable Conditions Scenario. From 2011 to 2035, these costs will average $232 per household per year. The additional vehicle operating costs that will be paid by households will average almost $6,100 each year.

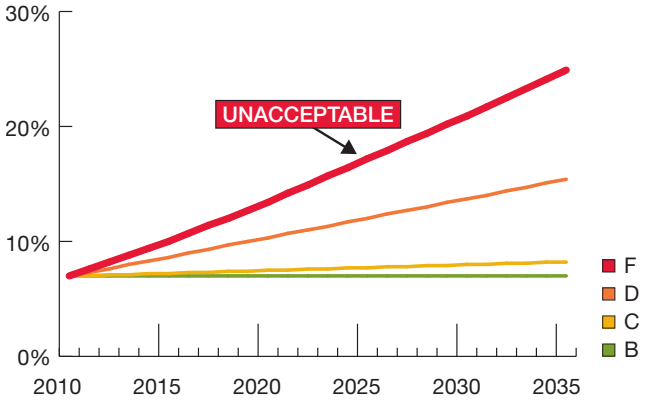
- The $232 per year per household is no "bargain." The extra use and maintenance costs that Texans will pay are 26 times higher than the taxes and fees.

Exhibit 6. Annual Hours of Delay per Commuter



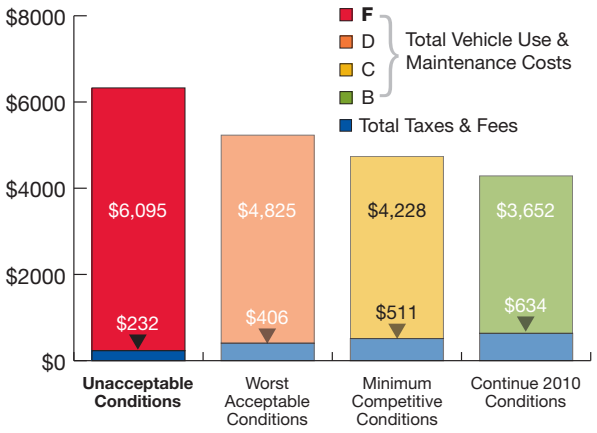
See Appendix C for more information.

Exhibit 7. Percent of Congested Rural Roads



See Appendix D for more information.

Exhibit 8. Average Annual Household Transportation Costs, 2011 to 2035 ($2010)



See appendices for more information.

The availability and the price of everything we purchase and consume are impacted by the efficiency of freight movement. It is vital to the future of Texas that we keep all modes of freight moving efficiently throughout our great state.

—Ken Allen
2030 Committee

Texas' Alternative Futures: Three Improved Scenarios

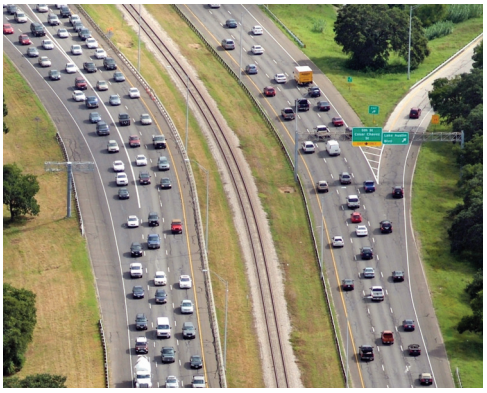
The 2030 Committee developed three alternatives to the unacceptable conditions forecast that will result from the current policies. Each adheres to the principle of "get as much use out of the current system and the current funding levels as possible." This approach includes several strategies that can be achieved with relatively low cost and no statutory changes, but they return large benefits for every dollar spent. The Committee quantified the cost of transportation for the average Texas household—the taxes and fees as well as the costs that some forget to include in these analyses, such as extra travel time and fuel due to traffic congestion, or closed bridges or increased vehicle maintenance costs due to rough roads for each of the transportation quality scenarios.

The Committee did not assign a letter grade of A to any scenario due to the significant funding required to achieve this level of quality for the transportation system. The three alternative transportation quality scenarios and their letter grades are described as follows.

- GRADE D: **Worst Acceptable Conditions** —This scenario represents the conditions that are the worst acceptable values for each of the four system elements, with a focus on preserving the enormous investment already made in the transportation system infrastructure:
  - Pavement and bridge maintenance will increase to slow the decline in conditions between 2011 and 2020. After 2020, the pavement conditions will hold steady at a level much worse than 2010 conditions. Under this scenario, 30 percent of pavements will have fair, poor or very poor conditions, and 5 percent will have very poor conditions in 2035. The surface area of deficient bridges will comprise slightly more than 3 percent of the bridge system in 2035, although approximately 7 percent of the smaller off-system bridges (those not maintained by TxDOT) will have this rating.
  - Urban congestion will grow at a rapid rate. Congestion will be better than under the Unacceptable Conditions Scenario but will more than double to an average of 84 hours of extra travel time per urban commuter by 2035. Overall costs can be reduced by using the Texas Transportation Action Principles.
  - Major rural highway connectivity improvements will add enough roadway lanes to alleviate only the most heavily traveled sections of the Texas Trunk System.

- GRADE C: **Minimum Competitive Conditions**—Texas has successfully maintained its transportation infrastructure in a condition at least equal to or better than that of its peer states and metropolitan regions, but the Worst Acceptable Conditions Scenario does not provide this level. The Minimum Competitive Conditions Scenario improves each of the four transportation system components:
  - The percent of very poor pavements would drop from 5 percent as seen in the Worst Acceptable Conditions Scenario to 2 percent in 2035.
  - The number of deficient bridges would be identical to the Worst Acceptable Conditions Scenario.
  - Urban regions would have congestion levels better than at least half of the U.S. regions with similar populations, but the average urban area delay will be 57 hours in 2035.
  - Additional high-traffic-volume rural roads would be addressed by 2035.

- GRADE B: **Continue 2010 Conditions**—Under this scenario, the transportation system conditions experienced in 2010 would be maintained throughout the period from 2011 to 2035. The percentage of deficient pavements and bridges would hold at 2010 levels. The urban and rural road networks would have the same high-traffic-volume levels as in 2010.

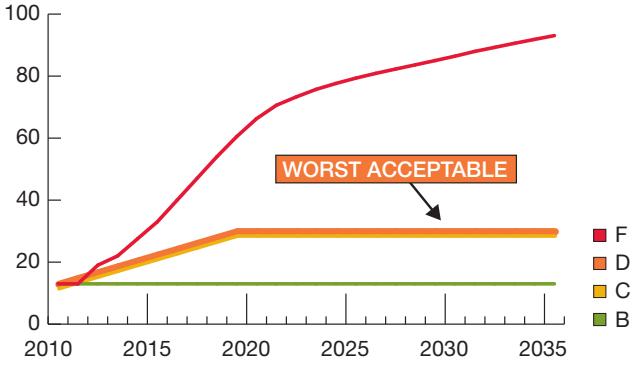


The Committee did not assign a letter grade of A to any scenario due to the significant funding required to achieve this level of quality for the transportation system.

GRADE D: Worst Acceptable Conditions Scenario

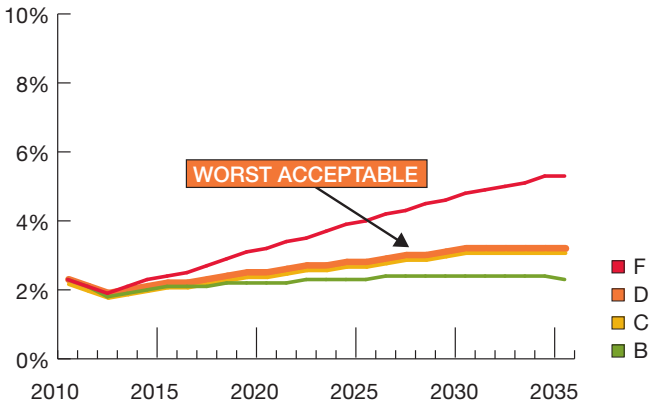
Significant traffic congestion will have the effect of making Texas cities less desirable for new residents and businesses.

Exhibit 9. Percent of Pavement in Fair or Worse Quality



See Appendix A for more information.

Exhibit 10. Percent of Deficient Bridges



See Appendix B for more information.

Additional funding would keep infrastructure conditions at a level that would not penalize Texans as much as the Unacceptable Conditions Scenario. Road quality deterioration would be slowed, and a significant number of deficient bridges could be addressed, resulting in this Worst Acceptable Conditions Scenario. Congestion would grow at a rate that has been seen only in economic boom times, but this would go on for 25 years and severely hamper the state's economic growth.

Pavement Quality

Though road maintenance costs are more than under the Unacceptable Conditions Scenario, Texans will have to pay less in vehicle maintenance and repair.

- Pavement conditions will gradually deteriorate from the current 13 percent of fair, poor and very poor to 30 percent of fair, poor and very poor in 2019; this level of pavement quality will be maintained through 2035.
- At the fair condition level, cheaper maintenance treatments can still be applied to pavements; more expensive treatments must be used at worse pavement condition levels (Exhibit 9).
- Texans would pay $15 billion in 2035 (2010 dollars) to bring the pavement conditions to 2010 levels, $39 billion less than the Unacceptable Conditions Scenario.

Bridge Quality

- In 2035, 3.2 percent of bridge surface area will be rated as deficient (Exhibit 10).
- Bridge conditions for the TxDOT system will decline from the current 1.8 percent of deficient surface area to 2.6 percent by 2035. Off-system bridge conditions will decline from the current 5.3 percent of deficient bridge surface area to 6.8 percent.
- The funding levels allocated to bridges will prevent a steep increase in bridge deficiencies. The overall quality of the bridge system, however, will decline from the 2010 conditions.
- By the year 2035, the cost to repair the backlog of deficient bridges will increase from $3 billion in 2010 to $4.2 billion—an improved condition when compared to the Unacceptable Conditions Scenario.

Urban Traffic Congestion

Growth in jobs and people will severely strain the limited funding for mobility projects. In the major metropolitan areas, congestion will grow to levels well beyond any existing U.S. city, making Texas cities less desirable for new residents and businesses (Exhibit 11).

- The urban congestion level is projected to rise from an average of 37 extra hours of travel today to 44 hours in 2015 and 48 hours in 2019 (equivalent to 6 days of vacation).
- Congestion is worse from 2020 to 2035; extra travel time will grow to an average of 84 hours.
- The projects and programs outlined in the Transportation Action Principles can be used to reduce congestion and lower construction costs.

Rural Connectivity

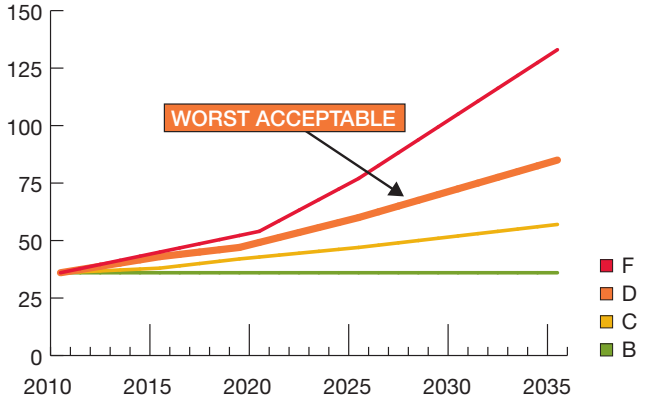
Some improvement can be achieved in this scenario, but in general:

- The amount of high traffic volume rural roadway will increase from about 7 percent to 10 percent in 2019.
- A total of 3,050 miles of major rural roads will have more traffic volume than designed for by 2035, bringing the total to 15 percent of the rural miles (Exhibit 12).
- Many important rural corridors will remain unimproved. It will be useful to periodically re-evaluate the corridors in the Texas Trunk System given the growth in rural Texas since the Texas Trunk System was designated.

Household Transportation Costs

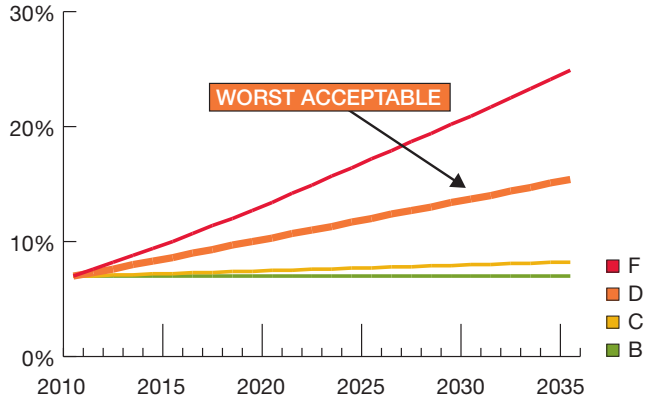
Exhibit 13 shows the annual transportation taxes and fees that would be paid by the average Texas household with the Worst Acceptable Conditions Scenario. From 2011 to 2035, these costs would average $406 per household per year, $174 per year more than in the Unacceptable Conditions Scenario. The additional vehicle operating costs that will be paid by households will average $4,825 each year, almost $1,300 less than the Unacceptable Conditions Scenario. Exhibit 13 does not include the substantial cost that will be paid by commercial operations in Texas.

Exhibit 11. Annual Hours of Delay per Commuter



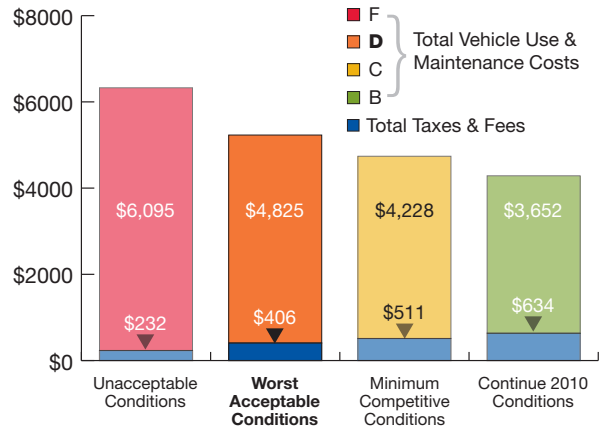
See Appendix C for more information.

Exhibit 12. Percent of Congested Rural Roads



See Appendix D for more information.

Exhibit 13. Average Annual Household Transportation Costs, 2011 to 2035 ($2010)

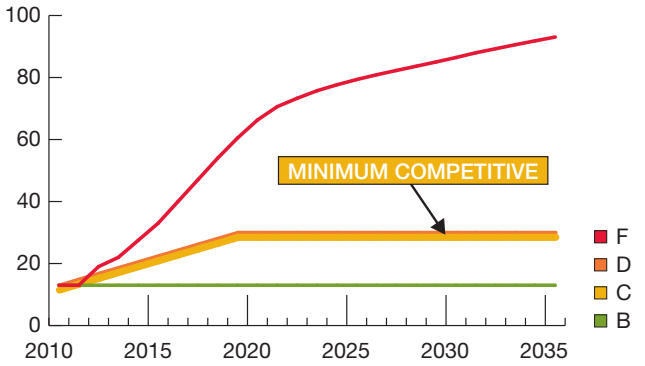


See appendices for more information.

GRADE C: Minimum Competitive Conditions Scenario

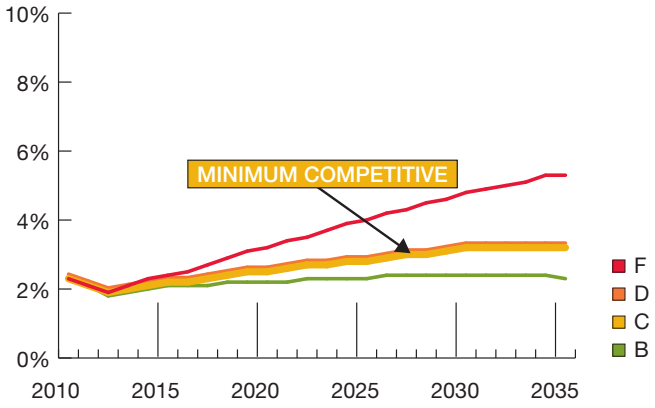
The overall quality of the bridge system will decline from 2010 conditions.

Exhibit 14. Percent of Pavement in Fair or Worse Quality



See Appendix A for more information.

Exhibit 15. Percent of Deficient Bridges



See Appendix B for more information.

Attaining the goal of maintaining parity with Texas' competitor states will require more funding, which could be generated in multiple ways, including taxes and fees, but the return for this investment will be substantial.

- Urban traffic congestion will increase from today's levels, but the increase will be gradual.
- Much of the rural road system will not have high traffic volumes by 2035.
- Road and bridge conditions will be worse than under today's conditions but should not cause significant problems for efficient freight movement.

Pavement Quality

- The Minimum Competitive Scenario pavement conditions are improved from the Worst Acceptable Conditions Scenario by reducing very poor pavements from 5 percent to 2 percent by 2019.
- Pavement conditions will decline significantly in ride quality, from 13 percent in fair or worse condition to 30 percent (Exhibit 14).
- The system can still provide the support for reasonable movement of goods and people. However, any major disruption (such as a bad drought or sudden reduction in maintenance) could lead to an unstable pavement system, causing travel delay and vehicle damage.
- Texans would pay $14 billion in 2035 (2010 dollars) to bring the pavement conditions to 2010 levels.

Bridge Quality

- Bridge conditions and funding levels are the same as for the Worst Acceptable Conditions Scenario (Exhibit 15). As with the Worst Acceptable Conditions Scenario, the funding levels allocated to bridges will prevent a steep increase in bridge deficiencies. The overall quality of the bridge system, however, will decline from the 2010 conditions.
- By the year 2035, the cost to repair the backlog of deficient bridges will increase from $3 billion in 2010 to $4.2 billion—an improved condition when compared to the Unacceptable Conditions Scenario.

Urban Traffic Congestion

Each of the Texas urban regions will have a congestion level equal to or better than U.S. cities of the same size using many projects and programs included in the Transportation Action Principles.

- Traffic congestion will increase from an average of 37 extra hours of travel today to 41 hours in 2019—approximately one week of vacation—and 57 hours in 2035 (Exhibit 16). Larger regions will typically have more congestion.
- The rate of congestion growth will be approximately the same as the growth since 2000.
- By 2035, congestion will be present in the midday periods of many Texas urban areas in the same way that it now affects the very largest regions.

Rural Connectivity

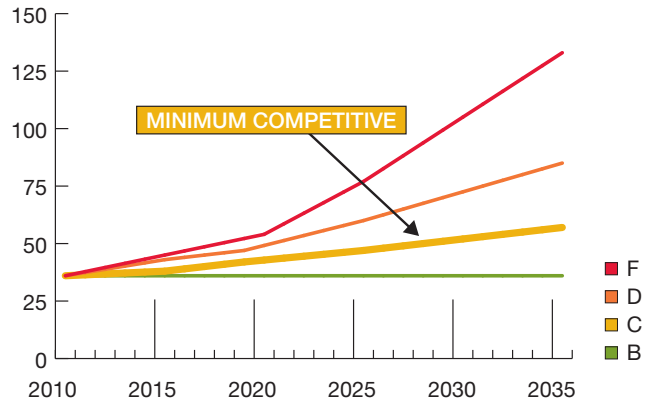
Freight movement growth will add roads to those needing attention in order to achieve a competitive rural network (Exhibit 17).

- Substantial progress will be made on completing the Texas Trunk System.
- The high-traffic sections of major rural roads will be widened by 2035, providing improvements for many travelers and freight shippers.
- The improvements will reduce the amount of heavily traveled routes to 8 percent of the major rural roads.

Household Transportation Costs

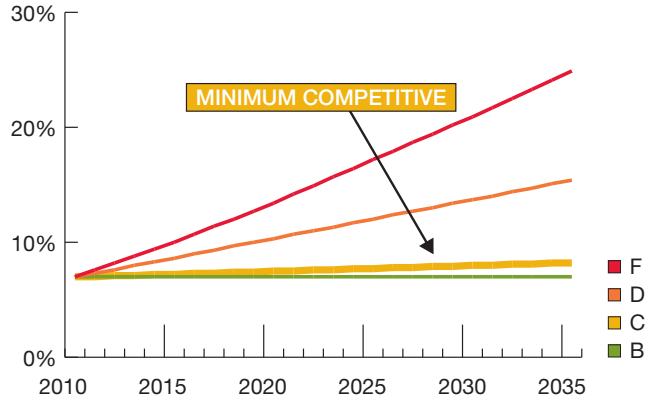
Exhibit 18 shows the annual transportation taxes and fees that would be paid by the average Texas household with the Minimum Competitive Conditions Scenario. From 2011 to 2035, these costs would average $511 per household per year, $279 per year more than the Unacceptable Conditions Scenario. The additional vehicle operating costs that will be paid by households will average almost $4,230 each year, more than $1,860 less than the Unacceptable Conditions Scenario. Exhibit 18 does not include the substantial cost that will be paid by commercial operations in Texas.

Exhibit 16. Annual Hours of Delay per Commuter



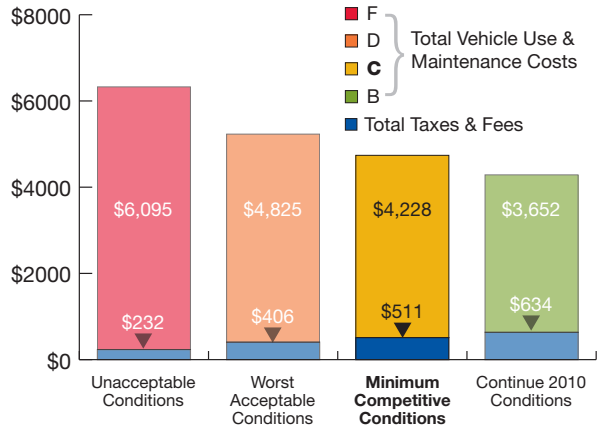
See Appendix C for more information.

Exhibit 17. Percent of Congested Rural Roads



See Appendix D for more information.

Exhibit 18. Average Annual Household Transportation Costs, 2011 to 2035 ($2010)

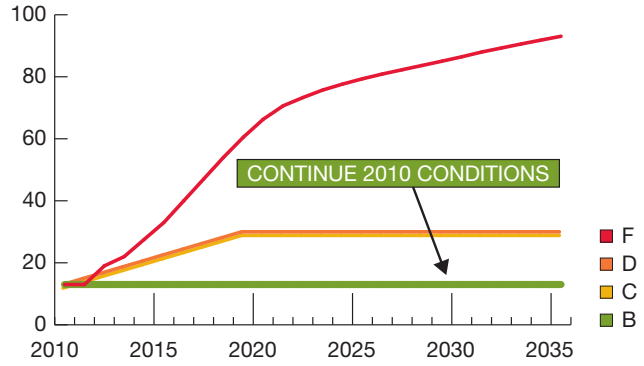


See appendices for more information.

GRADE B: Continue 2010 Conditions Scenario

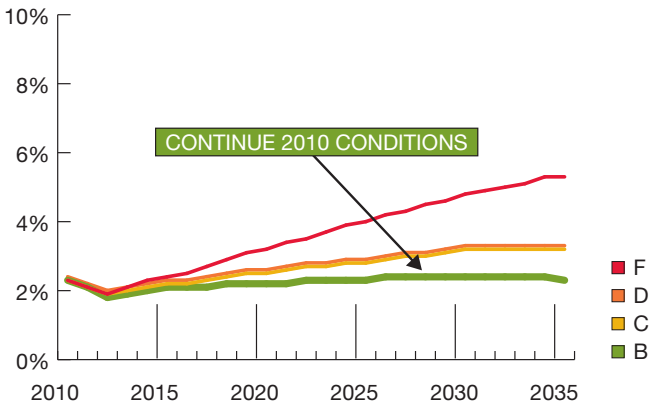
Many projects, programs and incentives are needed to continue 2010 congestion levels.

Exhibit 19. Percent of Pavement in Fair or Worse Quality



See Appendix A for more information.

Exhibit 20. Percent of Deficient Bridges



See Appendix B for more information.

This scenario is similar to one in the 2009 *Texas Transportation Needs Report*. The goals are to:

- Maintain bridge and pavement conditions in the same quality as 2010.
- Keep traffic congestion from growing.
- Maintain the same amount of heavily traveled major rural roads.

The scenario is an important benchmark. It quantifies the beneficial effects of addressing the transportation challenges with significant investments in new projects, programs and policies.

Pavement Quality

- Pavement conditions will be maintained at 13 percent of fair, poor and very poor throughout the analysis period of 2011 to 2035 (Exhibit 19).
- This scenario costs more for road maintenance than the Minimum Competitive Conditions Scenario, but Texans will pay less in terms of vehicle maintenance and repair and will be able to enjoy the same smooth roads they are using today.

Bridge Quality

- Bridge conditions will be maintained at values similar to 2010 conditions, with bridge deficiencies remaining at 2.3 percent of the statewide bridge surface area (Exhibit 20).
- This scenario will require an increase in bridge investment but will keep the backlog of deficient bridges under control; the cost to repair the backlog of deficient bridges would remain at $3 billion (2010 dollars).
- Maintaining 2010 conditions will decrease the risk of detours and provide better ride quality on bridge decks.

Urban Traffic Congestion

The solutions required to maintain this level of mobility would be a range of highway and transit projects, advanced technologies to improve the efficiency of systems, and incentives to get commuters to think about when and how they make their trips.

- Average congestion delay is held steady in each urban region (Exhibit 21).
- The statewide urban average increases slightly due to more rapid population growth in the more congested regions.
- Such progress would put Texas cities in the forefront of good quality of life.

Rural Connectivity

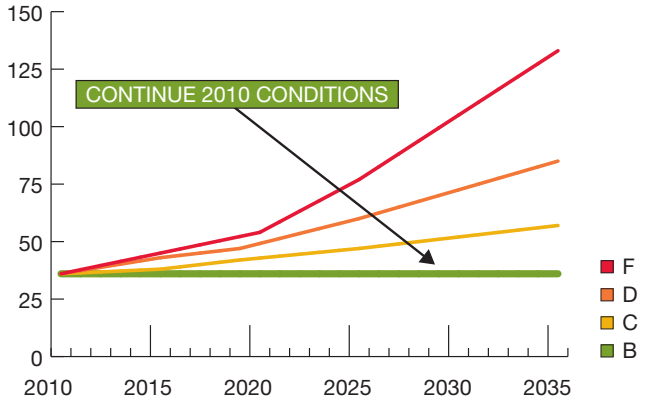
Widening the high traffic volume sections of rural corridors will offer significant benefits to travelers, truckers, manufacturers and communities.

- The scenario maintains the amount of heavily traveled major rural roads at 7 percent (Exhibit 22).
- Corridors that receive funding between 2011 and 2035 should be evaluated to ensure that these corridors are the most important to address.
- Providing a four-lane divided road reduces the number of opposite-direction crashes and allows trucks or other slower vehicles to be passed more easily.

Household Transportation Costs

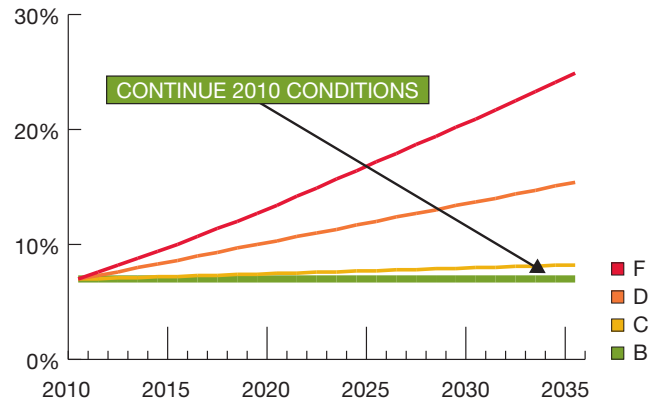
Exhibit 23 shows the annual transportation taxes and fees that would be paid by the average Texas household with the Continue 2010 Conditions Scenario. From 2011 to 2035, these costs would average $634 per household per year, $400 per year more than the Unacceptable Conditions Scenario. The additional vehicle operating costs that will be paid by households will average $3,650 each year, $2,440 less than the Unacceptable Conditions Scenario. Exhibit 23 does not include the substantial cost that will be paid by commercial operations in Texas.

Exhibit 21. Annual Hours of Delay per Commuter



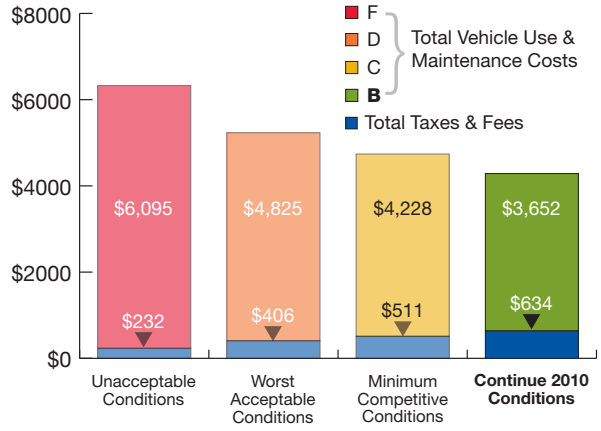
See Appendix C for more information.

Exhibit 22. Percent of Congested Rural Roads



See Appendix D for more information.

Exhibit 23. Average Annual Household Transportation Costs, 2011 to 2035 ($2010)



See appendices for more information.

Total Scenario Costs

This report describes the effect of four alternative scenarios with pavement and bridge conditions and urban and rural system performance. Costs were described in previous sections using per-household transportation costs. Exhibit 24 illustrates the statewide total cost of each scenario and the estimated component costs for three time periods.

Exhibit 24. STATEWIDE TOTAL Implementation Costs for Scenarios (Billions of $2010)

Period	System Element	Scenarios			
		F Unacceptable Conditions	D Worst Acceptable Conditions	C Minimum Competitive Conditions	B Continue 2010 Conditions
2011 to 2015	Pavement	$5.8	$10.6	$10.8	$14.5
	Bridge	$2.3	$2.7	$2.7	$2.9
	Mobility	$18.1	$16.5	$32.4	$30.6
	Rural	$0.0	$0.8	$1.5	$1.6
	Total	**$26.2**	**$30.6**	**$47.4**	**$49.6**
2016 to 2019	Pavement	$5.1	$10.1	$10.3	$13.6
	Bridge	$1.8	$2.2	$2.2	$2.4
	Mobility	$13.7	$15.3	$17.3	$27.5
	Rural	$0.0	$0.7	$1.2	$1.3
	Total	**$20.6**	**$28.3**	**$31.0**	**$44.8**
2020 to 2035	Pavement	$9.9	$39.5	$40.3	$46.8
	Bridge	$7.3	$8.6	$8.6	$9.4
	Mobility	$36.0	$64.2	$85.5	$114.5
	Rural	$0.0	$2.7	$4.7	$5.1
	Total	**$53.2**	**$115.0**	**$139.1**	**$175.8**
2011 to 2035	**Grand Total**	**$100**	**$174**	**$217**	**$270**

See appendices for more information.

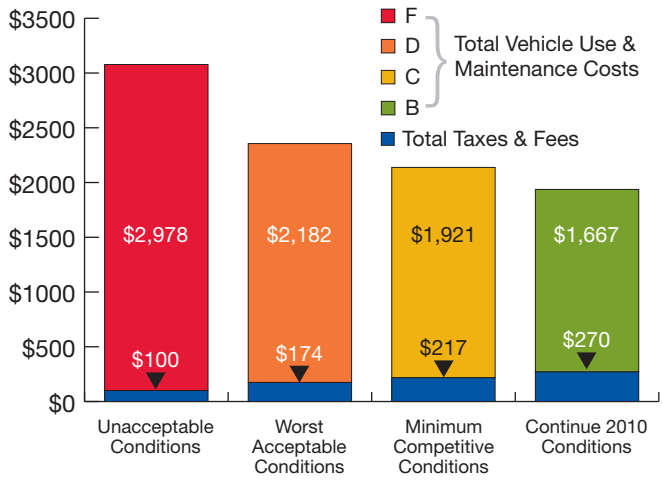
To summarize, the four alternative scenarios have the following total costs associated with them for the 2011 to 2035 period:

- Unacceptable Conditions Scenario (Current Trend) $100 billion
- Worst Acceptable Conditions Scenario $174 billion
- Minimum Competitive Conditions Scenario $217 billion
- Continue 2010 Conditions Scenario $270 billion

As shown on the bottom line of Exhibit 24, total revenue available for pavement and bridge maintenance plus additional capacity is expected to be $100 billion from 2011 to 2035. The estimated funding gaps for the other three scenarios will range from $74 billion to $170 billion from 2011 to 2035.

Exhibit 25 shows total statewide transportation costs for personal vehicles and commercial trucks. The scenario costs (shown in blue) are drawn from Exhibit 24. The revenue to support these expenditures must be drawn either directly from the individuals or businesses in the form of taxes, tolls and fees or indirectly by other means. In addition to these costs, the expenses for vehicle use (including extra travel time and fuel consumed in congestion) and maintenance (due to rough roads and bridges) for personal vehicles and commercial trucks are a substantial element of the transportation costs paid by Texans (shown in the scenario colors in Exhibit 25). Taken together, the taxes, fees, tolls, vehicle use and maintenance costs represent the total costs paid by those who use the roadway system.

Exhibit 25. STATEWIDE TOTAL Transportation Costs between 2011 and 2035 (Billions of $2010)



See appendices for more information.

As can be seen in Exhibit 25, the Unacceptable Conditions Scenario (the current trend) has the lowest tax and fee cost ($100 billion) but almost $3 trillion in vehicle use and maintenance costs. The real costs incurred by those who use the roadway system (the combination of taxes, fees, vehicle use and maintenance costs) exceed $3 trillion.

By contrast, the Continue 2010 Conditions Scenario requires more investment via taxes and fees ($270 billion as compared to $100 billion in the Unacceptable Conditions Scenario). As a result of that increased investment, however, there are significantly lower vehicle use and maintenance costs ($1.7 trillion). In total, the two costs are less than $2 trillion per year.

By raising the taxes, fees and other revenue necessary to pay for the incremental investment of $170 billion ($270 billion minus $100 billion), more than $1 trillion in total user cost is saved.

Each of the Texas urban regions will have a congestion level equal to or better than U.S. cities of the same size.

Funding Transportation Improvements

Texas' legislators are the landlords of our state's roads and bridges. Texas' prosperity and the very lives of its citizens are dependent on the investment they make. Without significant new dollars, the existing system continues to deteriorate, resulting in lost commercial opportunities, reduced safety, increased congestion and exponentially higher transportation costs.

—Judy Hawley
2030 Committee

The Committee studied a range of fee and tax increases to achieve the amount of additional funding required to meet the goals identified in this report. There are any number of possible scenarios that could be developed to raise the revenue required. The values included in this section are intended only as examples to estimate the level of financial effort required to meet the scenario funding levels.

Where We Are Today

Texans pay less in transportation fees than residents of 43 other states, including residents in almost all states with which Texas competes economically. Based on the typical family vehicle, among the 50 states, Texas ranks:

- 18th in vehicle registration fees;
- 29th in state gasoline tax rate, and
- 44th in overall annual cost of vehicle ownership.

In addition, Texas motorists do not pay some taxes that are common in other states, including a property tax on vehicles. There are three major sources of revenue Texas uses to fund state roadways:

- State fuel tax: 20 cents per gallon for gasoline (last raised in 1991)
  20 cents per gallon for diesel fuel (last raised in 1991)
- Federal fuel tax: 18.4 cents per gallon for gasoline (last raised in 1993)
  24.4 cents per gallon for diesel (last raised in 1993)
- Vehicle registration fees: $50.75 for personal cars (as of September 1, 2010). For commercial vehicles, the registration fee is based on the weight of the vehicle. These fees range from $54 to more than $840.

Appendices E and F detail several other sources of tax and fee revenues that may help fund transportation. Over the past several years, the state has used bonds to finance road construction. Interest paid on these bonds totals almost $300 million each year.

Possible Revenue Sources

The Committee characterized four categories of potential roadway revenue sources:

- Capture existing revenue,
- Systemwide sources,
- Targeted options and
- Local-level approaches.

Capture Existing Revenue

Some transportation-related taxes and fees are directed to other state funds; these monies could be "captured" by directing them into the State Highway Fund from the fund(s) to which they are currently dedicated. Revenues directed to the general revenue fund each year include:

- $100 million from various fees for oversized- and overweight-truck permits,
- $111 million from the motor vehicle seller-financed sales tax,
- $130 million from the motor vehicle rental gross receipts tax,
- $756 million from 75 percent of the oil production tax and
- $2.3 billion from the motor vehicle sales and use tax.

In addition, there are "diversions" of funds from the State Highway Fund to purposes other than the construction and maintenance of Texas roadways. For example, almost $600 million of State Highway money is used each year to fund the Department of Public Safety, and almost $130 million is transferred from the State Highway Fund to the Texas Department of Criminal Justice and other agencies. If some of these funds can be captured, the amount of tax and fee increases necessary to fund transportation improvements can be reduced. For more information, see Appendix F for automotive-related fees that are dedicated to other funds. (Appendix F lists the amount of State Highway Funds that are diverted to other agencies.)

There are any number of possible scenarios that could be developed to raise the revenue required for transportation improvements.

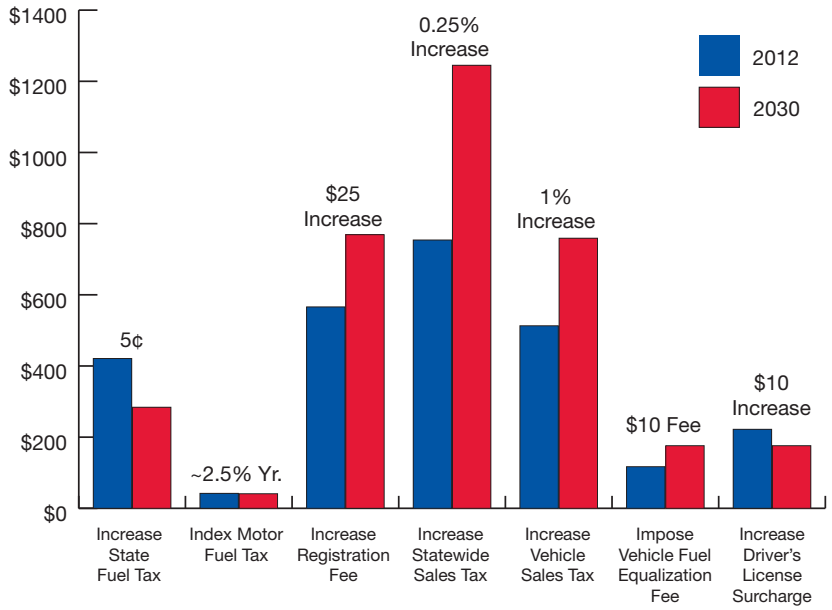
Systemwide Sources

Systemwide sources are those statewide taxes and fees paid by all Texans who use the roadways or buy motor fuel. Current systemwide sources are the vehicle registration fee and the state motor fuel tax. In 2010, revenue raised from the portion of the motor fuels tax dedicated to the State Highway Fund was approximately $2.2 billion. Vehicle registration fees raised an additional $1.1 billion in 2010 for the State Highway Fund.

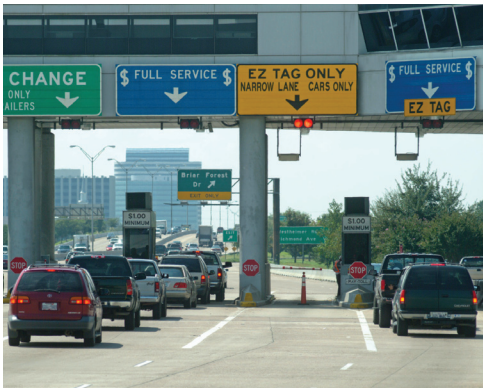
Some examples of other potential systemwide sources include those below (and others in Appendix F). These could be used as replacements for existing fees and taxes, or could be added to the current fee and tax structure. The amounts in Exhibit 26 illustrate the revenue that could be raised in 2012 and 2030.

- Increasing the state fuel tax 5 cents per gallon would generate an estimated $420 million in 2012 and $280 million in 2030. The decline in this amount is due to the expected increase in the miles per gallon that vehicles will achieve over time.
- Indexing the state fuel tax to inflation would yield $42 million in 2012 and $41 million in 2030.
- An increase to the registration fee of $25 per vehicle produces an estimated $570 million in 2012 and $770 million in 2030.
- Increasing the state sales tax by one-quarter of 1 percent and dedicating the increase to transportation would yield $750 million in 2012 and as much as $1.3 billion by 2030.

Exhibit 26. Annual Additional Revenue (Millions of $2010)



See Appendices E and F for more information.



Targeted options consist of taxes and fees that are raised by defined projects (such as toll roads) or areas and used only for improvements within that project or area.

- Increasing the state vehicle sales tax by 1 percent and dedicating it to transportation would provide $510 million in 2012 and $760 million in 2030.
- Imposing a driver's license surcharge of $10 would yield $220 million in 2012 and $310 million in 2030.
- A $10 vehicle fuel equalization fee imposed on vehicles with higher than average fuel efficiency could compensate for the loss of fuel tax revenue. Annual revenue by 2030 is estimated to be $180 million.

Other taxes and fees could include:

- Vehicle property tax (collected in 16 states)—A vehicle property tax is based on a percentage of the market value of the vehicle each year. The property tax revenue collection indicated in Appendix F is based on a $100 minimum fee for all vehicles.
- Vehicle Miles Traveled Fee—This charge is based on the number of miles traveled by a vehicle. A fee on miles traveled would be a logical application of the "user pays" concept. An approach to implement this type of fee is now technologically possible in a way that protects the public's confidentiality concerns while collecting revenue.

Targeted Options

Targeted options consist of taxes and fees that are raised by defined projects (such as toll roads) or areas and used only for improvements within that project or area. The revenues generated by these options would not be deposited into the State Highway Fund. They would be instituted and collected at the local or regional level. These options include increasing tolls, charging freight container fees or charging a fee to drive in congested areas. See Appendix F for a list of targeted options and the revenues they generate.

Local-Level Approaches

Local-level approaches include a range of possible taxes imposed at the local level to generate revenues for transportation projects in the immediate locale. A 1 percent increase in the local sales tax or an additional 1 cent increase in motor fuel taxes paid are some examples of these local approaches. See Appendix F for a list of revenues that could be generated by imposing these taxes in each of the urban regions.

The Committee recognizes transportation funding solutions are policy decisions that should be made at the state and local levels and that a variety of approaches could be taken.

Crafting a Funding Solution from a Variety of Choices

How might these different approaches be used to craft an overall solution for funding transportation improvements and what order of magnitude would be required? The Committee recognizes these are policy decisions that should be made at the state and local levels and that a variety of approaches could be taken. The following is one example of several funding options that could be combined to achieve the Worst Acceptable Conditions Scenario described earlier in this report.

Example of a Funding Solution to Achieve the Worst Acceptable Conditions Scenario

As an example, to meet the Worst Acceptable Conditions Scenario in 2019 it would be necessary to:

- Increase the state fuel tax by 5 cents per gallon.
- Increase state vehicle registration fees by $16.
- Capture diversions from the State Highway Fund to the Department of Public Safety (phased in gradually over a 10-year period).

See Exhibit 27 for specific numbers.

Exhibit 27. Funding Solution Example

Phased-In capture of DPS payments	$ 4.4 billion	Increased fees shown in the example would move Texas from its current rank of 44th of the 50 states in household cost for transportation to a ranking of 31st.
Increase state fuel tax by 5 cents per gallon	$ 4.6 billion	
Increase vehicle registration fees by $16	$ 3.1 billion	
TOTAL REVENUE GENERATED	$ 12.1 billion	
Cost per year for the average Texas household	**$70**	

Over the period 2012 through 2019, a total of approximately $12.1 billion in new revenue would be generated—enough to meet the funding requirements of the Worst Acceptable Conditions Scenario.

This example funding scenario shows one way to provide sufficient revenues to maintain pavement and bridge quality at acceptable standards and slow the rate of increase in congestion. In terms of the effect on individual Texas taxpayers, the increase in fees would move Texas from its current rank of 44th of the 50 states to a ranking of 31st (based on the total cost of owning a vehicle that travels 12,000 miles per year). In total, the increased cost of taxes and fees to the average Texas household would be approximately $70 dollars per year—less than 20 cents per day. However, this funding solution would save the average household approximately $361 in additional vehicle maintenance and operating costs, congestion costs and additional fuel that would have to be purchased due to poorly maintained roads and bridges and longer travel around closed bridges and traffic congestion.

Summary of Possible Revenue Sources

Exhibit 28 shows the revenue potential of several taxes and fees at various rates. The revenue sources are merely examples of common taxes and intended only to provide the reader with additional context in assessing funding needs. Revenues from some sources are already dedicated to transportation and others provide general revenue for the state. A third group of potential tax sources are not currently imposed at all. A more complete list of potential revenue sources is contained in Appendices E and F.

Exhibit 28. Possible Revenue Amounts for Several Revenue Types and Time Periods

Revenue Type	Current	Estimated Revenue[1] FY 11 (millions)	Unit of Increase	Estimated New Revenue Per Period[2]			
				2012–2015 (millions)	2016–2019 (millions)	2020–2035 (millions)	2012–2035 (millions)
Amounts of State Highway Fund							
State Fuel Tax[3]							
Gasoline	20¢/gal	$1,758		$6,797	$6,666	$21,018	$34,480
			1¢/gal	$340	$333	$1,051	$1,724
			5¢/gal	$1,699	$1,666	$5,254	$8,620
			10¢/gal	$3,399	$3,333	$10,509	$17,240
Diesel	20¢/gal	$530		$2,720	$3,040	$14,167	$19,928
			1¢/gal	$1,699	$152	$708	$996
			5¢/gal	$1,699	$760	$3,542	$4,982
			10¢/gal	$1,699	$1,520	$7,084	$9,964
Vehicle Registration Fee							
Vehicle Registration Fee	$50.75/Veh	$858		$5,627	$6,466	$33,195	$45,287
			$5/Veh	$468	$526	$2,763	$3,758
			$25/Veh	$2,345	$2,635	$13,831	$18,811
Amounts to State General Fund							
Special Permits		$55	N/A	$164	$164	$656	$984
Vehicle Sales Tax	6.25%	$2,397		$10,667	$12,457	$69,080	$92,203
			1%	$1,707	$1,993	$11,053	$14,753
Possible Revenue Streams That Are Not Collected							
Indexed Fuel Tax[3]		N/A					
Gasoline			CPI	$315	$861	$7,398	$8,574
Diesel			CPI	$128	$395	$5,326	$5,850
State Fuel Sales Tax		N/A					
Gasoline			1%	$1,627	$1,981	$11,731	$15,339
Diesel			1%	$538	$727	$4,452	$5,762
Vehicle Miles Traveled Fee[4]		N/A	1¢/mile	$11,252	$12,204	$59,626	$83,082

[1]Biennial Revenue Estimate, Texas Comptroller of Public Accounts, January 10, 2011.
[2]Texas Transportation Institute estimates.
[3]Fuel tax revenue estimates represent only the portion dedicated to the State Highway Fund.
[4]Revenue totals are based on total estimated vehicle travel.

The detailed analysis by the 2030 Committee clearly shows the problems of rough pavement, bridges that are closed or restricted, traffic congestion and a rural road network that does not provide the required service to personal vehicle or freight movement.

The Remaining Questions

Texans will pay more in transportation costs over the next several years. The choice is clear: do nothing to address transportation challenges facing Texas—resulting in stop-and-go traffic, lost family and work time, and economic loss—or avoid further system degradation and substantial increases in vehicle use and maintenance costs through an increased investment in transportation funding.

The detailed analysis by the 2030 Committee clearly shows the problems of rough pavement, bridges that are closed or restricted, traffic congestion and a rural road network that does not provide the required service to personal vehicle or freight movement. The remaining questions, then, are:

- **What approach will be pursued to ensure the long-term service of the Texas transportation system?**
- **Will Texans pay more and suffer bumpy roads, poor bridges and traffic congestion—or pay less to address the problem and enjoy a better quality of life and economic benefits?**

2030 Research Team

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A Member of The Texas A&M University System

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Appendices

The appendices referenced in the report are posted on the 2030 Committee's website at: **texas2030committee.tamu.edu**.
Appendix A – Pavement Quality
Appendix B – Bridge Quality
Appendix C – Urban Traffic Congestion
Appendix D – Rural Connectivity
Appendix E – Additional Revenue Sources for Pavement and Bridge Maintenance
Appendix F – Funding Transportation Improvements
Appendix G – Estimating Vehicle Operating Costs and Pavement Deterioration

Executive Summary

2030 COMMITTEE

It's About Time: Investing in Transportation to Keep Texas Economically Competitive

Introduction

In 2008, Texas Transportation Commission Chair Deirdre Delisi appointed members of the original 2030 Committee. The initial charge of this committee made up of experienced and respected business leaders was to provide an independent, authoritative assessment of the state's transportation infrastructure and mobility needs from 2009 to 2030. The report that emerged from the first 2030 Committee, entitled *2030 Committee Texas Transportation Needs Report*, was released in February 2009 and can be found, along with its Executive Summary, on the Committee's website: http://texas2030committee.tamu.edu.

In July 2010, Chair Delisi reconvened the 2030 Committee, which includes most of the original Committee members, and charged it with developing a forecast for alternative levels of service for the four elements of the Texas transportation system—pavements, bridges, urban mobility and rural connectivity—along with analyzing potential sources of transportation revenue and determining the economic effects of under-investing in the system. The Committee provided guidance and direction to a team of transportation experts at the Texas Transportation Institute (The Texas A&M University System); the Center for Transportation Research (The University of Texas at Austin); and The University of Texas at San Antonio. The current report, *It's About Time: Investing in Transportation to Keep Texas Economically Competitive*, updates the February 2009 report by providing an enhanced analysis of the current and future state of the Texas transportation system.

Strategic transportation investments have played a significant role in enabling Texans to live and work where they choose and efficiently transport goods to markets and manufacturers. Unfortunately, transportation investments have not kept pace with the state's growth.

The Challenge Facing Texans

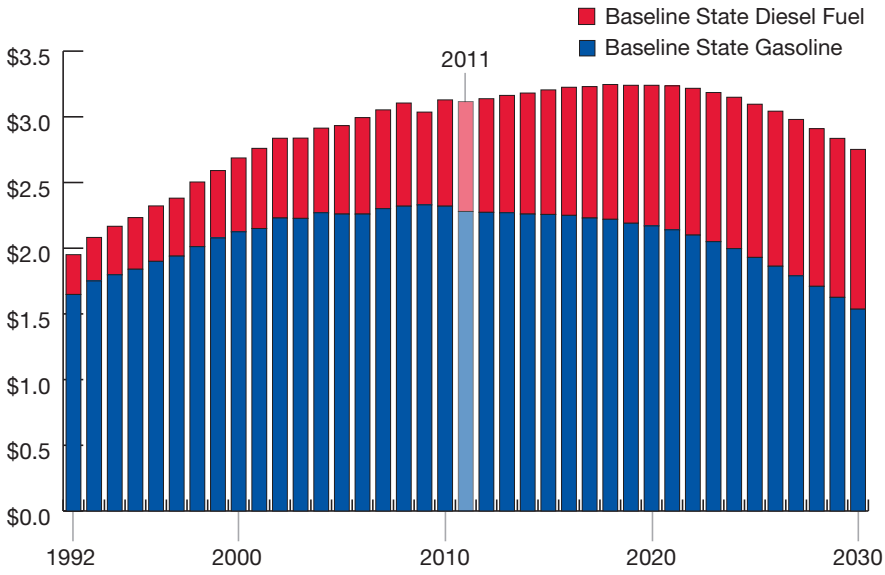
Texas has experienced more than 40 years of strong economic growth. Strategic transportation investments have played a significant role in enabling Texans to live and work where they choose and efficiently transport goods to markets and manufacturers. Unfortunately, transportation investments have not kept pace with the state's growth. Subdivisions, office buildings, schools and other travel destinations are often built without sufficient facilities to accommodate the travel created by these developments. Increasing traffic problems in rush hours—and even in the middle of the day in some cities—are only one symptom of the investment gap. Factors impacting the quality of Texas transportation include:

Income from traditional transportation funding sources (taxes and fees) is no longer sufficient to keep pace with current and projected highway construction and maintenance cost increases.

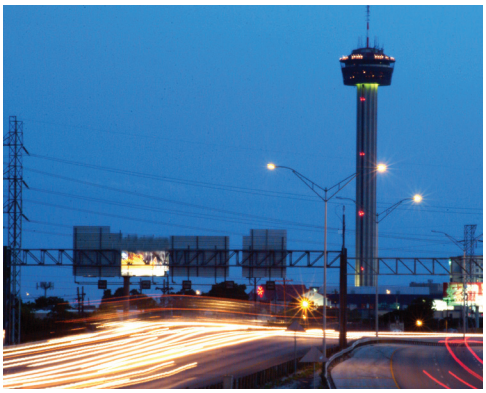
- **Burgeoning population and job growth**—The 15 million new Texans projected to arrive over the next 25 years means Texans will need to make more transportation investments.
- **More freight being moved**—Freight traffic is expected to grow at twice the rate of passenger vehicle traffic as the Texas economy grows over the next 25 years. Trucks and trains in rural and urban corridors are a key part of the economy and must travel on reliable timetables. If freight does not move efficiently in Texas, the state will lose jobs to areas where freight moves more easily.
- **Road preservation concerns**—It is cheaper to keep roads in good condition than to fix them after they deteriorate. Maintaining transportation facilities is similar to maintaining a vehicle; it is easier and cheaper to change the oil and filter than to burn out the motor and then replace it. The projections show that many road miles will require costly rebuilding even if the best efforts are made to preserve them through the most cost-effective maintenance programs.
- **Increased time and costs for system improvement**—Waiting until transportation problems escalate will mean higher costs for transportation system improvements. Major transportation projects can take years to plan, design and build.
- **Deficient bridges**—Most Texas bridges that are deficient do not collapse completely. Instead, they have weight restrictions placed on them. Increasingly restrictive weight limits cause inconvenience to the traveling public and result in increased costs for freight and commercial vehicles.
- **Significant erosion in traditional funding**—Income from traditional transportation funding sources (taxes and fees) is no longer sufficient to keep pace with current and projected highway construction and maintenance cost increases.
- **Recent one-time funding infusions breed complacency**—Recent one-time funding infusions from a variety of sources have enabled road and bridge conditions to be maintained, even while traditional funding sources have declined. Urban traffic congestion grew during the last decade; it recently declined with the economic recession but is on the rise again. The one-time funding infusions make it easy to overlook the problems coming in the near future.

Adding to the funding and growth challenges, today's more fuel-efficient vehicles pay lower fuel taxes per mile than when the tax rates were set almost two decades ago. While they offer benefits such as leaving a smaller carbon footprint and allowing Texans to travel further per gallon, increasingly fuel-efficient cars and trucks generate less income from motor fuel taxes to fund the rising demands on Texas roadways as we move further into the 21st century. As Exhibit ES-1 shows, Texans will not be able to count on ever-increasing fuel tax revenues as they have in the past.

Exhibit ES-1. Motor Fuel Revenue (Billions of $2010)



Source: Texas Comptroller of Public Accounts and the TxDOT TRENDS Model.



The Committee studied four transportation quality scenarios for pavement and bridge conditions and urban and rural system performance to illustrate the choices that Texans face between now and 2035. A letter grade was assigned to each scenario ranging from F to B.

Texas Transportation Action Principles

The 2030 Committee believes that the responsibility of choosing individual transportation projects belongs with local and state officials who have access to the expertise and necessary information and are in touch with prevailing public opinion. However, the Committee believes that certain principles should guide investments in transportation programs. The Committee used these principles to identify methods to select transportation projects (without choosing individual projects), identify appropriate funding levels and ensure accountability with Texans.

- First and foremost, preserve Texas' substantial investment in transportation infrastructure.
- Ensure Texas is getting "bang for the buck" in using its transportation system.
- Involve transportation users and employers in transportation solutions.
- Attack problems and seize opportunities.
- Display results and support accountability.
- Require users to pay for services they "consume."
- Make timely decisions about transportation investment levels.

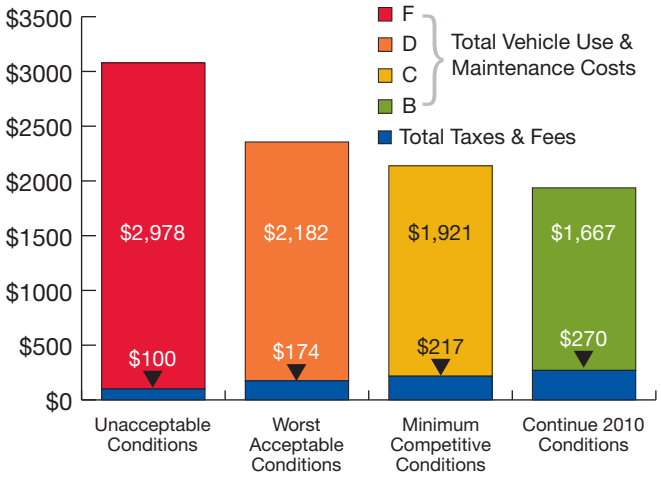
Revenues from some sources are already dedicated to transportation, and others provide general revenue for the state.

Four Transportation Scenarios—Texas' Alternative Futures

The Committee studied four transportation quality scenarios for pavement and bridge conditions and urban and rural system performance to illustrate the choices that Texans face between now and 2035. A letter grade was assigned to each scenario ranging from F to B. The strategies range from doing nothing new to implementing enough programs and projects to maintain conditions as they are now. *The Committee did not assign a letter grade of A to any scenario due to the significant funding required to achieve this level of quality for the transportation system.*

- **GRADE F: Unacceptable Conditions**—The current policies, planning processes and funding schemes would continue under this scenario.
- **GRADE D: Worst Acceptable Conditions**—Investments would be made to maintenance programs to reduce the amount of roads and bridges that will require expensive rebuilding.
- **GRADE C: Minimum Competitive Conditions**—Texas' infrastructure and congestion levels would remain in a condition equal to or better than its peer states or metropolitan regions.
- **GRADE B: Continue 2010 Conditions**—The conditions experienced in 2010 would be maintained throughout the period from 2011 to 2035.

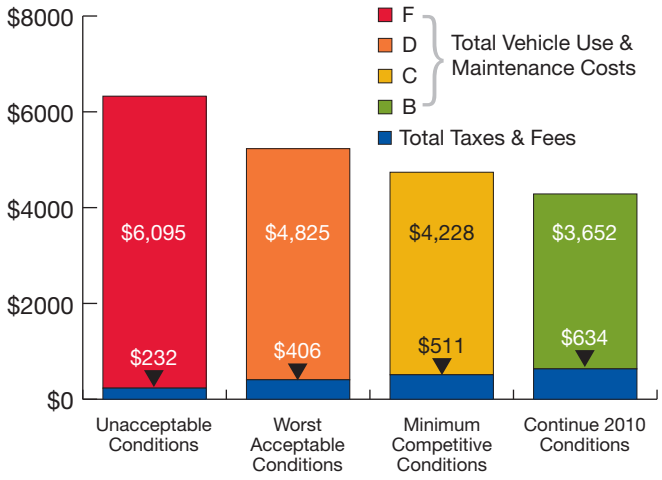
Exhibit ES-2. STATEWIDE TOTAL Transportation Costs between 2011 and 2035 (Billions of $2010)



See appendices for more information.

Exhibit ES-2 summarizes the significant decreases in vehicle use and maintenance costs for relatively modest tax and fee increases. The estimates illustrate the significant value of increasing the state's investment in transportation improvements. The effects on personal travel as detailed in the scenario results are totaled. The fees and taxes paid by commercial trucks are also included, along with the increased vehicle maintenance and operating expenses, travel time, fuel and delay cost as a result of the unacceptable conditions.

Exhibit ES-3. Average Annual Household Transportation Costs, 2011 to 2035 ($2010)



See appendices for more information.

How Will Texans Pay for Transportation?

Under the three improvement scenarios with passing grades, Texans realize savings in projected household costs by investing more in transportation funding. Texas' businesses also see benefits from smoother pavements, better bridges and reduced congestion. Exhibit ES-3 clearly illustrates the choices at the household level—small increases in transportation funding yield benefits much larger than the fees paid. As with Exhibit ES-2, the vehicle use and maintenance costs include items such as extra travel time and fuel due to traffic congestion, or closed bridges or increased vehicle maintenance costs due to rough roads for each of the transportation quality scenarios.

- **GRADE F: Unacceptable Conditions**—Between now and 2035, the average Texas household will pay an estimated $232 per year in taxes and fees for transportation if there are no changes to policies or funding levels. This includes fuel taxes, vehicle registration fees, tolls and other fees for construction and maintenance of the transportation system. They will also pay almost $6,100 per year for extra travel time associated with traffic congestion and detours around deficient bridges, increased fuel purchases due to longer trips and stop-and-go traffic, and additional vehicle maintenance expenses due to rough roads.
- **GRADE D: Worst Acceptable Conditions**—An additional $174 per year paid in taxes and fees per household, however, returns $1,270 per year in savings of congestion and vehicle operating and maintenance costs. Pavement conditions will be much better, and congestion will grow more slowly.
- **GRADE C: Minimum Competitive Conditions**—An additional $279 per household each year above the unacceptable conditions trend will return more than $1,860 per household in savings each year. Conditions will ensure Texas cities and rural areas are economically competitive with peer states.
- **GRADE B: Continue 2010 Conditions**—An additional $402 per household each year is required to keep conditions as they were in 2010, but that investment returns $2,440 per household in benefits each year.

Increasing traffic problems in rush hours—and even in the middle of the day in some cities—are only one symptom of the transportation investment gap.

Total Scenario Costs

Exhibit ES-4 illustrates the total cost of each scenario and the estimated component costs for three time periods.

As shown on the bottom line of Exhibit ES-4, total revenue available for pavement and bridge maintenance plus additional capacity is expected to be $100 billion from 2011 to 2035. The estimated funding gaps for the other three scenarios will range from $74 billion to $170 billion from 2011 to 2035.

Exhibit ES-4. STATEWIDE TOTAL Implementation Costs for Scenarios (Billions of $2010)

Period	System Element	Scenarios			
		F Unacceptable Conditions	D Worst Acceptable Conditions	C Minimum Competitive Conditions	B Continue 2010 Conditions
2011 to 2015	Pavement	$5.8	$10.6	$10.8	$14.5
	Bridge	$2.3	$2.7	$2.7	$2.9
	Mobility	$18.1	$16.5	$32.4	$30.6
	Rural	$0.0	$0.8	$1.5	$1.6
	Total	**$26.2**	**$30.6**	**$47.4**	**$49.6**
2016 to 2019	Pavement	$5.1	$10.1	$10.3	$13.6
	Bridge	$1.8	$2.2	$2.2	$2.4
	Mobility	$13.7	$15.3	$17.3	$27.5
	Rural	$0.0	$0.7	$1.2	$1.3
	Total	**$20.6**	**$28.3**	**$31.0**	**$44.8**
2020 to 2035	Pavement	$9.9	$39.5	$40.3	$46.8
	Bridge	$7.3	$8.6	$8.6	$9.4
	Mobility	$36.0	$64.2	$85.5	$114.5
	Rural	$0.0	$2.7	$4.7	$5.1
	Total	**$53.2**	**$115.0**	**$139.1**	**$175.8**
2011 to 2035	**Grand Total**	**$100**	**$174**	**$217**	**$270**

See appendices for more information.

Possible Revenue Sources

Texans pay less in transportation fees than residents of 43 other states, including residents in almost all states with which Texas competes economically. Based on the typical family vehicle, among the 50 states, Texas ranks:

- 18th in vehicle registration fees;
- 29th in state gasoline tax rate; and
- 44th in overall annual cost of vehicle ownership.

In addition, Texas motorists do not pay some taxes that are common in other states, including a property tax on vehicles. There are three major sources of revenue Texas uses to fund state roadways.

- **State fuel tax—**20 cents per gallon for gasoline (last raised in 1991) and 20 cents per gallon for diesel fuel (last raised in 1991).
- **Federal fuel tax—**18.4 cents per gallon for gasoline (last raised in 1993) and 24.4 cents per gallon for diesel (last raised in 1993).
- **Vehicle registration fees—**$50.75 for personal cars (as of September 1, 2010). For commercial vehicles, the registration fee is based on the weight of the vehicle. These fees range from $54 to more than $840.

The Committee characterized four categories of potential roadway revenue sources:

- **Capture of existing revenue—**Some transportation-related taxes and fees are directed to other state funds; these monies could be "captured" by directing them into the State Highway Fund from the fund(s) to which they are currently dedicated.
- **Systemwide sources—**Systemwide sources are those statewide taxes and fees paid by all Texans who use the roadways or buy motor fuel. Current systemwide sources are the vehicle registration fee and the state motor fuel tax.
- **Targeted options—**Targeted options consist of taxes and fees that are raised by defined projects (such as toll roads) or areas and used only for improvements within that project or area. The revenues generated by these options would not be deposited into the State Highway Fund. They would be instituted and collected at the local or regional level. These options include increasing tolls, charging freight container fees or charging a fee to drive in congested areas.
- **Local-level approaches—**Local-level approaches include a range of possible taxes imposed at the local level to generate revenues for transportation projects in the immediate locale.

Texans pay less in transportation fees than residents of 43 other states, including residents in almost all states with which Texas competes economically.

The Remaining Questions

Texans will pay more in transportation costs over the next several years. The choice is clear: do nothing to address transportation challenges facing Texas—resulting in stop-and-go traffic, lost family and work time, and economic loss—or avoid further system degradation and substantial increases in vehicle use and maintenance costs through an increased investment in transportation funding.

The detailed analysis by the 2030 Committee clearly shows the problems of rough pavement, bridges that are closed or restricted, traffic congestion and a rural road network that does not provide the required service to personal vehicle or freight movement. The remaining questions, then, are:

- **What approach will be pursued to ensure the long-term service of the Texas transportation system?**
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