

Research Report

FEBRUARY 2005

Texas Road Policy Keeping Up With Demand

By

Byron Schlomach, Ph.D.

Chief Economist, Texas Public Policy Foundation



www.TexasPolicy.com

TABLE OF CONTENTS

Research Highlights.....	3
About The Author.....	4
Introduction.....	5
Road Transportation Challenges in Texas.....	6
Potential Solutions.....	20
Conclusions.....	37
Endnotes.....	39

Permission to reprint this publication in whole or in part is hereby granted, provided the Texas Public Policy Foundation and the author are properly cited.

ABOUT THE TEXAS PUBLIC POLICY FOUNDATION

The Texas Public Policy Foundation is a 501(c)3 non-profit, non-partisan research institute guided by the core principles of limited government, free enterprise, private property rights and individual responsibility.

The Foundation’s mission is to improve Texas government by generating academically sound research and data on state issues, and by recommending the findings to opinion leaders, policymakers, the media, and general public. The work of the Foundation is conducted by academics across Texas and the nation, and is funded by hundreds of individuals, corporations and charitable institutions.

By refusing government funding, the Foundation maintains its independent voice on the issues important to Texas’ future.

In 1989, a small group of civic-minded Texans created the Texas Public Policy Foundation to bring independent, market-based thinking to tackle problems facing state government. Through the years, the Foundation has championed solutions to the day’s pressing issues, and won support for market-based policies that have made Texas a better place to live and work.

The Foundation’s impact on public policy is substantial, and has been noted by lawmakers and opinion leaders alike. The *Dallas Morning News* has said the Foundation is “dubbed the ‘official think tank of Texas’ by friends and foes.”

RESEARCH HIGHLIGHTS

Texas has more roadway miles than any other state. Over a quarter of Texas' 302,000 miles of public roads is state owned. From 1990 to 2003, the demand for roads in Texas increased 13 times faster than the state's road system increased in capacity. As a result, travel delay due to congestion in Texas increased from 750 million hours per year in 1982 to 3.6 billion hours in 2000. Two of the top 10 most congested metropolitan areas in the nation are Houston and Dallas-Fort Worth. Austin is the most congested city of its size in the nation. From 1990 to 2000 congestion cost \$45 billion in lost time and wasted fuel for the 60 percent of the state's population located in the state's eight major metropolitan areas.

Truck imports by weight from Mexico increased 9 percent and from Canada by 36 percent from 1997 to 2000. The number of incoming truck crossings from Mexico increased 64 percent from 1995 to 2000. Over half the tonnage of freight shipments is shipped by truck. Texas has eight of the top 50 U.S. foreign trade gateways on its borders. Four of these are on the border with Mexico. The Port of Houston is one of the United States' most important trade gateways. Combine these road-demand statistics with the fact that over half the state's population lives in ozone nonattainment pollution zones, and it becomes clear that Texas faces serious transportation problems needing solutions.

With the passage of House Bill 3588 in 2003, the Texas Department of Transportation (TxDOT) is now headed in the right direction, using innovative contracting methods and encouraging tolls through the Texas Turnpike Authority and new regional mobility authorities. The Trans-Texas Corridor plan is a financially risky proposition, but since even this must be supported substantially with tolls, risk is reduced for Texas taxpayers in general. Hopefully, the political will to keep recent reforms can be mustered and Texas can develop a road network worthy of the 21st century.

Other important actions include:

- Preserve the fundamental reforms of HB 3588;
- Enhance urban mobility through tolled "managed lanes" and convert high-occupancy vehicle (HOV) lanes, currently offered for free, to tolled lanes;
- On tolled intercity highways that might be developed, include concessions within the rights-of-way where possible so that they are accessible only from the toll lanes, and simultaneously eliminate or substantially reduce state fuel taxes on gasoline and diesel sold from these concessions;
- Adjust state policy to allow for funding projects to enhance rail traffic, taking pressure off the road network and improving traffic flow on roads;
- Limit incompatible land development along railroad rights-of-way;
- Establish procedures and metrics to make sure tax-financed road projects that expand capacity are properly prioritized to produce the greatest possible net benefits for the state;
- Make greater use of contracting for routine maintenance, expanding the model established with the VMS, Inc. contracts for routine maintenance on IH-35 and IH-20;
- Eliminate the old design-bid-build road construction strategy and make greater use of design-build strategies;
- Allow for road project development under greater secrecy or establish a time – certain in advance of road planning – after which land platting changes will not be accepted in eminent domain cases so that landowners cannot game the right-of-way acquisition system; and
- Establish disincentives for the diversion of local resources to transit projects, which have shown themselves to be almost universally cost ineffective.

ABOUT THE AUTHOR

Byron Schlomach, Ph.D., is the chief economist for the Texas Public Policy Foundation, where he has authored a number of key papers on education and fiscal policy.

Dr. Schlomach came to the Foundation from the Texas Education Agency. He has also served as a staff member in the Texas Legislature, most recently as the chief of staff to State Rep. Kent Grusendorf, the chairman of the House Committee on Public Education. Previously, he was a researcher in the Office of the Texas Comptroller, where he conducted research into education and transportation and was the principal author of a study examining public school start dates.

Raised in Texas, Dr. Schlomach received both his bachelor's and doctorate degrees in economics from Texas A&M University. He has served as an assistant lecturer in the Texas A&M Department of Economics and has taught at Austin Community College.

Dr. Schlomach and his wife live in Hays County with their children.

INTRODUCTION

The reason roads are often called arteries goes beyond the fact that a road map looks eerily like a diagram of an animal's blood circulatory system. Transportation is indispensable to our way of life. It is, in fact, indispensable to maintaining a standard of living above subsistence, for without transportation, there is no trade. Therefore, it is vital that the transportation network, especially roads, be maintained and expanded to accommodate economic growth and a growing state population in Texas.

In Texas and the nation, road transportation policy is changing. Historically, roads have been constructed and maintained using proceeds from fuel taxes. Now, however, tax fatigue among voters has produced less tolerance for tax increases, and inflation and improving fuel efficiency of vehicles are combining to render the fuel tax much less effective as a way to raise funds to build and maintain highways.

In 2003, the Texas Legislature passed House Bill 3588, catapulting the state to the forefront of transportation policy in the nation. Road project decision-making is being devolved to local metropolitan areas to improve the efficiency and effectiveness of road planning in the most-congested areas of the state. The pay-as-you-go funding system is being enhanced with bond proceeds financed with tolls to get road infrastructure on the ground quickly. The Texas Department of Transportation is also changing project development and contracting practices to shorten the time from conception to completion of road projects.

Some of the changes have been jarring. Many taxpayers are resistant to tolls. Contractors are uncomfortable with changes in business as usual. Changes in road design strategies make developers uncomfortable. Environmentalists and others are concerned about the acceleration of project development.

In the midst of the confusion and conflict that change engenders, policymakers are experiencing the push/pull of the deliberations about the future of road policy. Therefore, it is more important than ever that the issues be well understood. The fact is that road traffic has been rising rapidly in Texas while road capacity has not. The plodding transportation development policy of the past is a luxury the state can no longer afford if Texas is to maintain and expand the prosperity it currently enjoys.

ROAD TRANSPORTATION CHALLENGES IN TEXAS

Road Supply versus Road Demand – Physical Disparity

As of 2002, there were 301,778 miles of public roads in Texas, more than for any other state. Of these, 79,493 miles were owned by the state, 142,636 were owned by counties, and 78,653 were owned by municipal authorities. Of all the states, California has the second greatest total miles of public roads at 167,898, only 56 percent of Texas' public road mileage, despite having a total population 60 percent greater than that of Texas. Texas, on the other hand, has 68 percent more land area than California. Still, Texas has 1.15 miles of public road for every square mile of land area whereas California has only 1.08 miles of road per square mile.¹

Today, Texans drive more than ever before. Most Texans (79.4 percent) commute to work alone in their personal vehicles. Only 12.5 percent carpool. Fewer than 2 percent use public transportation, including taxis. The number of vehicle miles traveled per person in Texas in 2000 was 800 miles greater than the national average. Eight percent of all vehicle miles traveled in the United States occurred in Texas. Only California's total road travel exceeded Texas'.²

Despite the high demand, from 1995 to 2000, total miles of public road increased in Texas by only 1.6 percent.³ From 1990 to 2003, the number of lane miles[†] of public road on the Texas state system increased only 4 percent. By contrast, the number of total vehicle miles traveled on the state system increase 52.8 percent. In other words, travel on Texas state roads increased at a rate more than 13 times that of Texas' road capacity over this 13-year period.⁴

Road Congestion

Road congestion is *the* issue when it comes to roads. Virtually all other issues discussed here are either symptomatic or causal to road congestion. If not for road congestion in Texas, road transportation would not be a significant issue. Road congestion causes excess fuel use, traffic accidents, excess wear and tear on roads and vehicles, and pollution. It is also mainly an urban phenomenon.

Urban Road Congestion

Texas has some of the most congested cities in the nation. Austin holds the distinction of being the most congested medium-sized city in the nation.⁵ While congestion is worse in several of the nation's cities than in the most congested of Texas' cities, the overall trend

[†] Road length is measured in two ways, "centerline miles" and "lane miles." A two-lane, four-lane, or six-lane road one mile in length is one centerline mile but is two, four, or six *lane* miles in length, respectively. Unless specifically noted otherwise, it should be assumed that road lengths reported are in centerline miles.

seems to be that congestion is getting worse. Nationwide and in Texas, congestion affects more roads and more trips and takes up more of a day than ever before. It has also worsened in every size urban area, though large urban areas are more congested than small ones.⁶ Overall, travel delay caused by congestion in Texas increased from 750 million hours in 1982 to 3.6 billion hours in 2000.⁷

The Texas Transportation Institute's (TTI) annual mobility report estimates various congestion statistics for 85 metropolitan areas throughout the United States. These areas are ranked according to various measures of congestion severity, with the most congested area ranked number one. Table 1 looks at the nine Texas metropolitan areas included in TTI's annual report. Included in the table is each area's congestion ranking, according to the cost of congestion per year for the average peak time (rush hour) traveler. Two Texas metropolitan areas, Dallas-Fort Worth-Arlington and Houston, are among the top 10 in the nation in road congestion. The three Valley metropolitan areas, Brownsville, Corpus Christi, and Laredo, are among the least congested of the 85 metropolitan areas included in the study.

Table 1
Road Congestion in Nine Texas Metropolitan Areas

Metropolitan Area	Rank (Cost per Peak Traveler)	Congestion Cost per Person	Gallons of Excess Fuel Consumed per Person	(Peak) Travel Time Index	Annual Hours of Delay per Person	Percent of Lane Miles Congested	Annual Lane Miles Needed to Prevent Greater Congestion
Austin	16	\$461	44	1.31	26	63	52
Beaumont	61	\$140	13	1.07	8	24	13
Brownsville	85	\$45	4	1.07	3	21	9
Corpus Christi	82	\$59	6	1.04	3	14	0
Dallas-Fort Worth Arlington	6	\$627	58	1.34	36	52	195
El Paso	53	\$175	17	1.16	10	45	25
Houston	7	\$586	53	1.39	33	57	223
Laredo	81	\$66	6	1.07	4	43	21
San Antonio	32	\$344	33	1.23	19	54	52

Source: 2004 *Urban Mobility Report*, Texas Transportation Institute

Important to notice in Table 1 is the travel time index. The Governor's Business Council wants to maintain a statewide peak travel time index of 1.15 (or lower, if currently lower in an area). That is, peak period travel would, under this standard, take 15 percent longer than travel on the same roads during off-peak periods. Five of the nine metro areas in TTI's report are above this standard, with four of them well above it. The other four are well below it.

An expressway lane can generally handle a maximum of about 2,000 vehicles per hour before more vehicles cause traffic to slow to stop-and-go conditions.⁸ For this reason, just to maintain a given level of congestion, or a given travel time index, more lanes must be added to an area's road system as population increases and economic growth encourages more travel. TTI calculates the number of lane miles that must be added yearly in each area in order to maintain the current travel time index. Just to maintain the current congested conditions in each of the most congested areas, a total of 447 lane miles would have to be added to their road networks yearly. To be sure, much of the need is for more city roads, but much of this mileage would be added to the state system, and none of it would reduce current congestion levels.

Congestion is costly, both in time and in resources. According to the Texas Department of Transportation, "The average Houstonian spends more than 50 hours stuck in traffic each year." Sixty percent of Texans live in the state's eight major metropolitan areas. These include Austin, Corpus Christi, Dallas-Fort Worth, El Paso, Lubbock, Hidalgo County, Houston-Galveston, and San Antonio. Between 1990 and 2000 congestion in these areas cost over \$45 billion in lost time and wasted fuel.⁹

The old adage that time is money is true. Congestion leads to greater air pollution, which, in turn, leads to greater gasoline costs, not only because more gasoline is burned, but also because one way to meet federal clean air regulations is to require the use of expensive reformulated gasoline. Congestion leads to lower productivity as workers spend valuable time sitting in traffic. Congestion leads to greater wear and tear on vehicles due to start-and-stop traffic. Congestion leads to longer delivery times for truck freight traffic. Congestion also contributes to traffic accidents. And as one recent study found, just sitting in traffic triples the chances of having a heart attack later.¹⁰ In addition, accidents on highways constitute almost a quarter of all work-related fatal injuries in Texas and are the leading cause of fatal injuries in the state.^{11,12}

Clearly, Texas urbanites need some solutions. The classic solution to congestion has been to build more free roadways. In an effort to solve congestion problems, TxDOT, along with regional planners, has exercised its only option – loops around cities. Then, loops have been built around loops. The result has generally been development immediately adjacent to these loops and then congestion of the loops with mostly localized traffic. Construction relieves congestion and should be pursued. However, the question that arises is whether it is appropriate for the state to fund roads supposedly intended for through traffic but designed in a way that leads to their becoming de facto city streets.

Another commonly attempted solution to urban congestion is transit, all of which is heavily subsidized with tax dollars. Various transit options include bus systems, light rail, and commuter rail. Unfortunately, the evidence shows that despite large sums of money being spent on such systems, there is very little if any positive impact. If anything, transit seems an expensive diversion of resources.

Other hoped-for solutions to the urban congestion problem include efforts to get commuters to carpool, city redesigns via so-called "smart-growth" initiatives that are

supposed to encourage walking and biking to work. Carpooling is encouraged through incentive programs (usually aimed at employers) and the installation of HOV lanes on congested corridors. These supposed solutions are problematic as well.

In 2001, according to the National Household Travel Survey, non-job related travel averaged 14,500 miles per person. The average person traveled 40 miles per day, taking about four trips per day. Eighty-eight percent of this travel was done in a personal vehicle. The largest share of trips was for shopping, obtaining health care, and conducting other personal and family business. Commuting to and from work accounted for a mere 15 percent of all personal trips. In 2000, passenger cars and light trucks accounted for 85 percent of all passenger miles.¹³

People like the flexibility and independence a personal automobile affords them. With an automobile, one is free to shop when and where one chooses. It allows multitudes to make independent decisions about where their children are schooled, when and where they will work, and where they will live. The automobile also allows for ready access to leisure activities in and out of town.

Instead of encouraging or discouraging any given mode of transportation, government should seek to neutrally provide infrastructure according to the transportation modes for which people are willing to pay. Government should not seek to hide the true costs of various favored modes with subsidies or taxes that imperfectly reflect the real cost of using infrastructure, but should instead insist that the full costs be borne directly by the users of a given mode.

Evidently, people are willing to pay a lot for cars, both for their purchase and for the infrastructure they use, as well as upkeep and fuel. The automobile, despite appearances, is efficient for how people actually live their lives in Texas and the United States. However, the extent to which people are willing to fully bear the cost of their transportation decisions is difficult to gauge as long as they have little idea what that true cost is. We have no idea, for example, how many individuals would choose to pay a toll to avoid a few traffic lights versus how many would rather sit at lights because the limited-access highways that allow them to avoid the lights are not priced.

Intercity Road Congestion

Although statistics and measures for intercity (rural highway) congestion are not readily available, some of Texas' rural freeways are crowded and dangerous. It is not uncommon for the casual holiday traveler to find himself in a traffic jam in the middle of nowhere as a result of a traffic accident, construction, or even just volume of traffic. However, for the most part, Texas does not suffer badly from intercity congestion. The bulk of the congestion on the state's highways is in urban areas.

The one corridor most often mentioned as problematic is IH-35, as anyone who regularly travels it can attest. The IH-35 corridor, over virtually its entire length from Laredo to the Oklahoma border, is crowded. This in no small part is due to adjacent economic

development along nearly its entire length. From San Antonio to Waco, a distance of 180 miles, the corridor is heavily developed, with development often extending very little distance on either side of the road. From Fort Worth and Dallas to the Oklahoma border, the heavy development pattern is repeated. Growing truck traffic and personal travel between urban areas combine to make IH-35 and other intercity corridors in Texas increasingly difficult to travel.

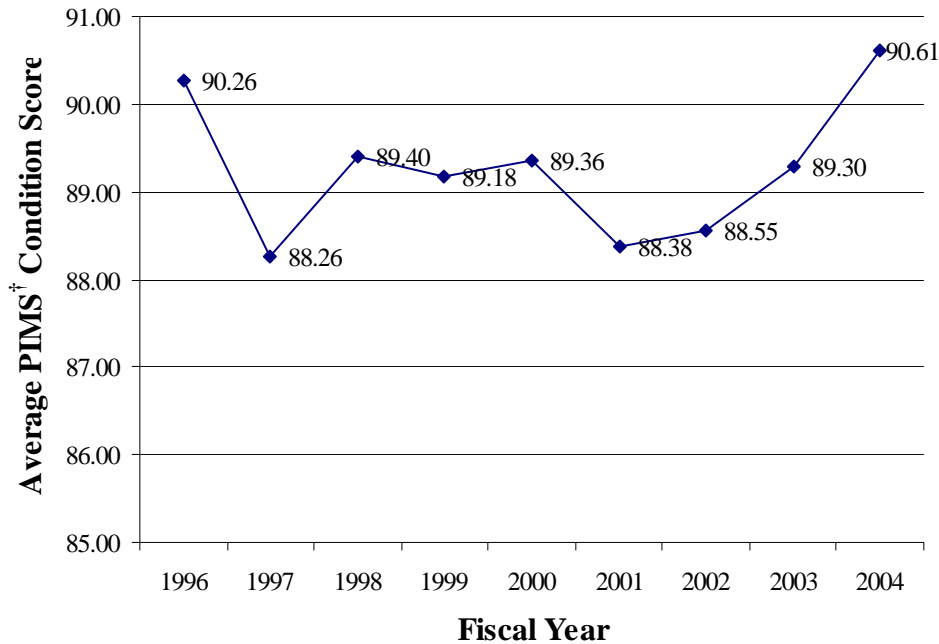
The key issue regarding road congestion is economic development immediately adjacent to a road. The more economic development on the roadsides, the more congested the road will be. Interstate highways and state freeways have tended to become local roads in and near urban areas. The Governor's Business Council estimates that in order to maintain current congestion levels near Austin, Dallas, Fort Worth, Houston, San Antonio, and along the Texas/Mexico border, 453.6 lane miles of rural interstate and state freeway principal arterial roads will have to be added by this year. Most of the increase in congestion would result from growth in and near these communities.¹⁴

Maintenance

From 1996 to 2000, the number of urban miles of Texas road reported to be in good or very good condition in the interstate, other freeways, and other principal arterial categories decreased from 4,877 miles to 1,593 miles. The miles of this roadway rated in poor to mediocre condition increased from 1,162 to 3,203 miles during the same period. Rural interstate, principal arterial, and minor arterial miles of road in Texas judged in good or very good condition decreased from 15,959 to 9,531 miles while those rated poor or mediocre increased from 684 to 3,261 miles.¹⁵

Road conditions have improved in recent years, according to TxDOT's measurement, as can be seen in Figure 1. Regardless of current road conditions, maintenance is an ongoing process that simply cannot be shirked. Investment in more road surface creates a larger maintenance commitment. In 2002, 19 percent of TxDOT's revenue per mile of road went to maintenance.¹⁶ Nevertheless, roads in need of repair cost Texas motorists \$3.6 billion every year, or \$273 per motorist, in extra vehicle repairs and operating costs, according to one estimate.¹⁷

Figure 1
Statewide Pavement Condition Trends



[†]Pavement Information Management System
Source: *TxDOT*

Through the 1990s, the condition of interstates and freeways tended toward improvement nationwide. The number of structurally deficient bridges also declined, but the number of functionally obsolete bridges (those bearing more traffic than for which they were designed) increased slightly over much of the decade – still more evidence of rising demand for roads.¹⁸ In 2001, 22 percent of all Texas road bridges were functionally obsolete or structurally deficient – less than the national average of 28 percent. However, due to its size, Texas had more such bridges than any other state – 10,555 of them.¹⁹

Freight Traffic

The theme song of an old television series from the 1970s started off with the words “Big wheels a rollin’; Gotta keep ‘em rollin’ ” to set the mood for a show about big-rig truckers. It could just as well characterize what may be the biggest challenge Texas faces with its road network.

It’s almost a cliché, but it is true that modern just-in-time production inventory management has made timely shipping more critical than ever. This is one technique that

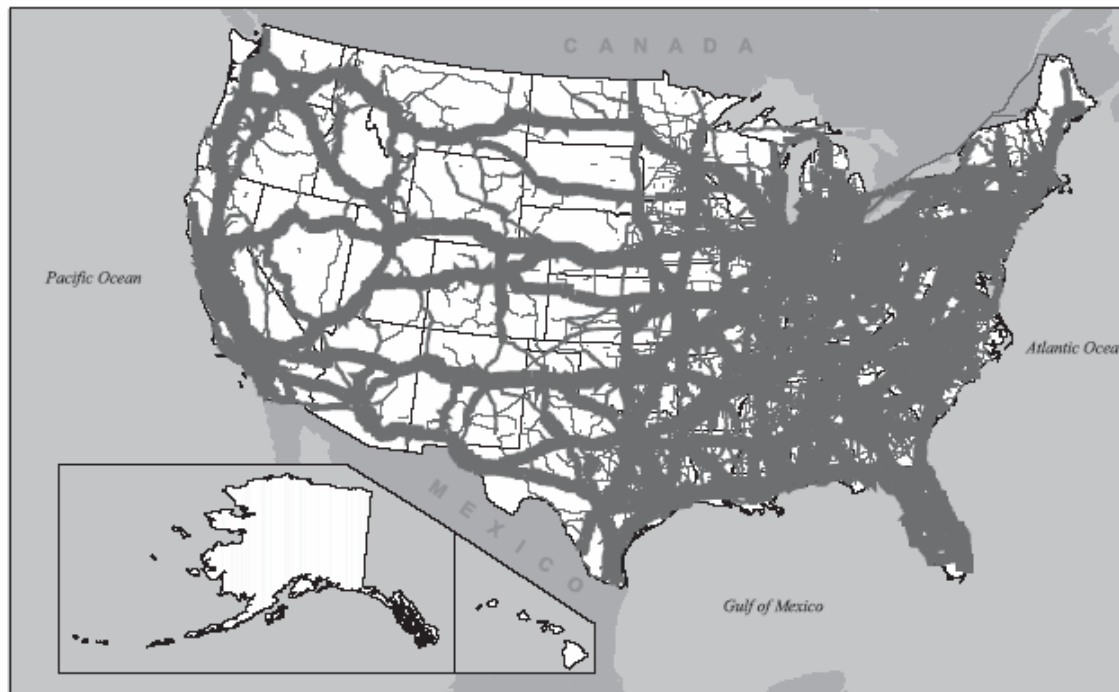
makes it possible for the United States' relatively high-cost labor force to continue to compete in the global marketplace.

Consider one statistic. Truck imports by weight from Mexico to Texas increased 9 percent from 1997 to 2000. Truck imports by weight from Canada increased 36 percent during the same period. The number of incoming truck crossings from Mexico increased from 1,895 to 3,113 from 1995 to 2000, a 64 percent increase.²⁰

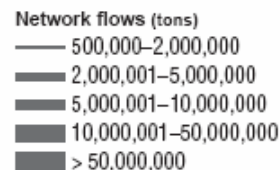
The problem with so much freight on so many trucks is that cars and trucks are a lot like oil and water: they don't mix. In addition, large heavy trucks do a lot of road damage. Roads and bridges must be built to much heavier specifications than would otherwise be necessary due to truck weight. Many of the state's rural farm-to-market roads were built in the 1950s when truck weights were lower and before it was realized that axle weight rather than gross vehicle weight is the real issue when it comes to roads.²¹

Trucks deliver 90 percent of the value of U.S. freight every year.²² In the United States, the number of medium and heavy trucks grew 18 percent between 1992 and 1997. In the same five years, the number of trucks in the very heavy subcategory increased 46 percent. Heavy trucks overall (those over 26,000 pounds) increased 37 percent. In 2001, heavy trucks accounted for 77 percent of the weight applied to urban interstates. They accounted for 89 percent of the weight applied to rural interstates.²³

Figure 2
Truck Freight Flows in the U.S.: 1998



SOURCE: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Operations Core Business Unit, Freight Analysis Framework (FAF).

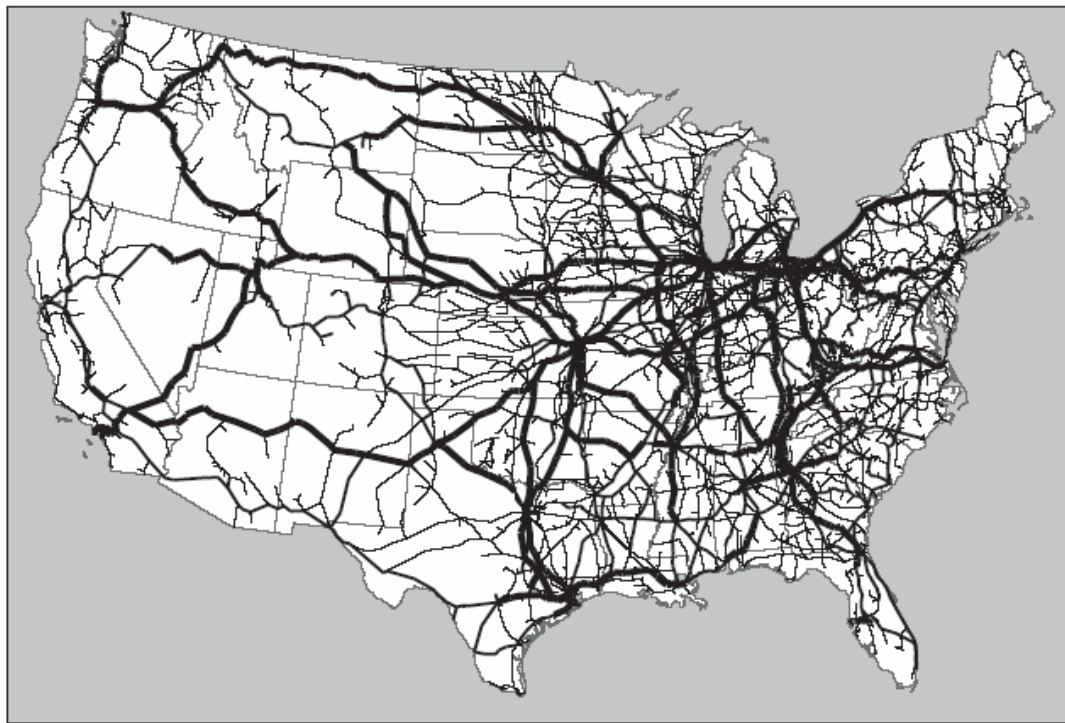


As seen in Figure 2, a lot of the nation’s truck freight flows through Texas. Major hubs include, of course, the highly congested urban areas of the state. The largely rural interstate highways (IH-35, IH-10, IH-20, IH-30, IH-37, IH-40, and IH-45) are obviously heavily traveled by truck traffic. Some U.S. highways in Texas bear a lot of truck freight flows as well (US 287, US 77, US 183, and US 84). Interestingly, although the bulk of truck freight from Mexico crosses at or near Laredo, McAllen, Brownsville, and El Paso, Laredo and Brownsville are two of the least congested metro areas in the nation, according to the Texas Transportation Institute’s mobility study, and El Paso barely exceeds the travel time index goal set by the Governor’s Business Council (see Table 1). The congestion in the border region is at the crossings themselves where customs and other border-crossing processes bring traffic to a stop.

In 1997, a total of 545,603 tons were shipped by truck to, from, and within Texas, counting tonnage that passed through the state. Of the total tonnage of shipments originating in Texas in 1997, 50.9 percent was shipped by truck. Only 10.5 percent was shipped by rail. The long-haul nature of rail, versus the relatively short-haul nature of much truck traffic is exhibited by the fact that trucks represented 38.4 percent of the ton-miles of Texas-originating shipments while rail accounted for 29 percent of the ton-miles.²⁴

Of the top 50 U.S. foreign trade freight gateways (by value of shipments), eight are in Texas, with four on the Texas/Mexico border. Seventy percent of trade with Mexico comes through Texas. The ports of Houston, Beaumont, and Corpus Christi are three of the top 50 foreign trade gateways in the nation.²⁵ The importance of these ports of entry can be seen in the map of the nation's truck flows (Figure 2). The water ports' importance is especially made clear by Figure 3.

Figure 3
Rail Freight Flows in the U.S.: 1998



SOURCE: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy, personal communication, August 2003.

Network flows (tons)
— < 5 million
— 5 million–20 million
— > 20 million

The importance of the Port of Houston as a major source of freight traffic is dramatically illustrated in Figure 3. It is the sixth largest port in the world and might soon be the fifth largest. It is first in the nation in terms of foreign tonnage handled. It is the seventh largest container port in the world and has been known to turn away container customers. At present, about two-thirds of the freight received at the Port of Houston is consumed within 100 miles of the port, though this will soon change.²⁶

Two of the biggest container shippers in the world, Wal-Mart and Home Depot, are constructing receiving and distribution facilities adjacent to the Port of Houston. After the strikes at California ports a few years ago that cost retailers dearly during a Christmas season, there is a new determination to actively avoid California's ports. Texas is now seen as a relatively attractive shipping point from which to move freight throughout the nation rather than just to the major markets of the state. To handle the added capacity, the Bay Port Container Terminal is slated to be completed at the Port of Houston by June 2006.²⁷

All this is to say that Texas' surface transportation arteries are very busy with freight traffic and are going to only get busier – a lot busier. A key alternative to truck freight shipping is railroad freight shipping. Unfortunately, state and federal policy seems set up to tolerate rail transportation rather than to enhance it. It is probably no accident that national rail mileage reached its apogee in 1956, the same year the federal government created the interstate highway system.

As development has occurred around railroad rights-of-way, it is the railroads that have been forced to adjust, rather than the developers. Trains are slowed to a crawl and street/railroad crossings are often left at grade. For decades, federal policy seemed determined to put the railroads out of business, regulating rates, business practices, and labor policy in ways that made the rail business increasingly untenable. Take into account that the trucking industry enjoys a huge subsidy in not having to fully finance its share of road use, and it is easy to see why long-haul truck traffic is so common today despite the continued presence of a rail network.

In the past, the railroad and trucking industries viewed each other only as rivals. Today, particularly with changes in federal policy, they increasingly and properly view their industries as symbiotic. Three decades ago, the federal government relented and allowed truck trailers to “piggy back” on flat rail cars, opening new possibilities for intermodal shipping across the nation. Given rail's relative efficiency in hauling heavy loads over long distances, it is easy to conceive of rail as the long-haul and heavy-load shipper with trucking serving a more regional and specialty role.

Financial Realities

In order to improve traffic flow in and around cities to where peak congestion causes a trip to take only 15 percent longer than without congestion, the Governor's Business Council estimates that the state needs to put \$78 billion in additional resources into road

improvement over the next 25 years, mostly in new construction to add capacity. In other words, to achieve this goal, the state needs to spend more than \$3 billion each year in addition to what is already planned for the next quarter century. The net benefit from this expenditure would be over \$430 billion.²⁸ However, for the 2005 fiscal year, the state's highway construction budget is only about \$2.8 billion, far less than just the amount of *increase* called for by the Governor's Business Council, which would more than double the current construction budget.²⁹

At a time when the need for roads is greater than ever, when Texans drive more than ever, and when cities seem to be more sprawled out than ever, several factors have combined to make it increasingly difficult for Texas' government to build the roads citizens want and believe they deserve. First, the prices of steel, concrete, and asphalt have all increased due to increased world demand. The economies of India and China, the two most populous nations in the world, are finally feeling the benefits of market reforms and are surging forward like never before.

Second, vehicles are more fuel efficient. This means that a vehicle today pays less fuel tax per mile traveled than one of equivalent weight 20 years ago, assuming the tax per gallon did not change. Increased fuel efficiency is great for consumers and great for the environment, but it makes the fuel tax that we rely on to fund road construction and maintenance more dubious as a funding source.

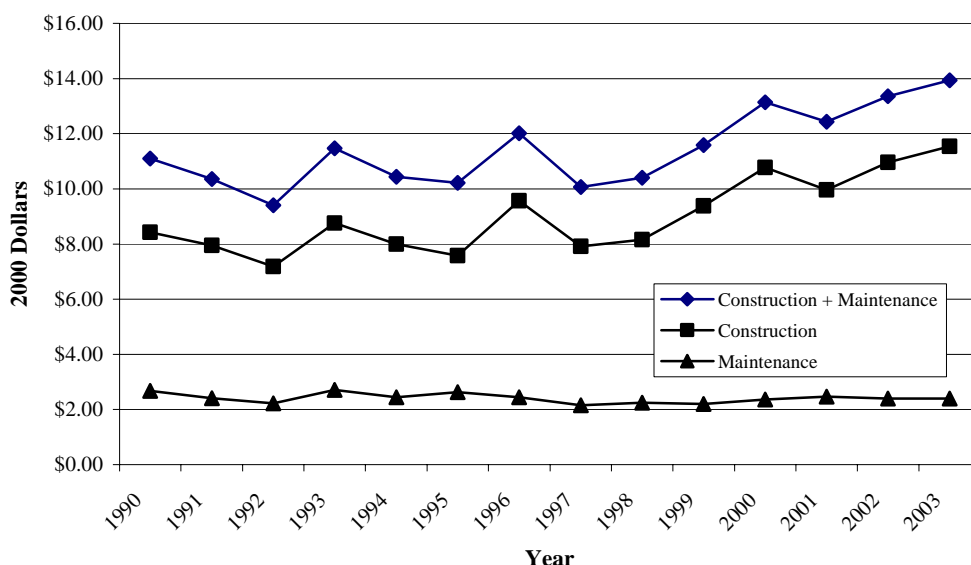
Third, the fuel tax does not change with inflation. The state's gasoline tax last increased in 1991. The federal fuel tax last increased in 1997. Combined, they constitute 38.5 cents of the cost of every gallon of gasoline we buy. However, inflation has eroded the state and federal gas taxes so that, in order for each gallon of gasoline to be taxed as heavily as when each of these taxes was last increased, the combined total would have to be 49.2 cents – higher if greater fuel efficiency was factored into the equation.

Fourth, attitudes in Texas seem to have evolved to the point where higher taxes are politically infeasible. While those who believe in limited government can justifiably look at this as a positive development, this makes it all the more difficult to fund roads that depend on a dedicated tax. In addition, the fuel tax is not really so dedicated. A quarter of the Texas fuel tax has been deposited with the Foundation School Program since 1946. Funds have always been deducted to support the Department of Public Safety as well. Though no longer the case, for years funds earmarked for "highway beautification" were diverted to help pay for courthouse restorations.

Figure 4 shows trends in road spending in Texas on construction and maintenance in comparison to daily vehicle miles traveled (the average number of miles traveled by a vehicle per day), accounting for inflation. While not a perfect measure, vehicle miles traveled is a very good gauge of total road demand. As it increases, road construction is needed in order to accommodate additional traffic. On the other hand, if a community is not very congested and vehicle miles traveled increases, it might not be necessary to build new roads. This, as noted below, is not the case for much of Texas.

Some road construction expenditures might actually be better termed heavy maintenance. A good deal of construction is better called re-construction and does not add capacity to the road network. As road demand increases, though, it seems reasonable to expect that routine maintenance (patching, painting, re-paving, mowing, etc.) would increase. As can be seen in Figure 4, real (after-inflation) maintenance spending per vehicle mile traveled in Texas is not increasing and is, if anything, trending downward slightly over time.

Figure 4
Real Road Spending per Daily Vehicle Miles Traveled in Texas



Source: TxDOT data, author's calculations.

According to Robert Poole of the Reason Foundation, it takes 30 cents to 50 cents per mile per vehicle to build and maintain high-cost, new elevated freeway lanes.³⁰ The total federal and state gasoline tax from a vehicle getting 20 miles per gallon is less than 2 cents per mile. Of course, vehicles all over the state are rolling over roads that just need to be adequately maintained, making more funds available for the high-cost roads, but it is impractical to believe that current sources of revenue for road construction and mobility are adequate to the task at hand.

The folly of maintaining dependence solely on gasoline taxes becomes even clearer when Texas' transportation funding from the federal government is considered. Texas is one of 23 states that contributed more in federal transportation taxes than it received from the federal government in 2003. It is one of only 17 states that have been on the short side of this statistic since the federal highway trust fund was created in 1956. In 2003 Texas

received about 86 cents for every dollar contributed to the federal fund.³¹ Texas is set to receive 90 cents for every dollar contributed in the next federal budget. It would have been a major victory had Texas received 95 cents of every dollar it contributes.

Pollution

Internal combustion engines in vehicles contribute to air pollution by emitting “volatile organic compounds” such as nitrous oxide and carbon monoxide. Combined with sunlight and naturally occurring air, these compounds react to form ground-level ozone. Ozone, consisting of oxygen atoms, reacts readily with other substances, making it very caustic. It can damage lungs as well as plants.

The only source of ground-level ozone is vehicle emissions. On windy, cool days ozone pollution is not a problem. Less ozone is formed when the sky is cloudy and wind dissipates emission gases. On warm, sunny, calm days, though, emission gases build up in the ground-level atmosphere and can negatively impact human health.

Whether the concern is warranted or not might be debatable, but vehicle emissions are also a major source of carbon dioxide, a gas many believe is contributing to a warming of the Earth’s climate. Passenger cars and light duty trucks accounted for some 78 percent of carbon dioxide emissions in the United States in 2001.³²

Road congestion contributes to air pollution by causing vehicles to be on the road running their engines longer than they otherwise would. Not only that, vehicles must accelerate and decelerate repeatedly in congested conditions, resulting in more fuel being burned over a given distance than would otherwise occur. An estimated 319 *million* gallons of fuel were wasted due to congestion in the nine Texas metro areas included in the TTI mobility report. This wasted fuel represents many tons of volatile organic compounds and carbon dioxide.

All vehicles pollute, and all vehicles pollute more on a given trip when they spend a large amount of time idling. However, only 5 percent of all vehicles on the road today produce 50 percent of emissions. Seventy percent of emissions are caused by only 10 percent of vehicles. The main reason for this is the age of the vehicles. Since automobiles are getting increasingly efficient, the newer the automobile fleet, the lower the pollution levels. Unfortunately, motor vehicle sales taxes discourage the purchase of newer vehicles in Texas.³³

Table 2 shows those counties in Texas whose ozone levels exceed the maximum standard as determined by the Environmental Protection Agency. Twenty-four Texas counties are affected, less than 10 percent of Texas counties, but these are the most populous counties in the state. Over half of Texas’ population resides in these counties. In addition to the ozone exceedances, as of September 27, 2004, parts of El Paso County were in air quality nonattainment for excessive carbon monoxide and particulate matter.³⁴

Being in nonattainment is costly. The federal government requires that action be taken to mitigate excessive levels of pollution. Requiring only the sale of reformulated gasoline in nonattainment areas is typical. Reformulated gasoline is relatively expensive. Also typical are especially expensive and stringent vehicle inspections for all vehicles, despite the fact that a relative few old and/or out-of-tune vehicles cause most of the pollution. Roadside devices that can identify these vehicles are available.

Another pollution hazard is cargo. Trucks carry a number of substances classified as hazardous that, if spilled in an accident, can pose significant risk to those who live near major thoroughfares. From 1996 to 2000, the number of incidents involving hazardous materials on Texas highways increased from 807 to 1,203, with \$4 million in damages in 2000 alone. During the same period, the number of hazardous incidents on Texas railroads actually declined slightly – from 169 to 154 incidents – resulting in \$251,000 in damages in 2000.³⁵

Table 2
Texas Air Quality Nonattainment Areas for Ozone

County	Area Name	Pop (2000)	County	Area Name	Pop (2000)
Bexar	San Antonio	1,392,931	Hardin	Beaumont-Port Arthur	48,073
Brazoria	Houston-Galveston-Brazoria	241,767	Harris	Houston-Galveston-Brazoria	3,400,578
Chambers	Houston-Galveston-Brazoria	26,031	Jefferson	Beaumont-Port Arthur	252,051
Collin	Dallas-Fort Worth	491,675	Johnson	Dallas-Fort Worth	126,811
Comal	San Antonio	78,021	Kaufman	Dallas-Fort Worth	71,313
Dallas	Dallas-Fort Worth	2,218,899	Liberty	Houston-Galveston-Brazoria	70,154
Denton	Dallas-Fort Worth	432,976	Montgomery	Houston-Galveston-Brazoria	293,768
El Paso	El Paso	679,622	Orange	Beaumont-Port Arthur	84,966
Ellis	Dallas-Fort Worth	111,360	Parker	Dallas-Fort Worth	88,495
Fort Bend	Houston-Galveston-Brazoria	354,452	Rockwall	Dallas-Fort Worth	43,080
Galveston	Houston-Galveston-Brazoria	250,158	Tarrant	Dallas-Fort Worth	1,446,219
Guadalupe	San Antonio	89,023	Waller	Houston-Galveston-Brazoria	32,663
				Population Total	12,325,086

Source: U.S. Environmental Protection Agency

POTENTIAL SOLUTIONS

More Roads

Compared to other proposed alternatives, the surest and simplest way to relieve road congestion is to build more roads where they are needed. The logic is obvious enough. If you spread the same amount of traffic over more road lanes, the traffic density falls and traffic moves at a faster overall pace. Many, however, argue that despite the addition of roads, congestion has only increased because more roads encourage more driving. Part of the argument is that more roads make it possible for individuals to live farther from their jobs.

It is understandable why people would get the impression that building more roads increases road congestion, despite the illogic of such a contention. Experience and casual observation would seem to confirm it. Doubtlessly, all of the big cities in Texas have more lane miles of roadway than they have in the past. They are also more spread out and more congested than ever before. However, from 1990 to 2000, the state's population increased almost 23 percent while, at the same time, the number of lane miles in the state increased by a little over 3 percent.³⁶ Given that much of the population growth occurred in urban areas, it is natural that these areas would spread over more land. It would also erroneously appear that building roads caused people to drive more, a classic example of misidentifying cause and effect.

As it happens, building more roads makes it possible to reduce the emission concentrations to which people are exposed. With more roads over a wider area, people spread out their living and work patterns. In so doing, pollution concentrations fall. Even if people must, on average, drive farther, it is possible for overall pollution emissions to fall over time with improving technology. This is especially true if already existing technologies are employed to identify and remove the highest-polluting vehicles.

Despite the fact that total vehicle miles traveled in the United States more than doubled from 1975 to 2003, the average number of ozone exceedances actually decreased between 60 percent and 90 percent, depending on the ozone standard used. Average levels of fine particulate matter decreased as well, by more than 40 percent. Because of improving technology, automobile emissions per mile are falling 10 percent a year even as miles driven are increasing 2 percent per year. Even levels of soot emitted by diesel trucks have decreased markedly.³⁷

Put Roads Where They Are Most Needed

Because roads are provided by the government, political realities rather than economic efficiency often play the bigger role in determining which roads get built. Economists have long noted the problems inherent with government/bureaucratic provision of goods and services. With market provision, the self-interest of producers aligns with the self-interest of consumers due to profit motive and competitive pressure. Absent the

possibility of profit and competition, government decision makers often find their self-interest served when they fail to act in the interests of those they ideally serve – the taxpayers.

Political considerations tend to result in a view of road construction and maintenance as government jobs programs rather than as means to allow for the greatest amount of private economic activity possible. When a road is constructed, the employment involved in constructing that road is obvious and tangible. The road itself is obvious and tangible as well. It is an asset for which elected officials can claim credit. The many diffuse and difficult-to-measure private jobs created as a result of putting roads where they serve the greatest net benefit are much more difficult to point to and take credit for “creating.”

For years, there have been complaints that the “border” (Texas/Mexico border region) has not received its fair share of funding. El Paso policymakers, whose city is no closer to Houston than it is to San Diego, have often complained of being neglected. With the completion of the North American Free Trade Agreement and the increased truck traffic at the border, cries of neglect grew louder. Yet, congestion statistics tell the true story.[†] There is no congestion problem at the border – at least not when compared to problems in Houston, Fort Worth-Dallas, Austin, and San Antonio – except at the border crossings themselves for reasons unrelated to road capacity.

The fact is that commuters sitting in heavy congestion on freeways have been subsidizing road projects in the rest of the state. What are now unquestionably the state’s economic powerhouses – its urban areas – are being choked by the very congestion that makes them such good sources of funds for everyone else. Fortunately this is beginning to change.

The Texas Transportation Commission and the Texas Department of Transportation have begun change how road funding is distributed, in a manner that benefits all Texans. In 2000 the comptroller’s office recommended that TxDOT’s confusing array of 34 road funding categories be consolidated to create a more understandable system. Eventually, TxDOT pared the number of categories down to 12.

Just a few years ago – in no small part because of how funding was distributed – projects were constructed piecemeal. Often it seemed like TxDOT would reconstruct and widen congested roads only to leave critical intersections to be constructed very last, making most of the construction up to that point almost meaningless. A good example of this is IH-35 south of Austin. For years, north of San Marcos and south of San Marcos, IH-35 was six lanes. *Through* San Marcos, where traffic could be expected to become more congested, it was only four lanes. This is still true in New Braunfels, though IH-35 is currently being widened through that city.

[†] See Table 1.

Examples of how freeway projects have been constructed one small segment at a time abound. An overpass might be built here. A several-mile stretch of highway might be built there. Connecting the two would be access roads, with traffic lights at intersections and a hundred feet of median in between where the rest of the freeway is supposed to be built someday.

That piecemeal system has yielded to greater funding simplicity and greater local autonomy and flexibility. It is now within the purview of the 25 TxDOT district offices to determine priorities and decide how funds are spent so as to identify and satisfy sometimes swiftly changing local needs. An example of how this has worked lies just south of Austin in the community of Buda, where the Cabela's retail chain decided to locate a distribution and retail outlet center. Once the deal was struck with local government, TxDOT moved with amazing speed to start construction on enhanced access roads and overpass facilities at the IH-35 access point. What used to take years of planning and deliberation was commenced within a comparatively short time.

Another big change in how funding flows involves the eight big metropolitan areas. Austin, Corpus Christi, El Paso, McAllen, Houston-Galveston, Lubbock, Dallas-Fort Worth, and San Antonio are guaranteed a certain level of state funding over the next several years. By knowing well in advance minimum amounts of funding that will not be reduced even if toll roads result in a great deal of revenue, the metropolitan planning organizations in these areas can set long-term goals and conceivably see to the construction of whole corridors instead of enhancing roads and constructing overpasses intermittently.

Another important innovation is the development of a congestion time index for the state. One of the big problems policymakers face in judging TxDOT's performance is the absence of objective measures of how well it is ensuring mobility throughout the state. The development of a congestion index (similar to the travel time index developed by the Texas Transportation Institute and exhibited in Table 1) allows policymakers to more effectively monitor how well TxDOT and various local planning organizations accomplish their jobs over time.³⁸

TxDOT and the commission that oversees it need to be careful not to allow past decisions made in a different time to dictate the future. It seems that at one time a good deal of emphasis was placed on spreading road construction contracts all over the state, rather than on building roads to optimize movement throughout the state. Planned in 1995, the Texas Trunk System is envisioned as a network of 4-lane free-access roads connecting all cities in the state that have over 20,000 inhabitants. Phase I of the system will not be completed until about 2013.

The first phase of the Texas Trunk System is a good idea. It appears to be designed primarily to connect relatively short segments of four-lane road that have two-lane segments in between. In other words, it represents some attempt to make sense of the piecemeal nature of Texas' current road network. However, subsequent phases of the Texas Trunk System should be evaluated purely on their capacity to improve mobility.

While safety, it can be argued, is a big issue dictating that additional phases of the trunk system be completed, the need for safety improvements should be demonstrated. Otherwise, it can be argued that all highways in the state should be four-lane, divided highway, an untenable position.

Design Roads to Minimize Cost

One of the most distinctive design aspects of Texas interstate highways (and others comparable to them) is the presence of access roads. These parallel roadways, though not constructed to the same pavement specifications as highways, are costly to build, requiring acquisition of additional right-of-way as well as construction and maintenance.

Other states provide only enough off-highway pavement to allow access to the highway. Access to businesses and residences in close proximity to highways is provided through local streets. For years, TxDOT committed itself and the state's taxpayers to lowering development costs immediately next to what were supposed to be limited-access, high-speed highways, thereby turning interstate highways in urban areas into city streets by default.

Recently, the Texas Transportation Commission entertained a proposal to suspend the construction of access roads even on projects that had already been planned with them. The outcry from developers caused the idea had to be scrapped. However, the decision was rightly made that limited-access highway projects would no longer be planned with access roads. Taxpayers will no longer have to bear the expense of right-of-way acquisition for, construction of, and maintenance on access roads. It is also good for travelers, who will see less congestion.

Unfortunately, in certain cases access-road construction can be difficult to avoid. Some parties skillfully game the right-of-way acquisition phase of a road project to enhance land holdings along a road by forcing access-road construction. With hand-drawn plattings showing subdivisions of relatively large land-holdings that actually have road access, property owners have been able to claim that a road project would damage them terribly by landlocking a subplot of land, often surrounded by holdings of family members. In such cases, it is often cheaper for TxDOT to construct an access road than to compensate the landowner for his alleged loss. In many instances after construction, the plot in question is magically re-consolidated with surrounding plots with the new road access enhancing the larger property's value considerably – essentially at taxpayer expense. A legislative fix is clearly needed.

Other potential cost savings could be found in the construction of dedicated truck lanes. Heavy trucks require foundations and pavement much thicker than would otherwise be the case. Current road configurations demand that all lanes be constructed to truck weight specifications. It might be possible in many instances on the local level to restrict trucks to dedicated lanes built to accommodate the trucks' weight. Careful consideration, though, must be given to the expense of constructing facilities to interface with existing

roads and the necessity to provide for the breakdown of large trucks to smaller ones when necessary.

By saving on construction costs and designing roads with such a goal in mind, resources can be stretched, making it possible to put even more pavement on the ground. Future maintenance cost savings should be considered as well. Narrower medians and roadsides, for example, can save on landscaping far into the future. The effort should be to get the maximum amount of mobility for every dollar spent.

Resist Ineffective “Fixes”

There is no shortage of suggested alternatives to road transportation. Some are more reasonable than others. Long-haul freight rail is a proven and competitive alternative to trucking, and with minimal encouragement, could be more so. Other alternatives would involve technologies still needing years of development, such as a freight pipeline or other dedicated systems that would involve electromagnetic locomotion.³⁹

The most common alternatives to building more roads to solve congestion problems are greater reliance on transit and policies to encourage greater population densities in cities. The idea is to get people out of their cars and on their feet, either walking or riding bicycles. However, it would require a 200 percent increase in transit funding, from \$35 billion to \$110 billion, to boost transit’s commute share of 4.6 percent to 6.9 percent (a 50 percent increase) nationwide, saving the average commuter only 44 seconds per day.⁴⁰

Transit

Many supporters of public transportation think transit is not only the best solution for urban congestion but for urban pollution problems as well. If Austin’s Capital Metro is at all representative of the effectiveness of transit in helping to mitigate pollution, transit is anything but cost effective. On “ozone action days,” when heat and lack of wind combine to allow excessive amounts of ground-level ozone to build up, Capital Metro allows everyone to ride for free, giving up fare revenues amounting to less than \$200,000 in 2003. However, by one calculation, every ton of nitrous oxide removed with the ozone action day program costs Capital Metro \$160,000, 12 times the recommended amount for businesses to spend in their efforts to reduce such emissions.⁴¹

The problem is that even when transit is free, people do not like to use it. From 1960 to 2000 the share of work trips by transit fell from over 12 percent to less than 5 percent nationwide. Meanwhile, federal transit subsidies nearly tripled and all government subsidies increased by a factor of seven.⁴² This is the problem with transit. Even though few state-level resources are used for transit, local resources that could be used to actually solve transportation problems are too often used to exacerbate them through spending on various transit boondoggles – buses, light rail, and commuter rail.

Not only does transit funding divert resources from use on proven transportation modes – like more roads – it also negatively affects the private sector. One estimate holds that if,

in 1998, funds spent on transit had been left in the hands of the private sector, the nation's capital stock would have been \$400 billion greater, supporting 7 million more jobs.⁴³

In Florida, cities that have done least well in keeping down congestion as a result of rapid economic and population growth are Miami and Fort Lauderdale, both of which have spent large shares of their scarce transportation funds on rail transit.⁴⁴ One study showed that Los Angeles' freeways are 11 times more cost effective than the light rail system in that city, and nearby San Jose has seen its light rail ridership plummet of late.⁴⁵ The key to solving congestion is adding road capacity.

There are currently three light rail systems in Texas: Dallas DART, Houston METRO, and Galveston Island Transit. Within the first few months of opening in January 2004, Houston's Metrorail seven-mile starter light rail line had been involved in 36 collisions, 25 times the national average. In order to try to keep the cost of this very expensive transit alternative as low as possible, light rail trains were put on the same grade as automobiles. This compromise on safety, while saving money, has had its consequences. The issue, though, is not efforts to achieve cost savings on a light rail system; the issue is the decision to build a light rail system at all.⁴⁶

Transit projects fall into a category of public infrastructure undertakings wherein proponents often overestimate the benefits and underestimate the costs. Those who have studied transit projects note that initial ridership estimates, necessary to convince voters to approve of such projects, are very high. Over time, as systems are being built and organized, ridership estimates drop precipitously. Then, when a system opens, ridership is almost always said to be higher than projected even though it is much lower than projections made when voters were talked into approving the project. A book has been written about this all-too-common bait and switch strategy's use with large infrastructure projects.[†]

A central problem is that "public transit simply lacks the speed, flexibility and convenience to be relevant in modern America."⁴⁷ The automobile provides flexibility and ready mobility. Public transit, whatever its type, does not take the individual exactly where he or she wants to go at the time he or she wants to go there. If it is possible to make transit an attractive, cost-effective alternative, it might be worth doing so if automobiles were taken off the road, but the promise of transit has thus far failed to materialize.

Despite this, the call for transit continues. Austin voters recently approved use of transit funds to establish a commuter rail service. This commuter rail and the Dallas/Fort Worth commuter rail both use already-existing rails and might be more cost effective than light

[†] See Ben Flyvbjerg, Nils Bruzelius, and Verner Røghengatter, *Megaprojects and Risk: An Anatomy of Ambition*, Cambridge University Press (2003).

rail. Nevertheless, given the fixed nature of the route, it is difficult to believe people will ever heavily use this type of transportation.

Possible Real Transit Solutions

Bus transit, the most cost effective form of transit available today, might be made more effective and desirable to potential riders if two policies were adopted. First, transit services should be privately contracted. Instead of having government agencies run these systems, contracts should be let allowing private management with real decision-making power take over. With a financial return based on ridership and cost effectiveness (i.e., profit) there would be a greater incentive to make bus services desirable.

Second, so-called “bus rapid transit” lanes should be adopted as a standard policy where possible. Dedicated lanes for high-occupancy vehicles are already open to transit bus operations. Such lanes, however, could and should become more common. However, to be cost effective, they should be open to private operators as well who can pay tolls to enter. With tolls, the lanes could be kept clear for buses and other high-occupancy vehicles like jitneys by increasing the toll when demand is high, making commutes on these forms of transit quick and relatively convenient.

A “jitney” is a private bus service, so called because when private bus services were first offered in the United States, the most common fare requested was a nickel, then nicknamed a jitney much like a quarter is still called two-bits. Cities made private bus services illegal when leaders discovered city-owned transit systems – trolleys – were losing riders. Occasionally, someone tries to start up a type of limited jitney service in an American city, but taxi companies and transit authorities, with their exclusive franchises, usually manage to get such services shut down.

Congestion happens when people in their automobiles converge from a web-like network of side streets onto main thoroughfares and then diverge to a different web-like network some miles distant. The problem with transit is that it assumes most of the web-like networks on each end of people’s commutes do not exist. Jitneys could service just these networks, in addition to the commutes themselves.

Cities would have to establish a legal framework and possibly some infrastructure for jitneys to exist, but the benefit might be (and there should be some emphasis on *might*) a positive effect on congestion. Jitneys are a market innovation for which many people of limited means are willing to pay without public subsidy, opening the possibility that transportation resources dedicated to public transit could be freed to contribute to real solutions. Instead of seeking to force people onto government-owned transit they have demonstrated they do not like and will not use in sufficient numbers, cities should encourage private bus services. TxDOT should not aid local transit planning and implementation unless cities make jitneys legal and establish a foundation for them to exist.

High-Occupancy Vehicle (HOV) Lanes

The 2000 Census shows that, nationwide, since 1990 carpooling declined from 13.4 percent of work trips to 11.2 percent of work trips despite billions being spent on HOV lanes on congested highways. In Texas, in a single decade almost 500 miles of HOV lanes have been added to the urban road network where construction costs are at their greatest.⁴⁸

Carpooling has lost commuting share in 36 of the 40 largest metro areas, including Los Angeles and San Francisco.⁴⁹ A study by the Minnesota Department of Transportation indicates that HOV lanes fail to deliver on their initial promise and that they might even be causing pollution. It is estimated that if two HOV lanes were opened to general use around Minneapolis/St. Paul, commuters would save 831,200 travel hours and a million gallons of fuel each year. As a result, hydrocarbons would be reduced 33 tons per year and carbon monoxide emissions would fall some 370 tons.⁵⁰

On the other hand, Dallas-area HOV lanes at least initially showed some success. Carpooling tended to increase after HOV lanes opened there.⁵¹ This might just be a result of the HOV lanes being new. In Pittsburgh, HOV traffic on IH-279 has declined 20 percent over time after peaking in 1992, despite a good deal of congestion on the corridor in question.⁵²

Toll Roads

Although the Houston and Austin Turnpike Company was authorized by the Republic of Texas to build a toll road between the two cities in the 1840s, the first toll road in the state was the Dallas-Fort Worth Turnpike, which opened in 1957 and reverted to being a free road in 1977.⁵³ As of 2001, there were eight toll roads in Texas, five owned by the Harris County Toll Road Authority, two owned by the North Texas Tollway Authority, and one privately owned (now owned and administered by the Texas Turnpike Authority Division of TxDOT). They totaled 135 miles in length. There were 25 toll bridges, most on the Texas/Mexico border with all but perhaps one publicly owned.⁵⁴

Today, TxDOT has a division dedicated to planning, building, and administering toll roads. The Texas Turnpike Authority Division (TTA) was once nominally a separate entity with its own commission established in 1953. From 1953 to 1997, the year it was integrated into TxDOT, the TTA completed only four turnpike projects with two reverting to free-access facilities and two being transferred to the newly created North Texas Tollway Authority in 1997. Since its full integration into TxDOT, the TTA has become more active than ever. Today, it is financing tolled sections of Loop 1, SH 45, 49 miles of SH 130, and U.S. 183A, all part of the Central Texas Turnpike Project in the Austin area.

Though the TTA got off to a very slow start, it is apparently a concept whose time has come. Colorado and North Carolina recently created toll agencies with authority to work with the private sector to develop and operate toll roads. Georgia and Mississippi are the

most recent states to enact public-private partnership laws for toll road development. There are 21 such enabling laws, covering nearly all the fastest-growing states.⁵⁵

The Need for Tolls

Not to belabor the point, but Texas needs road infrastructure and it needs it badly. Toll financing has several advantages over tax financing that are not often considered. Not the least of these is that tolls make the construction of infrastructure possible today rather than someday perhaps years from now. The money to finance road construction must come from somewhere. With tolls, the money comes directly from those who use the infrastructure.

Tax financing of roads separates the proceeds from the roads traveled. With toll financing, there is no need for estimated counts of people who want to travel in a particular area in a particular direction at a particular time of day. Congestion does not have to be estimated on a tolled road. The tolls tell the story. This vital information sends clear signals to road authorities about where they should concentrate their resources. With proper reporting, it is very difficult for those in charge of a state road agency to claim it is necessary to divert resources to low-traffic areas.

For all practical purposes, limited-access roadways are currently the only roads to toll. As has been noted, these roads often get choked with local traffic, essentially becoming local streets instead of throughways handling the high-speed travel for which they were designed. With tolls, it is less likely that individuals will enter the roadway only to make short hops. Now it is not uncommon to see vehicles enter a limited-access highway and then exit again within a half mile in an urban area for the purpose of missing one or two intersections on an access road.

Unnecessary travel during peak traffic periods would also be discouraged. Not all rush hour traffic is necessary. Some rush hour drivers could choose other travel times. While rush hour delays might be costly, many find the delay worthwhile for the relative convenience of going to and from work during traditional time periods. However, others might change their habits if, on top of congestion, tolls added to their costs. Explicit financial costs make a bigger impression than implicit costs like time delays.

Value pricing could play a very important role in controlling congestion on highways, especially in urban areas. Value pricing is the practice of varying tolls depending on time of day, vehicle weight, and number of occupants. Those who most highly value travel during traditionally congested periods would be allowed to essentially “bid” a greater amount for that privilege than those who do not value that travel time so highly.

Through road pricing, more rational business location decisions would be made. Employees’ cost of living and commuting is one consideration businesses must take into account. This plays an important part in determining competitive compensation. If there is a way to lower the costs for employees, it helps lower costs for the company. Location decisions by companies today can, to a certain extent, take for granted that road costs are

an entirely external factor about which they should not – indeed cannot – be concerned. However, with tolls employee costs would be explicit, something a company *could* take into account. Consequently, instead of locating in a city center or other location where almost no one lives and to which virtually everyone has to drive long distances, companies might choose to locate someplace where the commute is not so long for most employees. This would serve to clear the air as well as the roads.

Those who would like to see more carpooling and bus riding are more likely to get what they want with tolls than with other supposed solutions. Tolls help to make explicit the benefits of riding together in vehicles, especially if value pricing is employed and commutes are during traditional, congested time periods. Several people riding in a van or bus individually bear less cost from tolls than they would if they were in their own vehicles.

Another benefit of tolling is that the highway authority has functions more like a business than an entity performing tasks to mollify pesky legislators and taxpayers. The Central Texas Turnpike Project is a case in point. The project is partly financed through the issuance of bonds and federal loans that will be financed by tolls collected once the project is operating. As the project is being constructed, interest is accruing at a rate of \$3.62 a minute. This provides a powerful incentive to get the road constructed as quickly as possible since the bonds will not be paid with taxpayer money, regardless of whether the road is operating or not. Only when the road is complete and tolls are being collected will the bonds and the interest be serviced.⁵⁶

Not only do tolls encourage the completion of road projects, they also encourage those in charge to keep a road open and operating. When lanes are closed for maintenance on an unpriced road, the mindset tends to be that cars and their drivers are a nuisance. On a toll road, drivers in their cars are customers and the closed lane is a major cost, not just in maintenance expenses, but in lost revenue. Thus, there is a strong incentive to complete the maintenance and reopen the lanes quickly.

Toll Innovations

Six years ago, in San Diego County in California, carpool lanes were converted to all-electronic toll lanes with tolls varying every six minutes. This proven so popular that the toll section is being quintupled in length, complete with re-directional lanes (lanes on which the direction of traffic changes depending on the time of day). In Orange County, California, a constant 65 mile per hour traffic flow is maintained even during rush hour through the use of value pricing. Two lanes consequently handle over 40 percent of rush hour traffic, despite being only 33 percent of lane capacity.⁵⁷ Despite some revenue loss to high-occupancy vehicles, the tolls generate enough revenue for construction, operations, maintenance, highway patrol services, and local property taxes.⁵⁸

Interestingly enough, the tolled lanes, called “express lanes,” receive 70 to 80 percent public support in San Diego even among the poorest quarter of the population. Evidently, people like to get where they want to go in a timely manner and are willing to pay for the

privilege, rather than sit in traffic paying only a gasoline tax. Denver and Minneapolis are converting HOV lanes to express lanes. In Florida, the Tampa-Hillsborough Expressway Authority is building elevated express lanes. Others are being considered for Miami and Orlando.⁵⁹

Where possible, HOV lanes should and often are being converted to express lanes, also sometimes called “managed lanes.” First, it is very costly to build in congested areas and toll revenues are needed to complete road projects. Second, it makes no sense to give a high-value resource away, and a lane on a congested thoroughfare in an urban area is a highly valued resource indeed. Third, enforcement of the high-occupancy requirement with HOV lanes is very difficult. There are a lot of cheaters and some pretty easy ways to skirt the high-occupancy requirement, like propping a mannequin in a car seat.⁶⁰

Modeling shows that converting HOV lanes to pure toll lanes would lead to less delay than would converting to toll lanes that allow high-occupancy vehicles to travel for free (often then called HOT – high-occupancy toll – lanes).⁶¹ In Houston and Dallas, expansions of I-10 and I-635, respectively, include express lanes with variable pricing. Both will enable the use of express buses for rare high-speed transit service.⁶² Houston’s express lanes will allow high-occupancy vehicles with three occupants or more to travel toll free.⁶³

One type of toll being proposed in Montgomery County is “pass-through” or “shadow” tolling. This type of tolling is not really tolling at all but a method by which a local entity that is willing to take the risk can be reimbursed by the state. A city or county can finance a road or bridge with local money or even a bond issue. Based on traffic counts, which can be very accurate using automatic electronic equipment, the state reimburses the local government according to the use of the facility. The risk arises from the fact that the expected traffic volume might not materialize and the local entity would be left footing more of the bill than anticipated. Montgomery County is planning to issue \$75 million in property tax-backed bonds that could serve as a perpetual pool of money for road improvement if enough traffic materializes.⁶⁴

Another potential form of toll road is a toll truckway – a dedicated truck route that covers long, rural distances. Potential toll truckways identified by trucking companies for a Reason Foundation study included IH-30 east from Dallas, IH-10, IH-40, and IH-20. None of these, however, scored among the highest 10 possible routes by Reason’s criteria. Toll truckways would make it possible for large, heavy three-trailer trucks to ply the highways, giving up some of their efficiency gain in the form of tolls. Taxpayers would not be saddled with the high cost of building roads to accommodate the heavy weight of such trucks, and public safety would be enhanced.⁶⁵

Privatization

In Massachusetts, the privatization of road maintenance through competitive bidding with public employees among the bidders resulted in that state’s road maintenance budget falling from \$40 million to \$25 million from 1991 to 1999 even as total maintenance

increased. Public employees reduced workers' compensation claims by 60 percent. Overtime decreased 70 percent and sick leave decreased 50 percent. This is a prime example of how privatization provides a win-win proposition for taxpayers with better service and lower cost.⁶⁶

Virginia contracted with VMS, Inc. in 1997 to maintain 251 miles of interstate. That state recently exercised a five-year contract extension. VMS estimates that the company saved Virginia taxpayers \$8,000 per lane mile of maintenance. Other studies found savings as high as \$23 million per year. VMS has also been maintaining 75 miles of major city streets and highways in Washington, D.C. Major improvements in road quality have resulted. Other benefits accrue from use of local subcontractors. Florida, as a result of private contracting, estimates savings of 15.3 percent over the life of the contracts.⁶⁷

Recently, TxDOT renewed a contract with VMS to maintain a section of IH-35 through TxDOT's Waco district and another contract to maintain a section of IH-20 in the Dallas area. Using local independent contractors, VMS maintains roadways up to a contractually determined level of serviceability. Apparently, TxDOT has been happy with the service VMS has provided. VMS has been working with TxDOT on these interstate road segments since at least 2001, but TxDOT has thus far failed to let other similar maintenance contracts for other roads. This appears to be due largely to bureaucratic inertia.

Other privatization opportunities exist in the state's road system. In principle, there is no reason private companies could not manage a given road's entire lifespan, from design to abandonment, if that ever were to occur. The state could request proposals to site and build a road in a given area. Private companies could use relatively low-cost techniques such as aerial surveying to determine a possible path for a road and then bid for the right to design and build the road, contracting with others to make right-of-way acquisitions. Then, other companies, as well as the one that built the road, could bid for the right to maintain the road.

This sounds like a remote possibility. TxDOT is set in its ways and is not likely to acquiesce to such radical change. But the future is now. What has just been described is very close to the kind of innovative contracting that has been employed on the SH 130 toll project. Because the Texas Turnpike Authority has had widened discretion on contracting practices for some time, there has been innovative contracting on that project. Nevertheless, it does not go quite as far as it could. The vast majority of the planning, sighting, and right-of-way determination tasks have been conducted by TxDOT. But SH 130 is only a first step.

HB 3588 – Reform from the 78th Legislature

Road transportation expert Robert Poole of Reason Foundation says about the transportation reform bill passed by the 78th Legislature in 2003 that, "At a recent transportation finance conference in New York City, investment bankers lauded Texas as a model for other states, and I concur in that judgment."⁶⁸

The Legislature granted wide latitude and authority to the Texas Transportation Commission and TxDOT to solve the state's road transportation problems. TxDOT now has broadened authority to enter into partnerships with private companies to find solutions, streamline processes, and move quickly to build new roads.

Major policy changes by the Texas Legislature and TxDOT include tolling, which will *first* be considered for all new limited-access highway projects. New limited-access highway capacity is not likely to be added unless it is tolled. Exceptions include instances of long-planned expansions such as the Texas Trunk System. However, even new overpasses and interchanges might be tolled if regional authorities agree to it. After all, tolling makes additional capacity-enhancing projects financially feasible.

The Legislature also determined that TxDOT must reduce congestion, not just the rate of increase in congestion. In other words, TxDOT received marching orders that it is to get road infrastructure on the ground as quickly as possible. To that end, the Legislature gave TxDOT the tools to make this possible, and policymakers in the Legislature are insisting that these tools be used.

Comprehensive Development Agreements

One tool now in TxDOT's kit is the comprehensive development agreement. In its simplest terms, a comprehensive development agreement is a design-build contract, a type of public-private partnership contract that has long been determined a time saver and a way to gain new efficiencies. A design-build contract is one in which a contractor is given the job of not only constructing a project but of also designing it.

Design-build is in contrast to design-bid-build contracts, which are linear and, consequently, time-intensive. Under design-bid-build, TxDOT designs a road, doing preliminary right-of-way studies and beginning the right-of-way acquisition process. Once the project is designed and usually after most of the right-of-way has been purchased, the project is opened for bid by contractors who are simply builders that possess little latitude to deviate from TxDOT plans. Construction often does not commence until the right-of-way has been entirely cleared of utilities and other structures.

In complex projects, such as many roads, unexpected obstacles like environmental issues or slow action on the part of utilities arise. Sometimes these obstacles are minor. Other times they are major. Different fixes for the same problem that might be conceived can range from very inexpensive to extraordinarily expensive. The most expensive fix might be to try and stick with the original design. Consequently, when unexpected circumstances arise, the contractor in a design-bid-build environment must suspend operations and await solutions to be worked out with TxDOT, often necessitating change orders and time-consuming periods of redesign.

Design-build contracts transfer a good deal of risk to the contractor. The basic parameters and specifications are made plain to potential bidders for such contracts, but much is left

to be finalized. Bidders know going into the contract that they will have to remain flexible, that unexpected problems could arise, and that they will have to devise fixes to these problems. Contractors are willing to take the risk, however, because of the wider latitude afforded them. Delay is very costly to contractors, but with design flexibility at their disposal, delay can be minimized. The result is that design-build projects often come in under budget and before deadlines.

A comprehensive development agreement, however, is even more thorough than the design-build model. For example, the SH 130 contract includes a provision that can be exercised by TxDOT to have the principle contractor, actually a consortium of companies, provide maintenance on the road for an amount already bid in the contract. This innovative aspect to the contract provides a quality control over the contractor since once the road has been completed, the contractor can be held to a maintenance contract that is apparently very reasonable. As an example, the SH 130 contractor has, unbidden by TxDOT, redone at least one section of concrete in order to minimize future costs of maintaining the road.⁶⁹

HB 3588, though very much an improvement over past practice, requires the use of a general engineering consultant. This is a private firm that contracts with TxDOT as an additional monitor over the principal contractor on a project. How necessary the general engineering consultant is remains unclear; the use of such a firm requires the employment of dozens of individuals on a project the size of SH 130. The agreement with the principal contractor transfers the risk to the contractor, so it is in the contractor's interest to keep quality high. The employment of a private engineering firm to act in TxDOT's stead as a shadow bureaucracy seems redundant and negates some of the advantages of the form of contracting the law now allows. For the general engineering consultant contractor to earn its keep, it must find problems, which can lead to needless nitpicking.

Nevertheless, SH 130 is an example of how comprehensive development agreement contracting can facilitate speedy results. On the SH 130 project, road base can be seen compacted around electric utility poles that will have to be moved, but because the contractor could go ahead and do it, planning and designing around them, construction proceeded despite the presence of the utility poles. Electrical lines run between two overpass approaches, again because the contractor does not have to wait first for utility relocation in order to proceed. Bridge foundations are purposely constructed even before load specifications for bridges are fully determined. The foundations are made heavy enough to accommodate any vehicle because time under the contract with TxDOT is more valuable than the extra concrete required.

Regional Mobility Authorities

Under the reforms of the 78th Legislature, any county or set of counties may petition the Transportation Commission to form a Regional Mobility Authorities (RMA). An RMA constructs and manages transportation projects with the goal of improving mobility in a region. RMAs make local planning and prioritizing decisions easier compared to dependence on TxDOT and one of its district offices. Texas is not alone in this type of

reform. Legislation in California and Colorado allows for the establishment of local authorities or agencies for the organization and creation of toll roads.⁷⁰

Because RMAs may establish tolls, issue bonds, develop transportation projects, enter into comprehensive development agreements, and apply for funds from other sources, it is possible for local areas to get projects that might otherwise take years or even decades on the ground quickly. Regional Mobility Authorities, in some ways, are akin to the Harris County Toll Road Authority and the North Texas Toll Authority, except that an RMA may be formed without express authorization from the Texas Legislature.⁷¹

Thus far, four RMAs have been formed, one for Travis and Williamson counties, one in Bexar County, one in Grayson County and, most recently, one in Cameron County,⁷² all for the purpose – more than anything else – of creating one or more toll roads. The Central Texas Regional Mobility Authority (Travis and Williamson counties) has thus far generated the most controversy, and, unfortunately, local Austin politics often become grist for state political controversies.

The toll roads the Central Texas Regional Mobility Authority is establishing have generated controversy for two reasons. First, tolls in Texas anywhere other than Houston and Dallas are new, and many people across the political spectrum do not like the idea of tolls. Second, there is a strong anti-growth movement in the Austin area that dislikes the fact that tolls make possible road projects that used to be relatively easy to block since TxDOT never minded taking its money elsewhere.

Unfortunately, politicians eager to curry favor in the midst of a controversy have willingly entered the fray, vaguely hinting that improper dealings have taken place. Thus, the politicians, by demanding investigations and claiming a need for legislative fixes, appear to be working hard to safeguard everyone's interests. It is possible that improprieties may be uncovered. Thus far, however, nothing egregious has come out. The main issue is that some people do not want the toll projects to happen. If they succeed, the main effect will be continued congestion on Austin-area highways, a situation the anti-development faction of the toll projects' opposition would view as positive.

With the creation of RMAs, a potentially confusing, difficult-to-navigate, multilayered system now exists under the Texas Transportation Commission. First, there is TxDOT and its 25 district offices, along with the Texas Turnpike Authority. Somewhat independent of this structure are Metropolitan Planning Organizations, which the federal government requires in each of the metropolitan areas of the state. Now, counties may create relatively independent Regional Mobility Authorities. Hopefully, the Transportation Commission will be able to manage it all, since everything is ultimately accomplished under its oversight.

The Legislature should reduce the number of and redefine the territories of the TxDOT districts. Since TxDOT's creation, most of the districts' territories have never changed. The number started at 25, dropped to 24, and then rose back to 25. An attempt about a decade ago to eliminate the Yoakum district office resulted in a new district on the border

and the continued operation of the Yoakum office. Right now, there are district offices in both Fort Worth and Dallas.

The Trans-Texas Corridor

One part of the road reform law passed by the 78th Legislature is the Trans-Texas Corridor. The concept is to establish facilities to run parallel to busy cross-state corridors.[†] While the design is not necessarily set in stone, the concept allows for the possibility of several different parallel roadways on a right-of-way as much as 1,200 feet wide once existing free road right-of-way is accounted for, perhaps allowing for dedicated tolled roads for trucks and separate facilities for cars. Utilities may locate facilities on the corridor, conceptually, and so might railroads. The idea behind the corridor is to facilitate freight movement – and ultimately overall mobility – across the state.⁷³

While the Trans-Texas Corridor proposal might result in more timely movement of freight across Texas, an important concern is that it not reduce the amount of badly needed funding that could be available to urban areas to meet much-neglected mobility goals. As has been noted, intercity congestion is not a big problem in Texas except, perhaps, during holidays like Christmas and Thanksgiving. Large urban areas have already subsidized rural highways and smaller cities for decades. Now they are expected to make up for the neglect themselves through tolls. Urban planners understandably might look askance at a proposal that would divert funds from their own pressing needs.

The parts of the proposed Trans-Texas Corridor routes most likely to pay for themselves through tolls are those near metropolitan areas. To the extent that congestion-relieving segments can be constructed in these areas, this is where efforts should be concentrated. Unfortunately, the proposed potential 1,200-foot-wide right-of-way for the Trans-Texas Corridor presents a costly proposition anywhere near urban areas, where real estate is most expensive.

The basic layout of the Trans-Texas Corridor should not be pre-determined. The development of a series of projects to get a corridor operating under this plan will, it is hoped, result from private sector involvement. TxDOT may receive unsolicited proposals for the development of a section of the corridor. It is best if contractors are granted the greatest possible latitude to determine if certain facilities are likely to be profitable and what road design and right-of-way requirements are needed.

If the Trans-Texas Corridor is to be a financial success and not a drain on resources that might be better used elsewhere, steps must be taken to make it as profitable as possible for private developers. This may require legislation. One step the Legislature could take

[†] Priority corridors identified include IH-35, IH-37, IH-45 from Fort Worth to Houston, IH-10 from Orange to El Paso, and the proposed IH-69 route from Texarkana to Houston to Laredo.

to make the corridor financially feasible and demonstrate the value of tolls would be to suspend fuel taxes along the corridor. Fuel concessions could be placed inside the corridor's right-of-way so that they are not readily accessible locally. This would assure users of the corridor that their tolls are for the road and that they are not somehow being double-taxed.

One way to avoid the expense of the Trans-Texas Corridor mega project would be to encourage the fullest possible use of existing infrastructure, especially railroads. The primary reason cited for creating the corridor is freight traffic. It seems there is at least one alternative for freight traffic that is underutilized: the railroads.

Encourage Railroads

For rail's full potential to be realized, and for it to play its part in relieving congestion on Texas roads, transportation policy will have to concentrate on more than maximizing white and yellow lines on asphalt and pavement. Texas has more total railroad mileage than any other state at 14,192 miles, dwarfing Illinois' next highest total of less than 10,000 miles.⁷⁴ Texas' freight capacity should be exploited fully before another huge, competing interstate-type road investment is made.

Policies will have to change. Instead of forcing railroads to conform to encroaching development, it must be acknowledged that most if not all the railroad right-of-way in the state has been in place for over 100 years. For example, grade separations between rails and roads would likely be much more common if state planners took the time benefits of quicker train freight movement into account. Developers should have to provide sound and safety barriers when they develop property near a railroad, and the Legislature should pass stronger disclosure laws requiring that property buyers be informed of nearby railroads.

As was noted previously, the Port of Houston is going to get busier, possibly at a faster rate than in the past. The freight received there – “where 14 railroads meet the sea” – will have to be moved out somehow. Rail freight right-of-way is already present. Already, the creation of three consolidated freight corridors out of the Port of Houston and through the city is under consideration. Currently, about 59 trains per day run out of the port. The hope is to increase this to 113 trains per day. There are 752 railroad/street crossings in Houston, 179 of which are grade separated.⁷⁵

In Chicago, there are 1,200 daily trains with 37,500 daily freight cars. There are 22 intermodal hubs and 900 railroad/street crossings. This level of rail traffic is not achievable without state and local cooperation with the railroad industry.⁷⁶

Besides allowing for greater railroad mobility by designing roads and road infrastructure to accommodate rail, the state could help by investing in intermodal transfer points. Trucking and rail companies should pick up the tab for such terminals, but state and local governments could help determine where these facilities should be located and aid in constructing adequate access facilities.

CONCLUSION

Texas faces a host of transportation challenges, not the least of which is to maintain the largest road network in the nation. Texas is a major throughway for freight from Mexico and throughout the world. Consequently, Texas roads are getting more use than ever, and more roads are needed in Texas than ever before.

Texas has fallen behind on its road infrastructure investment. Other priorities at the state and federal levels have forced the state's economy to grow by consuming a road investment that was made decades ago. Little of the construction that so inconveniences travelers across the state has added new capacity to the road system, and road traffic has increased tremendously.

Only with innovation in more efficient road design and contracting techniques as well as toll financing will Texas be able to meet the current transportation challenge. Road management must also become more efficient. Too much needs to be done for the state to continue funding on a pay-as-you-go basis. Policymakers have recognized this fact and have courageously stepped forward to encourage policies that are, at least initially, unpopular.

While there is still some room for policy improvement, Texas is headed in the right direction. With tolls, road development and use are likely to be more rational. Through innovative financing with bond proceeds, innovative planning through regional authorities, and innovative contracting as with comprehensive development agreements, the state will find itself on surer footing with its road infrastructure. Texans just have to have the courage to ride out the inevitable bumps that come with new ideas and innovations.

Policy Recommendations

- ✓ Preserve the fundamental reforms of HB 3588;
- ✓ Enhance urban mobility through tolled "managed lanes" and convert high-occupancy vehicle (HOV) lanes, currently offered for free, to tolled lanes;
- ✓ On tolled intercity highways that might be developed, include concessions within the rights-of-way where possible so that they are accessible only from the toll lanes, and simultaneously eliminate or substantially reduce state fuel taxes on gasoline and diesel sold from these concessions;
- ✓ Adjust state policy to allow for funding projects to enhance rail traffic, taking pressure off the road network and improving traffic flow on roads;
- ✓ Limit incompatible land development along railroad rights-of-way;
- ✓ Establish procedures and metrics to make sure tax-financed road projects that expand capacity are properly prioritized to produce the greatest possible net benefits for the state;
- ✓ Make greater use of contracting for routine maintenance, expanding the model established with the VMS, Inc. contracts for routine maintenance on IH-35 and IH-20;

Texas Road Policy: Keeping Up With Demand

- ✓ Eliminate the old design-bid-build road construction strategy and make greater use of design-build strategies;
- ✓ Allow for road project development under greater secrecy or establish a time – certain in advance of road planning – after which land platting changes will not be accepted in eminent domain cases so that landowners cannot game the right-of-way acquisition system; and
- ✓ Establish disincentives for the diversion of local resources to transit projects, which have shown themselves to be almost universally cost ineffective.

ENDNOTES

-
- ¹ *Summary: State Transportation Profile*, Bureau of Transportation Statistics, U.S. Department of Transportation, December 2003, p. A-2.
- ² *Texas Transportation Profile*, Bureau of Transportation Statistics, U.S. Department of Transportation, p. D-1.
- ³ *Texas Transportation Profile*, p. A-1.
- ⁴ Texas Department of Transportation data.
- ⁵ *Austin Takes Unwanted Traffic Title*, KXAN News 36, September 7, 2004.
- ⁶ David Schrank and Tim Lomax, *The 2004 Urban Mobility Report*, Texas Transportation Institute, September 2004, pp. 2-4, <http://mobility.tamu.edu>.
- ⁷ Texas Transportation Institute, *Transportation Issues Facing Texans*, http://tti.tamu.edu/legislative_issues/.
- ⁸ Robert W. Poole, Jr., "Express Lanes for Florida," *The Journal of the James Madison Institute*, Spring/Summer 2004, p. 7.
- ⁹ Texas Department of Transportation, *Texas Metropolitan Mobility Plan: Breaking the Gridlock*, June 2003, p. 3.
- ¹⁰ Anahad O'Connor, "Heart Attack Risk Linked to Time Spent in Traffic," *The New York Times*, October 26, 2004, p. D9.
- ¹¹ "TWCC: Texas occupational Fatalities Increased in 2003," *Insurance Journal*, September 22, 2004, <http://www.insurancejournal.com/news/southcentral/2004/09/22/46182.htm>.
- ¹² *Fatal Occupational Injuries in Texas, 2000*, Texas Workers' Compensation Commission, January 2002, http://www.twcc.state.tx.us/sis/newpages01/2000_cfoi.pdf.
- ¹³ *Transportation Statistics Annual Report*, Bureau of Transportation Statistics, U.S. Department of Transportation, BTS03-06, Washington, D.C., October 2003, pp. 6 & 27.
- ¹⁴ Alan Pisarski, et. al., *Texas' Roadways — Texas' Future: A Look at the Next 25 Years of Roadway Supply, Demand, Cost and Benefits*, Governor's Business Council, April 2003.
- ¹⁵ *Texas Transportation Profile*, pp. A-4 & A-5.
- ¹⁶ David T. Hartgen, Ph.D., P.E., *The Looming Highway Condition Crisis: Performance of State Highway Systems, 1984-2002*, 13th Annual Report, February 10, 2004, <http://www.geearth.uncc.edu/people/hartgen/index.htm>.
- ¹⁷ TRIP Fact Sheets, July 2003, cited at <http://www.asce.org/reportcard/index.cfm?reaction=states&page=TX>.
- ¹⁸ *Transportation Statistics Annual Report*, pp. 111 & 113.
- ¹⁹ *Texas Transportation Profile*, p. A-1.
- ²⁰ *Texas Transportation Profile*, U.S. Department of Transportation, p. C-20 & C-21.
- ²¹ "Software Will Help Preserve Our country Drives," *Texas Transportation Researcher*, Texas Transportation Institute, Vol. 36, No. 3, 2000.
- ²² Robert W. Poole, Jr. and Peter Samuel, *Corridors for Toll Truckways: Suggested Locations for Pilot Projects*, Policy Study #316, February 2004, p. 3.
- ²³ *Transportation Statistics Annual Report*, p. 42 & 45.
- ²⁴ *Texas Transportation Profile*, p. C-3 & C-4.
- ²⁵ *Texas Transportation Profile*, pp. C-23.
- ²⁶ Presentation at the Texas Transportation Summit by Richard Schiefelbein, Railroad Coordinator, Port of Houston Authority, August 11, 2004.
- ²⁷ *Ibid.*
- ²⁸ *Texas Metropolitan Mobility Plan: Breaking the Gridlock*, p. 7.
- ²⁹ General Appropriations Act, 2004-2005 Biennium, 78th Legislature, Regular Session, HB1, State of Texas, 2003, p. VII-24.
- ³⁰ "Express Lanes for Florida," p. 6.

- ³¹ Ronald D. Utt, *The Federal highway program Shifts Money from South to North*, Executive Memorandum No. 938, The Heritage Foundation, July 7, 2004.
- ³² *Transportation Statistics Annual Report*, p. 103.
- ³³ Joel Schwartz, *More Highways, Less Pollution*, Tech Central Station, www.techcentralstation.com, July 30, 2004.
- ³⁴ *Green Book*, U.S. Environmental Protection Agency, <http://www.epa.gov/oar/oaqps/greenbk/anay.html>.
- ³⁵ *Texas Transportation Profile*, p. B-17.
- ³⁶ Census Bureau data, TxDOT data, author's calculation.
- ³⁷ Joel Schwartz, *More Highways, Less Pollution*, Tech Central Station, www.techcentralstation.com, July 30, 2004.
- ³⁸ *Texas Metropolitan Mobility Plan: Breaking the Gridlock*.
- ³⁹ "The Future of Freight: Research Explores underground pipeline system," *Texas Transportation Researcher*, Texas Transportation Institute, Vol. 36, No. 2, 2000.
- ⁴⁰ Wendell Cox and Randal O'Toole, *The Contribution of Highways and Transit to Congestion Relief: A Realistic View*, Backgrounder #1721, The Heritage Foundation, January 27, 2004, www.heritage.org/research/transportation/bg1721.cfm.
- ⁴¹ Ben Wear, "Free Bus Rides Costly Way To Cut Smog," *Getting There: Ben Wear*, *Austin American-Statesman*, August 16, 2004.
- ⁴² Adrian Moore, *Private Transportation and Competition: Testimony to Congress*, Reason Foundation, May 18, 2004.
- ⁴³ John Semmens, *A Critique of "Dollars and Sense: The Economic Case for Public Transportation in America"*, Reason Public Policy Institute, Policy Study 243, August 1998, <http://www.rppi.org/ps243.html>.
- ⁴⁴ "Express Lanes for Florida," p. 6.
- ⁴⁵ Ted Balaker, *The Strange Thing About Light Rail: No matter how much it fails elsewhere, officials still push costly new projects*, Reason Foundation, July 14, 2004.
- ⁴⁶ Owen Courrèges, *Memphis Should Learn from Houston's Rail Mistakes*, Reason Foundation, May 21, 2004.
- ⁴⁷ *Private Transportation and Competition: Testimony to Congress*.
- ⁴⁸ TxDOT data.
- ⁴⁹ Robert W. Poole, Jr., *Time to Rethink Carpool Lanes*, Reason Foundation, August 20, 2002, <http://www.rppi.org/carpoolanes.html>.
- ⁵⁰ Sean Paige, "Waste & Abuse: Some States Test HOV Negative," *Insight Magazine*, May 6, 2002.
- ⁵¹ "Dallas HOV Lanes Get the Job Done," *Texas Transportation Researcher*, Texas Transportation Institute, Vol. 38, No. 2, 2002.
- ⁵² Joe Grata, "HOV Lane Traffic Drops 20 Percent in 12 Years," *Pittsburgh Post-Gazette*, August 29, 2004, <http://www.post-gazette.com/pg/04242/369056.stm>.
- ⁵³ Katherine F. Trunbull, *Enhancing TxDOT — Regional Toll Authority Cooperation and Coordination*, Project Summary Report 0-4055-S, Texas Transportation Institute, p. 1.
- ⁵⁴ *Texas Transportation Profile*, p. A-3.
- ⁵⁵ *Private Transportation and Competition: Testimony to Congress*.
- ⁵⁶ Tim Weight, Toll Project Manager, TxDOT, interview, October 7, 2004.
- ⁵⁷ "Express Lanes for Florida," p. 7.
- ⁵⁸ Robert W. Poole, Jr., *If You Hate Congestion, Then You Gotta Love HOT Lanes*, Reason Foundation, June 16, 2004.
- ⁵⁹ "Express Lanes for Florida," pp. 8 & 9.
- ⁶⁰ *If You Hate Congestion, Then You Gotta Love HOT Lanes*, June 16, 2004.
- ⁶¹ Robert W. Poole, Jr., *Time to Rethink Carpool Lanes*, Reason Foundation, August 20, 2002, <http://www.rppi.org/carpoolanes.html>.
- ⁶² "Express Lanes for Florida," p. 8.
- ⁶³ *If You Hate Congestion, Then You Gotta Love HOT Lanes*.
- ⁶⁴ Ric Williamson, TxDOT Commission Chair, telephonic interview, November 24, 2004.

⁶⁵ Robert W. Poole, Jr. and Peter Samuel, *Corridors for Toll Truckways: Suggested Locations for Pilot Projects*, Policy Study #316, February 2004, p. 9.

⁶⁶ *Private Transportation and Competition: Testimony to Congress*.

⁶⁷ *Ibid.*

⁶⁸ Robert W. Poole, Jr., *Texas Sets the Pace in Highway Finance*, Reason Foundation, <http://www.rppi.org/phprint.php>.

⁶⁹ Tim Weight, Toll Project Manager, TxDOT, interview, October 7, 2004.

⁷⁰ Katherine F. Trunbull, *Enhancing TxDOT — Regional Toll Authority Cooperation and Coordination*, Project Summary Report 0-4055-S, Texas Transportation Institute, p. 2.

⁷¹ *Regional Mobility Authorities*, Texas Department of Transportation, July 2004, http://www.txdot.state.tx.us/txdotnews/RMA_manual_0704.pdf.

⁷² Elizabeth Pierson, "Regional Mobility Authority receives final approval," *Valley Morning Star Online Edition*, October 3, 2004.

⁷³ For more detailed on the Trans-Texas Corridor and how it might work, see *Crossroads of the Americas: Trans Texas Corridor Plan*, Texas Department of Transportation, June 2002, www.dot.state.tx.us/ttc/ttc_home.htm.

⁷⁴ *Summary: State Transportation Profile*.

⁷⁵ Presentation at the Texas Transportation Summit by Richard Schiefelbein.

⁷⁶ Presentation at the Texas Transportation Summit by Greg Stengem, Vice President, Safety, Training & Operations Support, BNSF, August 11, 2004.



We need your help!

The Texas Public Policy Foundation is a non-profit, non-partisan research institute guided by the principles of limited government, free enterprise, private property rights and individual responsibility. We seek to improve Texas government by producing academically sound research on important issues offered to policy makers, opinion leaders, the media and general public.

We do not take government funding or sell research outcomes, so we completely rely on the generous contributions of individuals, foundations and civic-minded corporations.

If you believe studies like this one are important for Texas, won't you consider a financial gift to support the Foundation and our mission?

Give generously today by visiting us online at
www.TexasPolicy.com,
or calling toll-free, (800) 694-8773.

Please pass this publication on to a friend and introduce them to our work!

Thank you for your generous support!

Log On to Learn More!

All of the Foundation's research and reports are available online at
www.TexasPolicy.com.

When there, be sure to sign up for the **Texas Public Policy News**. This free e-publication is issued every other Wednesday and includes information about upcoming events and publications.

Don't miss a single issue!



www.TexasPolicy.com