Transportation & the Environment

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FACTS ABOUT TRANSPORTATION IN TEXAS

Transportation & Population

- One of every eight Americans added during the last decade was in Texas.
- Urban traffic congestion costs Texas drivers more than $6.5 billion annually.
- According to U.S. Environmental Protection Agency estimates, the optimal speed for minimizing air pollution from automobiles is a constant 35 to 55 miles per hour.
- As traffic slows and there is more stop-and-go driving, automobile-related air pollution increases exponentially.
- In Texas, roadway travel accounts for 99.6 percent of combined highway-transit travel.

Transportation Funding in Texas

- Per capita highway spending in Texas has fallen 34 percent since 1980 and trails the national average by 12 percent.
- Spending per vehicle mile traveled in Texas is now 68 percent below the 1980 figure, and 18 percent below the national average.
- Spending per licensed driver in Texas has fallen 51 percent since 1960 and is now 12 percent below the national average.
- Texas allocates 34.7 percent of state motor fuel taxes to non-highway uses, the third-highest percentage of the 50 states and far higher than the median value for all states (approximately 8 percent). Of the $6.5 billion in taxes and fees paid on vehicles in 1999, $2.7 billion, or approximately 42 percent, went for transportation purposes, with the remaining $3.8 billion, or 58 percent, going for other purposes.

Bonding

- Bonding is not a method of creating funding; it is a means of changing the timing of cash flows that can be utilized for expenditures for programs.
- Entities that begin to utilize bonding to address large-scale capital requirements often become "perpetual" users of debt.

- According to Moody's Investor Service, Texas is one of only seven states that does not currently use highway debt.

NAFTA Traffic & Border Issues

- 79 percent of all U.S.–Mexico trucks crossed the border at Texas ports of entry, with 40 percent of the northbound trucks traversing Texas for destinations outside the state (other U.S. states and Canada).

- NAFTA truck traffic comprised 16.5 percent of all Texas truck traffic, with 75 percent of this on rural interstate highways and other rural roads.

- Thirteen highway corridors, which make up 18.9 percent of Texas highway mileage, carry almost 90 percent of all NAFTA traffic in Texas, with IH-35 alone accounting for 31.6 percent of this total.

- The direct annual costs of highway improvements to maintain the existing level of service is projected at $150.9 million per year, with the optimal need cost projected at $349.8 million per year.

- Cross-border truck traffic has risen more than 50 percent. At the same time, freight rail traffic has doubled.

- The "social costs" of the increase in NAFTA traffic, including congestion, accidents, air and noise pollution, and related costs is projected at $560.8 million per year.

Public Transit

- A study by the Union of International Public Transport (the international equivalent of the American Public Transportation Association) found that public transport in the U.S. is unable to compete with the automobile. Its speed is half as fast, which means that door-to-door travel times, incorporating terminal distance times, waiting, and transfer times, are three to four times longer on public transport compared to the automobile.

- Public transport use in the United States is lowest among all nations; it is virtually zero in Atlanta, Denver, Houston, Los Angeles, Phoenix, and San Diego.

- Over the past 10 years, spending on transit has escalated substantially in Texas. While road funding was expanding by only 3 percent, transit spending increased nearly 60 percent.

- In general, outside of "downtown" areas, transit is used only by those who have no choice.

- If automobile users are to be attracted to transit, then the transit system must take them where they want to go in a time that is competitive with the automobile.

- Texas ranks seventh in state and local tax revenues per transit passenger mile, at $0.649. This is 33 times the amount of state and local revenue per person mile for streets and highways.

Freight Rail

- ✯ The average large truck is the equivalent of 3.8 cars on an urban freeway.
- ✯ Texas metropolitan areas generally utilize rail freight more than other U.S. metropolitan areas.
- ✯ Houston has the highest share of rail freight tonnage and per capita tonnage of the top ten U.S. metropolitan areas.
- ✯ Dallas-Fort Worth ranks third in rail tonnage per capita and fourth in rail tonnage market share.
- ✯ San Antonio also has a higher-than-average dependence on rail freight.
- ✯ Rail has a lower fatality rate than trucks.
- ✯ Rail moves freight with less energy.
- ✯ Rail generally pollutes less than trucks.
- ✯ Rail freight rates are lower than those of trucks.
- ✯ Policymakers should consider enhancements to Texas freight rail infrastructure as a viable means of reducing traffic congestion.

Urban Sprawl & "Smart Growth"

- ✯ Urban sprawl is defined as the expansion of urban areas, especially at lower rates of density.
- ✯ So-called "smart growth" strategies have included a heavy emphasis on new urban rail systems and discouragement of added highway capacity.
- ✯ "Smart growth" strategies to combat urban sprawl have generally not been adopted in Texas.
- ✯ Higher traffic densities combined with slower operating speeds make air pollution more intense.
- ✯ By rationing land (such as through "urban growth boundaries) and rationing development (with development impact fees), smart growth increases the cost of housing, which works against the national policy objective that has favored maximum expansion of home ownership. It has also increased the price of rental housing and helped to create what is being referred to as a housing affordability crisis in some areas.

Air Quality

- ✯ Although air pollution levels in Texas have been declining steadily for over a decade, several urban areas are "out of compliance" with the Clean Air Act.

- El Paso exceeds allowable concentrations for ozone, carbon monoxide and particulate matter. Four counties in the Dallas/Fort Worth area exceed allowable concentrations of ozone. Seven counties in the Houston/Galveston area exceed allowable concentrations of ozone. Another 23 counties in the Austin, San Antonio, Corpus Christi and Galveston areas are considered "near" non-attainment areas for ozone.

- Conventional regulatory control measures and mandatory behavioral control measures have been shown to consume significant resources. They also lack flexibility, efficiency, and effectiveness.

- Market-oriented strategies allow for flexibility in implementation, provide incentives for cooperation, and help reduce some administrative burdens when compared to conventional approaches.

TRANSPORTATION & POPULATION

The Issue:

Texas transportation infrastructure has not kept pace with the state's fast-growing population and increasing mobility demands.

For decades, Texas has been among the fastest growing states in the union. This trend continued in the 1990s, with Texas growing 23 percent, a rate three-quarters higher than that of the nation.

Between the 1990 and 2000 U.S. Census, Texas added nearly four million new residents, a figure exceeded only by much larger California, which grew a little faster than the national rate. One of every eight Americans added during the last decade was in Texas.

The U.S. Census Bureau projects that Texas will grow 60 percent faster than the nation from 2000 to 2025. By 2025, the great majority of the growth – 89 percent – is likely to be in eight metropolitan areas: Austin, Brownsville, Dallas-Fort Worth, El Paso, Houston, Laredo, McAllen and San Antonio (Table 1).

Table 1
Projected Metropolitan and Other Growth in Texas to 2025

Metro Area	2000	2025	Change	%	Share
Austin	1,193,000	2,294,000	1,101,000	92.3	9.7%
Brownsville	335,000	589,000	254,000	75.8	2.2%
Dallas-Fort Worth	5,124,000	8,683,000	3,559,000	69.5	31.2%
El Paso	722,000	1,242,000	520,000	72.0	4.6%
Houston	4,687,000	7,525,000	2,838,000	60.6	24.9%
Laredo	205,000	502,000	297,000	144.9	2.6%
McAllen	560,000	1,324,000	764,000	136.4	6.7%
San Antonio	1,623,000	2,378,000	755,000	46.5	6.6%
Balance of State	6,403,000	7,695,000	1,292,000	20.2	11.4%
State	20,852,000	32,232,000	11,380,000	54.6	100.0%

Source: Estimated based upon Texas State Data Center estimates and projections and Wendell Cox, Freight Rail's Potential to Alleviate Traffic Congestion, Texas Public Policy Foundation, October 2001..

As a result, driving will increase at least as rapidly as the population increase. This will make it necessary to expand roadway capacity by at least a corresponding amount to maintain, much less improve, the quality of life.

- In **Dallas-Fort Worth**, traffic increased 45 percent more than roadway expansion between 1984 and 1999. The result is, on average, a penalty of 18 additional minutes for each hour of travel during peak periods.

- The situation is even worse in **Austin**, where traffic has increased nearly 80 percent more than the expansion in roadways. Traffic has slowed so much that more than 20 minutes has been added to every hour of travel during peak periods.

- Traffic is expanding at more than three times the rate of roadway expansion in **San Antonio**. Since 1984, 14 minutes have been added to every hour of travel during peak periods.

- In **El Paso**, traffic has grown at a rate 70 percent above that of roadway expansion. As a result, 11 minutes have been added to each hour of travel during peak period.

- Only in **Houston**, where roadway expansion has kept up with increasing demand have travel times not materially deteriorated. But Houston's traffic in 1984 was second only to Los Angeles' in 1984, and the roadway improvements needed to improve the situation have simply not happened.

According to the Texas Transportation Institute, urban traffic congestion costs Texas drivers more than $6.5 billion annually, more than four times the 1984 figure. This does not include additional losses in the economy, such as higher product prices due to slower delivery times. Nor does it take into account the reduced quality of life from the loss of leisure time due to increased travel times.

There are also health impacts. As traffic slows down, air pollution increases. According to U.S. Environmental Protection Agency estimates, the optimal speed for minimizing air pollution from automobiles is a constant 35 to 55 miles per hour. No urban area in the nation achieves such an average. As traffic slows and there is more stop-and-go driving, automobile-related air pollution increases exponentially (Figure 1).

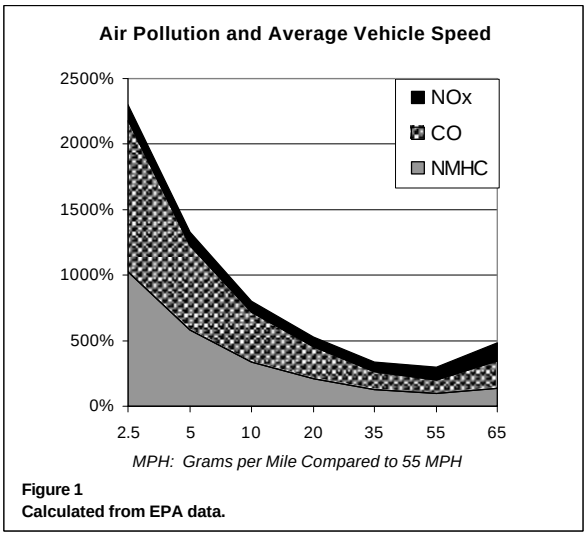

Figure 1
Calculated from EPA data.

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Adapted from "The Road Ahead: Innovations for Better Transportation in Texas" by Thomas A. Rubin, CPA, CMA, CMC, CIA, CGFM, CFM and Wendell Cox, Texas Public Policy Foundation, San Antonio, TX, February 2001.

TRANSPORTATION FUNDING IN TEXAS

The Issue:

Fiscal constraints dictate that common-sense spending priorities must be established to respond to the travel needs and demands of Texans.

State and local governments must annually balance spending priorities with available funding. Because of the multitude of competing demands for additional public revenue, it is not reasonable to assume that a new and large infusion of funding will be made available for transportation. Thus, meeting the future transportation needs of Texas requires application of two principles:

- Transportation spending should be allocated in such a way as to achieve the greatest effect. This means that criteria should be established to ensure that spending achieves the greatest impact. Because the state's transportation system is so diverse, a single criteria would be inappropriate. However, given the pervasiveness of increasing urban traffic congestion, it would seem appropriate for the highest priority to be given to highway expansions that are necessary to respond to increasing travel demands.

- Direct, non-political user financing of transportation facilities should be expanded. Because it is likely that there will not be large new infusions of public funding for transportation, it will be increasingly important for projects to be financed directly by users. This may appear to be a departure from previous methods of finance, but in fact it is very similar. For decades, America's major roadways have been financed by users through gasoline taxes and taxes on trucks. In the future, major expansions of the transportation system are likely to be toll-financed. Advances in electronic tolling technology mean that the entire roadway system can operate as a seamless whole. At the same time, if toll road authorities are properly structured to ensure that tolls are wholly dedicated to roadway support, users are likely to receive a better return. Increased reliance on the competitive market will lower roadway costs, while there will be no potential for diverting highway user fees to non-highway purposes.

An over-arching principle needs to be added – that the state's transportation system is designed in response to the

people and their demand for transportation. In transportation, as in other public functions, government is to be the servant of the people, rather than people being the servants of government. Thus, government has no business attempting to use social engineering strategies to alter travel behavior. In addition to the fundamental principle, there is also the fact that social engineering tends to fail, and usually at great cost.

Roadway Spending and Financing

While Texas spends more than $8 billion a year to build and maintain highways,[1] the financial commitment is dropping relative to a number of measures relating to construction spending (1997).

- Spending per capita has fallen 34 percent since 1980, and trails the national average by 12 percent (Figure 2).

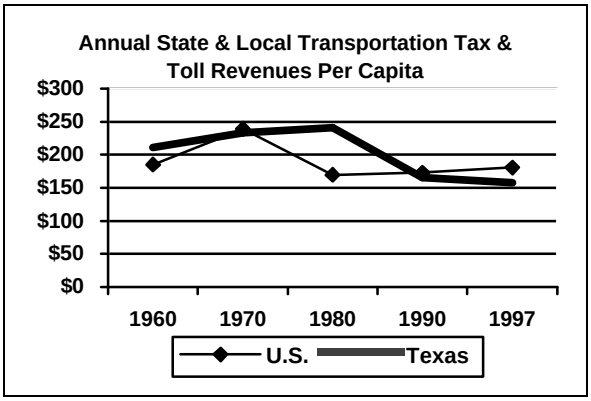

Figure 2
Source: Calculated from Federal Highway Administration data.

[1] Besides $21.9 billion spent on construction and maintenance by TxDOT from 1995 to 1999, an additional $14.2 billion was spent by Texas cities, counties, and other transportation agencies. Federal Highway Administration, *Highway Statistics,* 1995 to 1999, Tables SF-1, "Revenues Used by States for Highways," and HF-1, "Revenues Used for Highways, All Levels of Government."

- Spending per vehicle mile traveled is now 68 percent below the 1960 figure, and 18 percent below the national average (Figure 3).

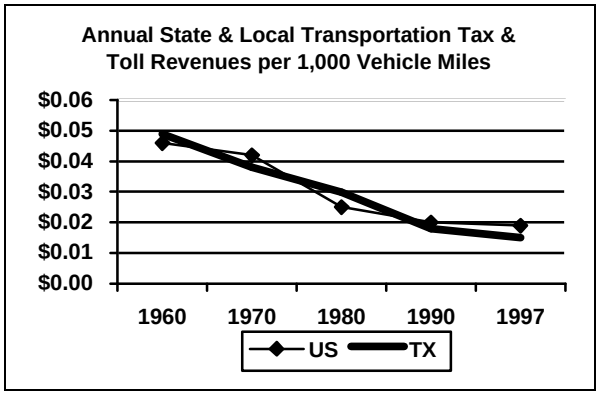

Figure 3
Source: Calculated from Federal Highway Administration data.

- Spending per licensed driver has fallen 51 percent since 1960 and is now 12 percent below the national average (Figure 4).

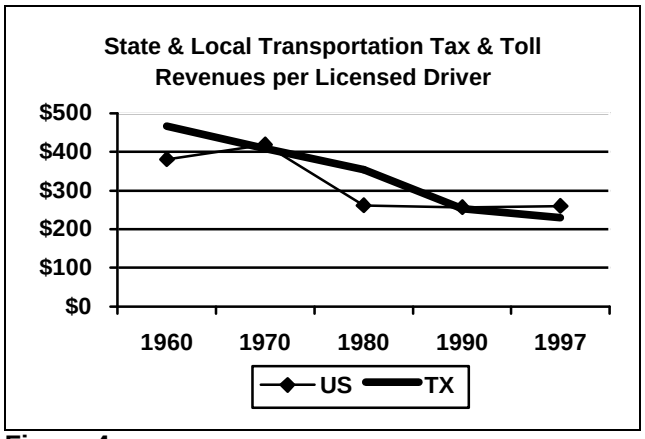

Figure 4
Source: Calculated from Federal Highway Administration data.

- Texas allocates 34.7 of state motor fuel taxes to non-highway uses, the third-highest of the 50 states and far higher than the median value for all states (approximately 8 percent). Of the to-

tal 1999 taxes and fees paid on vehicles of $6.5 billion, $2.7 billion, or approximately 42 percent, goes for transportation purposes, with the remaining $3.8 billion, or 58 percent, going for other purposes.

Funding Recommendations: The Texas Department of Transportation (TxDOT) estimates that present resources are able to finance barely 30 percent of optimal future needs. This does not include the substantial funding challenges faced by local governments across the state. To meet the challenge of traffic congestion in Texas, lawmakers should give serious consideration to the following mechanisms to increase roadway capacity:

1. New Transportation Innovations

- Develop completely new transportation corridors to serve the growing mobility and freight needs of the future. These corridors should be fully supported by private investment and user fees and could catapult the Texas transportation system ahead of the rest of the nation in the same way that the U.S. interstate highway system made the United States the envy of the world.

- Pursue double-decked freeways to make it possible to add up to six lanes of traffic without taking additional right-of-way (examples are Interstate 35 in Austin and Interstate 10 in San Antonio).

- Build truck freeways – exclusive roadways built above congested freeway corridors for commercial traffic, largely trucks.

- Build reversible lanes – lanes adjusted during peak periods to better accommodate demand.

- Build metroroute tunnels – a single tunnel carrying two decks of automobile (only) traffic. Such tunnels are far less costly per person mile than light rail or urban rail systems.

- Deploy automated tolling systems – toll roads in the state can be converted to full electronic tolling, similar to the system used on the Route 407 beltway in Toronto. All tolls are collected through electronically read cards on windshields. License plates of cars that do not have the electronic cards are photographed and users are billed through the mail. Elimination of toll booths would reduce traffic congestion, speed travel, and improve pollution in the local area.

- Build new limited access bypass roadways to relieve congestion on surface arterial streets in developing areas. These can be grade separated and have entrance and egress controls.

- In congested areas, surface arterials should be converted into surface expressways which limit grade crossings to signalized intersections and forces left turns to the right on access roads.

- Pursue technological advances such as on-board navigation systems and

collision avoidance systems and behavioral trends such as increased telecommuting.

Innovative Funding Approaches

- Local transportation agencies should be encouraged to cooperate better to develop minimum roadway capacity standards for the travel demands that occur in varying urban and suburban densities and land use configurations.

- Expanding the federal government's State Infrastructure Bank program to include more than the four pilot states would increase the ability of this program to assist disadvantaged counties with major projects.

- Seek additional federal grants, especially higher funding levels to offset the high cost of highway expansion and maintenance attributable to implementation of the North American Free Trade Agreement (NAFTA), and Federal Transit Administration "New Starts" grants for combined Busway/High Occupancy Vehicle (HOV)/High Occupancy Toll (HOT) lane projects.

- Electronic road pricing – As increasing population continues to drive increases in traffic volumes, more comprehensive approaches should be considered, such as electronic road pricing. Use peak period and mileage-based user charges to finance roadway system improvements. Higher user charges during peak travel periods would encourage some diversion of vehicle travel to less congested periods.

2. Build New Road Capacity With Transit Funds

- In certain cases, there is a significant unutilized portion of the one percent sales tax going to local governments that could be made available for either mixed transit/general use (chiefly Busway/HOV/HOT lanes), or "pure" general use transportation projects.

- Use federal transit grants to build additional roadway capacity:

  - The Federal Transit Administration "New Starts" program (49 USC 5309) can be utilized, in some cases, for HOV/Busway projects. The §5309 discretionary capital grant program can be used for bus system improvements and Fixed Guideway Modernization for Busway/HOV lanes, providing a useful level of funding for capital and maintenance.

  - §5307 – intended primarily for capital renewal and replacement, with local agencies given very wide discretion as how to utilize the funds within broad limits. It is perfectly proper to utlize such funds for capital additions.

  - Congestion Management Air Quality (CMAQ) grants can be utilized for transit capital improvements which may include Busways/HOV/HOT lanes, and for the operating costs of new

transit service for the first three years.

- Surface Transportation Program (STP) grants can be used for many of the same purposes as CMAQ grants, with the exception of operating costs.

✯ Use existing local sales taxes, and expansion where possible, to fund transportation projects that can improve transit access while providing additional highway capacity (such as HOV and toll lanes), particularly in metropolitan areas.

- Austin's Capital Metro collects a full one-cent sales tax and is banking substantial reserves. With an already documented program of savings, Capital Metro could operate on a one-half cent sales tax and make the other one-half cent available for highway and bus-based transit improvements.

- Transit authorities in Houston and Dallas have an extensive HOV construction program utilizing portions of local sales taxes for roadway improvements. Besides its successful Busway/HOV programs, Houston Metro has had a direct grant program for street improvements to local governments.

✯ By using a portion of local transit tax funds roadway improvements, federal matching funds can be greatly increased for roadway improvements. When transit agencies use local taxes to build light rail (or busways), they often receive a 50 percent match from the Federal Transit Administration. If these same funds are used for the purposes of building general purpose freeway lanes, they are eligible for an 80 percent match from the Federal Highway Administration. When these funds are used to build Busway/HOV HOT lanes, the toll revenues generated from the HOT lanes can be used to produce additional federal matching funds. This combined strategy yields a federal funding match that is twice as large as with light rail alone and which can build more than five times the lane miles of infrastructure, which can be a mixture of general-purpose lanes and transit fixed guideways (busway, HOV/HOT).

✯ Avoid looking to transit to solve congestion challenges. In future planning, transit, like any other mode, should be employed only where its costs are lower than those of the alternatives on a passenger mile or passenger hour basis.

✯ Intercity passenger rail should be considered as an alternative to highways only where the total cost per passenger mile or passenger hour is less than that of highways.

✯ Consider building HOV lanes as bi-directional lanes rather than the common, one-directional, reversible lanes. For example, 139 miles of the planned 225-mile HOV lane system in Dallas is planned to be reversible. With the continuing dispersion to jobs and residences, commuting patterns tend to be less one directional, with similar

volumes in both directions. One-way (reversible) HOV lanes should be constructed as two-way lanes.

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BONDING

The Issue:

The decision to finance highway projects with bonds should include a rigorous analysis of both short- and long-term costs and benefits.

While long-term debt for non-toll facilities has been common in many states for decades, Texas has not utilized or contemplated this method for most state highway funding, relying on the "pay-as-you-go" method of funding. Given the large unmet transportation needs, it is appropriate to investigate bonding as a financial tool at this time, especially since Texas appears to be one of only seven states that do not currently use highway debt.[1] This leads to an investigation of the possibilities and practicalities of using various existing and new funding sources as the backing for long-term debt.[2]

Bonding is a methodology to obtain a large sum of funds immediately, generally to construct specific major projects, by pledging to repay the amounts borrowed, plus interest, over an extended period of years, commonly 30 years. The obvious advantage is that desired improvements can be implemented sooner. The obvious disadvantages are that longer term interest payments reduce the availability of funds for such improvements; and that there is an element of risk present because resources that would otherwise be available to meet needs, including emergency needs, are now committed by prior actions.

Bonding is not a method of creating funding; it is a means of changing the timing of cash flows that can be utilized for expenditures for programs. Bonding is only possible where there is a stream of dedicated revenue, or the general obligation of the issuing entity, that potential bond buyers find acceptable as security for the debt issued. This, of course, means that once bonding is entered into, the funds pledged are effectively removed from the control of the issuing agency and dedicated to the purpose of repayment of debt service.

Because funds allocated for debt service become, in essence, funding allocations out of the control of the bonding entity's governing board, there is a degree of risk associated with bonding. If there is a downturn in the economy, and/or other factor(s), that reduce revenues, or if there are unexpected outflow requirements, an

[1] Moody's Investor Service.

[2] An excellent summary of the principal bonding options may be found in Senate Committee on State Affairs, Report to the 77th Legislature – Charge 1, Intermodal Transportation, "Innovative Financing Methods" pp. 38-45.

entity that has issued bonds has less flexibility to respond. The more debt that is issued, and the higher the annual debt service requirements as a portion of total cash inflows, the higher the degree of such risk, because the lower amount of non-pledged revenues remain subject to governing board actions. Proper debt management, as part of an overall long-term financial plan, can minimize the potential negative impacts of this risk, but cannot totally eliminate it. It is the task of policy boards to weigh risks and returns in making debt utilization decisions.

Entities that begin to utilize bonding to address large-scale capital requirements often become "perpetual" users of debt. The reason is, once the one-time inflow of bond revenues is utilized, there are fewer "annual" financial resources under the control of the governing board, while there are still a significant number of unmet needs. In such cases, it is not at all uncommon for the policy board to minimize this continuing shortfall by issuing more debt, often on a regular periodic basis.

There is nothing wrong with this pattern, in and of itself, if debt is employed properly, as part of an overall long-term capital/operations/financial plan, prepared and administered by knowledgeable and effective managers and policy board members. Many capital intensive industries have developed capital plans that employ what has become known as "perpetual debt" – a policy of procuring and replacing long-lived assets financed, in large part, by long-term debt with new long-lived assets financed by new debt (it is rarely, if ever, wise to issue debt that will not be paid off until after the assets thus financed reach the ends of their useful lives). Capital-intensive private and public industries such as utilities, transportation providers (railroads, truckers, airlines, water transportation, toll roads and bridges), major manufacturers, etc., often have long-term debt (and/or its close relative, long-term capital leasing) as a major and perpetual component of the capital structure.

In the private sector, using the future revenue stream from a capital project that would be financed by the proceeds of debt as the backing for the debt is common, a process that produces what are known as "revenue bonds," bonds that are backed solely, or principally, by such revenues. In the public sector, there are many types of improvements that have sufficient prospect of profitability as to make traditional revenue bonds feasible and common, such as water and sewer projects, public ownership electric utilities, parking structures, and others. In automotive transportation, toll bridges and toll roads are very common in this nation, including significant use in Texas, particularly in recent years.

A different type of revenue bond is one backed by specified taxes that are collectable by a governmental agency. A common example in local government transportation is sales tax revenue bonds, which are widely used throughout the U.S., including by such Texas sales taxing authorities as DART and Houston Metro. The use of such bonds is only possible when the sales tax has a life that exceeds that of the bond issue. Once such a revenue bond is entered into, it is generally

extremely difficult, if not impossible, to eliminate, reduce, or change the tax while there is still debt outstanding.

Another form of public sector debt is "general obligation" (GO) bonds. Such debt is backed by the full faith and credit of the issuing entity. For governmental units, this includes the requirement to increase taxes, if required, and to the extent allowed by statute and other valid limitations, to cover debt service payments.

GO debt is generally the highest rated debt, meaning that it carries the lowest interest rate, because the risks are the lowest of the various debt options. This increases the amount of funding that can be leveraged in at least one, and potentially two, ways. First, because the interest rate is lower, more initial capital can be generated by the same amount of annual debt service.

Second, certain of the GO debt proposals that have been forwarded recently in Texas are actually tied to a specific revenue source, with the GO security a means of producing superior financial characteristics for the state, rather than an actual intention that the debt service would be paid from other than the specifically identified revenues (either traditional Texas or new dedicated highway funding sources). In this situation, the "debt coverage ratio" – the ratio of projected cash available for debt service to the debt service payments – would be substantially lowered, from approximately 1.5:1 to 1.3:1 for revenue bonds to as low as 1.1:1 for this specialized type of GO debt. (Normally, the excess of the annual revenue received over the debt service requirements is usable as the agency wishes, including for road construction and maintenance. The reduced debt service ratio requirements produces significantly higher initial funding, but the increased annual and continuing debt service payments mean that the funding available for construction and maintenance in the "out" years will be reduced).

It is possible that bonding could be used to advance highway construction schedules in Texas. Whether or not bonding is preferable to "pay as you go" depends on multiple factors, such as cash flow analysis, construction, the impact on highway maintenance costs (which will be higher if more road mileage is built sooner), and other factors, such as costs and benefits to society as a whole.

The policy decision process should include a rigorous cost-benefit analysis. For example, there are likely to be significant positive impacts to a program that advances the construction of badly-needed highways. Examples of these benefits might include:

- ✯ Desired improvements can be implemented sooner.

- ✯ Genuine reduced monetary costs and increased income resulting from improved traffic flow (reduced congestion), such as lower local freight costs, and lower consumer product and vehicle operating costs.

- ✯ Improved economic growth and job creation as a result of better competitive positioning of Texas metropolitan areas relative to other areas that

fail to invest sufficiently in highway infrastructure.

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Prepared by Thomas A. Rubin, CPA, CMA, CMC, CIA, CGFM, CFM. Mr. Rubin is an independent transportation consultant and former Controller-Treasurer of the Southern California Rapid Transit District in Los Angeles.

HIGHWAY EXPANSION

The Issue:

Expanded highways are vital to preserving a high qualify of life and ensuring continued economic development in the Lone Star State.

Automobiles provide the great majority of urban travel throughout the high-income western world, except for commuting to a few downtown areas and travel within the most dense core cities. In Texas, roadway travel accounts for 99.6 percent of combined highway-transit travel. Even if transit were to double its market share, the auto share would remain above 99 percent. Even with a 60 percent increase in spending on transit over the past decade, transit's market share has remained virtually unmoved in Texas.

Policymakers should recognize the reality that Texans use automobiles, and that no set of public policies acceptable in a democratic society will change that fact. This means that highways must be expanded to accommodate the increasing demand. So long as urban development is not constrained within artificial boundaries, much of the new roadway construction will be in areas that are not yet developed, which will make it possible to keep neighborhood disruption to a minimum.

Gasoline tax increases are difficult to enact. Further, the statewide political support necessary for enactment makes it impossible to spend new gasoline tax funding in the most efficient manner (limited to areas with significant traffic congestion). Therefore, it is likely that much of the added highway capacity will need to be toll roads, as have already been built in the **Dallas-Fort Worth** and **Houston** areas. Already, new toll roads are proposed for construction in the **Austin** area.

Expanded highways are necessary not only to preserve the high quality of life Texans experience, but also to ensure the continued economic growth of the state**.** If traffic congestion is allowed to increase markedly – which it will if highway construction fails to keep pace with highway demand – then there will be serious economic costs. A government that is the servant of the people will implement such strategies as are necessary to provide the infrastructure required by the travel demands of its citizens.

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Prepared by Wendell Cox, Senior Fellow with the Texas Public Policy Foundation and principle of Wendell Cox Consultancy, an international public policy firm specializing in transport, economics, labor, and demographics.

NAFTA TRAFFIC & BORDER ISSUES

The Issue:

Enactment of the North American Free Trade Agreement (NAFTA) has brought both greater prosperity and disruption to border communities in Texas.

The North American Free Trade Agreement (NAFTA) has had a major impact on the Texas economy. The gross state product attributable to trade has risen from 6 percent in the middle 1980s to 14 percent in 2001,[1] reflecting sharp gains in cross-border commerce. This has significantly impacted the Texas transportation system:[2]

- 79 percent of all U.S.-Mexico trucks crossed the border at Texas ports of entry, with 40 percent of the northbound trucks traversing Texas for destinations outside the state (other U.S. states and Canada).
- NAFTA truck traffic comprised 16.5 percent of all Texas truck traffic, with 75 percent of this on rural interstate highways and other rural roads.
- Thirteen highway corridors, which make up 18.9 percent of Texas highway mileage, carry almost 90 percent of all NAFTA traffic in Texas, with IH-35 alone accounting for 31.6 percent of this total.
- The direct annual costs of highway improvements to maintain the existing level of service is projected at $150.9 million per year, with the optimal need cost projected at $349.8 million per year.
- Cross-border truck traffic has risen more than 50 percent. At the same time, freight rail traffic has doubled.[3]
- The "social costs" of the increase in NAFTA traffic, including congestion, accidents, air and noise pollution, and related costs is projected at $560.8 million per year.[4]

The Laredo area accounts for the largest amount of border truck traffic of any port of entry on the Mexican border. Second-

[1] Texas Comptroller of Public Accounts, Paving the Way: A Review of the Texas Department of Transportation, January 2001.

[2] Effect of the North American Free Trade Agreement on the Texas Highway System, Louis Berger & Associates, Inc. in conjunction with Dye Management Group, Inc., for TxDOT, December 1998.

[3] Calculated from Texas Border Infrastructure Coalition Report, 2000.

[4] Effect of the North American Free Trade Agreement on the Texas Highway System, Louis Berger & Associates, Inc. in conjunction with Dye Management Group, Inc., for TxDOT, December 1998.

and third-ranking San Diego-Tijuana and Cuidad Juarez-El Paso handle less than one-half the volume of Laredo. In 1998, Laredo handled approximately one-third of all cross-U.S./Mexico border truck movements, and more than one-half of movements across the Texas-Mexico border. Moreover, Laredo accounts for nearly 45 percent of cross-border railcars (Figures 1 and 2).

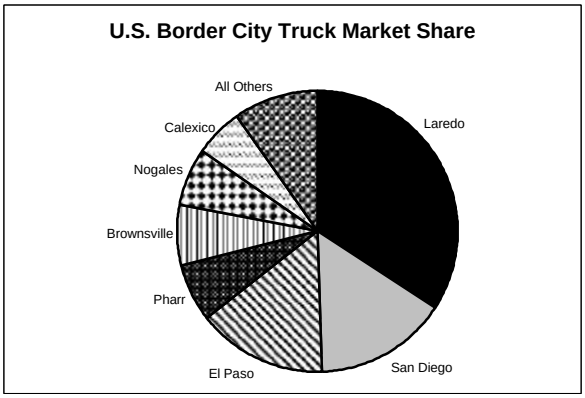

Figure 1
Calculated from GAO data.

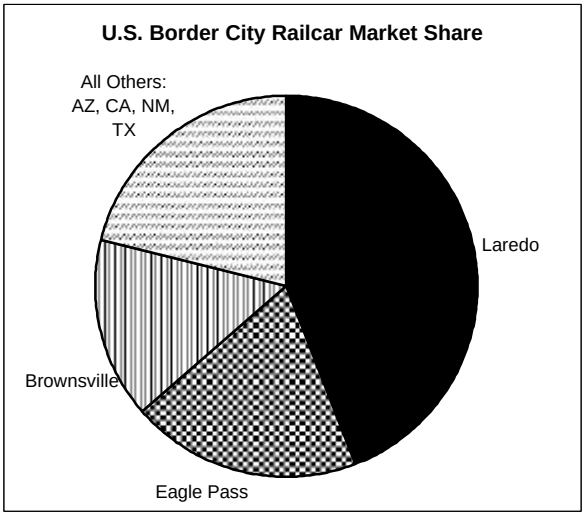

Figure 2
Calculated from GAO data.

There is no doubt that the increase in economic activity due to NAFTA has had far greater beneficial impacts on Texas than any other state. Indeed, it appears that almost half of all U.S.-Mexico truck traffic is between Texas and Mexico. However, even taking into account the significant amount of Texas-Mexico NAFTA truck traffic, the NAFTA traffic through Texas is significantly more than the total traffic through any other border state. This "through" traffic provides very large benefits for the entire nation, with Texas taxpayers footing the bill for infrastructure improvements benefiting others, and with Texas drivers and residents shouldering the added congestion and related disadvantages.

Texas has spent much more of its own money on border infrastructure than other states, with the federal government having provided a much larger share elsewhere (Figure 3).

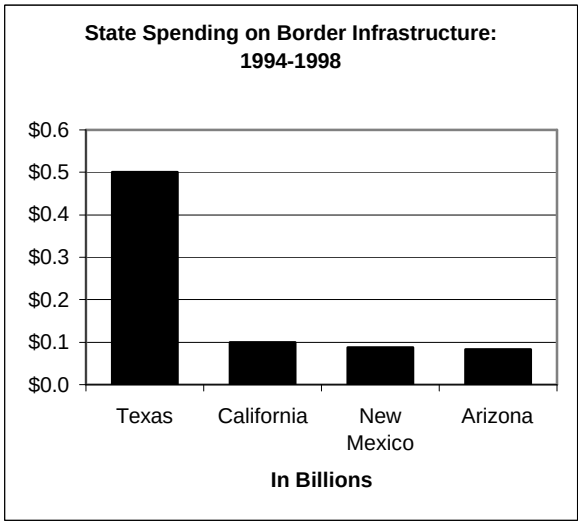

Figure 3
Calculated from GAO data.

Federal expenditures in relation to truck traffic volumes have been from 2.7 to 34 times that of Texas in Arizona, California, and New Mexico (Figure 4).

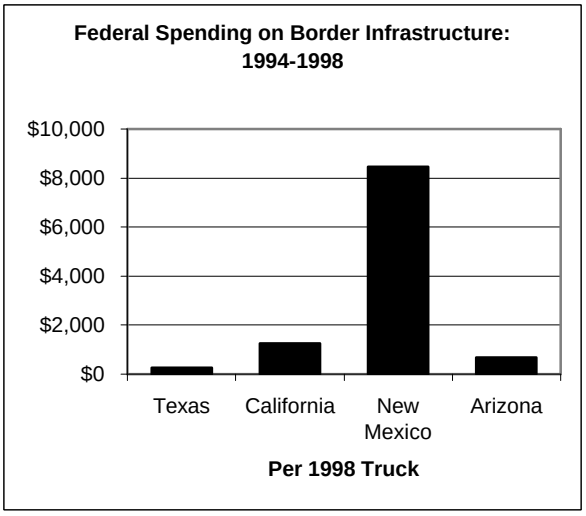

Figure 4
Calculated from GAO data.

It is inequitable to expect either the border communities or the state of Texas to finance what are in essence national infrastructure facilities. This would be akin to requiring border states to finance local immigration and naturalization service activities, or to have required the state of Alaska to finance defense activities within the state during the Cold War. The incremental costs of border activities should be, therefore, paid by the nation as a whole.

Workforce and management issues also contribute to border congestion in the following ways:

- The State Comptroller reports that it is not unusual for more than 75 percent of lanes to Mexico to be closed due to staffing shortages.
- Insufficient staffing by federal agencies, such as the U.S. Customs Service, U.S. Department of Agriculture, and U.S. Food and Drug Administration, result in lane closures, which reduce the capacity of border facilities to deal with traffic.
- Multiple inspections by government agencies slow the speed of traffic and increases congestion.
- Threatened with air quality non-attainment status.
- A number of border procedures remain to be automated.
- There is currently little, if any, data on average delay times for truck inspections at border crossings. The longer term management of border crossings should include goals and standards with respect to average truck delays.
- There is insufficient cooperation with border authorities in Mexico, which increases congestion.

Recommendations

There is no doubt that trade with Mexico will continue to increase, and it would therefore be justifiable for Texas state officials and lawmakers to seek increased federal assistance in responding to NAFTA-related costs. The next major chance for increased federal highway funding will be in 2003, when TEA-21 is up for reauthorization.

At the same time, the Texas Legislature should identify – or appoint a "blue ribbon" Border Futures Commission to identify reasonable infrastructure needs, incremental costs, and financing strategies.
Policy goals should be:

- To review the costs and benefits of border transportation activities and their impacts on specific border communities, especially the extent to which costs exceed benefits (incremental costs).

- To propose the specific border transportation projects, management procedures, and intelligent transportation system (ITS) strategies that would be required to mitigate the incremental impacts of border transportation activities on Texas border communities.

- To propose methods of finance with an emphasis on user financing, as opposed to general or statewide funding sources. In particular, there should be a thorough review of any potential mechanisms by which border traffic could be assessed the full incremental cost of needed border improvements. Obviously, such a financing mechanism would require federal legislation and concerted advocacy among states along the borders with both Mexico and Canada. Dedicated revenues from such a financing source could be directly transferred to state departments of transportation, which would administer state-mandated programs and allocate appropriate funding to local needs.

- To propose objectives with respect to border crossing performance in cooperation with United States and Mexican officials and to propose information systems that would allow "real time" notification to truckers of conditions at border crossings. This would allow truckers to select the most convenient routes to cross the border.

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Adapted from "The Road Ahead: Innovations for Better Transportation in Texas" by Thomas A. Rubin, CPA, CMA, CMC, CIA, CGFM, CFM and Wendell Cox, Texas Public Policy Foundation, San Antonio, TX, February 2001.

PUBLIC TRANSIT

The Issue:

Despite their exorbitant costs, expanded transit programs provide less than one percent of travel in Texas and fail to alleviate traffic congestion.

Over the last decade, urban planning and transportation agencies throughout the United States have embarked upon expensive transportation-related programs that have provided little in return.

In an analysis of transportation in world urban areas, the Union Internationale des Transports Publics (the international equivalent of the American Public Transportation Association) noted that:

In the United States, with the exception of New York, public transport is unable to compete with the automobile: its speed is half as fast, which means that door-to-door travel times, incorporating terminal distance times, waiting, and transfer times are 3 to 4 times longer on public transport.[1]

The study, which included 10 U.S. urban areas, also noted that:

The United States is the country where public transport use is lowest; it is virtually zero in Atlanta, Denver, Houston, Los Angeles, Phoenix, and San Diego.[2]

- **Urban Public Transit:** In an attempt to reduce the volume of driving, metropolitan areas have poured billions of dollars into expanded mass transit systems, especially light rail and commuter rail. Often these systems are advertised as having great potential for reducing traffic congestion. They are also advertised as alternatives to roadway construction. The only dimension in which they are genuine substitutes, however, is in their consumption of funding that might otherwise be used to provide more of the transportation capacity that people can or want to use – highways.

  Texas has not been exempt from this trend. Dallas built three light rail lines[3] and one commuter rail line in the last decade. Despite a sustained public relations campaign to demonstrate the success of the program, preliminary U.S. Census data indicates

[1] Jan Vivier, "Millenium Cities Database for Sustainable Mobility: Analysis and Recommendations," UITP (Brussels),

[2] The four urban areas studied but not classified as "virtually zero use" were New York, Chicago, Boston, and San Francisco. Each of these urban areas has a central business district (downtown) transit work trip market share above 45 percent. By contrast, among "virtually zero use" are urban areas that have made substantial investments in urban rail systems over the past two decades (Atlanta has built five metro (heavy rail) lines, while Denver and San Diego have built light rail lines).

[3] The three light rail lines share common tracks in the central area.

little or no impact. From 1990 to 2000, the number of people commuting to work daily on transit in Dallas County increased by less than 200 people. By contrast, 600 times as many people started commuting by car, with an increase of more than 115,000 new personal vehicles on the road. In contrast to the more than $1 billion spent on newly-opened rail lines in Dallas County, virtually no public funding was used to encourage walking and telecommuting, yet the number of people attracted to these options was far greater than that of transit. Walking attracted more than 4,300 new commuters, while over 8,700 people began working at home (including telecommuting).

While new transit programs are popular, they impact traffic very little, and at great cost. Austin's 25-year transportation plan anticipates spending 42 percent of regional financial resources on transit at the same time its market share is projected to increase little more than its current 2.1 percent.

Over the past 10 years, spending on transit has escalated substantially in Texas. While road funding was expanding by only three percent, transit spending increased nearly 60 percent. In 1989, roadways represented 89.5 percent of combined roadway-transit spending. By 1999, the figure had dropped to under 85 percent. This change in resource allocation did not produce a corresponding impact in the market. In fact, transit's market share (total percent of trips taken) in Texas was the same in 1999 as it was in 1989, 0.4 percent (Figure 1). Public spending on transit per point of market share is 44 times that of roadways.

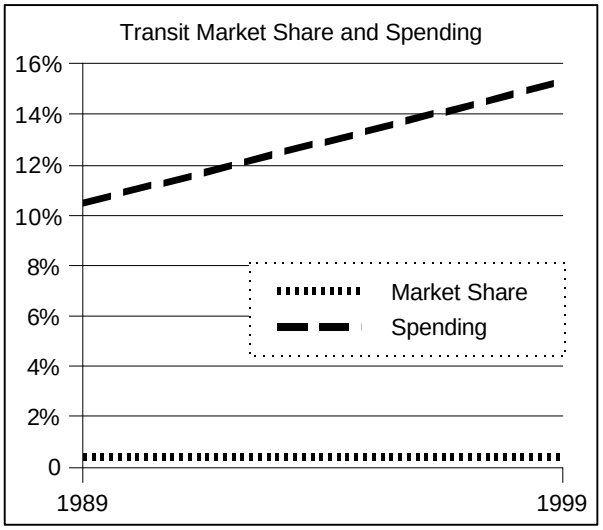

Figure 1

It may be surprising that substantial transit improvements do not yield correspondingly substantial increases in demand. There is no question that people will ride good and effective transit. The world's largest business districts – in places like Manhattan, Paris, and London – have transit work-trip market shares exceeding 70 percent. But, even in these urban areas with comprehensive transit systems, there is comparatively little use of transit except in the central area, or for downtown commuting. This is even more so in Texas. Downtown transit market shares are below 20 percent, and outside downtown market shares are well below five percent.

In the U.S., people who commute to jobs outside downtown by transit have incomes only slightly above the poverty line. In general, outside

downtown, transit is used only by those who have no other choice.

The reason that transit's market share is so low in the suburbs of Paris, London, and New York is the same reason that it is low in Texas – there is little automobile-competitive transit service. Even to the comparatively well-served downtown areas of Houston and Dallas, automobile commuting is generally faster. If automobile users are to be attracted to transit, the system must take them where they want to go in a time competitive with the automobile**.** No major urban area in the western world has such a system. The overwhelming majority of jobs is located outside downtown areas and simply cannot be served by automobile-competitive transit at an affordable price. Despite perceptions to the contrary, transit in Texas is a niche market provider – providing automobile-competitive service to little more than downtown.

- **Freight Rail:** There is an additional risk related to the commuter rail systems that rely on existing freight rail rights-of-way. Freight rail capacity is seriously constrained in Texas and much of the United States. The United States and Canada represent the only high-income nations in the world with substantial freight market shares, and as a result, truck traffic tends to be less intense than in Europe and Japan. Significant passenger and freight operations over the same rights-of-way seem to be incompatible, based upon the international experience. A principal factor in the continuing competitiveness of freight rail in both the United States and Canada has been the freeing of capacity by cancellation of most passenger train services. As a result, any strategy that seeks to impose commuter rail services on freight rights-of-way could interfere with conventional rail operations, driving freight volumes to trucks. The result could be that commuter rail improvements, promoted as a method of reducing traffic congestion, may in fact increase traffic congestion. The average large truck is the equivalent of 3.8 cars on an urban freeway.[4]

- **Intercity Rail and High-Speed Rail:** For the same and similar reasons, neither intercity passenger rail nor high-speed rail can reduce traffic congestion or take the burden off highways. There is simply not enough intercity demand to be captured by passenger rail services to make a difference. For example, the proposed 200 mile-per-hour Florida High Speed Rail system, canceled by Governor Jeb Bush in 1999, would have reduced traffic along the adjacent north Miami I-95/Turnpike corridor by less than 0.5 percent, according to the projections of its promoters. A higher 10 percent reduction would have been achieved in rural stretches between Orlando and West Palm Beach, where there is no serious traffic congestion. Since the most serious traffic congestion problems are in urban areas and not be-

[4] Wendell Cox, Freight Rail's Potential to Alleviate Traffic Congestion, Texas Public Policy Foundation, 2001 (http://www.tppf.org/transit/rail/toc.html).

tween them, high-speed rail and intercity rail would have no potential whatsoever to materially impact traffic congestion.

Generally, it was demonstrated in Florida that highway construction was a far less expensive and more effective strategy for increasing transportation capacity.[5] Slower intercity trains, such as the average 75 mile-per-hour system (with peak speeds of 110 mph) proposed in the Midwest,[6] will have even less impact. This is not to suggest that there is no place for privately-financed passenger rail services. The experience with intercity rail and high-speed rail in the United States indicates that such services are rarely profitable, as private entrepreneurs have been unwilling to risk their own funds.

Finally, to the extent that any new intercity passenger rail services would use existing freight rights-of-way, traffic congestion could be increased by forcing freight volumes to trucks.

Texas state and local governments spend a large amount on public transit. In fact, Texas ranks seventh in state and local tax revenues per transit passenger mile, at $0.649. This is 33 times the amount of state and local revenue per person mile for streets and highways.[7] It is also approximately three or more times the state and local transit funding commitment that exists in more highly transit dependent states.

At the same time, transit does serve an important role. Transit provides primary mobility for a large number of urban residents who do not have access to automobiles,[8] and it is likely that the figure is even higher in Texas.[9] Approximately one-seventh of transit spending in Texas now goes to services for the disabled, where the cost per trip is approximately $20. This may seem like a large amount, but it is similar to the cost per new trip for some new rail systems.

Annual growth alone in Texas street and highway traffic exceeds total transit use. And, on average, urban rail operating and capital costs are more than seven times the cost of new freeways per passenger mile.[10] In future planning, transit should be employed only where its costs are lower than those of the alternatives on a passenger mile or passenger hour basis.

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Prepared by Wendell Cox, Senior Fellow with the Texas Public Policy Foundation and principle of Wendell Cox Consultancy, an international public policy firm specializing in transport, economics, labor, and demographics.

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[5] Wendell Cox, Evaluation of theFDOT-FOX Miami-Orlando-Tampa High-Speed-Rail Proposal, James Madison Institute, 1997, (www.publicpurpose.com/lk-flfox.htm).

[6] This system would average less than 80 miles per hour.

[7] State and local funding is considered together, because states establish differing mixes of transit taxes. In Oregon, Colorado, and Texas, for example, virtually all transit taxes are local. In Michigan, there is a dedicated state funding source, and less local funding. See Wendell Cox and Thomas A. Rubin, The Road Ahead: Innovations for Better Transportation in Texas, Texas Public Policy Foundation, February 2001.

[8] Nationwide Personal Transportation Survey, 1995.

[9] The lower-than-average work trip market shares in Texas would tend to indicate that the low-income market component of transit ridership is higher in Texas.

[10] Internet: www.publicpurpose.com/hwy-tr96$.htm.

FREIGHT RAIL

The Issue:

Freight projects that assist in maintaining freight rail market share or that expedite truck traffic appear to have more potential for reducing traffic congestion than passenger rail projects in many areas. Public policy should be directed to implementing the most effective freight or passenger projects for reducing traffic congestion.

Urban areas around the nation face serious traffic congestion. While trucks represent an important resource, they have a disproportionately high impact on traffic congestion. That impact would be even greater if it was not for the strong freight rail industry.

The United States is unique in having retained a strong freight rail market. Freight rail in Europe and Japan has lost most of its market share, which has led to much higher levels of truck traffic, and more intense traffic congestion (Figure 1). Part of the reason for the decline of freight rail in these areas has been the emphasis on passenger rail, which has limited freight capacity and competitiveness.

U.S. freight railroads have been able to grow and maintain most of their market share at least partially because passenger rail services have been greatly curtailed, providing needed capacity for growth. The Northeast Corridor of the United States is more akin to Japan or Europe, with a much smaller market share for freight rail, again largely due to the emphasis placed upon passenger rail.

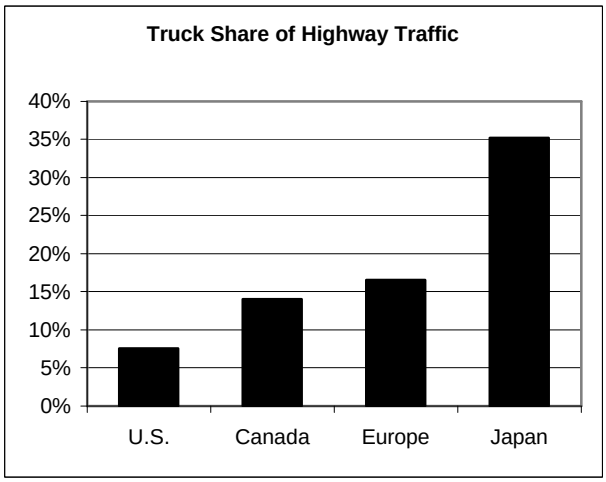

Figure 1
Calculated from national transportation department(s) data.

The international experience, historical trends, and the Northeast Corridor experience suggest that a strong freight rail system is incompatible with a strong passenger rail network. This is important, since many states and metropolitan areas seek to reduce traffic congestion through expansion of passenger rail (intercity and commuter). By driving freight away from railroads, the net effect of these projects could be to worsen traffic congestion. With respect then to traffic congestion, the question is whether a strong freight

rail system or a strong passenger rail system is likely to provide greater benefits.

To contain urban traffic congestion, it is crucial that the freight rail industry maintains or expands its market share. If freight rail experiences market share losses akin to those sustained in Europe or Japan, the equivalent of a 50 percent increase in urban traffic volumes can be expected by 2020. This would translate into serious economic losses.

Freight projects that assist in maintaining freight rail market shares or expediting truck traffic appear to have more potential for reducing traffic congestion than passenger rail projects in many areas. Public policy should be directed to implementing the most effective freight or passenger projects for reducing traffic congestion.

Traffic Congestion and Freight

Traffic Congestion in Texas: For decades, urban road expansion has fallen far behind the increases in traffic. Since 1982, traffic volumes on major roads in the five largest Texas urban areas have nearly doubled, while capacity has increased only 56 percent. As a result, the hours of time spent in delayed traffic have increased more than 300 percent (Figure 2).

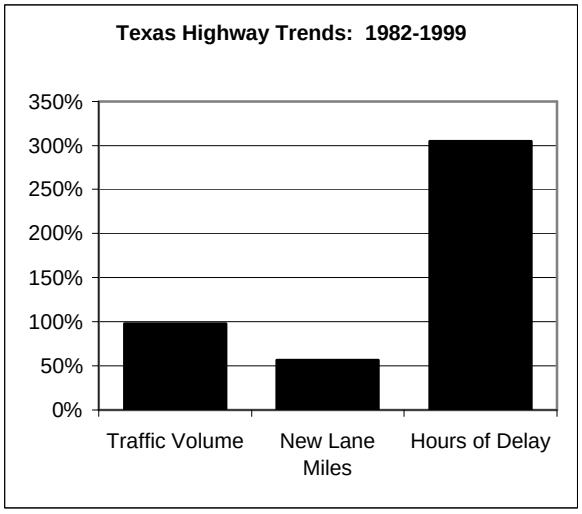

Figure 2
Calculated from Texas Transportation Institute data.

Highway and Rail Freight: The nation's highway freight industry moves 42.7 percent of combined rail and truck intercity freight and has been improving its share of the combined rail and truck freight market for decades. The industry was deregulated in 1979 and improved its productivity 36 percent through 1998 (ton miles per million dollars of revenue).

At the same time, trucks contribute disproportionately to traffic volumes. It is estimated that the average combination truck (single trailer or double trailer) consumes approximately 3.8 times the road space of an automobile (Figure 3). Large truck traffic volumes have been rising considerably faster than other traffic. From 1990 to 1999, urban truck traffic increased 48.7 percent, 80 percent above the 26.9 percent growth rate of other traffic. Over the next 20 years, truck volumes are expected to more than double in the United States (Figure 4).

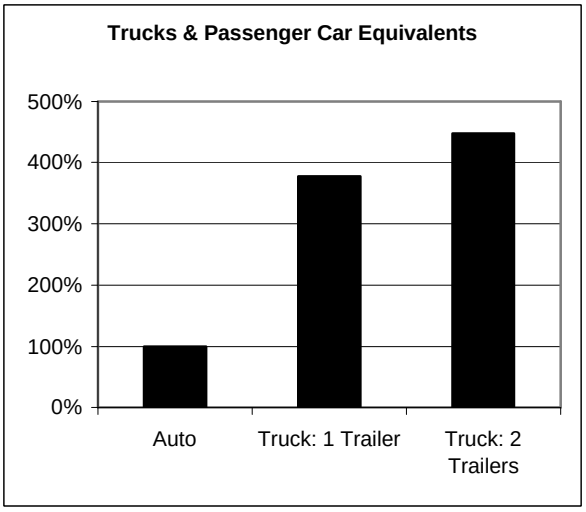

Figure 3
Calculated from Federal Highway Administration (FHWA) data.

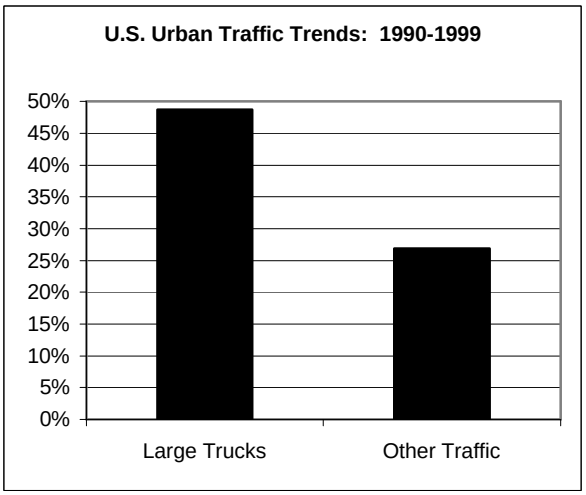

Figure 4
Calculated from FHWA data.

Despite the market share gains of trucks, freight rail has maintained a strong market share, at 57.3 percent of the combined rail and truck market in 1998 (Figure 5). Rail freight was deregulated in 1980. Since deregulation, rail freight has improved its productivity 143 percent (ton miles per million dollars of revenue).

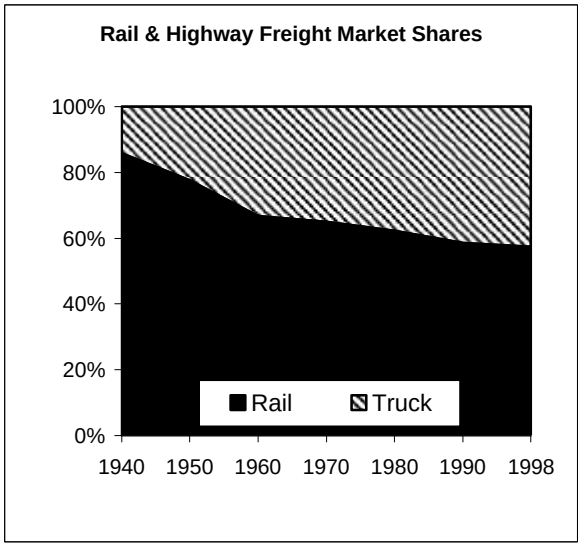

Figure 5
Calculated from U.S. Department of Transportation data.

The volume of rail freight is illustrated by the fact that if all rail freight traffic was diverted to trucks, truck traffic would increase approximately 116 percent. Over the next 20 years, rail freight volumes are expected to increase by one-half (Figure 6). This is a slower rate than the projected truck increase, and implies a further erosion of 15 percent in rail market share. This will lead to greater roadway congestion.

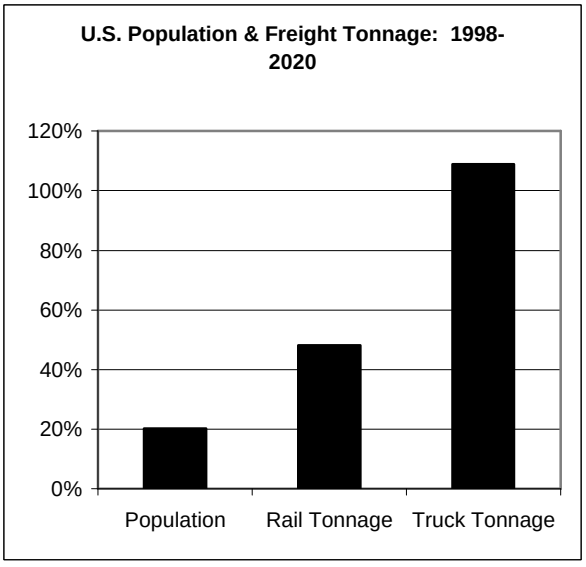

Figure 6
Calculated from U.S. Department of Transportation and Census Bureau data.

Little attention has been given to implementation of freight projects to alleviate traffic congestion. This briefing paper will provide a preliminary analysis of the potential for reducing traffic congestion through both rail freight and highway freight projects.

The Highway-Dependent U.S. Northeast Corridor: As in Europe and Japan, the U.S. Northeast Corridor (Washington through Baltimore, Philadelphia, and New York to Boston) exhibits both a strong passenger rail market share and a weak rail freight share. This corridor, comprising less than 2,000 miles of the nation's more than 100,000 railroad route miles, handles 75 percent of commuter rail traffic and more than 40 percent of intercity rail (Amtrak) service (Figure 7). The Northeast is by far the nation's least freight rail-dependent area (and most truck dependent), despite having some of the nation's largest seaports (seaports, with their large volume of container traffic, are generally large generators of freight rail traffic). Because a lack of investment and priority for passenger service, there are no freight rail lines into New York, the nation's largest city, from the west (New Jersey). A new freight-only tunnel under New York Harbor has been proposed.

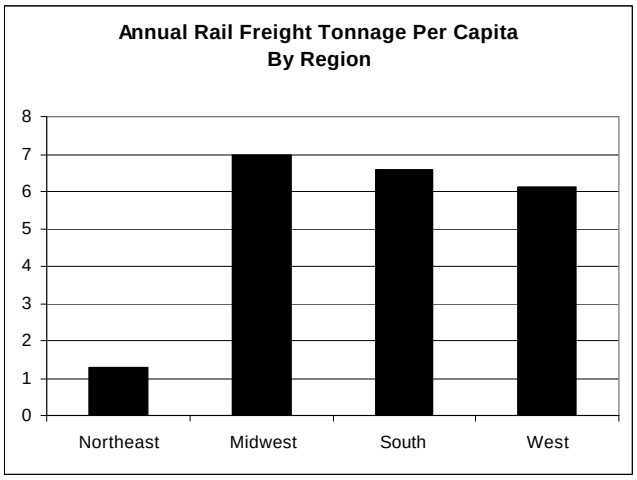

Figure 7
Calculated from U.S. Census Bureau Commodity Flow Survey, 1997.

Freight Rail & Traffic Congestion: Prospects

Freight Railroad Competitiveness: As noted above, freight railroads have lost market shares and are projected to sustain further market share losses. Nonetheless, the U.S. losses have been considerably less than those of Japan and Europe. Freight railroads have advantages over truck freight. They are able to move large volumes of freight comparatively inexpensively, and with a lesser expenditure of energy. The intermodal market, consisting of truck trailers and ocean shipping containers moved by rail and truck, is growing rapidly and has significant potential for expansion (Figure 8).

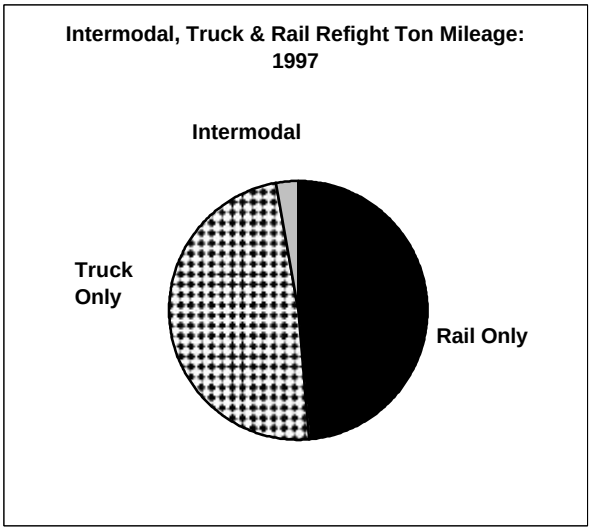

Figure 8
Calculated from Commodity Flow Survey data for 1997.

On the other hand, rail freight has significant competitive disadvantages relative to trucks. The most important is its comparative inflexibility, which manifests itself in slow operating speeds. Rail infrastructure is inherently much more limited than that available to intercity trucks. As a result, operating speeds of rail are comparatively slow. Moreover, the rail freight industry is among the nation's most capital intensive, which makes maintenance and expansion of the infrastructure challenging.

Freight railroads face a significant external threat. New commuter rail systems and proposed expansion of intercity rail service could make the freight railroads even less competitive. In the long run, this could result in diversion of large volumes of freight to trucks and to urban highways that are already congested.

Rail and Highway Freight in Texas: Texas metropolitan areas generally utilize rail freight more than other metropolitan areas (Figure 9). Houston has by far the highest share of rail freight tonnage and per capita tonnage of the top ten U.S. metropolitan areas. Dallas-Fort Worth ranks third in rail tonnage per capita and fourth in rail tonnage market share. San Antonio also has a much higher-than-average dependence on rail freight.

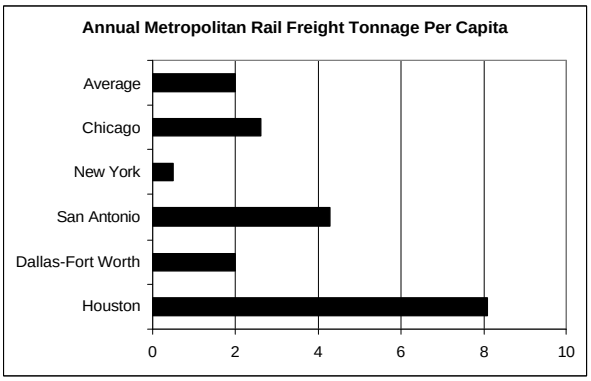

Figure 9
Calculated from Commodity Flow Survey data, 1997.

It is likely that both rail and truck freight volumes will expand at a higher-than-average rate in Texas because of the comparatively rapid population growth rate. NAFTA volumes are likely to increase the truck and rail volumes even more, since Texas has the most proximate Mexican border points of entry for 75 percent of the markets in Mexico, the United States, and Canada.

Economic Impact: At the same time, the additional traffic will cause further delays and impose congestion costs on Texas metropolitan areas. The projected reduction in the rail freight market share and the resulting additional congestion cost would be $6 billion in major Texas metropolitan areas in 2020 alone. If rail freight's market share drops to European levels, the cost would rise to $19 billion.

This would be equal to from $1,250 to $3,750 per household.

Reducing Traffic Congestion

Freight Projects and Traffic Congestion: The Potential: There is a proposal to develop an upgraded truck-rail intermodal system between Dallas and Houston. The cost per automobile equivalent trip removed from urban roadways would be superior to virtually any of the nation's new urban rail systems.

Similarly, projects that expedite and separate the movement of highway freight traffic can have a superior benefit. An exclusive truck freeway bypass of Austin could be 40 to 70 times as cost effective per automobile equivalent trip removed from Interstate 35 in Austin than the light rail proposal rejected by voters in 2000.

The potential for freight projects is underscored by an analysis of truck, transit, and traffic data in 45 world cities. Generally, trucks appear to increase traffic congestion much more than transit reduces it. In the United States, trucks are responsible for 19 times the traffic volume that is removed by transit ridership (a "truck-transit benefit ratio" of 19:1). In Houston, the only Texas urban area in the available international database, trucks are estimated to account for more than 40 times as much road travel as is reduced by transit travel.

Based on the Houston truck-transit benefit ratio, the 25 to 70 percent transit ridership increases projected for Texas urban areas over the next 20 years would produce the same reduction in traffic volumes as a 0.6 percent to 1.6 percent reduction in truck volumes over the same period.

Balanced Transportation Policy: A principal purpose of funding for urban transit projects is the reduction or containment of traffic congestion. Achieving this objective requires a balanced approach that relies on the most effective traffic-containing measures, rather than being skewed toward a particular strategy. Because it is so difficult to increase urban roadway capacity, and because rail freight traffic losses are generally transferred to traffic-increasing trucks, public policy should avoid actions that make freight rail less competitive. The international, national, and Northeast Corridor experience imply that strong rail freight market shares may be incompatible with an emphasis on commuter or intercity rail.

The private freight railroads are a national infrastructure resource. If freight rail should not continue to grow, thus losing market shares at a higher rate than in the past, urban traffic congestion will become worse. Further, there are other potential advantages of a public policy that would forbid government actions that skew the freight market away from rail to truck:

- Rail has a lower fatality rate than trucks (Figure 10).

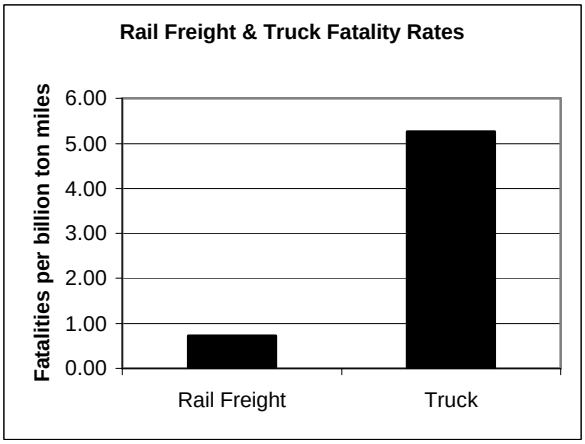

Figure 10
Calculated from Bureau of Transportation Statistics and U.S, Department of Transportation Fatality Analysis Reporting System data.

- Rail moves freight with less energy (Figure 11).

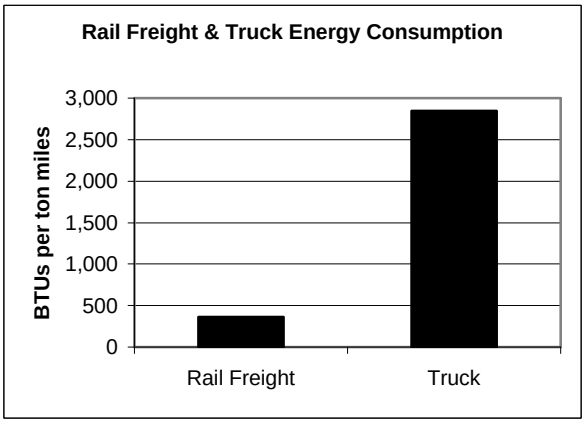

Figure 11
Calculated from Bureau of Transportation Statistics data.

- Rail generally pollutes less than trucks (Figures 12 and 13).

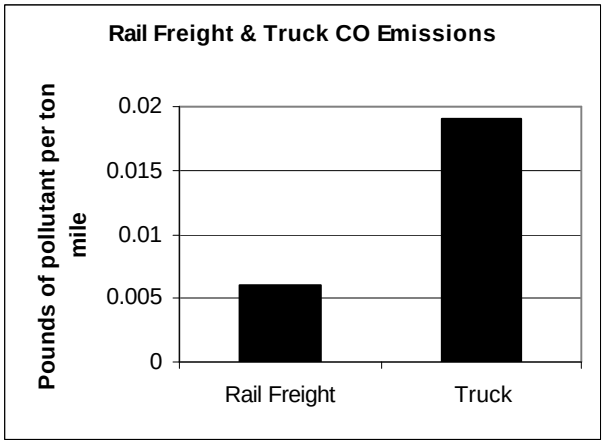

Figure 12
Calculated from C. Jake Haulk, *Inland Waterways as Vital National Infrastructure: Refuting "Corporate Welfare Attacks,"* Allegheny Institute, 1997.

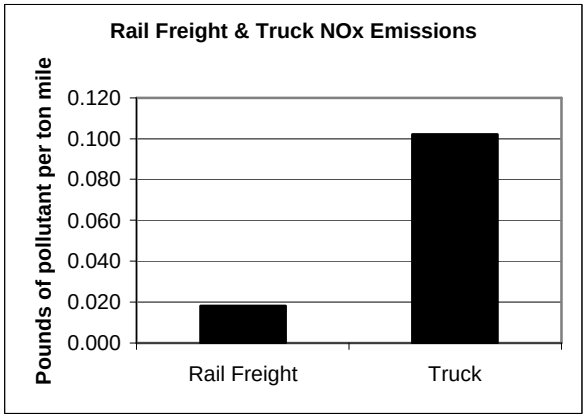

Figure 13
Calculated from C. Jake Haulk, *Inland Waterways as Vital National Infrastructure: Refuting "Corporate Welfare Attacks,"* Allegheny Institute, 1997.

- Rail freight rates are lower than those of trucks, ultimately lowering product prices.

As noted above, there may be cases where freight rail or truck projects might achieve greater traffic congestion reductions than transit projects for the same amount of public funding. Transit funding that is intended for traffic mitigation

should be available to the most cost-effective projects, passenger or freight.

Recommendations

- ✯ Urban transportation planning should routinely solicit and consider all potential passenger and freight alternatives for increasing usable automotive capacity and reducing traffic congestion.

- ✯ Urban transportation planning should routinely solicit and consider all potential passenger and freight alternatives for increasing usable automotive capacity and reducing traffic congestion.

- ✯ Transit congestion relief funding should be equally available to passenger and freight projects based upon their comparative effectiveness in reducing or containing traffic congestion.

- ✯ Development of any major investment (passenger or freight) should proceed only where it is found that the project is more cost effective in reducing traffic congestion than any other project considered.

- ✯ Commuter rail or intercity rail projects should generally not be considered, except in corridors that already have significant passenger rail volumes and where a rebuttable (legally challengeable on a factual basis) finding is made that neither the present nor future competitiveness of the rail freight system, locally, regionally, or nationally, would be compromised by the project. Such a policy is required to ensure the continued competitiveness of the freight rail industry and thereby manage traffic congestion.

- ✯ A Federal Transit Administration (FTA) program should be developed that identifies the most critical urban traffic reduction needs and prioritizes projects to achieve the greatest return.

To minimize the potential for overall societal economic loss, a rebuttable finding should be required that any project have a projected cost per hour of traffic delay reduced that is less than the personal economic cost of such delay.

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Prepared by Wendell Cox, Senior Fellow with the Texas Public Policy Foundation and principle of Wendell Cox Consultancy, an international public policy firm specializing in transport, economics, labor, and demographics.

URBAN SPRAWL & "SMART GROWTH"

The Issue:

So-called "Smart Growth" strategies provide limited, if any, benefits in changing urban development patterns and result in worsening traffic congestion where implemented.

A popular trend among planners is strategies to combat what is termed as "urban sprawl." Urban sprawl is defined as the expansion of urban areas, especially at lower rates of density. Urban sprawl has been occurring for centuries and has been driven by the democratization of mobility.

As more people were able to afford rail transportation in the 19th century, more moved to the suburbs, and urban areas sprawled both in the United States and Europe. The rate of sprawl accelerated in the 20th century as the automobile became generally available. In the early decades, urban sprawl was greatest in the United States because of its early, higher level of auto ownership. But after World War II, automobile ownership, which had previously been limited mainly to higher-income groups, spread throughout the world. European urban areas sprawled, with densities falling more rapidly than they had in the United States.

The anti-sprawl ("smart growth") movement has been successful in implementing significant land use strategies in a number of U.S. urban areas. For example, Oregon has adopted regulations that make it virtually impossible to develop even single-family dwellings outside "urban growth boundaries" that enclose an area slightly bigger than Dallas-Fort Worth (despite the fact that Oregon is 40 percent as large as Texas). In the San Francisco Bay area and other parts of California, development impact fees have added up to 20 percent to the price of new houses and 60 percent to the price of multi-unit (apartment) buildings.

So-called "smart growth" strategies have also included a heavy emphasis on new urban rail systems and discouragement of added highway capacity. The result has been, at best, marginal improvements in transit's market share, while highway congestion has deteriorated markedly. Portland's traffic has become so intense that travel during peak hour is now estimated to be slower than in Atlanta, which is renowned for its heavy traffic. Over the past 15 years, Portland has opened two light rail lines and constructed little in new roadway capacity. In 1984, peak period travel in Houston took 40 percent longer than in Portland; now it takes longer in Portland. Portland has the worst traffic congestion of any urban area of its size in the nation.

The "smart growth" strategies to combat urban sprawl have generally not been adopted in Texas. There is good reason to not adopt them. Urban areas have become too large in geographical expanse and have fallen too much in density for anything but radical changes in land use to make a difference. For example, the automobile is dominant in suburban commuting in Europe, despite the fact that overall urban densities are at least five times those of both the United States[1] and Texas. There, like in the United States, less than 20 percent of employment is in the central business districts, the destination to which automobile-competitive transit service is concentrated.

The point is that no set of strategies can increase U.S. urban densities to European levels, even if it was desirable. But, even more importantly, higher densities mean worse traffic congestion and worse air pollution. On average, European urban area traffic densities were nearly 120 percent higher than in Texas (Table 1).

The higher traffic densities combined with slower operating speeds make air pollution more intense. In 1990, air pollution intensity was from 28 percent to 84 percent higher in European urban areas compared to U.S. areas.[2]

Table 1
Traffic Density (Vehicle Miles per Square Mile)

Urbanized Area	1990
Houston	62,851
Dallas-Fort Worth	58,516
San Antonio	55,938
El Paso	45,605
Austin	45,261
Texas Urban Area Average	53,634
U.S. Urban Area Average	58,221
Europe Urban Area Average	116,665

Calculated from Kenworthy & Laube[3] and Federal Highway Administration data.

There are non-transportation reasons for rejecting smart growth as well. By rationing land (such as through "urban growth boundaries) and rationing development (with development impact fees), smart growth increases the cost of housing, which works against the national policy objective that has favored maximum expansion of home ownership. It has also increased the price of rental housing and helped to create what is being referred to as a housing affordability crisis in some areas. On balance, smart growth promises worse traffic congestion, worse air pollution and a less affluent society.[4]

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Prepared by Wendell Cox, Senior Fellow with the Texas Public Policy Foundation and principle of Wendell Cox Consultancy, an international public policy firm specializing in transport, economics, labor, and demographics.

[1] Wendell Cox, Smart Growth: From Fantasy to Fact, Presentation to Technologie, Transports et Modes de Vie Conference, Paris (6 December 2001), www.demographia.com/db-paris-smg.htm.

[2] Based upon data in Kenworthy and Laube, European Nitrogen Oxides production is 84 percent higher per urbanized square mile than in the U.S., Carbon Monoxide production is 28 percent higher, and Volatile Organic Compound production is 65 percent higher.

[3] Jeffrey R. Kenworthy, Felix B. Laube and others, An International Sourcebook of Automobile Dependence in Cities: 1960-1990 (Boulder: University Press of Colorado) 1999).

[4] Wendell Cox, Smart Growth and Housing Affordability, paper prepared for the Millennial Housing Commission, 2002. www.mhc.gov.

AIR QUALITY

The Issue:

Although Texas is a leader in the implementation of voluntary environmental-protection policies, there are elements of the state's air quality policy that could be improved by shifting away from mandatory, command-and-control regulatory approaches toward more voluntary and market-oriented approaches.

Although air pollution levels in Texas have been declining steadily for over a decade, several urban areas in Texas remain "out of compliance" with the Clean Air Act: El Paso exceeds allowable concentrations for ozone, carbon monoxide and particulate matter; four counties in the Dallas/Fort Worth area exceed allowable concentrations of ozone; seven counties in the Houston/Galveston area exceed allowable concentrations of ozone; and 23 additional counties in the Austin, San Antonio, Corpus Christi and Galveston areas are considered "near" nonattainment areas for ozone (Figure 1).

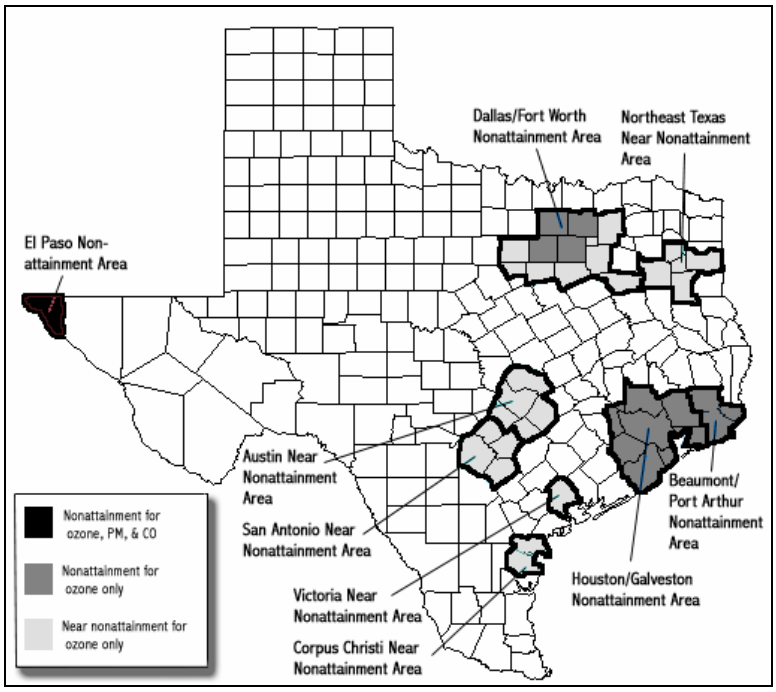

Figure 1
Source: TNRCC
(http://www.tnrcc.state.tx.us/oprd/sips/siptexas.html)

New air quality standards for ozone, promulgated by the federal Environmental Protection Agency (EPA) in 1997, have been cleared for implementation by Supreme Court action, but ozone non-attainment areas are not required to take steps to comply with EPA's new eight-hour ozone standard until they have attained compliance with the older one-hour standard.

New air quality standards for fine particulate matter (called PM2.5), also promulgated by the EPA in 1997, were recently approved by the Supreme Court and are expected to result in the designation of non-attainment areas for particulate pollution sometime in 2002.

Current Controls

Non-attainment areas are currently subject to Clean Air Act requirements to submit a State Implementation Plan (SIP) that EPA deems acceptable for reducing pollutant concentrations. EPA-approved SIPS are in place for Dallas/Fort Worth, El Paso, Houston/Galveston, and Beaumont/Port Arthur non-attainment areas.

In cooperation with the EPA and Texas Natural Resource Conservation Commission (TNRCC), the near non-attainment areas in Austin, San Antonio, Corpus Christi, and Galveston are implementing "ozone flex plans" that would prevent ozone levels in those areas from rising to a concentration that would place the areas in "non-attainment" with EPA's recently adopted eight-hour ozone standard.

Current controls included in the SIPs for the various non-attainment areas are as follows:

El Paso:

- Vehicle inspection and maintenance
- Clean gasoline
- Gas-fired water heaters, small boilers, and process heaters
- California spark emission engines

Dallas/Fort Worth:

- Vehicle inspection and maintenance
- Clean gasoline
- Gas-fired water heaters, small boilers, and process heaters
- California spark emission engines
- Texas emissions reduction plan (TERP)
- Clean diesel
- Cement kiln emission limits
- Voluntary mobile emissions reduction program
- Transportation control measures
- Speed limit reduction
- Point source NOx reductions

Houston/Galveston:

- Vehicle inspection and maintenance
- Clean gasoline
- Gas-fired water heaters, small boilers, and process heaters
- California spark emission engines
- Texas emissions reduction plan
- Clean diesel
- Voluntary mobile emissions reduction program
- Transportation control measures
- Speed limit reduction

- ✯ Point source NOx reductions
- ✯ Emission bank and trade program
- ✯ Vehicle idling restrictions
- ✯ Small, spark-ignition engine operating restrictions

Beaumont/Port Arthur:

- ✯ Clean gasoline
- ✯ Gas-fired water heaters, small boilers, and process heaters
- ✯ California spark emission engines
- ✯ Texas emissions reduction plan
- ✯ Clean diesel
- ✯ Point source NOx reductions

Recommendations

Air quality will continue to improve in Texas as a result of technological advance, turnover of the automotive vehicle fleet, newly promulgated federal diesel emission controls, and existing air pollution control measures.

Additional control measures might speed up the removal of air pollutants, but as the most cost-effective measures have already been implemented, such advances would consume significant environmental- and health-protection resources for little additional air quality benefit.

Existing approaches to air pollution have many known limitations which are growing as air pollution levels drop. Reform of existing air pollution controls offers the opportunity to hasten air quality improvements while reducing costs, freeing up resources needed to address other environmental and health problems in the state.

Conventional regulatory control measures and mandatory behavioral control measures including specialized fuel requirements, burdensome inspection programs, traditional permit systems, and other control-based approaches, have been shown to consume significant resources. They also lack flexibility, efficiency, and effectiveness. Market-oriented strategies, by contrast, allow for flexibility in implementation, provide incentives for cooperation, and help reduce some administrative burdens when compared to conventional approaches.

Although Texas is a leader in the implementation of voluntary environmental-protection policies, there are elements of the state's air quality policy that could be improved by shifting away from mandatory, command-and-control regulatory approaches toward more voluntary and market-oriented approaches.[1] Policymakers in Texas non-attainment areas might consider:

- ✯ **Alternative permitting approaches** that move away from the bean-counting approach of specifying and permitting each piece of polluting equipment by establishing facility-wide or even industry-wide emission limits and performance standards for specific industries or companies. Alternative standards would allow facilities to meet emission limits in cost-effective ways or buy and sell, rather than just trade, emission credits. Such

[1] Kenneth Green and Lisa Skumatz, "Clearing the Air in Houston: Innovative Strategies for Ozone Control and Air Quality," (Los Angeles: Reason Foundation, November 2000) (http://www.rppi.org/environment/ps273.html).

alternative strategies have produced great success in several states, including New Jersey, Massachusetts, and Mississippi.

- **Incentives for adopting new technologies** (or removal of tax and regulatory barriers to introducing new technologies) can help accelerate the adoption of lower-polluting technologies, replace or retrofit high-polluting fleets, and provide incentives for improved operation of vehicles.

- **Incorporating emission budgets or incentives into construction contracts** could provide incentives for advancing vehicle turnover and off-road engine turnover or retrofit with newer technologies, thereby reducing emissions.

- **More efficient and discerning methods for inspection and maintenance procedures** can maintain improved emission levels at lower costs. Using new technology to find non-complying vehicles on the road, and focusing inspection efforts on that segment of vehicles expected to have higher emissions, or allowing emission check exemptions for newer vehicles can provide the greatest benefit at lower administrative cost and lower inconvenience to (relative) non-polluters.

- **Voluntary employer incentives can encourage employees to use alternatives to commuting**, including parking cash-outs, tax incentives, and creative tradeoffs in benefits packages. Such approaches have performed well in other locations and provide incentives in the private sector and at needed times of day.

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Prepared by Kenneth Green, D.Env. Dr. Green is Chief Scientist and Director of the Environmental Program at the Reason Public Policy Institute and Foundation in Los Angeles, CA. His email address is: kenneth.green@reason.org.

The Dallas Morning News

Sunday, February 10, 2002

State's growth left highway planners in dust

JEFF JUDSON

In what might be the most important advance in transportation policy thinking since Franklin Roosevelt and Dwight Eisenhower independently envisioned the interstate highway system, Gov. Rick Perry's "Trans Texas" plan to build transportation corridors throughout the state is an innovative cure for our traffic woes.

Despite the misgivings of critics, the plan is a welcome departure from the status quo and nothing short of visionary. Even the governor's inclusion of passenger rail — which the preponderance of data indicates is costly and won't reduce traffic congestion — is different in that it uses private, rather than taxpayer, dollars.

For more than five decades, the engine of intercity transportation policy has been left idling in the United States. Based upon the Roosevelt-Eisenhower vision, we built the world's best intercity highway system, with 45,000 miles of high-quality roads connecting all of the major urban areas that existed in 1956.

But not once in the intervening years has any political leader or transportation bureaucracy seriously proposed realigning the nation's transportation policy to suit the development that has occurred since 1956. The interstate highway system itself was designed to serve the world that planners thought would exist in 1975. Our needs have changed.

In fact, the changes in and to Texas have been more significant than almost anywhere else. Few parts of the country have changed more than Texas, and transportation ideas suitable for 1975 are inadequate for the needs of 2002, much less 2025.

For example, the interstate highway system contained a single route through Austin, which in 1956 was an urban area smaller than the Quad Cities (which consist of Davenport, Iowa, and surrounding communities). The Quad Cities were given two interstate highways and one beltway.

Austin now is among the nation's largest metropolitan areas, with more than 1.2 million residents, while the Quad Cities are less than a third as large. Among the 50 metropolitan areas with populations of more than 1 million, there is just one that has a single interstate highway: Austin.

When the interstate highway system was designed, there were proud statements that every city of more than 50,000 would be served. Today, one Texas metropolitan area with more than 500,000 not served by the interstate system is the McAllen-Edinburg-Mission area. Nor is Brownsville, with a population of more than 300,000.

Where have the urban planners and transportation bureaucrats been? Weren't they aware that the nation was changing and that millions of people were moving to Texas, Florida and other Sun Belt states? The planners have been stuck in the 1950s.

Critics' worries that the Perry plan infringes on open space in Texas make Chicken Little sound like a realist. The best estimates are that little more than 2 percent of Texas was covered by urban development in 1997. If the current rate continues, 4 percent of the state will be developed by 2080. That isn't the stuff of panic.

What would those critics have us do? Outlaw for our children the suburban living that we enjoy? Force them to live in stiflingly dense and polluted cities? Adopt "smart growth" policies that raise the price of development so high that the average young family has little hope of owning a home?

With nearly 98 percent of the state remaining undeveloped, the alarm is more than a bit premature.

The old transportation corridors are congested and only will get more so. Mr. Perry's proposal to build new corridors is the type of visionary thinking that is required if Texas is to remain a good place to live and make a living.

Those who prefer gridlock, foul air and exclusionary planning may want to consider moving elsewhere. As for the rest of us, we think Texans deserve something better than the stale ideas of yesterday — something like the governor's innovative transportation plan for a bright future.

Jeff Judson is president and chief executive officer of the Texas Public Policy Foundation.

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Transportation & Environment Experts:

John Charles
Environmental Policy Director
Cascade Public Policy Institute
813 S.W. Alder, Suite 450
Portland, OR 97205
503-242-0900
www.cascadepolicy.org
john@cascadepolicy.org
Expertise: Transit, Smart Growth

Wendell Cox
Senior Fellow, TPPF
P.O. Box 841
Belleville, IL 62222
618-632-8507
www.publicpurpose.com
www.demographia.com
wcox@publicpurpose.com
Expertise: Transit, Urban Development, Demographics

Becky Norton Dunlop
Vice President, External Relations
The Heritage Foundation
214 Massachusetts Avenue, N.E.
Washington, DC 20002
202-546-4400
www.heritage.org
bndunlop@heritage.org
Expertise: Environment, Urban Sprawl

Duggan Flanakin
Publisher
Environmental Insider
P. O. Box 81762
Austin, TX 78708-1762
(512)-835-6466
www.einews.com
einews@einews.com
Expertise: Environment, Environmental Education, Energy and Science

Kenneth Green, D.Env.
Director of Environmental Program
Reason Public Policy Institute
3415 S. Sepulveda Blvd., Suite 400
Los Angeles, CA 90034
(310) 391-2245
www.rppi.org
keng@reason.org
Expertise: Air Quality, Climate Change

Steven Hayward, Ph.D.
Director of the Center for Environmental and Regulatory Reform
Pacific Research Institute for Public Policy
755 Sansome Street, #450
San Francisco, CA 94111
415-989-0833
www.pacificresearch.org
shayward@pacificresearch.org
Expertise: Environment

Jeff Judson
President & CEO
Texas Public Policy Institute
8122 Datapoint Drive, Suite 326
San Antonio, TX 78229
210-614-0800
www.tppf.org
jjudson@tppf.org
Expertise: Transit, Smart Growth, Environment

Ron Utt
Senior Research Fellow
The Heritage Foundation
214 Massachusetts Avenue, N.E.
Washington, DC 20002
202-608-6013
www.heritage.org
ron.utt@heritage.org
Expertise: Transportation, Urban Sprawl

Thomas A. Rubin, CPA, CMA, CMC, CIA, CGFM, CFM
2007 Bywood Drive
Oakland, CA 94602
510-531-0624
tarubin@earthlink.net
Expertise: Transit