TRANSPORTATION INFRASTRUCTURE:

ESTABLISHING PUBLIC POLICY PRIORITIES

The Texas Lyceum
23rd Public Conference

JOURNAL

December 2008

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President's Message

The Texas Lyceum is a vibrant and diverse group of men and women from across the state of Texas who are eager to contribute their talents and time to the betterment of Texas. A 28-year-old non-partisan leadership group, the Texas Lyceum focuses on public policy issues facing Texas and our nation. We conduct periodic public forums, publish The Texas Lyceum *Journal*, and annually conduct the Texas Lyceum Poll to help bring a better understanding of these issues to our state's and nation's leaders and decision makers.

The Texas Lyceum's 23rd Public Conference was held December 3rd at Reliant Center in Houston. Like all of our conferences, this event continued our tradition of examining issues that challenge us as leaders in our communities and as policy makers in Austin and Washington, D.C. Questions about the issues surrounding transportation infrastructure and public policy were significant during the recent legislative session and are likely to be discussed and debated for the foreseeable future. The Texas Lyceum's public conferences bring together diverse opinions and expertise to focus on these and other topics of importance to all of us as Texans.

2008 marks the second year of the Texas Lyceum Poll, a statewide, independent public opinion survey that measures Texans' attitudes about policies and issues that concern us. In addition to informing policy makers about Texans' opinions, the Poll also serves as a springboard for discussion at our public conferences. In addition to the information on the Poll contained in this *Journal*, please visit our website at **www.texaslyceum.org** to see the entire results of the 2007 and 2008 Texas Lyceum Polls.

In this edition of the The Texas Lyceum *Journal*, you will find articles from noted transportation experts and a summary of the Fishbowl Dialogue process from our conference, authored by our conference Chairman Tim Belton. This summary starts on page five.

The Texas Lyceum is committed to keeping Texas a vibrant force in the life of our country. We hope that the discussion at this public conference, the results of our Poll, and the articles in the *Journal* inform our policy makers in their roles as decision makers.

"Boettiger"

John R. Boettiger, Jr.
President, The Texas Lyceum

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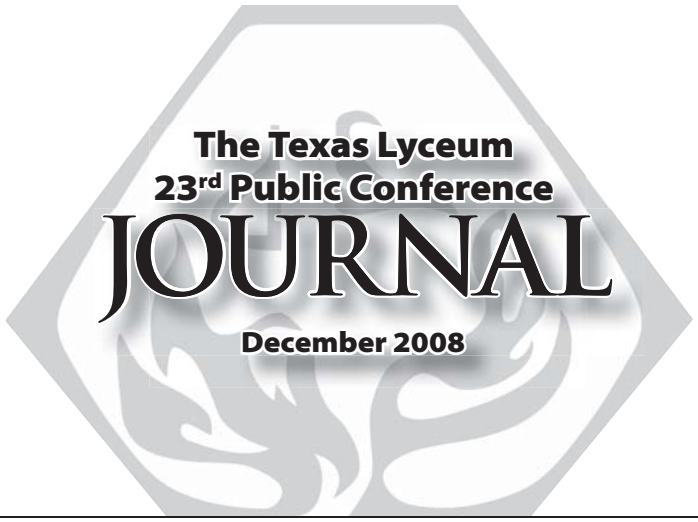


The 23rd Annual Texas Lyceum Public Conference Establishing Public Policy Priorities for Transportation Infrastructure

By Timothy D. Belton, Conference Chairman

For over 20 years, **Tim Belton** has built and led management teams across various industries including professional services, light manufacturing and consumer goods/retail through transformational change. As a seasoned turnaround professional, small to mid-cap executive and management consultant to billion dollar revenue companies, he has led turnarounds and rapid growth plans including start-ups, public company turnarounds and the lifecycle of acquisitions from candidate selection to post-acquisition integration. Mr. Belton has led several private equity and debt placements and liaised between investor and line management constituents to actualize the operating results conceived in the investment thesis. His education combines engineering and business with an MBA from the Harvard Business School and BBA in engineering management from the University of Texas at Austin.

Transportation infrastructure is the circulatory system for our way of life in Texas. The policy decisions made in 2009 at the federal, state and local level will have a lasting impact on Texans for generations. Over 400 Texans from across the State joined the Texas Lyceum for its 23rd Annual Public Conference at Reliant Center in Houston to ***establish public policy priorities*** *for our transportation infrastructure. The unique and interactive environment enabled the public to learn and challenge their thinking but also engage in the process of establishing actionable priorities for policy makers to consider as they, in turn, do the tough work of allocating scarce resources to a nearly infinite list of transportation infrastructure projects. The results of this day-long conference are contained herein. The full report on the conference is available on the Texas Lyceum website,* ***www.TexasLyceum.org****.*

FISHBOWL DIALOGUE PROCESS

First, a bit about the process, which was foundational to what occurred and the validity of the proceedings.

While a bit of a funny name, the science of the "fishbowl dialogue process" is quite serious business and very effective in forcing participants from diverse backgrounds to reach objectively prioritized conclusions.

The fishbowl dialogue engages large groups in a learning conversation—a dialogue—around a specific topic. The Texas Lyceum addressed four topics at its recent Public Conference. We selected dialogue participants with divergent viewpoints and ideas to inform and prepare the roughly 400 participants to break out into small groups and *Establish Public Policy Priorities.*

Betty Plevney, Graphic Recorder

OUT:
CHEMICALS
MINERALS
PETROLEUM PRODUCTS
MIXED FREIGHT
IN:
COAL
NON METALLIC MATERIALS
FARM PRODUCTS: (grain, corn)
CHEMICALS
FOOD
LETS TALK TEUs: (twenty foot equivalent units- a measure for containers)
TSUNAMI OF CONTAINERS
WILL WE EVER GET TO SLEEP?
Q&A
Panama Canal expands in 2014:
Port of Houston must plan for bigger ships, bigger cranes, bigger yards.
IMPACT TO NEIGHBORHOODS
Inland ports could help relieve pressure
Move containers in new ways that are environmentally favorable, with new developments in rail.
Mobility improvements coupled with increased velocity (more through communities, quicker) will reduce impacts.
INCREASING RAIL CAPACITY
Laying rail is expensive and a long-term commitment so we're exploring signalling changes and other such options.
PUBLIC/PRIVATE partnerships will be crucial to successfully increasing capacity
TERMINAL OPERATIONS vs. LONG DISTANCE
SHOULD RAILS BE PUBLIC?
TRANSPORTATION
WHO PAYS & HOW MUCH ?
CHALLENGES
Congestion on highways.
Permit office overloaded so fees raised & funds recouped that had been diverted.
Diversion of transportation funds.

The venue setting was designed to support the fishbowl dialogue and breakout process. Five to six guest speakers and a moderator were seated facing each other in a small circle on a raised center stage. The audience surrounded the stage, thus placing the speakers in a "fishbowl" as they engaged each other in conversation. This was not a venue for speeches to an audience. Each topic moderator had deep credentials in their topic, but their role was to use their experience to ensure the breadth of the topic was addressed to the fullest extent possible—not to be a speaker themselves. Given the divergent viewpoints of the participants, the moderators had to ensure that the dialogue proceeded as a constructive, informal conversation that allowed all guests to speak, challenged the ideas each other presented, and taught more about the topic.

Each topic dialogue lasted for 30-45 minutes and was followed by 15-20 minutes of questions from the audience. A graphic recorder mapped the conversation in real-time on large murals (included in this report) to visually capture the content of the dialogue and make key insights and patterns of thought visible to everyone.

After each dialogue, the audience went to work in facilitated small groups of roughly 30 audience members and posed one of three questions for each topic. They first discussed the question at their tables and then merged into a breakout group with four other tables to exchange and pool ideas. The various answers were written on hexagonally shaped Post-It cards that were placed on white boards, clustered into categories and then force ranked to objectives establishing the groups' prioritization. The process of force ranking caused the participants to face the trade-offs policy makers face when allocating the scarce resources of the public coffers. It is interesting to note that in many cases, the issues that received the most ballyhoo in the media do not rank in the top three, despite their advocates being well represented at the Public Conference. The vote tallies show the relative weight the audience placed on each priority.

Now, moving on to what came out of this interactive dialogue.

FISHBOWL DIALOGUE I
FREIGHT

Topic Co-Chairmen Duffy Crane (COO, Vines of Mendoza and Lyceum Director) and Geronimo Rodriguez, Jr. (Vice President-Diversity and Community Outreach, Seton Family of Hospitals and Lyceum Director) worked closely with dialogue moderator Allan Rutter (Senior Consultant, Cambridge Systematics) to create a dialogue to address multi-modal freight movements, identify benefits and burdens of each mode, and consider how policymakers can accommodate Texas' rapidly growing freight needs. Dialogue participants included Thomas Kornegay (Executive Director, Port of Houston Authority), Gerald Schwebel (Executive Vice President, International Bank of Commerce—Laredo), Steven Polunsky (Senate Transportation and Homeland Security Committee) and Chris Bigoness (BNSF).

The supply of raw materials and finished goods that are used and produced by Texas industries, as well as the goods we consume ourselves, move through boxcars, trailers, containers, or barges across our state. Freight moving through our communities touches all of us. We depend on it, we wait on it, we pass it as it moves through our highways, railways, waterways and airspace. We consume it. The business strategies and public policy choices that define our freight system influence prices, economic activity, public safety and our quality of life.

Texas is the gateway to North America. We lead the nation in many metrics: tons, rail miles, road miles, etc. With an $18 billion economic impact and almost 800,000 related jobs, our freight infrastructure is important to our economic vitality as it moves out chemicals, minerals, petroleum products and other mixed freight while bringing in coal, non-metallic materials, farm products, other chemicals and food products.

The Port of Houston lies in the heart of this infrastructure, bringing in freight primarily destined for use in Texas. It is an economic driver for the city, region and state, and sits at the center of the largest petrochemical complex in the U.S. and connects with the Intercoastal waterway, an essential industrial highway for Texas and the nation. Combined with the Port of Corpus Christi, these three elements of our waterborne freight infrastructure are critical today and growing in volume.

We can all appreciate the importance of our ports, the extensive freight rail system, the need for trucks and the potential of increasing waterborne freight movements. But, how do we serve this growing demand and reduce congestion, maintain security at our borders, and ensure environmental impacts are managed? How do we plan for the tsunami of containers coming through the expanded Panama Canal?

Following the dialogue, the audience considered the following three questions:

QUESTION 1
Which modes of freight transportation are best for Texas to meet its currently growing and future demand?

#1 Rail: With 30 votes—twice the number of votes than the second item, new technologies—rail clearly dominated the public's priority for freight. Expensive to build but efficient to operate, rail is recognized as a key (*the key?)* element of our freight transportation infrastructure statewide. Comments frequently centered on eliminating bottleneck by either rerouting tracks or grade separation at critical surface road intersections and on the importance of a consortium of public and private interests in incorporating effective rail policy into Texas' long-term transportation planning and funding.

With 15 votes, **New Technologies/Innovative Future Systems** came in second in the public list of priorities for meeting Texas' growing and future freight movement volume. The **Universal Freight Shuttle** proved very popular with the audience who wants to see this incorporated into future planning efforts.

Trucking came in a close third with 13 votes. The audience recognized it as familiar, important and part of the future plan—but expressed clear concern about presuming our surface roads are the only way to support our growing container traffic.

Waterways and **Pipelines** came in forth and fifth with less than 10 votes each, with interesting comments about expanding inland waterways and considering the movement of coal through slurry pipelines.

QUESTION 2
What objectives should Texas set for its 21st century transportation infrastructure?

This question was to focus not on programs but on the objective Texas should have in developing its future freight transportation infrastructure. A larger group addressed this question, hence the large vote counts.

It came as no surprise that **Comprehensive, Long-term Planning** came in first with 50 votes. Measure twice, cut once was one theme of the comments. The clear message was that the public expects sound, objective, fact-based, long-range planning and resource allocation without short-term, regionally powerful political interests or modal specific interests dominating policy and funding. The plan needs to consider all modes in addressing current congestion and freight flows, coordinate with federal, state and local programs, consider radically new ways of engaging the private sector to expedite implementation and focus on innovation. The expectation is for a long-term plan with three to five year milestones against which successive political administrations can be measured.

Talk is cheap, but infrastructure isn't. So a comprehensive **Funding Plan** to ensure implementation of the comprehensive long-term plan came in a close second with 42 votes. The common theme was that the infrastructure plan and funding plan have to be at parity for either to have any real meaning and impact. Funding sources need to be identified, dedicated and held sacrosanct until the comprehensive plan is complete—no skimming transportation funding for non-transportation priorities of the day along the way; and new, unconventional funding sources need to be considered. While both the infrastructure plan and funding plans should be statewide, local jurisdictions should be enabled to maintain autonomy in carrying out their respective roles.

Increased Efficiency came in third with 34 votes. Comments ranged from the simple and practical—expanding shifts at ports of entry, streamlining regulatory processes and using technology to expedite—to those requiring more investment—using technology to expand throughput and traffic flows. Essentially, the message was to make the most out of the infrastructure we have ahead of investing in capital-intensive solutions.

Quality of Life/Environmental Stewardship followed in fourth place very closely with 33 votes. There was a clear interest in the ever-expanding freight capacity having as few environmentally adverse consequences as is possible. Sustainability can and should be integrated into the planning process.

Effective Leadership came in fifth with 12 votes. While it came in fifth, one could consider this point as a gating factor. The audience expressed a palpable frustration with the short-term nature of so many policy decisions. The plans noted above must transcend the election calendar and CEO employment contracts.

QUESTION 3
What are the top five target locations for expansion of our freight transportation system?

This question focused on which geographies should take precedence in the development of the infrastructure and funding plans.

The audience gave 37 votes to **Seaports/Gulf Coast/ Houston**. The group comments repeatedly noted the statewide importance to the Port of Houston as well as the Port of Corpus Christi, other infrastructure along the Gulf Coast like the Intercoastal waterway and even the use of off-shore transport points. Several commentators noted that the Gulf Coast Rail District is a great idea but impotent if not funded to do what it is charged to do.

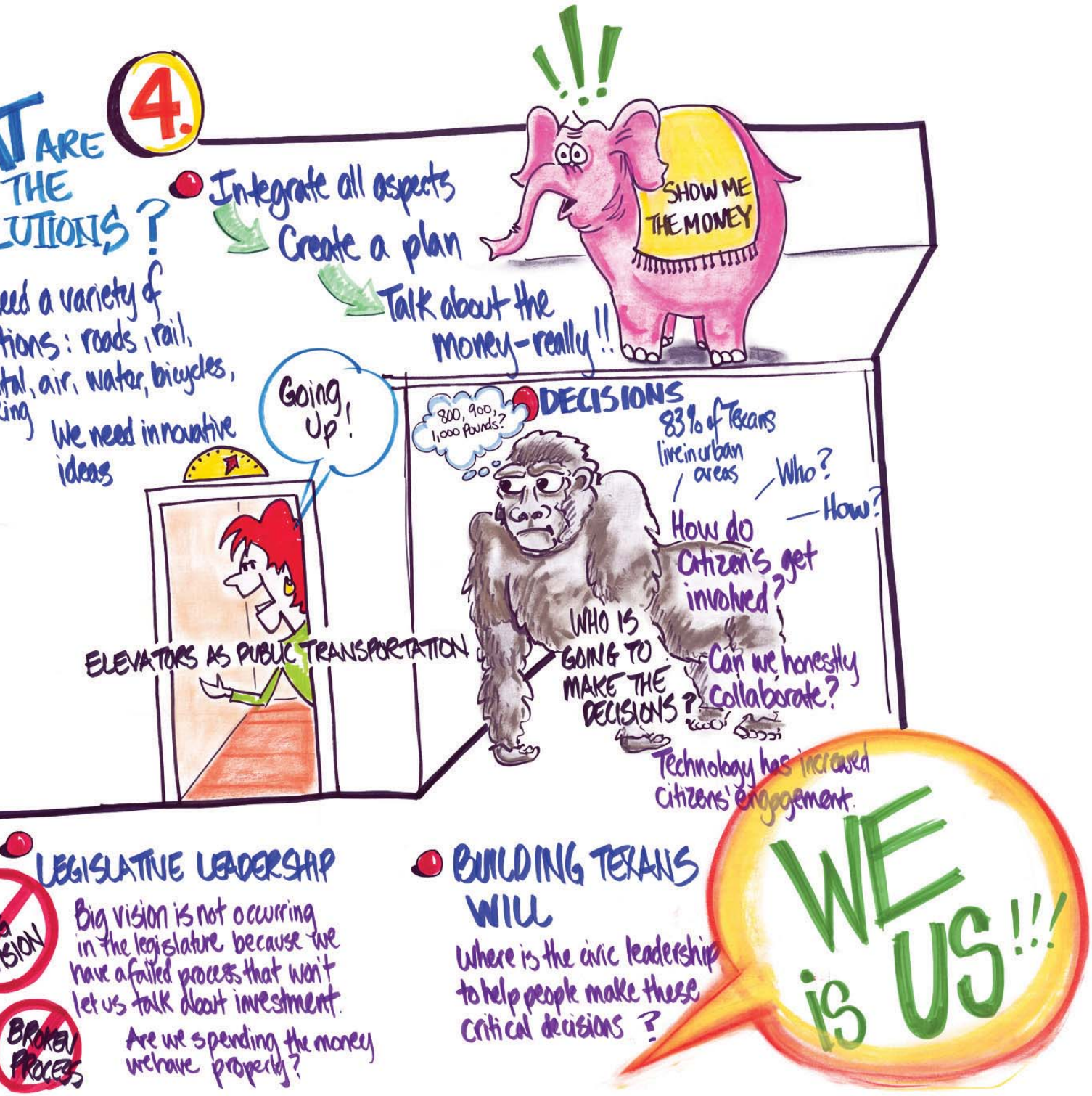
Laredo/I-69/Border Crossings came in a relatively close second with 25 votes. Combined with the Gulf Coast, these two areas represent hundreds of miles of access to Texas and nation-wide markets. Increased efficiencies of necessary security procedures at border crossings could dramatically increase throughput but would also virtually eliminate the carbon emissions from idling trucks and vehicles at these crossings. However, once these vehicles get through, they still need to get where they need to be with the least adverse impact to the communities through or around which they must travel.

Urban Bottlenecks were the audience's third priority with 15 votes. Choking on its own success, the Tower 55 intersection is the busiest and most congested at grade crossing in the nation. Unclogging this area will not only improve freight transportation efficiencies in the DFW area, it will improve throughput in other areas across Texas and even the nation. Resolving at grade crossing congestion in Houston also ranked high in the comments.

East Texas was priority four with 12 votes, with comments focusing on inland ports and multimodal transfer facilities in Texarkana.

The **Dallas/Fort Worth** area in general was called out with 10 votes, making it the fifth priority. The comments focused on multimodal facilities in South Dallas, differentiating this priority from Urban Bottlenecks, which focused primarily on Tower 55.

Betty Plevney, Graphic Recorder


T ARE
THE
LUTIONS?
4.
Integrate all aspects
Create a plan
Talk about the money-really!!
SHOW ME THE MONEY
eed a variety of
tions: roads, rail,
tal, air, water, bicycles,
ing
We need innovative ideas
Going Up!
ELEVATORS AS PUBLIC TRANSPORTATION
DECISIONS
800, 900, 1,000 Pounds?
83% of Texans live in urban areas
Who?
How?
How do citizens get involved?
WHO IS GOING TO MAKE THE DECISIONS?
Can we honestly collaborate?
Technology has increased citizens' engagement.
LEGISLATIVE LEADERSHIP
Big vision is not occurring in the legislature because we have a failed process that won't let us talk about investment.
Are we spending the money we have properly?
BUILDING TEXANS WILL
Where is the civic leadership to help people make these critical decisions?
WE is US!!!

FISHBOWL DIALOGUE II
SUSTAINABILITY

Lyceum Director Collin Cox (Partner, Yetter Warden & Coleman LLP) served as Topic Chairman, Sustainability. Moderator Richard Seline (CEO/Principal, New Economy Strategies, and Lyceum alumnus) led dialogue participants Dr. Carol Lewis (Texas Southern University), Gwen Eklund (TRC Companies, Inc. and President-elect of the Air and Waste Management Association), Phyllis Jarrell (Director of Planning, City of Plano), David Crossley (President, Gulf Coast Institute), Kirk Watson (Texas State Senator and Lyceum alumnus) and Joe Krier (President, Texans for Safe and Reliable Transportation and Lyceum alumnus).

Texas policymakers must consider how to design transportation solutions (and provide for maintenance) given the state's rapidly changing population base and highly mobile workforce. The traditional reliance on designing transportation solutions around real estate communities may be inappropriate, given the dramatic increase of statewide population (especially in cities), the impacts on communities of horizontal growth (sprawl) and vertical growth (high-rise structures), and the connections between transportation choices and air quality. In some Texas population centers, right-of-way availability is limited, perhaps rendering more important, less traditional transportation alternatives. Once you are out of land, the development path is clearly not sustainable or practical. This dialogue considered these issues and many other metrics of sustainability that link transportation reforms, work force trends, and the demands of an innovation economy with development of solutions that are themselves self-sufficient, and even self-financing

This dialogue first focused on defining Sustainability by asking the question, "Are we creating infrastructure that will grow as we grow our economy?" The dialogue panel engaged in a spirited discussion providing for mobility at the same time that we reduce the need. In the past, most of the time, effort and dollars went into lane miles with capacity designed to handle peak volumes. Today, a more balanced strategy of optimizing the use of our infrastructure includes encouraging work and personal travel patterns that push non-essential traffic into off-peak travel times through pricing and other incentives.

Following the dialogue, the audience considered the following three questions:

QUESTION 1
What objectives should Texas have by which we can measure the "sustainability" of our transportation infrastructure strategy?

Efficiency dominated as the first priority with 37 votes. The basic theme here was to get the most out of the transportation assets we already have in place through better planning, routine maintenance, right-of-way use and incentives—before allocating more public dollars to new projects. An interesting theme evolved comparing "negative metrics" such as congestion and air quality against the "positive measure" of attracting capital—the notion being that if a community is still attracting capital, rational people in an efficient market are concluding that the positives outweigh the negative.

This group ranked **Public Awareness and Participation** as the second priority with 29 votes. First and foremost, the sense of alarm for the sake of alarm needs to be replaced with a dispassionate and objective dialogue with the public about the real limitations to sustainability. Beyond public meetings and awareness campaigns, policy makers need to ***engage*** the public in the process—much like the Lyceum Public Conference. People need to be made aware of the choices and the consequences of each in order to make informed decisions and tradeoffs that directly affect their way of life.

Local Control came in third with 16 votes. While statewide planning and federal programs have a role, sustainability programs—like all politics—are local. Local communities should be encouraged to develop local programs over which they have local control. State and federal laws should remove impediments from municipalities to pursue mixed-use developments or other development priorities that are critical to a local community.

Quality of Life/Environmental Impact and Self Paying Transportation Systems tied for the fourth priority objective each receiving 14 votes.

QUESTION 2

What policy changes, if any, must Texas make in order to ensure future transportation infrastructure investments support sustainability objectives?

Funding/Funding Incentives dominated the audience's priorities with 62 votes. The comments centered around use-based funding as a mechanism to tie consumption of transportation infrastructure more directly with paying for it. Few things create more sense of stewardship than making folks pay for what they consume. Recurring themes in the comments were local control of funding mechanisms, transparency into the funding process and greater public involvement in the development of funding policies before the decisions are made.

Comprehensive Planning is the second priority for policy changes to encourage sustainability, receiving 36 votes. This is the second time Comprehensive Planning shows up as a "top three" priority, clearly communicating that the participants in this conference do not believe that the current planning efforts sufficiently engage the public and secure their buy-in, regardless of how much time various commission members spend in conference rooms.

Transportation Education received 30 votes as an area needing change, making it a close third priority for policy change to support sustainability. The sense of the body is that officials try to sell the plan to the public after it has been established instead of informing them of the options and engaging them in the process of establishing policy.

Coming in fourth with 21 votes is **Legislative Accountability.** The comments highlighted the notion that there is a *lack* of accountability in the legislative process, suggesting changes in the way that the legislature handles the debate. Perhaps processes like the one used for this conference in the affected communities instead of just relying on the people coming to Austin may provide both the appearance and in fact the engagement the Public Conference participants seek.

Ranking a distant fifth with 7 votes is more dedicated funds for **Mass Transit**.

QUESTION 3

What programs could Texas implement TODAY to improve the sustainability of our existing transportation infrastructure?

This question was addressed by a relatively small group, hence the low vote counts.

Funding was the prevailing TODAY issue with 14 votes. The focus was on immediately eliminating funding diversions and enabling regional impact fees to enable county-wide central planning.

Mixed Use/ Density received 11 votes, with comments focusing on encouraging higher density development and related transit use in urban areas.

Master Planning received 8 votes. **Demand Management** and **Public Education** each received 6 votes; however, the comments were not instructive.

Betty Plevney, Graphic Recorder

AT ELSE?
3. PUBLIC/PRIVATE PARTNERSHIPS
APPROPRIATE RISK/REWARD RATIO IS NEEDED
Private partner is not necessarily concerned with the public interest.
So it's the public partner that must state the rules/parameters that keep the public interest upheld.
Private capital does not want to take on political risk. It needs predictability in order to price risk effectively.
2. WHY NOT LIGHT RAIL?
Low cost airlines object.
Funding availability.
People don't live in high density which promotes light rail.
WHAT RISK SHOULD THE PRIVATE SECTOR BEAR?
WHAT ROLE?
$10 BILLION TO SPEND: HOW WOULD YOU SPEND IT?
Transportation to build/support sustainable neighborhoods & attract private sector investment
Will you alleviate congestion- if not ....
Leverage the $10 billion through a variety of federal funds matched with private capital
Remember... more supply doesn't mean less congestion
Get matching funds from private & public used to attack congestion!!
Complete all bike paths not finished in Texas
Free up corridors for "commute-rounds"
Eliminate the fares on Metro to increase ridership
RIDE

FISHBOWL DIALOGUE III
FINANCING OPTIONS AND PRIORITIES

Topic Chairman and Lyceum Director Melissa Killen (Attorney, Tuggey Rosenthal Pauerstein Sandoloski Agather LLP) worked with Topic Moderator Bill King (Of Counsel, Bracewell & Giuliani) to frame up the discussion on Financing Options and Priorities. Dialogue participants included Scott Polikov (Planner/Principal, Gateway Planning), Paul Martin (Shareholder, Winstead), Drew Masterson (Vice Chairman, First Southwest Company), Joe B. Allen (Managing Partner, Allen Boone Humphries Robinson) and Maura Goldstein (Partner, Baker Botts LLP).

While the Federal Highway Trust Fund has been the primary source of funding for maintenance and improvement of the interstate highway system, it does not generate enough money to accomplish its mission today or provide for future growth. Nor does it incorporate Texas' multimodal transportation infrastructure requirements. Going forward, the issue is one of balancing feasibility and benefits across complementary or alternative transport modes including bike lanes, bus rapid transit, toll roads, and commuter rail, but there is not even sufficient current funding for current road projects. This additional transportation infrastructure requires identification of funding sources. No single funding solution will work for every community, but the funding process must start with a clear understanding of the statewide and local requirements, lest the arteries of the Texas transportation system become even less effective in meeting our growing needs.

The dialogue began focusing on the Gas Tax. The notion that these earmarked transportation funds are being used to fund public education programs—taking nothing away from the needs of public education—feeds the sentiment that the legislative process lacks accountability. Several participants suggested indexing, but the broader consensus was around not relying on a fossil fuel-based funding mechanism in the first place.

The panel discussed a variety of alternative funding sources and the pros and cons of each. Sources included vehicle miles traveled, more toll roads, hybrid revenue structures, sales tax to allow locals to benefit and other forms of user fees. The capital market options for municipalities are less abundant than in the past, but smaller issues with higher rates of credit remain an option. Noting that private capital avoids political risk, it is even more important now that the overall plan be one in which the public was engaged and supports.

Following the dialogue, the audience considered the following three questions:

QUESTION 1
If Texas had $10 billion in "found money" for immediate needs, what should be our top five transportation infrastructure investment priorities NOW and for the next 5 years?

It is interesting that these breakout groups gave high priority to initiatives that reduce demand for surface roads, or at least make their use more efficient for non-freight purposes.

Freight Rail System came in first with 14 votes. The audience comments highlighted the congestion caused by freight rail in urban areas and the benefits to the overall transportation infrastructure efficiency of addressing this "gating problem." It was no surprise that grade separation and rail relocation were mentioned frequently and a funding priority.

Mass Transit/Light Rail came in a close second with 12 votes. Specifically mentioned in several groups' comments was commuter rail on the 290 corridor. During the dialogue, there was much discussion about whether light rail initiatives elsewhere in the country have been cost effective, but there was a clear priority from the audience to expand mass transit programs of some sort (fuel efficient buses, etc.).

Improve and Expand Use of Waterways tied Mass Transit with 12 votes, again emphasizing the need to get freight off roads.

Create Detailed Plan and Financial Analysis received 9 votes and echoes the theme of the immediate need for a transportation infrastructure master plan.

With all the discussion about investing stimulus tax dollars into road projects, it is particularly interesting that **Widen and Improve Existing Highways** was the distant fifth TODAY priority with only 4 votes.

QUESTION 2

If Texas has $100 billion in "found money" to invest in the ideal transportation infrastructure of the future, what should be our top five transportation infrastructure investment priorities for the next 25 years?

Rail again dominated the priorities with **High Speed Rail** receiving 59 votes, more than twice that of the second long-term priority. The dominant theme was the urgent need to overcome historical special interest objections to high-speed rail between major Texas cities, followed closely by interconnected light rail in urban areas. This once again harkens back to the need for comprehensive plan that local communities can support but that takes a statewide perspective.

Infrastructure Quality came in second with 25 votes. The wide-ranging comments focused primarily on improving the capacity of the existing system, its interconnectivity with high population areas and ensuring proper maintenance of the infrastructure we already have.

Freight Rail came in third with 15 votes, with the comments reiterating priority one from the previous question—eliminate freight rail bottlenecks across the state. The participants encouraged policies that encourage putting more truck trailers on trains for long-hauls across the state while also looking to new freight corridors outside of urban areas to support the growing freight traffic.

Mitigate Congestion came in a close fourth with 14 votes. While touched on in other priorities, the gist of this priority was a concerted effort to identify all congestion points in advance of development of the long-term plan and placing high funding priority on solutions that address these congestion points.

The distant fifth priority echoes a previous dialogue topic—**Sustainable Design**—which received 4 votes. The comments ranged widely from investing in new technologies to inventing transit oriented and/or walkable mixed-use development.

QUESTION 3

Texas has no "found money!" What should be our top five funding sources for our transportation infrastructure investment priorities?

What was striking about the priorities for funding sources was that the results focused on the simple, not the more complicated structures that were discussed. The KISS principle at play?

To this author's surprise, **Tolls** ranked a decisive first place priority with 18 votes. The comments from the breakout groups were very consistent one-word answers: Tolls.

Private/P3 Equity came a close second with 17 votes. Most of the comments echo the usual themes of leveraging public money against private equity and bonds for large projects. One specific priority was to allow Texas pension funds to make equity investments in Texas roads. This author likes that idea.

Local Options, **Indexing the Gas Tax** and **Vehicle Miles Traveled** received 8 votes, 7 votes and 6 votes, respectively.

Betty Plevney, Graphic Recorder

FEAR
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There a struggle as
to where to keep the
funds - where they are
generated?
SPEED UP!
SLOW DOWN
Let's build
something
KEY PRIORITIES
Invest in relieving congestion and bettering mobility: focus first on highways, but ensure the future generations can build on this.
Increase rail system to support freight.
Improve safety
Provide financing & investment to rebuild the infrastructure
Speed up our processes on how we implement projects: we're looking on review processes.
Speed! move quickly in the next two years on implementing projects.
Understand what your revenue-generating goal is & build accordingly.
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tain a road as the cost to build it.

FISHBOWL DIALOGUE IV
DELIVERING TEXAS' INFRASTRUCTURE PROJECTS

Lyceum Alumnus Donze Lopez (Principal, Donze Lopez Public Affairs) worked closely with Topic Moderator Steve Stagner (President, Texas Council of Engineering Companies) to assemble this dynamic panel of power players in Texas infrastructure. Jim Thompson (Regional Chief Executive, AECOM), State Senator Robert Nichols, Dan Stoppenhagen (Director, Business Development, Transportation and Infrastructure, Fluor Corporation), Phil Russell (Assistant Executive Director, Texas Department of Transportation) and Dr. Jorge Figueredo (Executive Director, North Texas Tollway Authority) delivered an engaging discussion.

The recent Sunset Commission report made it clear that the state must improve its efficiency and effectiveness, but the same can be said for many regions and local communities. The lack of an integrated master plan that all constituents can agree on and work towards is an absolute must-have. But, with 90% of our future growth coming from urban areas, which is more efficient in meeting mobility needs: local or state agencies; private or public sector delivery of projects? The evolution of Texas' transportation system requires an understanding of the urban and rural needs of its population. In meeting these requirements, it is wise to assess the advantages and limitations of local and state government jurisdictions. Each has unique characteristics for various situations. Likewise, public and private sector entities bring different tools to the table in providing projects for public use.

What became very clear from the dialogue, however, is that all parties need to be at the same table not fighting in the boxing ring. The primary consensus is that the current process of delivering Texas infrastructure is NOT efficient and that we should look to the best practices from around the world to develop our new statewide comprehensive plan and the right balance as to which jurisdiction implements which projects.

The second area of consensus was that relieving congestion and improving mobility should be our most urgent priorities and that our tactics going forward to speed up the process of concept to grand opening. The current morass of reviews and delays is creating congestion in the delivery process that rivals the congestion on our roads.

Following the dialogue, the audience considered the following three questions:

QUESTION 1
What objectives should Texas seek in the first place to address its multi-modal transportation infrastructure needs?

The decisive objectives were **Improving Public Input/ Local Support** with 14 votes and **Defining New Funding Models** with 13 votes. Regardless of how great any single project may be, TxDOT has lost the trust of the public. This is not because its people are bad. It is because the approach to engaging the public has been one way speaking engagements after projects are conceived instead of a dialogue early in the process of defining the problem and then the proposed solution. Adding to this loss of trust is the redirection to non-transportation needs or transportation needs in other states of Texas tax dollars earmarked for Texas transportation projects. Transportation funds generated in Texas need to stay in Texas, and Texas must explore new funding models to ensure the variety of multi-modal needs are addressed objectively.

Enhancing Rail was the third priority objective with 6 votes, followed by **Better Planning and Education** with 2 votes and **Defining Jurisdictional Roles** with 2 votes.

QUESTION 2
Which jurisdictions (TxDOT, regional, county, city, local, other entities, etc.) should take the lead in establishing and maintaining STATEWIDE or at least inter-regional transportation infrastructure networks?

Noting previous comments about the current level of trust and efficiency, one could infer from the results below that the audience is suggesting that a new Department of Transportation, radically restructured and better leveraging local jurisdictions and private sector resources is the right entity to lead the development of the new comprehensive plan and coordination of delivering projects.

Statements to its current efficiency and level of trust notwithstanding, the audience feels strongly that **TxDOT** should remain the lead in the statewide networks**,** giving them 13 votes. Several of the groups, however, listed "TxDOT and Counties" as their top priority.

Regional jurisdictions came in second with 8 votes.

Change TxDOT to Department of Transportation received 7 votes, and **A New Authority Over All Transportation** received 4 votes. This author reads this as one item with 11 votes.

MPOs received only 4 votes.

QUESTION 3
What percentage, if any, of the study, engineering, and delivery of TxDOT sponsored projects should be done by TxDOT employees versus outsourced to private sector firms?

For this question, the participants listed percentages from 0% to 100% in steps of 10s. They then applied their votes to a percentage, indicating how much of the work of studies, engineering and delivery TxDOT should do with in-house State employees. The comments had a common theme that TxDOT (or the new agency described above) should maintain a core competence in planning and project administration but that the *work* should be outsourced to private sector companies. The chart below summarizes the results:

50%—*2 votes*
40%—*2 votes*
30%—*13 votes*
20%—*10 votes*
10%—*6 votes*

So, that's what happened at the Lyceum this year. The following are this author's opinions only and not that of the Lyceum or its Directors.

The public wants to be and is capable of being actively involved in defining the needs and the comprehensive plan to address Texas' growing transportation infrastructure requirements. The architecture of this day-long conference represents an eminently workable process to engage divergent public interest to achieve a civil consensus around priorities. While that plan must be statewide in scope, it CANNOT be state-down in its development and communication to Texans. I would suggest that the vast majority of the vibrant animus towards Governor Perry's Trans Texas Corridor stems from Texans not liking to be told how the cow is going to eat the cabbage. A process of engagement with affected stakeholders in the general public to define the problem and develop a solution with a specific route would likely have generated a TTC route not entirely different from the one Governor Perry proposed. Let's hope that we have seen the last of "cram it down your throats" policy-making when it comes to developing a comprehensive transportation infrastructure plan for Texas.

Short-term, Texas needs to resolve freight rail-related congestion. This is a gating factor for many other congestion problems and the collateral damage to air quality and quality of life in general. Yes, it is expensive. Yes, the solutions will be more expensive in 20 years if we don't act today. Moreover, our demand may go away as shippers move their freight through other markets or manufacturers place their plants in other markets. Numerous short-term projects could be initiated immediately—some already having been through planning and environmental reviews—and should be the focus of the Obama administration's "stimulus through infrastructure investing" programs. This is a critical opportunity for State—Federal cooperation in the immediate future.

Texas needs a statewide agency to oversee transportation infrastructure projects—but that agency of tomorrow looks very little like the TxDOT of today. Government should only do what the people cannot do efficiently for themselves. Private sector engineering firms have as much as a 500% higher efficiency than TxDOT engineers, not because they are smarter or better but because they work in a different environment with different incentives. This reality should be embraced. There is no compelling public interest served by having hundreds of engineers on the State's payroll doing work that they could be doing while on a private sector payroll.

Our transportation infrastructure is the circulatory system of our way of life. With effective leadership, Texas could maintainits economic leadership in our nation and in the world by ensuring that goods and people can be moved efficiently throughout the state and our local communities. Or, we could suffer from clogged arteries. The spirit of Texas suggests that we are up for the challenge with the right style of leadership.

The 2008 Texas Lyceum Poll

SUMMARY OF FINDINGS

The second in the ongoing series of Texas Lyceum Polls finds Texans concerned about the direction of the country, losing a bit of their Republican identities while remaining conservative, putting one candidate way out front in a "fantasy" 2010 gubernatorial election, and holding their favorite in this year's presidential race to a single-digit margin.

They're in a sour mood about the political environment, but tend to be more optimistic about their own and their children's economic status and prospects. And while the next gubernatorial contest is wide open on the Democratic side, they have a distinct favorite on the Republican side of the ledger.

Our main focus this year, however, is on transportation. Texans drive a lot, want less congestion on the roads, are looking for ways to deal with high gas prices, and hope their governments will put more money into public transportation. But they don't like gas taxes and toll roads—especially where there are existing roads. And they'd like to see a ban on drivers using cell phones.

GENERAL INFORMATION

We interviewed Texas adults during the June 12-20 period, talking to 1,000 adults, half of them male, half of them female. Eight out of ten said they are registered to vote.

The highly contested presidential contest apparently has Texans more tuned into politics than they were a year ago. Half identify themselves as voters in "every" or "almost every" election, and 85% consider themselves "extremely interested" or "somewhat interested" in politics and public affairs.

The respondents come from a variety of places, 42% suburban, 28% urban, and 27% rural. Most—59%—are married, and 43% have one or more college degrees. Most—54%—identify themselves as White; 32% as Hispanic; and 11% as African-American. The party splits are 32% Republican and 44% Democrat—but the ideological splits go the other way, with 42% calling themselves conservative, 34% saying they are moderate, and 19% identifying themselves as liberals.

TRANSPORTATION

Texans spend a lot of time on the road and they're clearly aware of the costs, thinking of carpooling and public transportation, and getting some new roads to ease their commutes. They're open to higher government spending on transportation. But they don't want higher gasoline taxes or toll roads, and they have reservations about private companies working on Texas highways and about the state's use of eminent domain for new projects. They like the idea of trains connecting adjacent cities. And they'd support a ban on drivers using cell phones.

Most Texans—68%—said they drive themselves to work. Another 8% ride with someone else; 3% walk or ride a bike to work or school; 2% use mass transit. Most—74%—said they're in the car for less than an hour. More than a third—37%—spend less than a half-hour in the car on the daily commute. Another 11% spent 90 minutes or more commuting every day; almost half of that group spends more than two hours on the commute. And one in twenty said they work at home, avoiding the commute altogether (that doesn't include the 11% of respondents who said they don't commute to work or to school).

Almost everyone—88%—said they own a vehicle. Virtually all of them use their own vehicles to drive to work at least one day a week; four-fifths of them use their own car to go to work at least five times per week.

Not surprisingly, Texans think something ought to be done about traffic congestion, with 49% saying it's "very important" compared to other issues facing the state and 35% saying it's somewhat important.

They are willing to spend more on roads, so long as those roads are free to use. Asked how they feel about committing more resources to repair and improve existing

roads, on a scale of zero to ten, most (70%) said they'd opt for more spending. Less than one in ten gave the idea a "4" or less on that 1-to-10 scale. They were only slightly less open to the idea of committing more resources to new roads and highways, with 57% giving that a "6" or more. Change the question to toll roads and Texans get riled: 45% gave that idea a grade of "4" or less and nearly a quarter of them gave it a zero.

Asked directly, Texans made it clear they don't like tolls on new roads, and they like it even less on existing ones. On new roads, 66% oppose tolls (including 46% who "strongly" oppose them), and on existing roads, opposition to tolls climbs to 69% (including 53% who "strongly" oppose tolls on existing highways).

That's in spite of the fact that most of the respondents said they never or only rarely use toll roads. Only 8% regularly drive on toll roads, and only 29% said they occasionally drive on such roads.

Texans we surveyed don't want to raise taxes on gasoline to pay for transportation. Most—60%—strongly oppose an increase and they're joined by another 12% who somewhat oppose it. Only about one in four Texans said they would support an increase in the gas tax to maintain or build new roads.

They're plainly thinking about the costs of driving and about the environment. Most (66%) said they would strongly consider buying a hybrid or fuel-efficient automobile. More than half (63%) said they would consider carpooling and a majority (53%) said they would consider taking public transportation to work or to school. Just over half (51%) said they would strongly consider not taking a vacation this year; almost as many said they wouldn't consider that option. Some are thinking about living closer to work or school: 37% said they'd consider an eventual move to shorten their commute, while 62% said they wouldn't.

They're more open to higher spending on public transportation than for toll roads. Most of our respondents—65%—gave systems such as light rail a ranking of "6" or more on that favorability scale (40% gave it an "8" or better). And about that many gave the same mark to spending more on energy efficient and "next generation" buses (71% rated this "6" or higher on the 0-10 scale).

Asked whether state and local governments in Texas should be spending more or less than what they're spending now on transportation, 44% said spending is about right, while 26% said spending should be higher and 22% said it should be lower.

The numbers change a bit when the subject is "our rail system." Most (58%) said state and local governments should be spending "a little bit more" or "much more" on rail projects; 18% opted for "a little bit less" or "much less." They were less enthusiastic about spending more on airports (34%) and ports (44%).

Slightly more than half support "the state of Texas allowing private business contractors to handle transportation projects and improvements." But few are undecided. While 53% favor the private work, another 41% oppose it.

By a wide margin, Texans prefer to have design of new roads and highways in state rather than in local control. Those planners will have to walk carefully, though: 51% of our respondents said they oppose the state using its power of eminent domain to secure right of way for new transportation projects.

A large majority (76%) said they would support regional rail systems connecting adjacent cities like Dallas and Fort Worth or Austin and San Antonio.

Although 44% said they use their cell phone when driving, a smaller number would oppose a ban on using a mobile phone while driving. A majority—60%—would "strongly" or "somewhat" support a ban on cell phone use while driving. More than two in five would "strongly" support that ban. Just 23% strongly oppose a ban, joined by 14% who would somewhat oppose such a prohibition.

THE POLITICAL ENVIRONMENT

Texans overwhelmingly believe the country is on the wrong track, with 70% in that column and only 23% saying "things are moving in the right direction." That's a change from a year ago, when 62% thought the country was on the wrong track.

The economy is the most important issue facing the country, with 33% putting that at the top of the list. Next came gas and oil, 20%; Iraq and The War, 14%; then leadership, politics and gridlock, 6%; security, 4%; and immigration, 4%. A year ago, Iraq and The War led, at 39%, followed by immigration, 10%; the economy and employment, 6%; politics, leadership and government, 6%; and lack of values and morals, 4%.

The most important issue facing the state? Gas and oil prices topped the list, mentioned by 21% of those polled, followed by immigration, 20%; the economy, 17%; education, 12%; and leadership, politics and gridlock, 7%. The issue list a year ago started with immigration, 22%; education, 21%; prices, inflation, gas prices, and cost of living, 7%; health care, 4%; and crime, drugs, and violence, 4%.

Asked about the economic environment, 78% said the country is worse off than it was a year ago, while 17% said things are about the same. They were less gloomy when asked about their own personal economic situation, with 42% saying they're in about the same shape as they were a year ago, 35% saying their situation is worse now, and 22% saying their economic condition has improved over the last 12 months. And they were more optimistic still when asked whether they think their children will do better or worse economically: 39% said better off, 30% said worse off, and 21% think their children will do about the same as they have done.

THE 2010 GUBERNATORIAL RACE

The next race for governor of Texas is two years away, but we asked Texans to play fantasy politics and say whom they might support among some of the prospective candidates for the state's highest office.

U.S. Sen. Kay Bailey Hutchison has more support right now than any other Republicans we asked about, but nobody earned a majority. Among our respondents, 35% said they are likely to support Hutchison in a Republican contest, and 22% said they're likely to support Gov. Rick Perry in 2010. Lt. Gov. David Dewhurst was next, at 4%, and state Sen. Florence Shapiro and Railroad Commissioner Michael Williams each got 2%. One in five said they don't have a favorite, and 16% said they were not likely to support anyone on that list. A subgroup of Republican voters was just as emphatic: Hutchison, 50%; Perry, 23%; Dewhurst, 7%; Williams, 2%; and Shapiro, 2%.

Among Democrats, no one has broken out. The most popular name on the list was former U.S. Rep. Chris Bell, with 13%, followed by Houston Mayor Bill White (10%), former Dallas Mayor Ron Kirk (8%), former Comptroller John Sharp (7%), and former Comptroller candidate Paul Hobby (2%). More than four in ten (42%) said they don't know who they'll support, and 17% said nobody on this list would be their favorite. Among Democratic voters, the numbers were Bell, 17%; Kirk, 12%; White, 10%; Sharp, 7%; and Hobby, 2%.

In head-to-head match-ups between Republicans and Democrats, both Perry and Hutchison would defeat White in an election held today. In the first matchup, Perry holds a 32% to 29% edge over White, with 39% undecided. In a Hutchison-White match-up, the Republican Senator leads 34%-25%, with 41% undecided.

METHODOLOGY

The 2008 Texas Lyceum Poll is a telephone-based multi-stage cluster sample of Texas adults. Telephone coverage within the state of Texas is approximately 97%. Randomized selection procedures were assiduously followed throughout the process, even at the level of selecting individuals within the household. The final sample size is 1,000 adult Texans. The instrument itself relies on questions that have been used previously in national polls, and have been shown to be both valid (correlating with plausible independent and dependent variables) and reliable (robust to question order and interviewer effects). A Spanish version of the instrument was developed and respondents were given a choice of participating in English or Spanish. Bilingual interviewers were utilized, and approximately 48 interviews (5% of the sample) were completed in Spanish. The overall response rate (completed interviews/contacts) is 37%. This rate is partially the result of an extended time in the field, which facilitated call-backs. The overall margin of error for the sample is +/- 3.1 percentage points at the 95% confidence level. The data used to generate top-lines and tables are weighted by U.S. Census Bureau estimates with respect to age, gender, and race. For example, Census data indicate how the proportion of 18-29 year old Hispanic females in Texas, and we use these estimates to weight the survey data. As expected, the most significant weights are applied to young, male, minority respondents (who are under-represented here, as they are in almost all polls in the U.S.).

The 2008 Texas Lyceum Poll team was directed by Daron Shaw, Professor in the Department of Government at the University of Texas in Austin. Jim Henson, Director of the Texas Politics Project at the University of Texas in Austin, Ross Ramsey, Editor of Texas Weekly, and Julie McClure, VP of Investor Relations for Genesis Park LP, provided invaluable expertise and sound advice. Providing addtional support and assistance for the Poll were Brian Roberts, Tim Belton, John Boettiger, Margaret Justus and Maggie Radford.

The Trans Texas Corridor: Evaluating and Protecting Against Risks to the Public from Private Toll Roads

By Melissa Cubria, The Texas Public Interest Research Group

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ABSTRACT

In 2002, Governor Rick Perry announced his plans for a 4,000-mile swathe of highway, rail, and utility lines referred to as the Trans Texas Corridor. As originally envisioned, the system would span ten vehicle lanes though the original plan has been curtailed in the face of opposition and fiscal constraints. Should Texas move forward with the Trans Texas Corridor project, the Legislature must insist on specific protections for the public to ensure the needs of people come before any other special interest or investment entity.

INTRODUCTION

State governments increasingly receive offers of upfront cash or construction from the road privatization industry. Contracts with private investment entities can seem attractive for state governments struggling to meet growing transportation needs with stagnant revenues. However, most of these deals provide only short-term solutions with greater long-term problems for the public. Lessons learned from privatization deals in other states and initial experiences with the Trans Texas Corridor (TTC) proposal point to some of the problems and risks of road privatization deals.

THE ORIGINAL TRANS TEXAS CORRIDOR PROPOSAL

In 2002, Governor Rick Perry announced his plans for a 4,000-mile swathe of highway, rail, and utility lines referred to as the Trans Texas Corridor (TTC). As originally envisioned, the system would span ten vehicle lanes, with separate toll ways for passengers and trucks, six rail lines for high-speed passenger rail, commuter rail, and freight, and a network of utility lines for water, petroleum, natural gas, electricity and data.[1] The original plan has been curtailed in the face of opposition and fiscal constraints such that each facility will be built on a case-by-case basis. Thus, it is difficult to predict what the TTC would precisely entail, beyond a large network of toll roads traversing the state.

The Trans Texas Corridor is intended to link with existing interstate systems, three existing regional transportation systems, and major ports of entry in Laredo, El Paso, Brownsville, Beaumont, Corpus Christi, and Houston. TxDOT has identified four priority segments of the Corridor: the first segment would parallel I-23, I-37, and the proposed I-69 from Denison to the Rio Grande Valley; the second segment would follow the proposed I-69 from Houston to Laredo; the third segment would parallel I-45 from Dallas-Fort Worth to Houston; and the final section would follow I-10 from El Paso to Orange. The TTC was initially envisioned as composed entirely of newly constructed highways.

OPPOSITION AND THE CURRENT STATUS OF THE TRANS TEXAS CORRIDOR

Opposition to the Trans Texas Corridor has been widespread and heated. In the 2006 gubernatorial election,

1 "Crossroads of the Americas: Trans Texas Corridor Plan Report Summary," Texas Department of Transportation (June 2002).

Rick Perry was re-elected with only 39 percent of the vote, and his three opponents campaigned strongly against the TTC. In fact, Governor Perry is now at odds with his party, as the state GOP party officially opposes the Corridor.

Texans worry about the potential loss of farmland, the prospect of foreign ownership of state roads and rising tolls. Thousands of Texans have attended anti-TTC rallies and meetings. The pervasive backlash to the project persuaded public officials to place a moratorium on toll road concessions. As a result, the majority of the TTC project remains in the very early developmental stages. No routes have been finalized, and officials have yet to determine what aspects of the original proposal the corridors will include.

The moratorium in place does not however apply to high-priority corridors such as the TTC-35 and TTC-69.[2] The TTC-35 will connect Oklahoma to Mexico and the Gulf Coast, and TTC-69 will connect East Texas to Houston, Victoria, Corpus and Laredo. The TTC-35 is in the most advanced stages of the planning process, and the state has already signed a Comprehensive Development Agreement (CDA) with the joint-venture Cintra-Zachry. The CDA, signed in March of 2005, authorizes Cintra-Zachry to develop the master development and financial plans for the roadway, and allows the facilities to be constructed once the project receives federal approval. Under the CDA, Cintra-Zachry will be paid $3.5 million for the strategic development plan, and the company will also hold first negotiation rights for other projects. According to Cintra-Zachry's initial proposal, the company would invest $6 billion into the toll road from Dallas to San Antonio, and pay the state an additional $1.2 billion for the right to operate the road and collect tolls for 50 years. If Cintra-Zachry's proposal is rejected, individual segments of the roadway will be opened up for bidding for separate long-term concessions. Currently, the project is progressing through the environmental permitting process and Cintra-Zachry is preparing the master development proposal.

The TTC-69 project is further behind in the planning process than the TTC-35. To date, a joint venture of Zachry-ACS has been selected to sign a Comprehensive Development Agreement to create the master development and financial plans. Similar to the TTC-35 agreement, this CDA also grants Zachry-ACS the right at first negotiations for certain projects. As initially announced, the TTC-69 would have been built over new terrain paralleling US-59, US-77 and US-281. However, controversy over acquisition of so much land persuaded transportation officials to complete the Corridor by upgrading the three roads to interstate standards through rural areas and with bypasses around urban areas along the routes. Under the terms of the contract, US 77 is a priority segment and it will be upgraded to interstate standards as a non-tolled, four-lane road from Corpus Christi to Brownsville. The company intends to use concession revenue from seven toll road projects it would develop in south Texas to pay for the upgrades, which are expected to cost $1 billion. Overall, Zachry-ACS envisions $3 billion in capital investments for US 77 and 14 other capital investments totaling $5 billion. TxDOT anticipates financial close for the entire US 77 roadway in 2011, then would build the projects and upgrade US 77 within seven years.[3]

FRAUGHT WITH FUTURE PROBLEMS

There are countless reasons to be wary of the Trans Texas Corridor, many of which have not been at the center of the debate over the project's development. For instance, privately financed roads often cost more than publicly funded alternatives, as private companies must borrow at relatively higher interest rates and must cover profit margins for their shareholders. Dennis J. Enright, an investment consultant and toll road expert, has testified that on average it costs 30 percent less for a public agency to construct and operate a roadway compared to a private entity.[4] Under the Trans Texas Corridor proposal, the private companies would recoup their higher costs through higher tolls for Texas drivers. Though TxDOT will initially have approval over toll schedules, Texan drivers will be forced to cover the higher private costs.

Unfortunately, the profit-driven nature of these deals affects not only the users of the roadway but transportation policy in general. Many privatization agreements include "non-compete clauses" that restrict a government's ability to build or upgrade nearby competing roadways or "compensation clauses" that allow private road investors to sue the state in case government policies reduce toll road traffic. These clauses have the potential to hamper responsiveness to new transportation needs and to cost the state millions through legal fees and compensation payments. For example, California entered into a concession agreement, which included a non-compete clause, with a private operator for express lanes on SR 91. After the agreement was signed, Caltrans attempted to make safety improvements on nearby roadways due to growing congestion-related accidents. However, the private company sued and forced Caltrans to settle, thereby inhibiting the necessary improvements. Eventually, the state had to pass legislation authorizing a public agency to purchase the roadway before the improvements could move forward.[5]

2 "Senate Bill 792 and the Debate over Transportation Concessions," *Texas Council of Engineering Companies*, www.cectexas.org/research_&_policy_issues/documents/SB792andtheDebateOverTransportationConcessions.pdf.

3 "Zachry-ACS Win Texas 69 Road Plan," Public Works Financing 228 (June 2008): 6.

4 Choate, Pat. "The Wrong of Way: Texas Highways for Lease," *Corridor Watch*, October 31, 2008, http://corridornews.blogspot.com/2008/10/ideology-takes-its-toll-corporate.html.

5 Replogle, Michael. Testimony before the Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, May 24, 2007.

The CDA signed with Cintra-Zachry for TTC-35 includes a similar compensation clause, thus placing Texas in danger of expensive lawsuits and compensation payments.[6] TxDOT is responsible for planning transportation policy around the needs of the populace, not a companies' profit margin; but the inclusion of compensation clauses clearly violates this principle. In fact, the TTC-35 CDA even includes a timeline that allows Cintra-Zachry to construct the most lucrative segments of the highway first, instead of the most needed portions.[7] Both of these clauses clearly compromise the state's ability to prioritize transportation needs.

The inclusion of compensation clauses highlights an additional pitfall for Texas in its pursuit of the Corridor: transportation officials often lack adequate resources to properly judge the value and merit of these agreements. The contracts and financial details of these deals are extremely complex, and transportation officials have not developed a systematic approach to reviewing the contracts. These constraints, coupled with the length of the contracts, make it likely that the state will not receive a fair deal. Indiana, for example, received $3.8 billion for the 75-lease of its toll road. Though that amount may seem substantial, it pales in comparison to the fact that the private investor expects to clear a profit within 15 years. Due to similar concerns with inability to oversee or manage deals, the new Georgia DOT commissioner decided to scrap existing privatization negotiations.

Compounding these problems is concern over the financial viability of private entities and the possibility that they may become insolvent because they have higher capital costs. The recent financial crisis underscores that private companies are not always better equipped to manage financial risk. Financially troubled private toll operators might neglect maintenance and demand a bailout. A company in the process of bankruptcy would not likely make the necessary investments into the roadway. The state would be required to hire expensive lawyers to recoup its losses.

Beyond general concerns about the TTC agreement, this proposal has alarmed many over potential property rights concerns. The initial proposal called for a 1,200-foot wide roadway, amounting to 584,000 acres of land, much of it over productive farmland.[8] As previously mentioned, outrage over this land loss forced transportation officials to revise their plans. However, the initial proposal will still be included in the federal environmental impact statements, leaving open the option of completely new highways.[9] Even if the land-loss is mitigated, the toll roads will still damage the economic livelihood of many small towns due to a lack of exits and competing services provided in the corridor.

PROTECTING THE PUBLIC

Should Texas move forward with the Trans Texas Corridor project, state officials must apply public interest principles to ensure the needs of people come before any other special interest or investment entity. The Legislature must insist that certain standards are met. First, any upfront payment by a private entity must exceed what a public entity could deliver. States often hastily agree to toll concession agreements, eager to take advantage of the large upfront investment they can receive for new road construction projects. However, this impulsiveness may result in a bad bargain for the state.

Additionally, states must avoid contracts with non-compete and compensation clauses that hinder attentiveness responsiveness to new transportation needs. No project should move forward unless officials are certain they will retain control over decisions about transportation planning and management without financial penalties. Complete transparency of the bidding and negotiation process and full disclosure of all aspects of future operations must be maintained to protect states from unknowingly signing contracts that contain non-compete or compensation clauses. Transparency will also help ensure proper process and full accountability. The Legislature must also be granted the authority to approve or deny the terms of a final deal. In doing so, state governments can carefully analyze agreements to ensure that it has a long-term budgetary advantage beyond a short-term windfall. Together, transparency and accountability will help ensure that public officials do not sell off roads as a quick fix.

Finally, lengthy concession agreements make it difficult to determine what a private company's risks and opportunities will be in the future. For this reason, no deal should be longer than 30 years because of uncertainty over future economic conditions, and because the risks of a bad deal grow exponentially over time.[10]

Many reasons exist to be wary of both the Trans Texas Corridor and road privatization agreements in general. It would be extremely difficult for state transportation officials in Texas to properly monitor concession agreements, and there is potential for serious harm to the public interest. State Legislators should be wary of these agreements and should use public interest principles to assess deals and ensure that the needs of the populace are prioritized above all others.

6 Russell, Philip E. Testimony before the Legislative Study Committee on Private Participation in Toll Projects, July 22, 2008.

7 Choate, Pat. "The Wrong of Way: Texas Highways for Lease," *Corridor Watch*, October 31, 2008, http://corridornews.blogspot.com/2008/10/ideology-takes-its-toll-corporate.html.

8 Minton, Barbara L. "NAFTA Superhighway: Progress on the Trans Texas Corridor Continues," *Natural News*, April 9, 2008, http://www.naturalnews.com/022974.html.

9 Choate, Pat. "The Wrong of Way: Texas Highways for Lease," *Corridor Watch*, October 31, 2008, http://corridornews.blogspot.com/2008/10/ideology-takes-its-toll-corporate.html.

10 Baxandall, Phineas, "Road Privatization: Explaining the Trend, Assessing the Facts, and Protecting the Public," United States Public Interest Research Group (Fall 2007).

The Port Of Houston: Can It Continue To Grow?

by Jim Edmonds

James T. Edmonds has been Chairman of the Board of Commissioners of the Port of Houston Authority since 2000. Edmonds was first appointed to the Port Commission in October 1996, representing Harris County. Under Edmonds' leadership, the Port Authority continues to set standards for environmental management, initiatives, and compliance. In addition to his civic service with the Port of Houston, Edmonds also serves as the Chairman of the Memorial Hermann Hospital System, I-69 TxDOT Advisory Committee, the Alliance for I-69 Texas and the Gulf Coast Freight Rail District. Edmonds is president of Edmonds & Company, a business consulting firm.

Throughout Houston's history, the port has been a powerful engine propelling the city's growth. Whenever the Port of Houston has grown and expanded its capacity for handling cargo, the city and surrounding region have grown and prospered as well.

The Port of Houston has, for many years, remained the nation's leading port in terms of foreign tonnage and second in overall tonnage. As one of the largest ports in the world, more than 7,700 ships and 150,000 barges call at the Port of Houston and move more than 225 million tons of cargo each year. Much of the cargo is destined for the more than 150 terminals that make up the Port of Houston and are located along the Houston Ship Channel—home to one of the world's largest petrochemical complexes.

This activity translates into an enormous economic impact not just for Houston, but for the entire state of Texas. A recently released economic study shows that 785,049 jobs throughout Texas are in some way related to ship channel-related businesses. The overall economic impact of the port is nearly $118 billion. Of this total, $8.1 billion is the direct business revenue received by the firms which depend on the port. These firms provide maritime services and inland transportation services as well as ship and rig repair and maintenance services. An additional $5.9 billion is generated for local purchases from businesses. Some $3.7 billion in tax revenue is collected as a result of the business activities of those who use or provide port services.

The port, however, is just one important piece of the transportation system necessary to move goods from manufacturer to purchaser. Without smooth transportation linkages to and from the port that effectively promote the flow of trade, the efficiency of our marine terminals would be wasted. Trucks and trains rely on ready access that expedites the movement of cargo in a fast-changing, global marketplace.

The port is an enormous operation. It stretches 25 miles along the 53-mile-long Houston Ship Channel that links the Houston area to the Gulf of Mexico and the world. The Port of Houston Authority owns and manages the public wharves at the port. Every imaginable piece of cargo comes across these docks, from containers filled with consumer goods to gigantic blades for wind turbines and machines for refineries. In contrast to many ports, Houston exports more than it imports. Exports have grown as other nations take advantage of the dollar's weakness in value to purchase heavy machinery and other goods that America has to offer.

Over the past decade, as the per-unit cost of shipping containerized cargo has continued to decline, the port authority has seen this trade grow rapidly through the port. The 31-year-old Barbours Cut container terminal has made Houston's port into the largest container port on the U.S. Gulf Coast. Fifty-two years after the very first container ship in the world sailed to Houston, the port handles 69 percent of all the container activity along the U.S. Gulf Coast.

Almost two years ago, the port authority opened the first phase of the new Bayport container terminal. In 15 or so years, when this facility is fully developed, Houston's current container handling capacity will have nearly tripled. Much of our new business comes from increased containerized cargo from Asia, most especially from China. The 28 percent increase in East Asia cargo on the Gulf Coast from 2006 to 2007 includes a wide variety of consumer goods that arrive at the port and are transferred to gigantic distribution facilities, where they are sorted and sent on via truck to retail establishments throughout Texas and beyond.

In 2007, the port authority moved approximately 1.8 million TEUs or 20-foot equivalent units of containerized cargo across our docks. That was an all-time high for the port authority and broke the previous record set the year before. One of the reasons why trade through the port is growing is that Houston is located close to one of the nation's largest concentrations of consumers. More than 50 million people live within 500 miles of Houston. Ample truck, rail and air connections allow shippers to economically transport their goods between the Port of Houston and inland points.

About 12 percent of the Port of Houston's cargo currently comes through the Panama Canal. By the time the $5.25 billion expansion of the Panama Canal is completed in 2015, Houston's share of the cargo flowing through there also will have increased. Experts project that by 2025, container traffic through the Panama Canal will nearly triple from current levels.

By 2030, experts predict Houston may see a 74 percent increase over 2007's totals to 6.7 million containers annually. Total tonnage of breakbulk cargoes handled by the port authority may increase as much as 42 percent to 29.74 million tons by 2030. Despite the growing softness of the local economy, our cargo projections still see 8.5 to 9 percent growth through 2013.

In 2007, Houston added 103,400 new jobs, a 4.2 percent increase from the previous year. Houston will likely finish 2008 with about 65,000 new jobs, a 2.6 percent increase. Employment will likely be flat in 2009 as energy markets remain soft. Still, Houston will outperform the nation where job losses are expected in the 2 to 2.5 percent range, according to Dana Johnson, chief economist for Comerica Bank in Dallas.

The port has a long-range strategy for growth. This strategy relies on more than attaining efficiencies in cargo handling. Our future depends largely on expansion of not only port infrastructure, but also roadway and rail capacity.

The PHA works closely with the Texas Department of Transportation (TxDOT) so that area roadways can grow along with its cargo facilities. A growing facility such as Bayport requires constant improvement in roadway connectivity as cargo volume increases. For example, flyovers that avoid local intersections and connect directly with major arteries provide increased safety for local traffic as well as time-saving routes for trucks.

Rail poses a much larger challenge. Rail is economical when it is used for very long freight hauls, usually across multiple state lines. Nearly a century ago, Houstonians bragged about being the city where 14 rail lines converge on the sea.

What was once farmland and seemingly good locations for rail lines have since become the middle of neighborhoods and business districts. Jointly with the city and county, the port authority began working on the issue of Houston's rail corridors and how the movement of cargo by rail to and from the port can be reorganized to work more efficiently. TxDOT conducted a study that pointed out numerous opportunities for increased efficiency.

Trains rumble through more than 752 public at-grade crossings, causing more than 30,000 vehicle-hours of delay every day in Houston. Every time trains and cars cross paths, dangerous conditions for motorists are created, pollution is increased, and cargo is delayed. TxDOT's study identified nearly $3.4 billion of improvements for the eight-county Houston region comprised of Harris, Fort Bend, Montgomery, Galveston, Waller, Brazoria, Liberty and Chambers counties.

In 2005, the port authority took the lead by working to promote state legislation to allow the creation of a freight rail management district. This entity has the ability to seek out and accept federal funding to implement a freight rail plan. The project will eliminate mobility delays from railroad crossings and make improvements to the efficiency of the rail network serving the port customers.

Houston is not the only area in need of a significant rail project. TxDOT has identified $17.4 billion in needed rail projects across Texas. Interested parties went back to Austin to plead our cases and the 79th Texas Legislature passed HB 1546 to create the Rail Relocation Fund to help study the problem and go after funds to implement solutions. Voters across the state approved it in November 2005. Now among the great challenges ahead of us is to obtain funding from the Legislature.

TxDOT estimates that over the next 20 years, road-rail crossing delays will cost the eight-county Houston region more than $2.6 billion, including $2.3 billion in lost time, $146 million in collisions and $191 million in emissions and wasted fuel. Texas has more rail crossings than any other state and, as a consequence, more vehicle-train accidents than any other state. Since 1984, more than 5,500 people have been killed or injured in vehicle-train collisions in Texas.

Rail is 16 times safer than trucks for hazardous materials cargoes. Train locomotives emit one-twelfth the pollutants per ton mile of trucks. Redesigning the way freight is moved by rail can contribute to continued growth and prosperity, congestion relief, increased safety, enhanced quality of life and an improved environment. The benefits of more efficient use of rail are overwhelming, but without funding, rail relocation remains simply a good idea whose day is yet to come. As Houston faces environmental and transportation challenges over the next 20 years, the freight rail district will be part of the solution.

The Global Elite

by Bruce Wright

Bruce Lanier Wright has been a researcher, writer and editor for the Texas Comptroller of Public Accounts for more than 25 years. A graduate of the University of Dallas and the University of Texas at Austin, Wright has written on a wide variety of topics pertaining to the Texas economy and Texas state government.

WORLD TRADE MAKES TEXAS A GLOBAL PLAYER

You may not be interested in globalization—but globalization is interested in you.

Even if you never travel beyond the county line, you're surrounded by products from around the world, from the TV in your living room to the clothes on your back. And if you've got a job in Texas, chances are good that your livelihood is linked, directly or indirectly, to our trade with foreign nations.

International trade has been going on for as long as nations have existed, of course. But never before has it been as extensive as it is today.

Globalization, defined broadly, is simply the reduction and removal of barriers to the free flow of goods, services and information among nations. Such barriers have been disappearing rapidly in the last few decades, creating an unprecedented flow of worldwide trade and the beginnings, at least, of a single global market.

The rise of the globally interconnected economy has been controversial at times, and, as with all major economic shifts, has not been without pain. But globalization has expanded the range of goods and services available to all consumers while lowering their costs, and created new markets and new economic opportunities for U.S. companies.

And Texas in particular has reaped major benefits.

TOP EXPORTER

Texas has been the nation's No. 1 exporting state since 2002, due not only to its own business activities but also to its position as a major national hub for sea, land and air transportation.

Mexico remains our largest trading partner; our neighbor to the south received $56 billion in exports from Texas in 2007. Another partner, Canada, was second, receiving $16.8 billion in Texas exports in the same year. But third-ranked China and other emerging economies are becoming increasingly important.

According to the Federal Reserve Bank of Dallas, about 15 percent of Texas' economic output is related to exports. That's nearly twice as big a share as for the U.S. as a whole. That impact translates into jobs. International Trade Association figures indicate that nearly a quarter of all Texas manufacturing jobs depended on exports in 2006.

Texas companies are heavily committed to world markets. ITA reports that nearly 22,000 companies exported goods from Texas in 2006. Interestingly, 92 percent of those—20,121 companies—were classified as small and medium-sized enterprises with fewer than 500 employees.

"Globalization allows the smallest of firms to play a role," says Ebetuel "Beto" Pallares, executive director of the TransPecos/El Paso Regional Center of Innovation and Commercialization. "It allows for specialization and a faster pace of growth."

DOORWAY TO THE NATION

Texas seaports, airports and the inland ports on the Mexican border are among the nation's busiest destinations for imports, which benefit state industries related to transportation and warehousing, among others. Texas port activity rose more than twice as fast as the nation's between 1997 and 2006.

U.S. Department of Transportation (DOT) statistics for 2004 (most recent available data) indicate that Texas ports received more waterborne foreign shipments, as measured in tonnage, than any other state, accounting for nearly 28 percent of all such shipments received in the U.S. in that year.

Texas also dominates surface (truck and rail) trade with Mexico, receiving about $34 billion in imported merchandise from our southern neighbor via these means in 2005, or about a quarter of the U.S. total.

In 2007, Texas received more than $287 billion in imports. Unsurprisingly, given Texas' status as the leading energy-producing state, the most common import by far was machinery related to energy and power generation, with a total of $107.4 billion for the year. The miscellaneous machinery and appliances category was a distant second, at $48.5 billion.

GOOD INVESTMENTS

Texas businesses also benefited from increasing foreign investment. Texas ranked first among states in foreign investments in 2007, attracting more than $14.9 billion. In 2005 (most recent data available), foreign companies employed 344,600 workers in Texas, including more than 84,000 manufacturing workers, nearly one in 10 of all such jobs in the state.

Texas has a number of features that are attractive to foreign companies, says Anurag Kumar, senior manager at Dell and a board member of the Austin chapter of The Indus Entrepreneurs (TiE), an organization that links South Asian entrepreneurs with business opportunities in the U.S. and throughout the world.

"Clearly, the size of the state doesn't hurt," says Kumar. "There's a lot of room to build offices and commercial facilities. Yet the majority of the state population is concentrated in four metropolitan areas that are fairly close to each other. It makes it easier to go after a large base of customers.

"It's also a business-friendly state. Texas doesn't have an income tax, and the cost of living is very attractive for executives and workers," he says.

ATTRACTIVE TALENT

A bigger factor in Texas' success in foreign trade, however, may be a highly educated work force.

Texas workers can't compete with their counterparts around the world on wages alone, since the U.S. is a relatively high-wage nation. The quality of the worker, then, becomes all-important, both for exports and foreign investment.

This is particularly true in Texas' burgeoning high-tech manufacturing sector. In 2007, computers and electronic products were the state's second biggest export, with a value of $33.7 billion. The Dallas Federal Reserve estimates that 48 percent of Texas jobs related to computers and electronic equipment depend on exports.

Fortunately, "there are great schools, the University of Texas and Texas A&M systems, that continue to produce quality graduates," Kumar says. "And we have noticed that a lot of them tend to stay in Texas, even if they're from out of state. There's good retention of talent."

This talent has caught the attention of foreign investors. Despite recent fears of U.S. job losses to India's exploding high-tech sector, Kumar notes that Texas is luring many of those companies.

"A lot of companies in India are acquiring Texas companies and opening up huge offices here," Kumar says. "The second-largest IT company in India, for instance, Infosys, is planning to open a huge complex in Dallas. This will be a second headquarters, which speaks to the attractiveness of Texas talent.

"Another multi-billion-dollar Indian company, Tech Mahindra, is using Dallas as a large operations center," he says. "They have a lot of employees in Texas. It's no longer jobs going offshore—these companies are hiring local talent and bringing in people from out of state."

BRIC ON THE RISE

The state's most significant trading partner is Mexico, but other markets are becoming increasingly important. Texas exports to China in particular have skyrocketed, rising in dollar value by more than 300 percent since 2002.

This Texas experience reflects one of the largest trends in the world today: the emerging economies of developing nations. Many economists single out four of these as having the potential to dominate world trade in the 21st century: Brazil, Russia, India and China, collectively called the BRIC nations.

The Census Bureau estimates that the BRIC quartet represents 42 percent of the world's population in 2008, and all four are poised to undergo dramatic economic growth in the coming decades. Texas exports to all four nations have risen dramatically in the last five years, at rates ranging from 99.3 percent for Brazil to a whopping 303 percent for India.

In all, Texas exported nearly $15 billion worth of products to the BRIC nations in 2007.

BRISK TRADE WITH BRIC NATIONS

In the last five years, the dollar value of Texas exports to the rapidly growing "BRIC" nations—Brazil, Russia, India and China—has risen dramatically.

TEXAS EXPORTS TO BRIC NATIONS, 2002-2007

(amounts in thousands)

NATION	2002	2003	2004	2005	2006	2007	PERCENT INCREASE 2002-2007
Brazil	$1,958,764	$1,633,846	$1,737,317	$2,271,335	$3,184,536	$3,903,301	99.3%
Russia	537,949	474,171	448,868	612,624	770,495	1,177,279	118.8%
India	408,154	568,779	783,666	967,982	1,158,463	1,645,797	303.2%
China	2,064,267	3,059,559	4,455,739	4,901,323	6,643,380	8,272,890	300.8%

Most common Texas exports to the BRIC nations include chemicals, machinery and computers and electronics equipment.

TOP TEXAS EXPORTS TO BRAZIL, 2007

(amounts in thousands)

Chemical Manufacturers	$1,671,057
Machinery Manufacturers	981,786
Computers & Electronics	392,260
Transportation Equipment	267,587
Petroleum & Coal Products	253,292
ALL OTHER	337,319
TOTAL	**$3,903,301**

TOP TEXAS EXPORTS TO RUSSIA, 2007

(amounts in thousands)

Machinery Manufacturers	$655,985
Transportation Equipment	158,735
Chemical Manufacturers	121,226
Computers & Electronics	90,430
Primary Metal Manufactures	39,901
ALL OTHER	111,002
TOTAL	**$1,177,279**

TOP TEXAS EXPORTS TO INDIA, 2007

(amounts in thousands)

Chemical Manufacturers	$526,974
Machinery Manufacturers	333,304
Computers & Electronics	249,628
Petroleum & Coal Products	117,645
Waste & Scrap	96,445
ALL OTHER	321,801
TOTAL	**$1,645,797**

TOP TEXAS EXPORTS TO CHINA, 2007

(amounts in thousands)

Chemical Manufacturers	$2,589,003
Computers & Electronics	1,725,345
Machinery Manufacturers	1,230,667
Waste & Scrap	685,903
Crop Production	618,522
ALL OTHER	1,423,450
TOTAL	**$8,272,890**

Source: U.S. International Trade Administration

COMING TO AMERICA

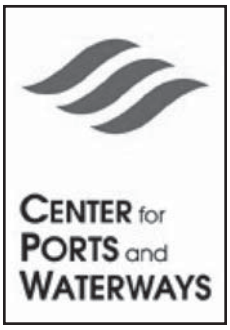
In 2007, $287.1 billion worth of imported goods entered the United States through Texas ports. Energy and power generating machinery accounted for about 37 percent of the total.

COMMODITY	TOTAL IMPORTS
Energy & Power Generating Machinery	$107,356,568,892
Misc. Machinery & Appliances	48,509,147,731
Telecom & High Technology	35,673,744,175
Vehicles & Transportation	30,452,626,474
Metals & Minerals	20,803,520,224
Other	15,301,426,689
Chemicals & Plastics	11,955,404,135
Food & Tobacco	7,618,902,540
Textiles & Apparel	6,267,566,333
Timber & Paper Products	1,535,273,209
Medical & Pharmaceuticals	805,521,448
Agriculture & Livestock	804,707,498
TOTAL TEXAS IMPORTS	**$287,084,409,348**

Source: Texas Business and Industry Data Center

A Modal Comparison of Domestic Freight Transportation Effects on the General Public

Executive Summary, November 2007



Center For Ports And Waterways

Seaports and inland waterways play a vital role in the economy of Texas. With eleven deepwater seaports and more than 1,000 miles of inland waterways, these international gateways account for more than 17 percent of Texas' gross state product, making it one of the country's largest maritime states. The Texas Marine Transportation System is just one component of the national system comprising 1,000 harbor channels; 25,000 miles of inland, intracoastal, and coastal waterways; and 3,700 terminals that handle passenger and cargo movements. This system connects with 152,000 miles of rail, 460,000 miles of pipelines, and 45,000 miles of interstate highways. These elements are all tightly interwoven; developments in one part of the system could easily affect another part of the system located hundreds or even thousands of miles away.

To help preserve this vital economic component and to position the industry to take advantage of opportunities for growth, the Texas Legislature established Texas Transportation Institute's (TTI) Center for Ports and Waterways (CPW) in 1995. The CPW, located in Houston, Texas, provides valuable applied research at the local, regional, and national level, benefiting both the nation and the State of Texas.

Through research and development, TTI has improved the effectiveness and efficiency of transportation systems. The Institute has been instrumental in improving mobility, safety, and economic competitiveness throughout Texas and the nation. This proven track record of research, technology transfer, and implementation is a valuable resource for the maritime industry.

From local issues in water transportation to issues such as Homeland Security, TTI and the CPW are uniquely qualified to help ensure the safety, efficiency, and productivity of our nation's maritime interests.

The CPW links seaports, shippers, carriers (all modes), government, universities, and the private sector. Working with these agencies which have interests in water and intermodal transportation, the Center addresses complex issues such as:

- Trade flows and trends
- Intermodal concerns
- Regional competitiveness
- Landside access
- Economic and environmental impacts
- International commerce
- NAFTA and GATT
- Port development
- Transportation Policy formulation and implementation
- Security

BACKGROUND

This report examines many of the same aspects as the 1994 Maritime Administration report, "Environmental Advantages of Inland Barge Transportation", but using more current data, and—in some cases—new data sources. The following topics areas were covered in this research

- Cargo capacity
- Congestion
- Emissions
- Energy efficiency
- Safety impacts
- Infrastructure impacts

The analysis is predicated on the assumption that cargo will be diverted to rail or highway (truck) modes in the event of a major waterway closure. The analysis considered the possible impacts resulting from either a diversion of 100% of the current waterborne cargo to the highway mode OR a diversion of 100% of the current waterborne cargo to the rail mode. This report presents a snapshot in time in order to focus on several vital issues. The data utilized in this research are publicly available and can be independently verified and utilized to support various analyses. Further detail about the information contained in this summary can be found in the full project report.

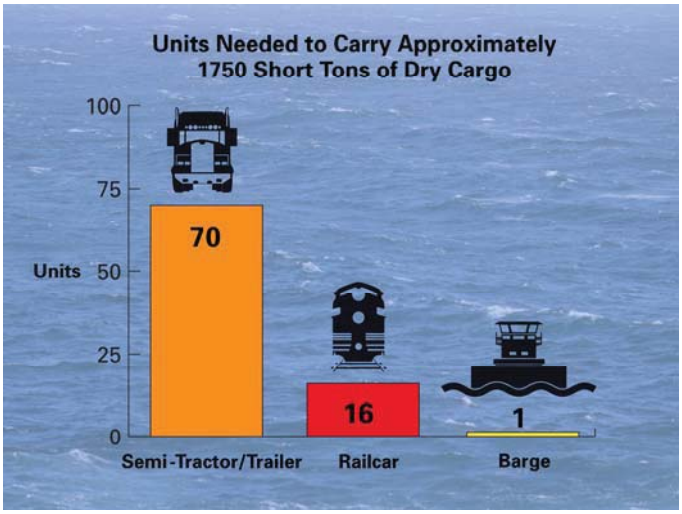
CARGO CAPACITY

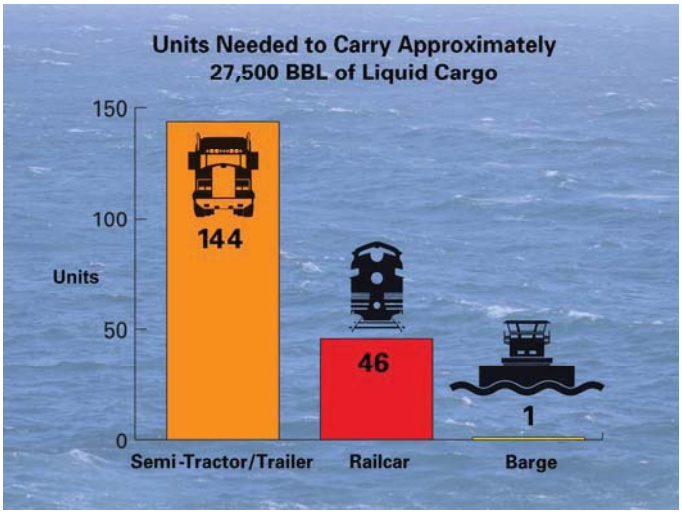
The "standard" capacities for the various freight units across all three modes used in this analysis are summarized in the following table.

Standard Modal Freight Unit Capacities.

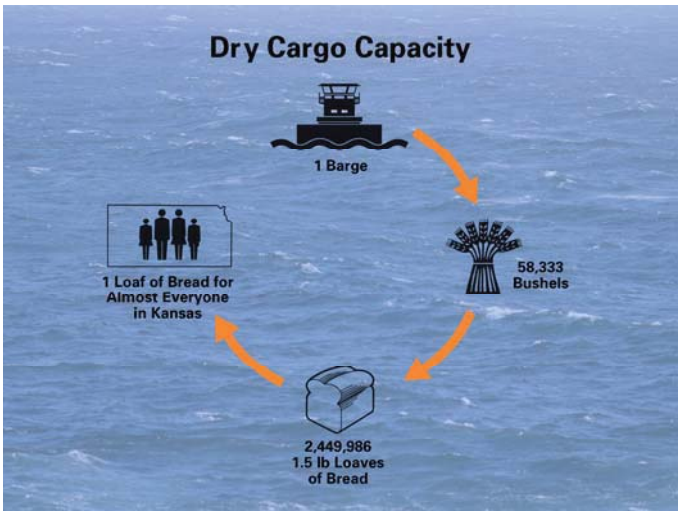
Modal Freight Unit	Standard Cargo Capacity
Highway – Truck Trailer	25 tons
Rail – Bulk Car	110 tons
Barge – Dry Bulk	1,750 tons
Barge – Liquid Bulk	27,500 bbl

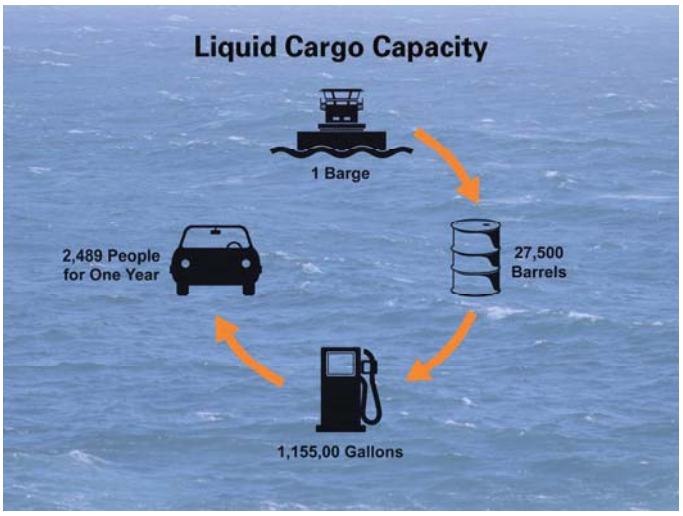
The following figures illustrate the carrying capacities of dry and liquid cargo barges, railcars, and semi-tractor/trailers.





It is difficult to appreciate the carrying capacity of a barge until one understands how much demand a single barge can meet. For example, a loaded covered hopper barge carrying wheat carries enough product to make almost 2.5 million loaves of bread, or the equivalent of one loaf of bread for almost every person in the state of Kansas. A loaded tank barge carrying gasoline carries enough product to satisfy the current annual gasoline demand of approximately 2,500 people.





CONGESTION ISSUES

HIGHWAY

The latest national waterborne commerce1 data published by the U.S. Army Corps of Engineers Navigation Data Center were obtained for calendar year 2005. The tonnage and ton-mile data for the following major rivers were extracted:

- Mississippi River—Minneapolis to Mouth of Passes
- Ohio River
- Gulf Intracoastal Waterway (GIWW)
- Tennessee River
- Cumberland River
- Columbia River system—Columbia and Snake rivers

The amount of cargo currently transported on these rivers is the equivalent of 58,000,000 truck trips annually that would have to travel on the nation's roadways in lieu of water transportation. The hypothetical diversion of current waterway freight traffic to the nation's highways would add 1,160 combination trucks (to the current 874) per day per lane on a typical rural interstate. The percent combination trucks in the Average Annual Daily Traffic on rural interstates would rise from the current 16% to 31%, or almost double. This increase in truck trips would cause the Weighted Average Daily Combination Trucks per Lane on segments of interstate between urban areas to rise by 33% on a nationwide basis. The impact in the vicinity of the waterways considered in this study would logically be much more severe than the national average, especially during the heavier truck travel periods of the year, month, week, or day.

RAIL SYSTEM CONGESTION IMPACTS

The tonnage moved on the inland river system would amount to an addition of nearly 25% more tonnage on the railroad system. This new burden would not be evenly distributed. The primary burden would be placed on the Eastern U.S. railroads with little real opportunity to take advantage of excess capacity that may exist on the Western U.S. railroads.

EMISSIONS ISSUES

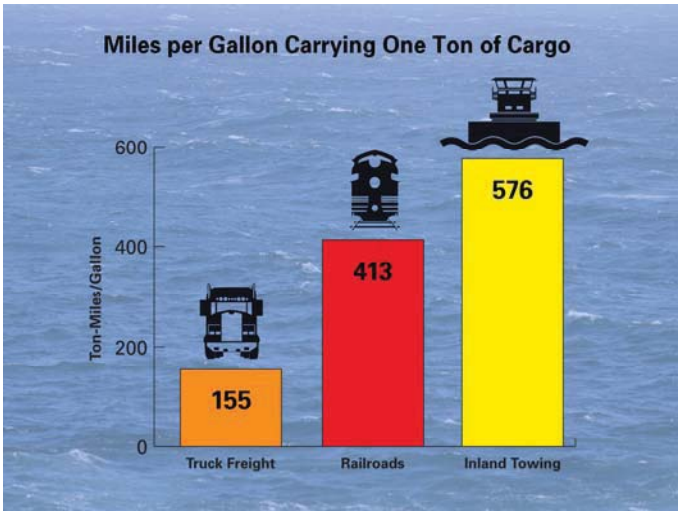
The emission comparison between the three modes is shown in the following table.

Summary of Emissions - Grams per Ton-Mile.

Emissions (grams/ton-mile)				
	HC	**CO**	**NO_x**	**PM**
Inland Towing	0.01737	0.04621	0.46907	0.01164
Eastern Railroad	0.02419	0.06434	0.65312	0.01624
Western Railroad	0.02423	0.06445	0.65423	0.01621
Truck	0.020	0.136	0.732	0.018

ENERGY EFFICIENCY

The following figure presents the average fuel efficiency results for each of the modes on a national industry-wide basis.

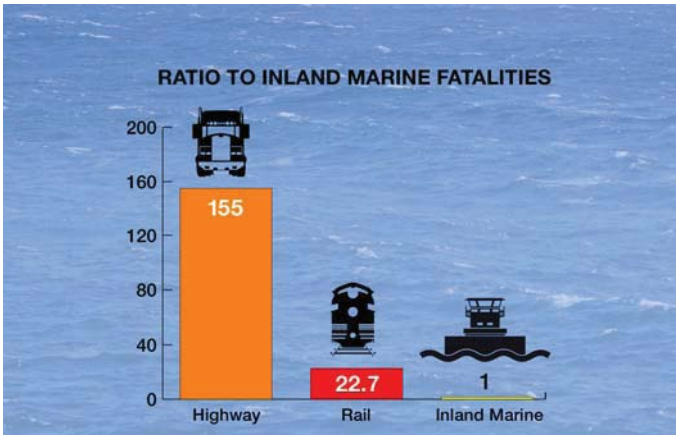


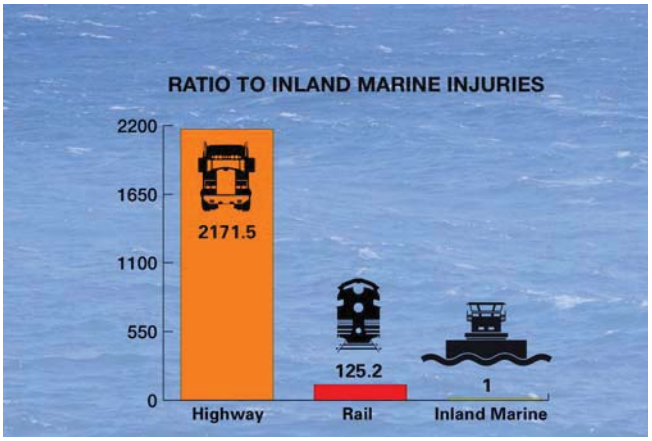
The marine fuel efficiency rates are based on TVA energy consumption data; the railroad efficiency rates are based on an analysis of railroad industry, Surface Transportation Board (STB), and Security and Exchange Commission (SEC) data; and truck efficiency rates are based on EPA MOBILE6 data.

SAFETY IMPACTS

FATALITIES AND INJURIES

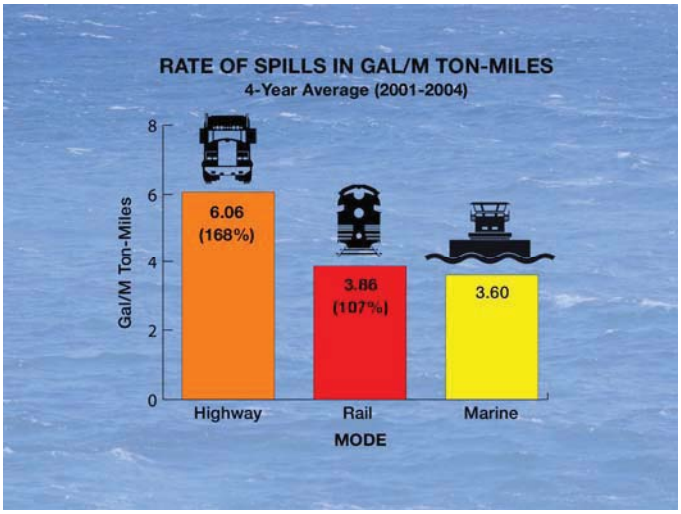
Both rail and truck statistics include incidents involving only vehicular crashes or derailments. However, the waterborne database reports incidents resulting from a wide variety of causes. In order to conduct a valid modal comparison for this study, a definition of "incident" analogous to the one used in the surface mode data was adopted. Data pertaining only to waterborne incidentS involving collisions, allisions (vessels striking a fixed object), or capsizings were further extracted and used in analysis. The data for rail fatalities and injuries respectively were obtained from Railroad Statistics: National Transportation Statistics—2006, Table 2-35: Railroad and Grade-Crossing Fatalities by Victim Class and National Transportation Statistics—2006, Table 2-36: Railroad and Grade-Crossing Injured Persons by Victim Class. Data for truck-related incidents were obtained from Large Truck Crash Facts, 2005, a publication of the Federal Motor Carrier Safety Administration. The data for waterborne incidents were taken from the Marine Casualty and Pollution Database, July 2006, a database that is maintained by the U.S. Coast Guard. The comparisons of fatality and injury rates are shown below.





HAZARDOUS MATERIALS INCIDENTS

Data on hazardous materials incidents for rail and truck were taken from the Pipeline and Hazardous Materials Safety Administration's Hazardous Materials Incident Reporting System, 2001-200. Data for inland waterway incidents were extracted from the Coast Guard's Marine Information for Safety and Law Enforcement (MISLE) system. Due to the fact that all three reporting systems basically rely on self-reporting, and the definitions of materials that require reporting are very complex, much of the spill data are suspect. However, for larger spills, it seems reasonable to assume that the accuracy of the data improves, due to the severity of the incident and public scrutiny; therefore, the research team decided to analyze only large spills as a measure of the overall safety of the modes in the area of spills. The threshold quantity was set at 1,000 gallons. The following figure provides a comparison of spills across the modes:



INFRASTRUCTURE IMPACTS

PAVEMENT DETERIORATION

In the event of waterborne freight diversion to highway transport, approximately 2-inches of asphalt would have to be added to the pavement of 126,000 lane-miles of rural interstate given the higher levels of expected 20-year truck loadings, assuming an even truck traffic distribution over the national highway system. Corridors that are parallel to the major rivers considered would undoubtedly receive a higher concentration of the additional truck traffic, and would be impacted to a higher degree than the national average. Other improvements would be required, such as capital expenditures on new construction of infrastructure and facilities such as bridges, ramps, highway geometric features such as horizontal and vertical curves and shoulders, truck stops, service stations, rest areas, weigh stations, and signage. In addition, routine maintenance costs associated with the new infrastructure as well as with the existing, which would be used more heavily, would likely be significantly higher.

RAILROAD INFRASTRUCTURE IMPACTS

With substantial diversion of inland waterway cargo traffic to railroads, the following effects could be expected in almost every case:

- Increased demand for rail cars and locomotives
- Higher freight rates • Need to expand infrastructure (rail lines)
- Potentially slower and less reliable delivery time

For example, the minimum cost for rail equipment to handle just the diversion Ohio River coal to the CSX rail line is estimated at over $581 million. Furthermore, an additional group of trains would need to be added in order to recover the reduced train trip efficiency from adding so many new train sets to this single route.

DISCLAIMER

This research was performed in cooperation with the U.S. Maritime Administration (MARAD) and the National Waterways Foundation (NWF). The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of MARAD or NWF. This report does not constitute a standard, specification, or regulation. iii

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Shaping the Competitive Advantage of Texas Metropolitan Regions:

The Role of Transportation, Housing and Aesthetics

Executive Summary, November 2006

Governor's Business Council

The Governor's Business Council (GBC) was created in 1994 as a non-partisan 501c(6) non-profit corporation. The GBC was designed to assist the Governor of Texas with economic development by:

- providing advice, research and counsel in the development and implementation of laws, regulations and programs to improve the business climate in Texas;
- providing advice and counsel with respect to the elimination and modification of statutory and regulatory impediments to economic development in Texas; and
- actively participating in many of the Governor's economic development outreach efforts.

Throughout the administration of Governor George W. Bush, the GBC actively supported the Governor's public education initiatives, including advice and counsel in the development and implementation of the Governor's reading initiative and the Charter School Resource Center. Additional resources were directed toward the study of a public school accountability system, use of advanced placement courses, elimination of social promotion and the increased use of technology in our State's public schools.

The Governor's Business Council continues to work for a better Texas. Governor Rick Perry has been successful in promoting a positive agenda that is beneficial to all Texans. The Governor continues to focus on moving Texas forward by creating greater economic opportunities for its citizens. The GBC actively supports Governor Perry's economic development initiatives with task forces for public and higher education, transportation, and economic development.

There are approximately 100 members of the GBC at any one time. To qualify for membership, a person must be the Chief ExecutiveOfficer, president, managing director of the board of directors, or the top executive in the state for his or her employer. Membership is comprisedof leaders of small, medium, and large corporations, of both for-profit and non-profit status. The executive committee of the GBC is responsible for membership criteria.

Presently, Bartell Zachry, chairman of Zachry Group, Inc., serves as chairman of the Governor's Business Council. Erle Nye, chairman and president of EN Consulting, Inc. in Dallas, and Michael S. Stevens, Chairman & CEO of Michael Stevens Interests in Houston, serve as vice chairmen.

Governor's Business Council Transportation Task Force
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INTRODUCTION

The future of Texas is tied to the economic health of its metropolitan regions. Texas has flourished because of several aspects of policy and development practices. One of the outcomes of the past is that transportation is a vital part of Texas' future. Traffic congestion threatens this future and is projected to increase in every metropolitan region with the currently expected funding. This report investigates what can be done to improve mobility in the next two decades and the important accompanying elements of that improvement.

The problems we face are a product of growth and affluence and the result of Texas' approach to development. Our economy is healthy and more growth is expected in the future. With this growth come challenges. As we move into a new era of labor force change in which the nation's labor force is aging, a new set of factors will serve to guide economic development. One of these will be the need to attract skilled workers. In many cases these workers will be working in fields, such high technology and services, where they can be almost anywhere. Quality of life issues – mobility, beautification, housing affordability, school quality and transportation – will be the keys to successfully competing for and retaining this future work force.

IMPROVING MOBILITY

Texas is an urban state. Seventy percent of the current population lives in the eight largest metropolitan regions, and 90 percent of the growth in the next two decades will occur there.

Vehicle travel has grown much faster than population in the past two decades. This is expected to be more equal in the next two decades. Economic growth will happen, but it will be easier to address. Current trends point to a closer match between the growth in vehicle travel and lane-miles which should help minimize the increase in congestion.

Changes made to transportation finance over the last two state Legislative sessions and the resulting improvements in planning processes mean that future congestion levels are not expected to be as bad as projections of just a few years ago. But more needs to be done.

The report estimates that over the next 25 years for the metropolitan areas it will require $66 billion in roadway expenditures over the $120 billion available from currently identified sources to achieve the Texas Metropolitan Mobility Plan (TMMP) target of a 1.18 TCI value. For the purposes of this report, it is estimated that approximately two-thirds of the $66 billion of this shortfall would be state funds and one-third of the funds required to meet the mobility goals would come from local/other sources. This assumption is based on existing state-local funding share arrangements. Under this assumption, the total cost to the state to achieve the TMMP mobility goals is estimated to be $44 billion over 25 years, less than the $78 billion in TxDOT needs estimated in the first Governor's Business Council report in 2003. There are several reasons for the reduction:

- The TMMP's Texas Congestion Index (TCI) target of 1.18 is slightly higher than the 1.15 established in the 2003 Governor's Business Council Report. The higher target value requires less funding. A more detailed assessment of the congestion problem in each of the eight largest metropolitan regions developed a mobility target for each area that cost effectively addresses that region's problem. The TCI measures the extra travel time in the peak period compared to the travel time in free-flow conditions (a TCI of 1.30 indicates a 20-minute midday trip will take 26 minutes in the peak).
- The statewide planning process, initiated by Governor Perry and being carried out by TxDOT and the Metropolitan Planning Organizations (MPOs) using a needsbased approach with a mobility goal, appears to have resulted in a more effective planning process that will lead to more focused road construction that will further lead to lower expenditures to attain the same congestion targets.
- The recent round of Metropolitan Transportation Plans (MTP) updates includes more toll roads which reduce congestion more than was projected.
- A more detailed analysis was used in this report to estimate the TCI values. Much more detail, available from the improved planning process, allows for a more accurate roadway needs estimate. The new process focuses on providing additional capacity to congested road segments rather than a generalized process of adding enough roadway to address average congestion problems.

RECONCILIATION WITH TXDOT PREDICTED SHORTFALL

TxDOT's estimated statewide construction shortfall of $86 billion is made up of $68 billion in the metropolitan areas (as compared to the $66.2 billion estimate produced by the GBC), $9 billion in "other" urban areas, and $9 billion in rural areas of the state. Historically one-third of metropolitan area shortfalls are funded locally (one-third of $66 billion reduces the total state requirement by $22 billion). Furthermore, the preliminary estimates from the Texas Urban Mobility Plan, to be published soon, are likely to identify $2 to $3 billion in "other" urban area need, as opposed to the $9 billion originally estimated by TxDOT. (This reduces the total state requirement by another $6 billion.) The result is a $56 to $58 billion dollar state funding shortfall (we have used $56 billion for the purposes of this report) to reduce congestion by 40 percent while adding up to 14 million people to the state's population, an incredible achievement.

In sum then, when comparing like areas, the difference between the GBC estimate and the TxDOT estimate for the eight largest urban areas of the state is $1.8 billion, or less than three percent ($66.2 billion versus $68 billion). While this report focuses primarily on the eight urban areas covered in the Texas Metropolitan Mobility Plan, the additional $12 billion in estimated additional need in other urban areas and in rural Texas is also addressed in brief.

HOW TO FUND THE SHORTFALL

Reducing the $44 billion metropolitan area state funding shortfall can be accomplished in a variety of ways.

The motor fuel tax continually loses value to inflation over time because it is assessed on a gallon of fuel rather than on the price of fuel. Today, because of inflation, the 20 cent per gallon fuel tax enacted in 1991 is now worth approximately 14 cents (see Section 1 of report). One solution to this problem is to increase the state fuel tax annually by an amount equal to a measure like the Highway Cost Index (HCI) multiplied by the state and federal fuel taxes in order to keep pace with the cost of constructing and maintaining roadways. This would protect purchasing power, insulating approximately 85 percent of TxDOT's revenues from losing value to inflation.

A possible solution to the metropolitan area $44 billion state funding shortfall would be to place the additional revenue generated from the indexing process described above into the Texas Mobility Fund, or a similar vehicle that would allow borrowing against that revenue stream. If the 20 cent per gallon fuel tax rate was not raised but simply adjusted in the future by a rate equal to 80 percent of the Highway Cost Index (HCI), the projected 2.7 percent annual increase would be sufficient to borrow the estimated $44 billion shortfall. To address the possible need for the entire state system, including rural and urban areas, of as much as $56 billion, the tax rate would need to be adjusted annually by 90 percent of the HCI, or 3.1 percent. Furthermore, in both scenarios, the bond debt could be serviced entirely with the proceeds from the incremental fuel tax increase.

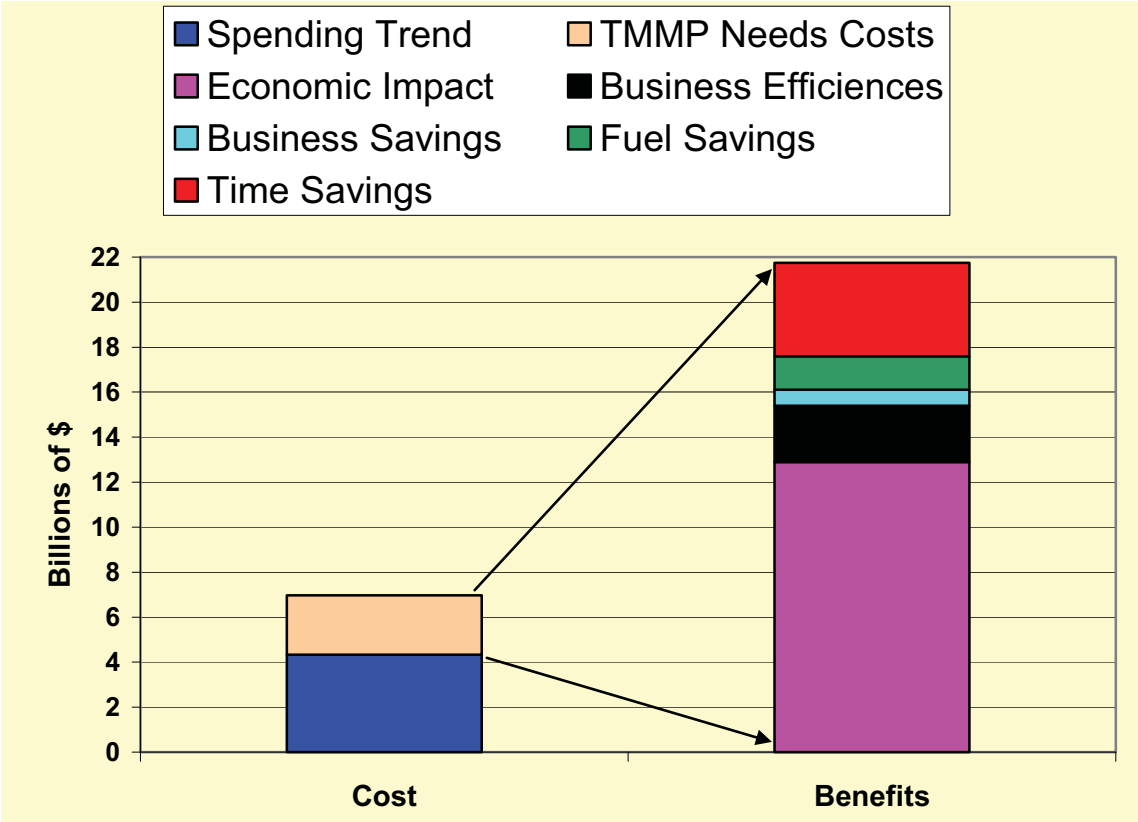
Additional potential solutions to the $44 billion metropolitan area state funding shortfall include the use of toll roads where possible and stopping the diversion of state transportation revenues into non transportation related purposes. The use of toll roads allows the construction of critical projects to be made possible in the absence of traditional transportation funding sources, and stopping diversions allows valuable transportation dollars to be spent on transportation projects.

Finally, the statewide funding shortfall including urban and rural areas could be achieved by an increase in the state motor fuel tax. For example, if the state motor fuel tax was indexed by an amount equal to the amount of increase in the highway construction index on both the state and federal motor fuel tax, the initial fuel tax increase necessary to achieve the $44 billion metropolitan area state funding shortfall would be 8 cents. To achieve the statewide $56 billion shortfall, the initial fuel tax increase necessary would be 12 cents (see Section I of report for further discussion).

BENEFITS OF REDUCING CONGESTION

The benefits to achieving the above stated mobility targets are substantial. For the $66 billion additional state and local investment in our transportation system we receive over $541 billion in total benefits. These include more than $37 billion in fuel cost savings in addition to an estimated travel time savings of almost $104 billion. Business efficiencies and business operating savings due to reduced congestion are estimated at almost $78 billion. The effect of the construction activity is projected to add approximately $322 billion to these benefits. Put another way, as a result of the expenditure of an additional $2.65 billion annually, $21.7 billion in annual benefits are realized through savings and additional economic activity.

ANNUAL COSTS VERSUS BENEFITS OF IMPLEMENTING TMMP NEEDS-BASED PLAN



There are some risk factors, however, associated with the estimate of available funding. As an example, it is not clear at this point what the effect of significantly higher fuel prices will be on travel patterns and subsequent fuel consumption. It is possible that any reduction in travel demand will also reduce the amount of funding required for highway system capacity additions.

BENEFITS OF ACCELERATING THE CONSTRUCTION OF ROAD IMPROVEMENTS USING FINANCING

The investment needs identified in Section I are a combination of the current deficiencies of the existing system with those investment needs that will be generated over time from future population and economic activity growth. Were the present system perfect in performance and condition, meeting future needs over time would be a relatively straightforward undertaking. It is not, and the benefits from accelerating the response to the extensive state and local backlog of needs are substantial.

While the full-scale backlog of investment requirements in highways should be identified, the present congestion levels throughout the state shown in Section I are an implicit indicator of the massive backlog of system performance needs. On the condition side there were 2,580 bridges in the state identified as of 2004 as Structurally Deficient and another 7,615 identified as Functionally Obsolete. Thus a total of 10,195 bridges, more than 20 percent of the state's bridges, were labeled as deficient out of a total of fewer than 50,000 bridges in the state. While this is better than many other states, it is a strong indicator of a critical backlog in terms of safety and performance.

Addressing the backlog by shifting to an accelerated program in which projects are started sooner and constructed more rapidly have immense payoffs:

- the benefits of the project in safety and performance are provided sooner
- cost growth effects of inflation are reduced (roughly equal to additional interest expense on bonds sold to pay for improvements)
- other beneficial projects can be brought forward into the project stream
- there are often logistical benefits to contractors working faster in larger undertakings

Other states have recognized these payoffs and are acting to accelerate their programs, often cutting delivery times to one-third of traditional approaches, with a combination of re-organized programming of projects, bonding, toll-oriented systems, and joint private-public efforts. The early benefits of this approach for Texas are substantial.

The report documents the benefits from mobility improvements in each region—the "what gets done" benefit. Another essential aspect of this improvement is the "how it gets done" benefit. There are enormous benefits to building the improvements faster and closer to when they are needed rather than waiting for funding streams to provide the needed infrastructure. The report investigates some of the issues related to financing the needed improvements and suggests additional study to dramatically speed system expansions.

- Expanding roads now provides significant mobility improvements resulting in travel time and fuel consumption savings to residents and commuters. The fuel savings from mobility improvements alone, assuming $2.80 per gallon gasoline, represents $37 billion in out-of-pocket cost savings.
- If an approach that recognizes the importance of rapidly improving the road network were used, the cost of borrowing construction funds would be approximately offset by the inflation in construction costs.
- The cost of borrowing to finance improvement is roughly equal to the inflation cost associated with deferring construction. Therefore, the cash outlays to the state over 25 years are approximately the same. To accelerate $36 billion in major projects in congested corridors costs $1.28 billion in additional interest, but saves $1.24 billion in inflated construction costs and provides benefits exceeding $16 billion. The society benefits include $2.2 billion in out-of-pocket fuel savings due to congestion reduction.

BEAUTIFICATION PROGRAMS

The Texas Department of Transportation has an extensive program of planning roadway aesthetic improvement. These plans include structures, the roadside and plantings in a combined set of treatments that are both visually pleasing and easily maintained. Aesthetic treatments are recognized as important factors in the perception and acceptance of major roadway improvements, and in many metropolitan regions these improvements appear to be a significant feature of public input, public discussion and acceptance of a major construction program. Many aesthetic treatments are considered a normal component of a roadway project and are included in most new construction projects. Their relative cost, in these cases, is quite low and typically included in new capacity or major reconstruction projects.

The most frequent generator of favorable and unfavorable responses, however, was the area outside of the right-of-way. Addressing the quality and look of adjacent developments will take time, but providing maintenance and litter control are relatively less complex activities that have significant benefits in improving the visual landscape.

The landscape portion of this effort has resulted in a broadly similar practice on TxDOT construction efforts. "Naturalized plantings" that replicate native plant communities are installed within the right-of-way at the conclusion of construction activity. Local agencies or groups are responsible for maintaining any of the ornamental or special landscaping elements.

Natural plantings and aesthetic roadway designs

EMISSIONS

Over the next 25 years, 88 percent of existing emissions will be eliminated due to improvements in emissions control technology, fuel mixtures and vehicle operating systems regardless of the amount of congestion. If congestion is reduced, emissions will decline further while accommodating all projected travel increases due to population and employment growth.

- Total emissions are an average of 80 percent lower than current amounts despite travel increasing between 50 and 175 percent in the metropolitan regions.
- Emissions per million vehicle miles are forecast to be approximately 88 percent lower than current rates.

COMPETITIVENESS AND TRAFFIC CONGESTION

Nearly all growth in the United States has been in metropolitan regions since World War II. Metropolitan regions have grown because they are efficient labor markets that provide economic opportunities that are generally more favorable than in other areas. One of the keys to Texas competitiveness has been the fact that its urban areas have generally lower levels of traffic congestion than other urban areas of similar size. Implementation of the Texas Metropolitan Mobility Plan Mobility Objectives is likely to improve mobility in Texas metropolitan regions even further, widening the gap with other areas throughout the nation.

Texas metropolitan regions are very competitive. Dallas-Fort Worth and Houston are the third and fourth fastest growing large urban areas in the high-income world (Atlanta is number one). Research indicates that metropolitan regions have greater economic output if they are more mobile. The critical issue is the number of jobs that can be accessed by employees in a particular period of time (such as 30 minutes).

Densification (land rationing) policies are sometimes suggested as a means for reducing traffic congestion. In fact, densification increases traffic congestion. Travel speeds become more erratic, which leads to more intense air pollution emissions.

COMPETITIVENESS AND HOUSING

Texas metropolitan regions have among the best housing affordability in the nation. The lower cost of living in Texas contributes to the state's competitiveness. In 1999, Dallas-Fort Worth and Houston had the most affordable housing among urban areas with more than 3 million persons. There are indications that this advantage has been expanded in the last five years.

The latest data indicate that if housing affordability in Dallas-Fort Worth were at Boston levels, median household income would need to be $10,700 higher to support the higher annual mortgage payments. That same house in San Francisco would require a median household income $20,700 higher than current Dallas-Fort Worth levels.

Denser land development patterns and restrictive growth policies are associated with artificially higher housing values. Metropolitan regions with land rationing have approximately 50 percent higher affordability multiples than areas without such policies. More recent research associates more stringent land use regulation with less than expected economic growth.

Texas metropolitan regions have not severely restricted the growth patterns, and, as a consequence, the cost of development is relatively low, allowing decisions to be made to build on the most economically viable parcels. This process is supported by the transportation investments that have been made over the past several decades. The superior mobility levels in most metropolitan regions provide a wider range of housing and job location choices than similarly-sized regions. Present Texas land use and transportation policies should be continued, which will maintain and improve the state's competitiveness, while providing housing opportunity and a better quality of life for a diverse population.

FREIGHT

Trucks carry 60 percent of freight in Texas. National projections indicate that truck traffic is increasing at a faster rate than that of cars and sport-utility-vehicles. The faster truck growth rate makes it more challenging to provide sufficient new roadway space to control traffic congestion.

Large trucks use 3.8 times more highway space than cars and sport-utility-vehicles on an urban freeway. In recent years, the safety record of trucks has been substantially improved, although there are still more than 400 fatal accidents that involve trucks in Texas. It is important that efforts be continued to improve truck safety. One of the most effective means for improving truck and other vehicle safety is to provide sufficient roadway capacity.

Texas is impacted by NAFTA commerce increases more than any other state. There have been substantial increases in truck traffic at border crossings between Texas and Mexico. There is a need for more information on truck traffic in Texas. TxDOT and the MPOs should undertake efforts to estimate truck volumes within metropolitan regions and on major freeway segments on an annual basis.

Various strategies can be used to better facilitate truck traffic. For example, truck only lanes and roads can be built. There may also be opportunities for targeted improvement, such as intermodal projects to improve both truck and rail freight movement at ports (such as what has been implemented in Los Angeles and is being evaluated in Houston).

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Cities and Their Parts: Is America On the Road to Ruin?

by Roger L. Kemp, PhD

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INTRODUCTION

The term "infrastructure" refers to the basic facilities and installations necessary for society to operate. These include transportation and communication systems (e.g., highways, airports, bridges, telephone lines, cellular telephone towers, post offices, etc.); educational and health facilities, water, gas, and electrical systems (e.g., dams, power-lines, power plants, aqueducts, etc.); and miscellaneous facilities such as prisons, asylums, national park structures, and other improvements to real property owned by government. In the United States, the infrastructure is divided into private and public sectors (in the latter case, divided again between facilities owned by municipal, county, state, and federal governments, as well as many special district authorities such as the Port Authority of New York and the Los Angeles Department of Water and Power, to name a few).

According to the American Society of Civil Engineers (ASCE), the only professional membership organization in the nation that has graded our nation's public infrastructure since, there are fifteen major categories of government infrastructure. These infrastructure categories include:

- Aviation,
- Bridges,
- Dams,
- Drinking Water,
- Energy,
- Hazardous Waste,
- Navigable Waterways,
- Parks and Recreation,
- Rail,
- Roads,
- Schools,
- Security,
- Solid Waste,
- Transit, and
- Wastewater.

FISCAL CRISIS

All levels of government in the U.S. are facing a new era of capital financing and infrastructure management. Revenues that once were available for capital construction, restoration, and maintenance, have either diminished or evaporated entirely in recent years. Portions of the public infrastructure that were once adequate are now experiencing signs of distress, even decay, with no end in sight to the ongoing deterioration of America's infrastructure.

Local, state, as well as the federal government, are now subjected to unprecedented fiscal demands for public services in an environment of limited taxation and dwindling financial resources. Throughout the nation, many state government deficits loom ominously on the horizon. At the same time, the federal deficit is at an all-time high, exacerbated by the fact that our nation is financing an undeclared war in the Middle East. These negative fiscal circumstances, experts believe, are likely to continue for many years to come.

Congested highways, overflowing sewers, and corroding bridges are constant reminders of the looming crisis that jeopardizes our nation's prosperity and the quality of life for our citizens. With new grades for the first time since 2001, the condition of our nation's infrastructure has shown little to no improvement since receiving a collective grade of D+ in 1998, with some areas sliding toward failing grades. The American Society of Civil Engineers' *2005 Report Card for America's Infrastructure* assesses the same 12 categories as in 2001, and added three new categories. The grade comparison of America's

infrastructure between the ASCE's most recent 2005 survey and its original survey in 1988 are highlighted below.

- **Aviation**—Received a grade of B- in 1988, and a grade of D+ in 2005.
- **Bridges**—Received a grade of C+ in 1988, and a grade of C in 2005.
- **Dams**—While not graded in 1988, they received a grade of D in 2005.
- **Drinking Water**—Received a grade of B- in 1988, and a grade of D- in 2005.
- **Energy**—While not graded in 1988, this category received a grade of D in 2005.
- **Hazardous Waste**—This category receive a grade of D in 1988 and in 2005.
- **Navigable Waters**—While not graded in 1988, they received a grade of D- in 2005.
- **Parks & Recreation**—While not graded in 1988, they received a grade of C- in 2005.
- **Rail**—While not graded in 1988, this category received a grade of C- in 2005.
- **Roads**—Received a grade of C+ in 1988, and a grade of D in 2005.
- **Schools**—While not graded in 1988, this category received a grade of D in 2005.
- **Security**—This category did not exist in 1988, and insufficient data is available to properly evaluate this category (i.e., this is a new category since 9/11/01).
- **Solid Waste**—Received a grade of C- in 1988, and a grade of C+ in 2005. This is the only infrastructure category to increase during its grade since the original "graded" evaluation some 17 years ago.
- **Transit**—Received a grade of C- in 1988, and a grade of D+ in 2005.
- **Wastewater**—Received a grade of C in 1988, and a grade of D- in 2005.

In short, U.S. roads, bridges, sewers, and dams are crumbling and need a $1.6 trillion overhaul, but prospects for improvement are grim. This is the amount of money necessary over the next five years to restore and rebuild major components of our nation's public infrastructure. The nation's drinking water system alone needs a public investment of $11 billion a year to replace facilities, as well as comply with regulations, to meet our future drinking water needs. Federal grant funding, in 2005, is only 10% of this amount. As a result, aging wastewater systems are discharging billions of gallons of untreated sewage into surface waters each year, according to the ASCE's report.

And the signs of our deteriorating infrastructure go on! Poor roads cost motorists $54 billion a year in repairs and operating costs, while Americans spend 3.5 billion hours a year stuck in traffic jams. The country's power transmission system also needs to be modernized, the report said. While demand continues to rise, transmission capacity failed to keep pace and actually fell by 2 percent in 2001. As of 2003, 27 percent of the nation's bridges were structurally deficient or obsolete, a slight improvement from the 28.5 percent in 2000. It is alarming to note, but since 1998, the number of unsafe dams in the country rose by 33 percent to more than 3,500. A side-by-side comparison of the grades for the various components of America's infrastructure for 1988 and 2005 are shown in Table 1.

Several national professional associations have officially endorsed the ASCE's *2005 Report Card for America's Infrastructure*. They include the American Public Works Association; the National Stone, Sand and Gravel Association; The U. S. Conference of Mayors; the National Heavy and Highway Alliance; the American Road and Transportation Builders Association; and the Association of State Dam Safety Officials. These endorsements are listed in Table 2.

ECONOMIC DEVELOPMENT

It should be emphasized that the improvement and maintenance of our nation's public infrastructure, at all levels of government, is critically linked to economic development in all regions of the country. Economic development programs, as most people are aware, bring in additional private-sector investment, add much-needed jobs to the local economy, as well as provide additional tax revenues to fund future public services (for all levels of government). An adequate infrastructure makes a city, county, state, and nation more desirable from an economic development perspective. Without an adequate infrastructure, the financial plight of all levels of government is likely to deteriorate even further in the future. Hence, finding solutions to the country's infrastructure problems is an important issue facing public officials (and citizens) in every level of government.

If the public officials continue to let these critical infrastructure issues remain unresolved, the next generation of political leaders at each level of government will either have to raise massive taxes to repair and maintain their government's respective portion of the infrastructure, or be forced to close many public facilities due to their disrepair, deterioration, or decay. In short, major portions of our public infrastructure will become unsafe for the public to use. Economic development programs will also diminish if these infrastructure issues are not properly addressed and resolved, creating lost opportunities for private sector investment, the jobs they would bring, as well as the much needed revenues that could be used to maintain essential public services at all levels of government.

NATIONAL LEADERSHIP IS NEEDED

While the views expressed by many experts who research and write on infrastructure issues throughout the nation point to a general agreement on the magnitude and complexity of this problem, little agreement exists on a consensus on how to achieve a comprehensive nation-

wide solution to restoring and maintaining America's public infrastructure. Although there is disagreement as to an acceptable solution, one point seems obviously clear: *the necessary leadership and policy direction required to properly address this national issue must come from the highest level of government.* It is only within a national policy framework that states, counties, and cities can work together to improve the current condition of our public works facilities. Local and state governments alone, because of their many diverse policies, multiple budget demands, and varied fiscal constraints, cannot be relied upon to achieve the comprehensive solution required to solve this national problem.

The current philosophy of our national government has been to let the lower levels of government (states, counties, and cities) solve their own problems, regardless of the nature of their complexity or the magnitude of funds needed. The political posture of our national government needs to become more positive and proactive if a solution is to be forthcoming. For these reasons, it is obvious that assertive leadership is needed from the federal government to make the difficult policy decisions, as well as to approve the funding requirements, necessary to solve our country's infrastructure problem. Fundamental changes are needed to redirect national priorities about how public capital investments are made. Public officials, at all levels of government, can no longer merely build public facilities without adequately maintaining them in future years.

THE FUTURE

As the severity of this issue escalates, and citizens become more aware of the increased costs of postponing a decision on this pressing issue, taxpayers may be more willing to become politically involved in solving this issue in the future. Taxpayers cannot be expected, however, to foot the entire bill for a solution, since the majority of our country's capital assets have been constructed over the past several decades, some over a century ago, and frequently with the assistance of grant funds from our federal government. This bullet is "too big to bite" by other levels of government alone.

Also, cities, counties, and states have relative degrees of wealth based on their taxing capacity, bonding levels and ratings, and budgetary reserves. Because of this, many lower levels of government do not have the financial capability, even with increased taxation, to adequately address those issues related to restoring and maintaining America's infrastructure. It is safe to say that most citizens throughout the country already feel overtaxed by all levels of government. Even though citizens may be willing to assist financially, a major redirection of federal government funds will be required for a truly comprehensive and coordinated nation-wide response to our country's outstanding infrastructure problems and issues.

Even with some additional taxes and user fees, funding will be limited at all levels of government. For this reason, argue those who deal with infrastructure issues, national priorities must be established for the replacement and restoration of capital facilities at all levels of government, starting with those projects that are necessary to ensure the public's security, health, and safety. Funds from the national government must be targeted for infrastructure projects from less important operational programs with limited, or only special interest, constituencies. Within the framework of national policies, existing federal grant programs must be redirected to provide the necessary funds to assist in the financing of those capital projects necessary to restore America's public works infrastructure to ensure the security, as well as the health and safety, of all our citizens throughout the country.

Our nation is not "on the road to ruin," as some experts explain, but merely going through the transition period required to properly sort-out and arrive at politically acceptable long-term solutions to this critical and complex policy issue that plagues all levels of government—federal, state, county, and city alike. If our nation's infrastructure is allowed to deteriorate even further in the future, possibly to the point of decay, the cost of resolving this issue will escalate significantly in future years, for all taxpayers. If this happens, economic development programs will also continue to suffer, and the revenues they could generate will not be available to assist in restoring our public infrastructure.

TABLE 1

REPORT CARD FOR AMERICA'S INFRASTRUCTURE

Grade Comparison between the 1988 and 2005 Reports
by the American Society for Civil Engineers

CATEGORY	1988 GRADE	2005 GRADE
Aviation	B-	D+
Bridges	C+	C
Dams	n/a	D
Drinking Water	B-	D-
Energy	n/a	D
Hazardous Waste	D	D
Navigable Waters	n/a	D-
Parks and Recreation	n/a	C-
Rail	n/a	C-
Roads	C+	D
Schools	n/a	D
Security	n/a	I*
Solid Waste	C-	C+
Transit	C-	D+
Wastewater	C	D-

*This grade reflects an "I" for "Incomplete," since insufficient information is available to properly evaluate this category. This category was added after the terrorist attack of 9/11/01.

TABLE 2
ENDORSEMENTS OF THE REPORT CARD FOR AMERICA'S INFRASTRUCTURE BY THE AMERICAN SOCIETY OF CIVIL ENGINEERS

American Public Works Association
National Stone, Sand and Gravel Association
The U. S. Conference of Mayors
National Heavy and Highway Alliance
American Road and Transportation Builders Association
Association of State Dam Safety Officials

Source: American Society of Civil Engineers, Infrastructure Report Card for 2005, *Website* (http://www.asce.org/reportcard/2005), March 13, 2005.

TABLE 3
INFRASTRUCTURE INTERNET RESOURCES

American Association of State Highway & Transportation Officials (http://www.transportation.org)
American Public Transportation Association (http://www.apta.com)
American Public Works Association (http://www.apwa.net)
American Society of Civil Engineers (http://www.asce.org)
Global Security (http://www.globalsecurity.org)
Infrastructure Security for the Built Environment (http://www.tisp.org/isbe)
International City/County Management Association (http://www.icma.org)
National Association of Counties (http://www.naco.org)
National Civic League (http://www.ncl.org)
National Infrastructure Protection Center (http://www.nipc.gov)
National League of Cities (http://www.nlc.org)
The Council of State Governments (http://www.csg.org)
The Infrastructure Security Partnership (http://www.tisp.org)
U. S. Department of Homeland Security (http://www.dhs.gov)
U. S. Department of Housing & Urban Development (http://www.hud.gov)
U. S. Department of Transportation (http://www.dot.gov)
U. S. Economic Development Administration (http://www.eda.gov)

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AFTERWORD TO INFRASTRUCTURE ARTICLE

No doubt that recent financial events in the U.S., and globally, will impact world financial markets, at least in the short-term. This means that government officials will focus on the financial stability of their respective nations, citizens will focus their attention on maintaining the value of their residences and financial assets, and other issues of importance, such as the condition of a nation's infrastructure, will once again take a *back-seat*, or *second-place*, to more important national issues. The philosophy of central governments will continue to be to *let lower levels of government solve their own problems.*

This trend, coupled with declining and tightening national financial resources, will place public officials at local levels of government in a difficult position since their tax dollar revenues are primarily used to maintain existing public programs and services, as well as satisfy existing outstanding debt service requirements. In America, as well as the rest of the world, citizens have heard about "funding for the bridge to nowhere," but the focus must change to "preventing bridges collapses such as the one that recently took place in the State of Minnesota." The condition of a nation's infrastructure must be brought to the forefront as a priority national issue once finances permit.

Pennies, Potholes and Politics—A Possible Roadmap to an Efficient Transportation System

by Martin Capper, Chief Executive Officer, Mark IV IVHS Division

Martin Capper joined MARK IV in 1993 and served as executive vice president of the IVHS division from 1997 until 2001 when he was appointed president. As of December 2008, he acquired the position of Chief Executive Officer.

Mark IV IVHS supplies the majority of electronic toll collection equipment in the northeastern United States including more than 18 million E-ZPasssm toll transponders. The E-ZPasssm system of the Interagency Group of 25 toll authorities is the largest and most successful intelligent transportation system implementation in the world, and MARK IV is a significant contributor to that success. Current IBTTA data reflects Mark IV as having 38% of the Global Electronic Toll Collection market with its nearest competitor at approximately 14% of that market.

In addition to its leading role in the deployment of Electronic Toll Collection, Mark IV is also a pioneer in the development of the next generation technology for Dedicated Short Range Communications (DSRC) and has participated in both the development of prototypes and the proof of concept testing of the technology.

Capper is a past chair of the Intelligent Transportation Society of America and led that organization to its participation on the Vehicle Infrastructure Integration project. He has presented papers on the practical use of technology in transportation throughout North America and in Europe.

Mark IV is also a member of IBTTA, a business member of APTA and is active in the state chapters of ITS America, particularly in the northeastern U.S. Additionally Mark IV is a member of ITS Canada.

Prior to joining Mark IV, Capper was a resident of South Africa for 20 years. During his career there, Mr. Capper served as CFO of South Africa's largest independent insurer for 5 years and pioneered the concept of electronic commerce between intermediaries and underwriters. In addition, he was the executive responsible for strategic planning for the nation's largest paper and packaging group—Nampak Ltd.

Born in Ireland, Capper is a fellow of the Institute of Chartered Accountants in Ireland having qualified in 1974. He and his wife live in Milton, Ontario.

It is common cause that, at least at present levels, gas tax is an inadequate way to finance America's transportation needs in the longer term. Opinions differ as to whether significantly increased levels of gas tax will solve the problems. The current high level of gas price demonstrates well that traffic volumes are not insensitive to gas prices with toll facilities currently reflecting decreases in traffic volumes and, therefore, revenues of anything from 2 to 6 percent. The nation's largest, at least in dollar terms, toll collector—Metropolitan Transportation Authority of New York—reports a 5% drop in traffic volumes year on year. If that is annualized, it approaches $100 million revenue.

Expecting an increase in gas tax to fund the growing transportation deficit in a society that is becoming increasingly more concerned about climate change is somewhat like poking your finger into the hole of the dam and expecting to stem the flood. This article does not set out to be a political treatise in what the possible alternatives should be, that would require a level of political astuteness that the author does not possess. It rather seeks to look at current technologies and emerging technologies and point to alternative options open to the nation's leaders.

Toll roads, including bridges and tunnels for which tolls are levied, have existed for almost as long as there has been traffic, whether powered by the internal combustion engine or in fact, horse-drawn. Methods of collecting tolls have progressed from the toll collector relieving his customers of cash, through the automatic cash collection baskets, swipe cards to electronic toll collection. Even today, with Electronic Toll Collection rapidly becoming a mature technology, the degrees of automation vary from barrier based systems right through to Open Road Systems with an increasing trend to All Electronic Tolling with no cash option being offered.

All current technologies deployed in the U.S., at least on the surface, meet the requirements of the current toll facilities; however, tolls collected at the current facilities, only go to support the facility or in some cases the related Mass Transit entities. Some tolls collected flow to the transportation funding of the state. Whichever is the case, the $5-6 billion collected each year by toll facilities represents a very small portion of the total transportation funding requirement.

In the early '90s, toll authorities like the North Texas Tollway and the New York State Thruway pioneered Electronic Toll Collection. Today, they are both using essentially the same technology that they first deployed. In both cases though, they have graduated from the traditional toll plaza configurations to Open Road Tolling, equally the same or similar technology to that being used on the all-electronic highway, Highway 407, in Ontario, Canada, is also being used in the High Occupancy Toll lane in Minnesota.

Globally, we see the same trends with transponder technology being used for "Free Flow Tolling" the European equivalent of Open Road Tolling and a move to transponder technology expected for the London England cordon or congestion pricing. The only facility to appear to "buck the trend" is Stockholm with its decision to use 100% ELPR (Electronic License Plate Recognition) or image tolling. However, that decision more results from the legal requirement that every vehicle license plate requires to be photographed anyway making transponders redundant!

The German Tollcollect system aimed at cross border trucks uses a mix of transponder and Global Positioning System devices. These devices tend to be significantly more expensive than the transponders used in conventional tolling. However, given the relatively small percentage of vehicles that require to be tolled or billed, the trade-off on minimal infrastructure cost is well justified.

There have also been significant steps in the development and improvement of imaging technologies where accuracy rates are getting close to the levels of accuracy being achieved by transponders. This is more so in Europe than in North America. License plates in Europe tend to be much more standardized than in the U.S., vanity plates tend to be the exception arising out of historical coincident rather than intent of design. (For example: COM1C). The first change order on the video billing subsystem of Highway 407 was when the Transportation Ministry moved from 6 character to 7 character license plates and simultaneously changed the font of the characters!

An advantage that Europe enjoys over North America is that there is a common standard, reinforced by agreement among the major manufacturers, for the technology used in Electronic Toll Collection. The major exception to that standard is the Italian Autostrada and the exception results from its deployment predating the standard.

In North America, there traditionally has been no such national standard, largely because other than at federal government level, there has been no real demand for such a standard and as toll authorities are, by their nature, self-funding and therefore, the federal government has had little, if any, influence in technology decisions. In fact, early attempts at producing a standard resulted in a standard with which every manufacturer complied but equally ensured that interoperability between competing manufacturers was not possible.

This situation began to change in the early years of this century when the Vehicle Infrastructure Integration (VII) project of the Federal Department of Transportation was born. The vision was simple—a standard device in every vehicle capable of communicating with each other and with the roadside all with the objective of improving safety. A partnership began to be developed between the federal government, state governments and automobile manufacturers.

This partnership was formed to develop a specification that would enable all devices built to the specification to communicate freely with each other. The Federal Communications Commission played its part by reserving 75MHz of radio frequency bandwidth centered around 5.9GHz. This bandwidth was available on free license to any transceiver that met the operating requirements. The band is free license but not license-free thereby protecting the integrity of a system that is dedicated to vehicular safety.

The Federal Department of Transportation began a program to develop the standard utilizing the standard setting processes of the Institute of Electric and Electronic Engineers (IEEE). Several alternative radio frequency schemes were considered and after several rounds of consideration, review and voting one of the popular 802.11 protocols was accepted. The standard is to all intents and purposes finally now settled.

Federal DOT also engaged the four companies involved in electronic toll collection to develop prototypes built to the standard and, planned to be used, in proof of concept testing. Collectively known as the DSRC (Dedicated Short Range Communications) Industry Consortium or DIC, Mark IV, Raytheon, SIRIT and TransCore split the work equally between them with Mark IV developing the hardware, TransCore the software, Raytheon the architecture and security and SIRIT conducting the testing.

Parallel to these activities, the VII partnership was tackling the weighty political and institutional issues that would need to be resolved before deployment could begin. The twin issues of liability and privacy are arguably the biggest hurdles to be overcome. I recall in the early days of E-ZPass, an enterprising journalist discovered what he thought was the big story when he discovered a chip inside the E-ZPass transponder which had those dreaded initials GPS on it. It took a discussion with the design engineers confirmed with a call to the chip manufacturer

to persuade the journalist that GPS were the initials of the chip manufacturer and not Global Positioning System! Now of course, with every VII device having a true GPS chip in it, the big brother concerns reemerge and in spades! It is no good protesting that the GPS chip is merely for positioning the vehicle—not tracking it!

On the liability side, the hurdle is as big or even bigger. With safety being the apparent driving force behind VII and with the device connected to the vehicle control computer and therefore to all of the vehicle safety systems such as the ABS or antilock braking systems, one begins to get an appreciation of the liability issues particularly in the litigious society in which we now live in North America.

The solution to each of these hurdles is likely to be very different. The easy solution, if easy is the right word, to the liability issue is for the federal government to legislate against the litigation "opportunities" in the interests of the greater good to be achieved by reducing the 40,000-plus fatalities each and every year on our highways and byways.

As I said earlier, the privacy issue is going to be more complex and will have many components not least of which will be education of the general public—education that although the devices communicate vehicle position every time they come in contact with a roadside device, they do so anonymously for the purposes of communicating data not about the vehicle itself but rather about the environment around the vehicle.

Perhaps the largest hurdle to get over will be the cost: the cost of the devices to be built into the vehicles; and the cost of the infrastructure. It could be argued that the cost of the devices in the vehicles should be borne by the vehicle manufacturers because, unlike other safety features in the vehicle, such as seatbelts and airbags, the manufacturers can actually achieve tangible benefits from the VII devices and the data they generate and transmit to the roadside. Such tangible benefits as warranty monitoring, with the industry's warranty costs running into billions it does not take a very large reduction in warranty expense to cost justify the devices.

Equally, there are benefits to the providers and maintainers of the roads infrastructure—such benefits as the ability to combine data derived from vehicle temperature and rain sensors to determine more precisely time and area for application of salt or sand in freezing conditions. Data from the vehicle ABS systems combined with location information from the GPS portion of the devices can assist in determining pothole locations and, therefore, need for maintenance. Probably at the top of the list of benefits is the benefit to be derived from reducing the number of fatalities on our roads. Currently occurring at a rate of over 40,000 fatalities each and every year, the cost to the economy runs into billions.

There has been little argument against the benefits, some of which I have identified above; however, the debate over privacy and liability has been robust. The other robust debate is how third parties, that are not the automobile manufacturers, can be permitted to introduce applications into the vehicle devices. Not the smallest part of the debate is who will own the account. Take Electronic Toll Collection (ETC) as an example. Since the introduction of ETC in the very early '90s, the toll authorities have jealously guarded the account, in most cases not least because the law requires them to! The vehicle manufacturers believe they need to control both the application and the account. Control of the application is somewhat understandable as the tolling application would be one of many sitting alongside the safety system applications of the vehicle.

I have no doubt that all of the hurdles that I have identified above, together with the many other hurdles that exist, can be overcome but it will take time, and time is not a luxury that those operating our transportation system have! My opening statement is that gas tax is an inadequate source for funding our transportation system. It is inadequate today and will become increasingly more so over the coming years. Our next so called "reauthorization" is due for the five years commencing October 2009. The levels of funding that transportation leaders and lobby groups seem to be centering around—half a billion dollars—is double the current levels.

At a time when we are looking for increased funding, we are also demanding better protection of our environment through more fuel-efficient vehicles and reduced use of fossil fuels and increased use of alternative energy. In recent months, we have seen the volatility of the price of oil. Oil is not a renewable resource and generally over time, its price will increase. So the purchasing power of our gas tax dollars will continue to decline, all gathering together in a perfect storm aimed at ensuring a deteriorating transportation system unless we urgently and drastically reform the way we fund the system. We need not a "reauthorization" but rather a new authorization.

If I could now consider some numbers to illustrate the point—at current levels a penny per gallon additional tax on gas will yield $1.8 billion. If our requirement is another $50 billion annually, then the gas tax increase required to fund this is approximately 30 cents per gallon! The dramatic increase and volatility in gas prices over recent months is at least one major factor behind the reduction in vehicle miles traveled being reported nationwide, thus demonstrating that demand for gas is not as inelastic as we had previously thought!

A significant disadvantage of gas tax as a source for funding transportation is that the funding mechanism, in and of itself, does not allow us to better manage the system. There are better ways that, in addition to being efficient funding methods, can also be used to better manage aspects of the system. I refer, of course, to using pricing to manage the congestion issue, which is arguably, next to funding, the second major issues facing our transportation mavens today!

Given his situation, it appears that the VII program with some refocusing of its objectives should at least be considered as one means to assist in both resolving the funding and congestion issues.

Let us look first at the funding issue: Each VII device is connected to the vehicle's on-board computer and therefore can extract accurate vehicle miles traveled from the odometer. The device is also capable of transmitting that data to the roadside or even, possibly, to a gas pump! Given these two facts, we have the means of using vehicle miles traveled as a method for charging user fees and at least one already proven method for collecting such fees.

Studies carried out by the Texas Transportation Institute show that in 2005 the average vehicle miles traveled in the top 100 major metropolitan areas was approximately 12,500 per capita. If we apply the 2005 census data to that number and we charge 1 penny per mile as a user fee, the resulting revenue would be $31.8 billion or to put it differently, to raise the $50 billion increased funding that is being requested would require a user fee of less than 2 pennies per mile traveled!

The cost of deploying both vehicle devices and infrastructure needs to be considered. Relying on the vehicle manufacturers to deploy the devices on vehicles will not work largely because the North American fleet only turns over every 16 years or so! The fleet is approximately 240 million vehicles and best forecasts for Detroit's 2009 production is 11.5 million vehicles. Clearly dealing only of new production will not permit widespread implementation of a VMT user fee for several years.

As to the cost of the individual devices, this is difficult to estimate; however, given a 240 million potential market place and given at least 4 manufacturers capable of manufacturing the devices, it is reasonable to assume a price around $20. Simple math shows the total cost of deploying to be in the region of $5 billion or about 10% of the potential revenue in year one, or less than one sixth of a penny a mile.

The infrastructure cost is more complex because one tends to view our current toll collecting facilities as the deployment example. I would suggest, however, there is an alternative. A few paragraphs ago, I used the statistics for the top 100 major metropolitan areas on the basis that every vehicle fairly regularly visits such areas. There are 300,000 signalized intersections in the United States. Increasingly, these intersections are being networked and incorporated into traffic management systems. Installing the roadside infrastructure component at these signalized intersections will allow us to take advantage of existing networks and enhance existing traffic management systems. Assuming four roadside devices at each intersection and a cost of $3,000 per unit the total cost would be approximately $3.6 billion.

The cost assumptions I have outlined above are intended to be indicative of an order of magnitude, not engineering estimates. When considering order of magnitude, the reader should relate them to two values. First, they should be related to the annual revenue that could be collected using such a system. Second, they should be referenced against the amounts of money that have been paid by the private sector for leases or concessions of such toll facilities as the Chicago Skyway and the Indiana Toll Road and to the offer for the Pennsylvania Turnpike.

I am neither advocating for or against privatization. I am merely pointing out the options that open with such a deployed system—in effect, provoking the debate.

A recent headline in *Tollroads* newsletter read: "Urban tolls would reduce cost of housing, provide major social benefits study shows." The editor, Peter Samuels, is referring to a report published in Brookings-Wharton Papers on Urban Affairs 2008, and I would encourage readers to also read this report. Congestion pricing is one of the tools that the system I have outlined can utilize! The benefits in traffic and congestion management are well published by those more competent than me and my purpose in this article is to show that deploying a system aimed at collecting user fees brings benefits far in excess of efficient revenue collection.

It should also be remembered that by focusing the VII program as a revenue collection tool, we have not in any way compromised or abandoned the original vision of a system dedicated to safety. I am aware that I have not taken into consideration the cost of system integration nor the operating costs of such a system—they clearly will have to be part of the debate. I reiterate the purpose of this article is to ensure that we do not ignore what I believe to be a valuable tool in our transportation toolbox, and I do not believe it should be bogged down and clouded by institutional issue.

Transportation: This Year's Challenge for the Next Century

By Texas State Senators John J. Carona and Kirk P. Watson

Senator John J. Carona, President Pro Tempore

First elected to the Texas Legislature in 1990, Senator John Carona is now in his fifth term in the Texas Senate, representing District 16 in Dallas County. Previously, Senator Carona was elected to three terms in the Texas House of Representatives. Senator Carona serves as Chairman of the Senate Committee on Transportation and Homeland Security and as a member of the Senate Criminal Justice, Jurisprudence, and State Affairs committees. In addition, he currently serves as President Pro Tempore of the Texas Senate and Chairman of the Joint Legislative Study Committee on Private Participation in Toll Projects.

Senator Carona received bachelors of business administration degrees in insurance and real estate from The University of Texas at Austin in 1978. He currently serves as president of a national realty management firm.

Senator Kirk P. Watson

Kirk Watson is the Texas State Senator for District 14, which includes most of Travis County and the City of Austin. He is vice-chair of the Senate Committee on Transportation and Homeland Security, and he serves on the Senate Committees for Jurisprudence, Nominations, Business and Commerce, and the Subcommittee on Emerging Technologies and Economic Development. He also serves as chair of the Capital Area Metropolitan Planning Organization. He was recognized in 2007 as *Texas Monthly* magazine's legislative "Rookie of the Year."

Senator Watson is a partner with the law firm, K&L Gates. He is a lawyer, mediator, and public affairs consultant, and he is the former Mayor of Austin, Texas. In 1991, Watson was appointed by Governor Ann Richards to chair the Texas Air Control Board. He is former chair of both the Texas Advisory Board for the Environmental Defense Fund and the Greater Austin Chamber of Commerce.

Texas highways were once the pride of the state—and justifiably so. Our extensive infrastructure allowed generations of farmers and ranchers to feed the state and the world, and it turned our cities and metropolitan regions into economic powerhouses. Our farsighted transportation networks allowed Texans to charge into a prosperous future without having to catch up with the present.

But for a generation, the state has approached old and new transportation challenges in a very different way. We have struggled simply to keep up with our needs.

As a result, Texas now faces a transportation crisis. The state stands at a critical intersection, and the choices that the Legislature makes over the next several months will determine both how we live right now and what opportunities or challenges our children will inherit.

This paper, co-authored by the Chairman and Vice-Chairman of the Senate Transportation and Homeland Security Committee, outlines the issues that Texas faces in the near and distant future, as well as options for confronting those challenges that the 81st Texas Legislature will consider when it convenes in January 2009.

GROWING CONGESTION

Texans spend more and more of their lives in traffic instead of with their families. The Texas Transportation Institute's 2007 Urban Mobility Report provides a very sobering reality check in this regard. In the Dallas-Fort Worth Metroplex, residents spent 58 hours—a week and a half of work time—sitting in traffic in 2005 (the year covered in the Institute's most recent report). That's a 480 percent increase from 1982, the largest jump in terms of raw hours in the country.

Houston is nearly as bad, with area motorists losing 56 hours a year to traffic delays—more than double what they faced 23 years before. In San Antonio, this loss of

time jumped from six to 39 hours. In Austin, it went from 12 hours to 42. In El Paso, three to 24.

Even in the relatively small towns of Laredo, Beaumont, Brownsville, and Corpus Christi, motorists are spending eight to 12 hours a year in traffic, according to the Institute. It used to be two to five.

Clearly, this is an economic problem, with major arteries bottled up, workers spending more and more time in traffic, and freight unable to flow through a region. But more than that, it represents a loss of freedom. The combination of significant, ongoing growth and inadequate, deteriorating infrastructure—a disorder that promises only to get worse if the state does nothing—will make it harder and harder for Texans to live where they want to, run errands, and simply to spend evenings and free time with their families.

TIGHTENING REVENUE

Texas' dramatic growth is apparent as the state sizes up its needs and the costs of providing them. Looking at it from the revenue side, however, we appear to be frozen in time.

The motor fuels tax—the primary mechanism for funding transportation in this state—has stood at 20 cents-per-gallon since 1991. Meanwhile, the population continues to rise, as do the costs of the roads and other transportation projects that Texans need. A cost index tied to steel, concrete, asphalt, and other materials that go into transportation projects shows those costs have increased by 60 percent in the last five years alone, according to the Texas Department of Transportation.

This approach of cutting back on needed projects rather than evaluating solutions to build them is hardly unique to Texas. Since 2006, the federal government has rescinded $924 million in promised transportation funding for Texas alone, and the Texas Department of Transportation expects another $729 million in rescissions next year. Going back to 1993, the federal fuel tax has been frozen at 18.4 cents per gallon of gas.

The response has not been to fix that disparity, but to cut back on projects that don't provide revenue themselves. About a year ago, the Department of Transportation stopped work on a wide-ranging slate of projects, touching every region in the state.

Many of those projects were restored based on a commitment to pay for them with bond funding. Such use of debt has expanded considerably in recent years. It probably will soon include $5 billion in general obligation bonds, backed by sales taxes and other general state revenue, which Texas voters approved in 2007. While this has effectively covered short-term transportation needs, it cannot be a long-term solution because it increasingly would drain away funding for debt service that will be needed for immediate needs.

DEPENDENCE ON TOLLS

This convergence of growing needs and shrinking revenue has left one dominant mechanism for addressing our congestion problem in future years: toll roads. User fees on drivers provide ready funding for road builders and transportation agencies, and they offer an irresistible source of revenue for governments that need to build other projects.

Toll roads are an accepted part of the landscape in regions such as Houston and the Metroplex that have mature toll road systems. But they have met with considerable resistance in areas such as Austin and San Antonio, where commuters rightly question how funding will be used and whether drivers on tolled lanes should subsidize those in other areas.

Despite such qualms, tolls will likely factor into most major new highways and expansions, at least in the immediate future. The Texas Department of Transportation has said it will evaluate every major highway project—starting with all 87 planned projects state-wide—as a toll project. And the legislature has been slow or unwilling to provide alternatives that would allow regions or the state to build new and larger roads without tolls.

Some have urged that the state take the next step and approve the use of concessions and other types of comprehensive development agreements that would literally or practically privatize parts of the state's highway infrastructure. Such measures would allow private corporations to collect toll revenue over decades in exchange for up-front payments and commitments to build and maintain the roads. Opposition has grown to this approach, in the legislature and elsewhere, as concerns have spread about unintended consequences that could limit the development of Texas' transportation system.

SOLUTIONS: MOVING FORWARD

The disparity between rising costs and frozen revenue sources means it is only becoming harder to address these needs. Texas is facing 21st Century challenges with 20th Century tools.

In January, the 81st Texas Legislature will begin weighing opportunities to make a meaningful investment in transportation. Here are alternatives which we believe the state must explore:

END TRANSPORTATION FUNDING DIVERSIONS:

The State Highway Fund, also known as Fund 006, has long provided money for the Department of Public Safety and other priorities. In 2007, more than $1.5 billion dollars was diverted from Fund 006 for non-transportation purposes.

Over the current biennium, ending in 2009, the Department of Transportation estimates that these diversions will cost the State Highway Fund the following amounts:

80th Legislative Session 2007 Diversions	
Agency	**Amount**
Department of Public Safety	$ 1,245,108,574.00
Texas Education Agency	$ 100,000,000.00
Medical Trans - Medicaid Match	$ 85,381,725.00
Auto Theft Prevention	$ 27,558,755.00
Salary Increase for Schedule C	$ 22,291,710.00
Client Transportation Services	$ 22,363,606.00
Health and Human Services Commission	$ 20,000,000.00
Texas Transportation Institute	$ 14,317,605.00
Texas Workforce Commission - Client Transportation	$ 13,658,704.00
Gross Weight Axle Fees	$ 10,800,000.00
State Office of Administrative Hearings	$ 6,736,396.00
Commission on the Arts	$ 1,340,000.00
Attorney General - Mineral Rights Litigation	$ 1,700,000.00
Historical Commission	$ 1,000,000.00
Regulation of Controlled Substances	$ 804,972.00
Silver Alert for Missing Senior Citizens	$ 224,990.00
Lufkin Tourist Information Center	$ 150,000.00
TOTAL	**$ 1,573,437,037.00**

With funding already running chronically short, Texas must focus this money on roads and other transportation projects.

RE-WRITE THE GAS TAX:

As discussed above, the motor fuels tax—Texas' primary source of transportation funding—cannot provide for the state's transportation needs. Efforts to increase it, however, have been repeatedly confounded at the Capitol.

The last major increase in this revenue source, approved in 1991, was approved only after a significant portion of the revenue it collects was committed to public schools.

During the 80th Legislative Session in 2007, two significant efforts were made to ensure the motor fuels tax better reflects the costs it must pay for. Senate Bill 165 called for an indexing of the motor fuels tax to the highway cost index. However, the bill could not be heard because the Texas Constitution requires legislation that increases taxes to begin in the House of Representatives. And House Bill 962, which would have indexed the motor fuels tax to the consumer price index, was left pending in the House Ways and Means Committee.

The House of Representatives as a whole did, however, support a summer "gas tax holiday" through an amendment on Senate Bill 1886 that was introduced on the House floor. This amendment, which would have cost Texas hundreds of millions of dollars in transportation funding, passed 118-16, but was later removed in conference committee.

If the state is going to improve transportation in our state, particularly without an over-reliance on toll roads and user fees, the Texas House of Representatives must champion indexing the motor fuels tax. Without support from our colleagues in the House, this concept is dead on arrival.

The Texas State Comptroller of Public Accounts estimates that any increase in the motor fuels tax, whether a flat-rate increase or an indexing will, increase transportation funding by hundreds of millions of dollars.

Motor fuels tax indexed to the Producer Price Index for highway and street construction		
Fiscal Year	Gain/(Loss) to General Revenue Fund 001 and the Available School Fund 002	Gain/(Loss) to the State Highway Fund 006
2010	$ 49,116,000.00	$ 136,996,000.00
2011	$ 68,996,000.00	$ 192,491,000.00

Motor fuels tax indexed to the Consumer Price Index		
Fiscal Year	Gain/(Loss) to General Revenue Fund 001 and the Available School Fund 002	Gain/(Loss) to the State Highway Fund 006
2010	$ 34,466,000.00	$ 96,134,000.00
2011	$ 61,800,000.00	$ 172,415,000.00

So even the lowest level of indexing, the Consumer Price Index, would create more than $100 million annually of additional transportation funding.

Such numbers, along with our ongoing and chronic transportation funding challenges, mean the Legislature must have a serious debate about restructuring the motor fuels tax to reflect the enormity of Texas' challenges and, at the very least, indexing it to inflation.

USE BOND FUNDING TRANSPARENTLY:

Debt financing, through bonds, has been one of the very few areas in which the Legislature has actively put new transportation initiatives before voters. And voters have been consistently supportive—a year ago, Texans voted to dedicate $5 billion in tax-supported bonds to transportation projects.

In the upcoming session, the Legislature will likely authorize the use of this $5 billion—that is the easy part. Much harder will be ensuring that the money is used properly, transparently, accountably, and without politics.

There will be a spectrum of potential safeguards and restrictions for the use of this $5 billion, including potentially dedicating it to the construction of new highways, using it to leverage local funds, or even providing equity on toll projects.

All of these limitations, and others, should be considered. But it is most important that this money not represent a blank check to the Department of Transportation or the legislature as a whole. And the money should be used for Texas' most pressing needs statewide, not pet projects that benefit the districts of certain powerful legislators.

SUPPORT REGIONAL TOOLS:

As the state's commitment to transportation funding has deteriorated, more and more of the responsibility has fallen on cities, counties, and other local jurisdictions.

However, the legislature has not been much more forthcoming with innovative planning and financing tools for local officials than it has been with transportation funding itself. Regions, particularly counties, have been severely limited—essentially to property tax increases or toll roads—in the available options for providing transportation.

In 2007, the Legislature passed a bill allowing Hidalgo County to collect an additional optional fee on vehicle registrations—money that would pay for local transportation projects. Counties across the state should be allowed to take similar actions, particularly with the approval of voters.

But as important as this new revenue source would be, it is not enough. So the legislature also should be willing to provide new mechanisms that would allow local officials not only to raise money, but also to make their money go further. It is past time for lawmakers to drop their knee-jerk opposition to new planning authority. Done well and in a way that respects property rights, such measures would ensure that scarce transportation dollars are not wasted on short-sighted developments that cost far more to serve than well-planned projects.

Such new mechanisms will help local officials at every level manage the challenges that the state's declining transportation role has thrust on them.

EXPLORE NEW ALTERNATIVES:

For most of its history, Texas has relied on single-occupancy vehicles to move people through regions and across the state. But the new century demands a new approach.

Our existing network of rail lines could be a powerful asset in Texas' transportation portfolio in coming decades. But some of these lines are often as congested as our highways. A maze of rail lines that converge near Fort Worth, an area known as Tower 55, is consistently among the worst rail traffic jams in the nation.

This congestion is a major obstacle for economic development in Texas. It makes it harder for some of our industries to receive materials and ship their products elsewhere, and it causes delays that are costly in time and money.

But more than that, the state is missing a significant opportunity to establish healthy, much-needed commuter lines where these freight trains now run. In Central Texas alone, new commuter and freight rail service could strengthen the economic ties between Austin and San Antonio, move some commuters and trucks off of Interstate 35, and put an economic charge in this vital part of the state.

So as the legislature considers transportation options, it should work to create a truly comprehensive statewide system for moving people and freight. This work should start with a sincere effort to augment our rail system by creating an effective freight system built on 21st Century needs, and to build up a passenger system that serves commuters and travelers across Texas. We can begin by funding the Rail Relocation Fund that voters overwhelmingly approved in 2005.

REFORM THE TEXAS DEPARTMENT OF TRANSPORTATION:

Finally, the 81st Legislature needs to seize its unique opportunity to establish a more effective and transparent state transportation department.

The department is now going through the state's Sunset Review Process, in which the legislature comprehensively evaluates an agency's operations and effectiveness. It represents the single best opportunity to reform the state bureaucracy. The Texas Sunset Advisory Commission is expected to act on staff recommendations and public testimony regarding the Department of Transportation in the weeks leading up to the legislative session—this will be a starting point as policy makers and transportation advocates evaluate what to do about the agency.

The Department of Transportation has taken commendable steps in recent months to be more open and accountable to all Texans. Nevertheless, the legislature should create a management structure that makes the agency completely transparent about its work, challenges and resources, and that ensures its leaders will advocate no agenda but that of the people of Texas.

For all of its recent overtures to the legislature and the public, the Texas Department of Transportation remains a wounded agency, one stained by an overt advocacy of privatization and occasional disregard for the Legislature. The department needs—and, we believe, wants—to restore its credibility. The Sunset process represents the best chance to create reforms guaranteeing that Texans are fully aware of its activities and never question its objectives.

MOVING DOWN THE ROAD

None of the changes detailed above will be easy. Indeed, they will confound the promises of something-for-nothing that have frequently defined Texas' approach to transportation.

But they are necessary if we are to address the needs we see every day at rush hour—challenges that will only become greater as Texas continues to grow.

Texas has prospered, in large part, because previous generations made transformative investments in transportation and other infrastructure. This commitment allowed us to focus on specific projects and grow our economy without needing to rush to catch up with immediate needs. This foundation fueled our prosperity.

But over recent decades, the state has neglected to build on its inheritance, and our children now risk becoming the first generation of Texans to inherit an inadequate transportation infrastructure with nowhere to grow. We have to take this opportunity to create a comprehensive system that meets the needs of those who are here and generations to come.

Managed Lanes: Addressing Congestion in Urban Freeway Corridors

by Ginger Goodin, Texas Transportation Institute

Ginger Goodin, P.E. is a senior research engineer with the Texas Transportation Institute at Texas A&M University and has over 20 years experience in transportation planning, design and operations. Her research areas are managed lanes, HOV systems and tolling implementation. She is involved in managed lanes research at the state and national level, and project development efforts in Texas and Virginia. She chairs the Transportation Research Board's Committee on HOV, HOT and Managed Lanes.

INTRODUCTION

Urban areas are facing the growing challenges of traffic congestion and limited capacity expansion due to funding shortfalls, growing constructions costs, and environmental and societal impacts. As a result, transportation officials are exploring the use of managed lanes to address mobility needs in freeway corridors, particularly where major expansion options are limited. Managed lanes utilize operational strategies for the purpose of managing travel demand and potentially improving transit and other forms of ridesharing. The managed lanes approach is gaining interest around the United States as a strategy that combines a variety of operational approaches to make the most effective and efficient use of a freeway facility.

WHAT ARE MANAGED LANES?

Within the transportation profession, the term "managed lanes" has different meanings depending upon the agency. In some agencies, managed lanes are commonly thought of as high-occupancy toll (HOT) lanes-facilities that employ variable pricing and vehicle eligibility to maintain free-flow conditions and provide high-occupancy vehicle (HOV) preference. In other agencies, a broader definition is customary, in which various management tools and techniques are combined to improve freeway efficiency and meet certain corridor and community objectives. This broader definition of managed lanes includes HOV lanes, congestion-priced lanes (including HOT lanes) and exclusive or special use lanes, such as express, bus-only, or truck-only lanes.

Although the term "managed lanes" is increasingly recognized in the transportation profession, it is not a term recognized by the general public. The managed lane facilities in operation today are typically called "HOT lanes" or "express lanes." In Texas, the first multi-lane managed facility in operation is Katy Freeway Managed Lanes within the reconstructed I-10 freeway in Houston. The Katy Managed Lanes opened under limited operation in October 2008 and are operated by the Harris County Toll Road Authority. Other managed lanes under development in Dallas and Houston utilize a variety of names, including "managed HOV lanes" and HOT lanes. This largely reflects the evolutionary nature of managed lanes in the two Texas cities where HOV lanes have been in operation since the early 1980's.

ACTIVE MANAGEMENT

A fundamental premise of managed lanes is the idea of active management. Under the philosophy of active management, a lane or set of lanes within a freeway corridor is designed to provide a premium level of service, such as free-flow conditions at all hours. This is a shift in the paradigm of how freeway lanes are built and operated: the conventional approach allows those new lanes to gradually be filled up with vehicles over time to the point that they become congested and cannot be effectively operated. Using strategies that include congestion pricing, allowable vehicle types, and access control, an operating agency can proactively manage demand and available capacity of the lanes to achieve the desired performance. From the

outset, the agency defines the operating objectives for the managed lanes and the kinds of action that will be taken once predefined performance thresholds are met. The following examples show how demand on a managed lane facility can be reduced through a specific action:

- To maintain a speed of 60 miles per hour (mph), the operating agency raises the toll rate on a priced facility.
- To ensure that the bus operating speeds of 50 mph can be maintained, the agency raises the occupancy requirements to use an HOV lane.
- To operate within a volume threshold of 1,500 vehicles per hour per lane, the agency closes an on-ramp to express lanes during peak periods.

The core of the active management philosophy is the development of clear performance objectives and operating threshold values that directly relate to the goals of the project. Additionally, a managed lane facility can be designed and operated to achieve different objectives during different days of the week or times of the day. For example, a facility could operate as HOV or HOT lanes during peak periods to focus on increasing person throughput during commute periods, toll express lanes during off-peak periods, and potentially, a truck only facility during certain times of the day.

RATIONALE FOR CONSIDERING MANAGED LANES

Transportation agencies may have a number of reasons for considering managed lanes in a freeway corridor. Among them are the following:

- The inability to build enough lanes to address congestion during peak periods: Because of construction and right-of-way costs, environmental concerns, or community issues, it may not be possible to expand the cross-section of a freeway to offer congestion-free travel at all times of the day. Managed lanes can provide a congestion "relief valve" to offer faster trips during peak periods.
- The desire to offer travel options in a congested corridor: Building on the success of HOV facilities, managed lanes can provide travel time savings for buses, vanpools and carpools, creating an incentive to shift modes from single-occupant vehicles (SOV) to various forms of ride sharing. The idea of implementing bus rapid transit (BRT) within managed lanes as a way of providing high-capacity mass transit service evolved from the HOV experience.
- The need to address funding issues and the potential for revenue generation: As transportation funding declines, agencies are looking at managed lanes as a way to implement freeway improvements while covering all or a portion of capital costs, paying for operating expenses, or funding additional transportation improvements in a corridor (including transit service).
- The desire to increase effectiveness of HOV lanes: Employing management strategies such as pricing to existing HOV lanes has the potential to preserve person-movement objectives while enhancing an HOV lane's effectiveness in meeting other corridor-wide goals.
- The need to separate large vehicles: For safety considerations in corridors with heavy truck volumes, an operating agency may want to separate large trucks from other vehicles using a managed lanes approach.

In considering managed lanes for a particular corridor an agency may seek a combination of project objectives, both in the short term (10 years) and for long range needs (20 to 30 years). Designing for a flexible managed lane system will allow the agency to modify operations in response to changes in travel patterns in the corridor as well as long-term changes in broader community goals.

MANAGED LANES IN OPERATION TODAY

The following section highlights the two original managed lane facilities in the U.S., which employ the primary management strategies of pricing, vehicle eligibility and access control.[2] These two projects, as well as the others shown in Table 1, have been proving grounds for the implementation of variable road pricing.

STATE ROUTE 91 EXPRESS LANES, ORANGE COUNTY, CA, USA

The State Route (SR) 91 Express Lanes in California were the first in the United States to vary tolls by the level of congestion on the roadway. Built within the median of SR 91 and opened in 1995, the four express lanes are 10 miles in length with no access other than the end points. Two lanes are provided in each direction, and they are separated from the main lanes by plastic pylons and a painted buffer.

Variable toll rates are set according to the level of congestion typically experienced on the roadway, making peak periods the most expensive time to travel, and currently range from $1.25 in the off-peaks to $9.05 in the peak hour. Although the facility is open 24 hours per day and seven days per week, and tolls are charged at all times, the operators use price to maintain free-flow speeds on the express lanes at all times.

Tolls are paid exclusively through electronic collection. Facility users must have an account and a transponder. The facility also encourages travel in HOVs. Carpools with three or more occupants (HOV3+), motorcycles, zero-emission vehicles and vehicles with disabled person license plates are free at all times, with the exception of the evening peak period in the peak direction, when HOVs are charged 50 percent of the posted toll.

INTERSTATE 15 FASTRAK EXPRESS LANES, SAN DIEGO, CA, USA

The Interstate 15 (I-15) FasTrak Express Lanes in San Diego, CA, are operated by the San Diego Association of Governments (SANDAG). On the eight-mile, two-lane reversible facility, the express lanes are separated from the main lanes by concrete barriers. Access is available only at the end points.

The express lanes originally were operated as HOV lanes but often had unused capacity available. In 1996, the HOV lanes were converted to HOT lanes. SOVs are charged to use the facility and HOVs travel free of charge.

The I-15 express lanes use dynamic pricing—the first of its kind implemented. Toll rates typically vary from $0.50 to $4.00 but can rise as high as $8.00 in severely congested conditions. Technology deployed in the corridor allows for the assessment of current traffic conditions. The toll rate is adjusted dynamically to ensure free-flow conditions in the express lanes.

Dynamic message signs posted prior to the entrance of the facility alert the drivers to the current toll. As with the SR 91 Express Lanes, all users must be registered and must have an established FasTrak account, which allows tolls to be collected electronically.

A 12-mile extension of the facility is nearing completion. This new section consists of two managed lanes in each direction, dynamically priced for SOVs, with intermediate ramps serving areas along the corridor. Bus rapid transit (BRT) is a significant component of the expansion project, with new BRT transit stations built along the route as part of the project.

PUBLIC ACCEPTANCE OF MANAGED LANES

Public acceptance of the projects described above has been high, although not initially so. Project experience has shown that there is typically initial public reluctance to priced lanes, but that sentiment changes after education and following the opening of the project, where travelers can experience the benefits. In the case of I-15 in San Diego, public approval was high after the opening of the original FasTrak project, and users felt the project was fair. In addition, surveys and usage studies of the Minneapolis, San Diego and SR 91 projects show use of the facilities by drivers in all income brackets.

Research has shown that successful projects have common messages that have been well received by the public.2 These include:

- **Choice**—Research has shown that the public does not perceive pricing as inequitable when it is presented as a choice for commuters. The education process is key to communicating this message.
- **Tool**—The public may perceive a pricing project as a "band-aid" or short-term solution. Messages should emphasize that it is only one tool that works with a comprehensive plan.
- **Efficiency**—Typically the public does not understand how an HOV lane operates or what techniques may be used to maximize the operational efficiency. When shown that pricing maximizes available capacity, the pricing concept is more acceptable.
- **Operations**—People want to know how the program will work. Presenting examples of successful projects and how they operate helps facilitate understanding and support. This is especially true in areas where there are no HOV lanes or toll roads. They need assurances that toll collection will not impede travel that is already congested because they may be unfamiliar with electronic toll collection.
- **Enforcement**—Enforcement is especially important in areas that currently operate HOV lanes. The traveling public wants to know that if they pay for a premium service, others will not be allowed a "free ride."
- **Revenue Use**—How the agency plans to use the revenue must be clearly defined from the outset of the project. Successful projects have targeted the money for improvements in a corridor where the project is occurring. Public opinion research indicates that people are evenly split on revenue use for transit improvements or to fund roadway projects. Additionally, as part of the on-going public information, improvements that are made with revenue should be highlighted.

THE FUTURE OF MANAGED LANES

As transportation agencies around the United States embrace the managed lanes approach, there also is recognition that the idea is more than a concept—practical implementation issues need to be addressed through further research and development. Although examples such as California's 91 Express Lanes and I-15 FasTrak Express lanes are frequently cited as models of successful projects, they are somewhat simplistic in their operating approach.

Next-generation projects currently under development are more complex in terms of multiple ingress/egress locations, access treatment, enforcement and transit integration. Of particular interest are those that are addressing some of the challenging issues associated with managed lanes, as this mobility strategy encompasses the full range of possibilities—and complexities. [5,6] Each new challenge poses tough questions that have not been tackled in the projects currently in operation:

- Multiple mid-point ingress/egress points and the ripple effect on technical and operational complexity, including tolling operations, lane separation, enforcement, safety and driver information.

- Buffer or striped separation between managed and general purpose lanes and the ability to effectively enforce access restrictions and toll evasion.
- The role of revenue generation and the competing objectives of maximizing person movement through HOV exemptions and maximizing revenue.
- The role of bus transit, including BRT, and its integration in managed lane operations.
- Improved methods for enforcement of HOV preference in managed lanes.
- Signing and motorist information needs in an operating environment where strategies may change dynamically and where competition with signing in adjacent freeway lanes may create driver information overload.
- Sustaining operational flexibility over the life cycle of the facility and communication to policy-makers and the public that freeway express lane operations will be adjusted as needed over time according to predefined performance objectives.
- Equity and environmental justice concerns, which have been addressed successfully on some projects but have been problematic on others.
- Analytic tools that estimate travel demand, revenue projections and operational impacts interactively.
- Integration if managed lane projects into the existing and planned transportation system (freeway, arterial and transit systems) and connectivity with other managed lanes.
- Dynamic operations beyond pricing, including methods and approaches to dynamically modify vehicle eligibility or access on a managed lane facility.
- Public education and understanding of complex managed lanes facilities.
- Legislative authority, particularly related to operating agencies and their powers to operate as toll authorities in collecting fines and enforcing compliance using automated techniques.

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Table 2. Selected Managed Lanes Projects			
Project	**Design characteristics**	**Operations and management**	**Opening Date**
Interstate 394, Minneapolis, MN, USA	• HOV to HOT conversion • 11 miles total, 8 miles with one lane per direction with striped buffer separation and mid-point access	HOV2+ free with dynamic pricing for SOV	May 2005
Interstate 25, Denver, CO, USA	• HOV to HOT conversion • 7.5 miles, two-lane reversible with barrier separation	HOV2+ free with variable pricing for SOV	June 2006
State Route 167, Seattle, WA, USA	• HOV to HOT conversion • 9 miles, one lane per direction with channelizer separation and mid-point access	HOV2+ free with variable pricing for SOV	May 2008
Interstate 10, Houston Katy Managed Lanes USA	• New managed lanes • 23 miles, 13 miles with 2 lanes per direction, channelizer separation and mid-point access	HOV2+ free with variable pricing for SOV	Lanes opened October 2008 Pricing operations beginning Spring 2009
Interstate 15, San Diego Express Lanes expansion USA	• New managed lanes • 20 miles, 4 total managed lanes with flexible lane assignment using movable barrier system, barrier separated from main lanes with mid-point access	HOV2+ free with variable pricing for SOV, BRT emphasis	Early 2009
Interstate 680, Express Lanes Almeda County, CA, USA	• HOV to HOT conversion • 14 miles, one lane, one direction with striped buffer separation and mid-point access	HOV2+ free with dynamic pricing for SOV	2010
Interstate 30, Dallas, TX, USA	• New managed lanes • 15 miles, 2 to 4 lanes per direction with channelizer separation and midpoint access	HOV3+ free with variable pricing for SOV	2010
I-495 Capital Beltway Northern VA USA	• New managed lanes • 14 miles, 2 lanes per direction with channelizer separation • Developed under public-private partnership	HOV3+ free with dynamic pricing for SOV	2013
Source: TTI Managed Lanes Inventory, 2008			

Work Place Flexibility: The Underused Tool in the Transportation Box

by Carol Abel Lewis, Ph.D.,
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Carol A. Lewis, Ph.D., is an associate professor in transportation studies and director of the Center for Transportation Training and Research at Texas Southern University. She is responsible for educating students in fundamentals of transportation and urban transportation issues, as well as conducting operational and policy related transportation research. Since 1992, she has conducted research for the Texas Department of Transportation (TxDOT) regarding Regionalizing Public Transit, Smart Growth, Land Use and Development, Strategic Planning, and Land Value Effects of Elevated and Depressed Freeways. Lewis was the research supervisor for the Federal Highway Administration's (FHWA) Noise Compatible Land Use Brochure and workshop series on this topic. She has completed work including research titles, Optimizing Route Specific Marketing to Increase Public Transit Ridership, Land Value Assessment of Bus Transit Facilities, and Criteria for Transit-Friendly Decision Making. Her funded research also includes corridor feasibility studies for major Houston area freeway corridors, analysis of options to better manage freeway lanes and an assessment of the external influences on transit-oriented development. In March 2008, Lewis was asked to serve as lead investigator for Texas Southern University's designation by the Department of Homeland Security as a Petrochemical Transportation Security Center of Excellence.

Prior to joining Texas Southern University, Lewis spent 15 years as manager and director of planning at the Metropolitan Transit Authority of Harris County. During that time, Lewis developed the citizen participation programs and bus routing scenarios. She was also responsible for system-wide bus routing plans and METRO capital projects including Park & Rides, transit centers, and rail planning.

Lewis belongs to a number of professional organizations including the Transportation Technical Advisory Committee of the local Metropolitan Planning Organization (HGAC) and the Red Cross Transportation Advisory Committee. In 2004, Houston's Mayor Bill White appointed her to the Office of Mobility, an advisory function of the Mayor's Office and as Chair of the City's Planning Commission. At the suggestion of Mayor White, she was appointed to the Governor's Task Force on Emergency Evacuation following the 2005 hurricane season. Lewis served two years on the board of the Metropolitan Transit Authority as an appointee of, then, Houston Mayor Lee Brown and six years as the national academic advisor for the Conference of Minority Transportation Officials. Lewis holds a Ph.D. from the University of Houston in Political Science and M.A. and B.A. degrees from the University of Iowa.

ABSTRACT

Congestion increases air pollution, contributes to crashes, and increases roadway maintenance costs. Most often, discussions to alleviate congestion focus on expanding or building new roadways and improving public transportation. In addition to these two transportation staples, a variety of options offer promise and can skim just enough travel from the margins to make an important difference. Travel time benefits have been measured in Houston based on implementation of a Work Place Flexibility program. Key elements are telework and flexible scheduling. This sustainable option also contributes to emissions reductions and improved fuel consumption.

For many Texans, the rigors of the commute to and from work are a typical, but unwelcome, component of daily life. In addition to the inconvenience, congestion is estimated to cost Texans billions of dollars annually in wasted time.[1] Congestion increases air pollution, contributes to crashes, and increases roadway maintenance costs. The cost of conducting business is negatively affected by congestion. Most often, discussions to alleviate congestion focus on expanding or building new roadways and improving public transportation. These two conventional responses are valid and must be retained as we approach our transportation future. The list of options, however, is a bit longer and one option that needs far greater attention is described as the cadre of Flexible Work options.

1 Texas Transportation Institute <http://tti.tamu.edu/publications/researcher/newsletter.htm?vol=39&issue=2&article=3&year=2003>

CHALLENGES OF GROWTH AND DEVELOPMENT

The good news about congestion is that it represents a positive economy, growth and development. The State's major metropolitan areas—Houston, Dallas and Fort Worth, San Antonio and Austin are projected to grow by more than 1 million people each within 20 years. If all proceeds well, a number of these people will be wage earners with a need to conduct work somewhere, indicating a need for increased travel. Traditionally, increased demand for travel led transportation and elected officials to pursue more roads. Texas's urban and rural roadway miles exceed 300,000, almost double the number 20 years ago[2]. While new roadway miles may alleviate congestion over the short-term, generally accepted is the notion that increasing roadway miles does not represent a long-term method of resolving congestion. By the late 1970s, Texas' four largest urban areas started adding public transportation to the mix. San Antonio's Via began in 1978 and postured itself as one of the best bus systems in the state at that time. Houston followed with its Metropolitan Transit Authority in 1979, the Dallas area with DART in 1983, and Austin's Capital Metro in 1985. These staples of the transportation system, roadways and public transit, form the core components of the transportation network; but greater demands on limited budgets strain the transportation communities' capacity to respond to projected growth.

The greatest challenge for the infrastructure improvements described above is lack of available funding. Last year, through a confluence of events, dollars anticipated to fund TxDOT projects became unavailable and MPOs, local TxDOT officials and local governments scrambled to determine which of all the needed projects should be delayed or eliminated. The transit agencies' funding future is also difficult as the agencies compete nationally for a limited pool of dollars available for new construction. Peripheral, but relevant are the fuel prices experienced during the summer of 2008. Miles traveled in vehicles dropped across the nation and Texas as fuel prices hovered at $4.50 per gallon at the pump. Although prices have dropped substantially since then, we now know that it's possible for fuel prices to hinder mobility and reduce the gasoline tax funding source. All these challenges confirm the importance of having options to the conventional transportation solutions.

A MULTI-FACETED APPROACH IS NECESSARY: INCLUDING WORKPLACE FLEXIBILITY

Roadways and public transportation will continue to be the workhorses of our transportation system. We need to expand them judiciously and maintain them well. It is important, though, that we not ignore other options. A variety of transportation options offer promise and can skim just enough travel from the margins to make an important difference. Walking and bicycling to work contribute to decreasing demand for the nation's roadways. Certain individuals may make decisions about where they live and work that will allow them to walk or bicycle. Also with the potential to help is the deliberate focus on gaining a better balance between housing locations and job locations. The jobs-housing balance can lessen travel if people live closer to work, which reduces the length of the trip and takes demand off the transportation network. There may be constraints to achieving the jobs-housing balance, such as people changing jobs or two-person households with only one person proximate to work. Available to a far greater segment of the population is Work Place Flexibility. Work Place Flexibility relies on shifting some trips from the peak travel times, allowing people to craft their work schedules so their arrival and departure from work is during non-rush hours.). Encompassed in a flexible work schedule are the compressed work week (working 40 hours in 4 days or 80 hours in 9 days) and flexible work hours (employees may arrive and leave before rush hour or arrive and leave after rush hour). The concept also includes working from home, called telework or telecommuting. Although rural areas are not faced with congestion, people living in these communities will have their own transportation challenges, which can also take advantage of flexible work arrangements.

Commuting to work statistics show nationally the number of people working at home increased from 3.26% in the 2000 Census to an estimated 4.07% in 2006 according to the American Commuter Survey (3.5 % for Texas). Work Place Flexibility has major sustainability implications in efficient use of existing resources, improving air quality and lessening or delaying the demand for additional infrastructure investments.

WHAT ABOUT A DEMONSTRATION? WILL THIS WORK?

When campaigning for office in 2002, one item on Houston Mayor Bill White's agenda was to get Houston moving. In addition to advocating for Houston's high profile light rail system and beginning the incident management program, SAFEClear, Mayor White spearheaded an initiative focusing on large downtown and uptown employers to implement or expand a Work Place Flexibility program. CEOs were targeted, first to engage their thoughts about flexible work programs and, then, to solicit their active participation in implementing flexible options for their employees. Once a solid number of CEOs committed, the City of Houston structured an initiative to facilitate the companies' program implementation. A Web site shows companies how to establish Flexible Work options for their employees, identify and recruit appropriate participants, and share best practices. A survey instrument is available to help employers link the appropriate jobs and employees with the suitable flex option. It is important to

2 Table 1-1, Roadway Miles, by Functional Class, 2005 <http://www.bts.gov/publications/state_transportation_statistics/state_transportation_statistics_2006/html/table_01_01.html>

note that a Flexible Work option is not appropriate for all jobs or for all employees. Employers are encouraged to measure productivity of participating employees to establish a performance culture as a program component. Misconceptions to be dispelled include the following:

- If one employee is included in Work Place Flexibility, all must be involved.
- People currently working 50—60 hours per week will start working 40 hours.
- Fridays is the only day people can have off as a flexible day.
- Those not participating in the Work Place Flexibility initiative get stuck with all the work.
- Anyone on a flexible schedule is not ambitious.
- Work Place Flexibility causes coverage problems for managers.

As an incentive, employers committing to Work Place Flexibility are eligible for a special emblem designating them as a Flexible Workplace Employer for that year. A second incentive is the opportunity to apply for the prestigious, nationally recognized Alfred P. Sloan Award for Work Place Flexibility. Twelve Houston companies were awarded in 2007.

In addition to the companies committed to Work Place Flexibility long-term, once each year, a special two-week *Flex in the City* campaign is conducted. During that period, employers throughout the city are encouraged to try Work Place Flexibility as a demonstration. In the first year, more than 20,000 individuals committed to *Flex in the City* for the two weeks. A survey of 2,700 participants reported 68% reduced their travel time, noting the same or better productivity at work.

Assessment of the Work Place Flexibility initiative occurred at two levels: macro level analysis and micro level analysis (see Mobility Measure Subcommittee). Data were collected from the Houston area traffic center (Transtar) and by traffic counters strategically placed at intersections proximate to participating employers.

MACRO LEVEL ANALYSIS:

During the two weeks of *Flex in the City*, freeway travel times were monitored on two Houston area freeways, US 59 South and IH 45 North. The assessment showed that 16,000 travelers saved 1.7 minutes each for a total of 906 hours aggregate savings each day on those two freeways. For perspective on those values, consider that annual hours of delay have increased steadily for Houston commuters. Texas Transportation Institute's Urban Mobility study shows Houston commuters spent 32 hours per year in traffic in 1982; that number increased to 56 annual hours in 2005[3]. Any strategy that reverses that trend is very valuable, especially since more Work Place Flexibility participants would provide more travel time savings.

MICRO LEVEL ANALYSIS:

Duke Energy and Johnson Space Center are two employers offering Work Place Flexibility for their employees. Two hundred (200) Duke Energy staff members participated in the flexible initiative and saved 1.08 minutes per employee. In the aggregate, the savings reduced travel time 10 minutes for travelers traversing a nearby intersection. Johnson Space Center's Flexible Work Place employees experienced even greater time savings. Their 800 participants reduced the travel time to work by 5.27 minutes.

LESSONS LEARNED AND RECOMMENDATIONS MOVING FORWARD

Mayor White's Work Place Flexibility program provides a strong foundation and shows the concept can serve as an important option to address rush hour travel. Success is attributed to having a high level champion in the Mayor and gaining early CEO commitment. Employers can appeal to a highly mobile workforce attracted to flexible work environments and employees benefit by reducing the time spent traveling to work. In addition to the transportation benefits, Work Place Flexibility is sustainable; financial and infrastructure resources are used efficiently. Although not measured as part of this project, reductions in fuel use associated with less time idling in congestion can be assumed. Related reductions in vehicle emissions are also a benefit. Introducing Work Place Flexibility provides advantages to employees in their work and personal lives and to transportation providers in their resource allocation.

The Work Place Flexibility initiative stresses implementation only when it makes good business sense, focusing on the right jobs and right employees. Admittedly, there are some limitations to how large the contribution from this option might be because it is not appropriate for all employees. Attention to the thousands of additional Texans, who might be candidates for Work Place Flexibility would make a difference, though, and should be aggressively pursued.

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3 http://tti.tamu.edu/documents/mobility_report.2007.pdf

The Hard Facts About the Transportation Policy Debate

by Joseph Giglio, Ph.D.

Professor Joseph Giglio, Ph.D., has an extensive background in business, public policy, and finance. He has served as executive vice president at Smith Barney, president of Chase Municipal Securities, and senior managing director at Bear, Stearns & Co. He has also served as chairman of Apogee Research Inc. Professor Giglio has also held a series of senior management positions with the federal government and with both the City and State of New York. He served as chairman of President Reagan's National Council on Public Works Improvement and has chaired the U.S. Senate Budget Commission on Innovative Financing of Infrastructure. Professor Giglio served as chairman of the board for the Intelligent Transportation Society of America (ITSA), a federally-charted advisory committee addressing public and private sector technology applications. He currently serves as a special advisor to the Office of the Secretary of Transportation. He is also the vice chairman of the Hudson Institute, a leading public policy organization in Washington, D.C., and an elected board member of the Pioneer Institute. Professor Giglio is a former board member of the Massachusetts Higher Education Financing Authority and former chairman of the Public-Private Division of the American Road and Transportation Builders Association. He sits on the board of a number of private corporations, including Quixote Corporation, and has written extensively on finance and transportation public policy. Professor Giglio was appointed by Governor Romney to the Transportation Finance Commission and the Massachusetts Health and Higher Education Authority.

No transportation policy discussion is worth having it if does not start with two hard facts. For starters, we do not have a national infrastructure problem; we have a national infrastructure condition. Problems can be solved, our national infrastructure condition can only be coped with and then only if we act in the future with a greater sense of urgency and great intelligence than we have in the past. If you believe that a major policy breakthrough in dealing with this condition is likely at the federal level, I have a bridge to sell you in Brooklyn. Second, it is time to get back to basics. The only two sources of revenue for our network are user fees and taxes. Put differently, our transportation infrastructure network needs net new resources.

Total reliance on public resources and the fuel tax to fund investments in transportation infrastructure is no longer a realistic option. Other spending priorities at the national level will crowd out infrastructure funding. Currently, we have the transportation network we deserve but not the one we need in the 21st century, especially in view of our decades long inability to maintain it properly and invest in it wisely.

Now we all have this nagging sense that the current transportation network cannot support a decent level of economic growth. And we all have our own ideas of how to characterize the network. But candidly, these ideas aren't what matters. Rather, it is the ideas of customers that should be valued. Of course, trying to get the traditionalists in the industry to understand this is like trying to teach psychology to someone who has never met a human being.

So with my usual Olympian detachment, let me suggest that the transportation network has taken on many features characteristic of the government run monopolies in the former Soviet Union which were neither effective nor efficient:

1. Uniformly Mediocre Products
2. Perpetual Shortages
3. Failure to use Pricing to Differentiate Service or ration available capacity
4. Hoarding of Local Resources
5. No incentives for innovation or risk
6. Unachievable Long-Range Plans
7. Customer Satisfaction is not a consideration

I could go on, but you all catch the joke. So, what are we to do?

Not surprisingly, the focus for transportation in recent years has continued to fixate almost singularly on financial concerns: we need more money. And, predictably, with the transportation bill coming up for reauthorization in September 2009, the usual scrum of suspects is already gearing up to slug it out over the bill documenting the how much more money we are supposed to throw at the condition. You all are familiar with such reports. These need studies are one of those hardy perennials, another report telling us that in some vital areas—education, health care, things are even worse than we thought, and that each area is suffering from a choking shortage of money.

In the category of transportation infrastructure, it is some variant of *Why Johnny Can't Read.* The underlying assumption is we should spend more without considering spending resources better. Today, the major transportation

debates are all about money, spending more and more on the same product rather than on what and where to spend that money better. Just consider health, we spend more dollars per capita than other western industrialized nations with mediocre results.

Similarly, the U.S. ranks second only to Norway among OECD countries in per student spending on education with, again, poor results. Interesting enough, most efforts to define the transportation funding gap in the U.S. assume a continuation of past travel patterns. When you cut through the statistical squid ink surrounding these studies, you conclude that insufficient consideration is given to how such travel patterns may be affected by future changes in domestic and global economics, domestic demographics, and emerging technologies. Look, the one thing we can be certain of about the future is that it will be different from the past. Such need studies are as meat and drink—perhaps pot and coke might be more precise to the usual crowd who can be counted on to label their findings anywhere from worrying to alarming to frightening.

The authors haul out their best solemn tone, words such as "distressing" and "grave concern" and "dire" are brought into play. Look for "threats" to pop up with some frequency, nor will "crisis" be in short supply; "serious action" one need scarcely add is called for now.

Nothing remains really, but to ring up the livery service and order the hand basket in which, along with the transportation infrastructure we shall all presently ride off to the underworld. It will be one of the happiest days in my life when I can read one of these studies without falling asleep.

For me, before we get caught up in the next round of debate and lobbying about such tactical issues as appropriate levels of funding, how to restore the rapidly depleting balance of the Highway Trust Fund and new ways to pay for transportation improvement, we need to ask and answer some basic questions. I believe that the principal transportation challenge we face is the lack of a national strategy that answers the basic questions, such as:

- What should the nation's transportation system look like in the future?
- What options do we have for transforming the existing network to match this vision?
- What resources are available to carry out these options?
- How do we measure our success in making the transportation network better?

These are strategic questions because the answers to them will determine the shape of any tactical programs we develop to improve the network. And they still remain unanswered because we have failed to ask them in a properly serious way.

Until we answer these questions, any tactical improvement programs are speculative at bet. How could they be otherwise when we haven't yet developed a sound strategy for turning the present transportation network into what the nation needs? We have to stop trying to put the cart before the horse and start over.

Should state governments lease their existing toll highways to private consortiums and use the up-front cash they receive to fund construction of road and rail projects that have been sitting on the shelf due to lack of funds? Should state governments implement roadway pricing on key links of their highway system to make them self-support enterprises and thereby assure adequate funds for their on-going maintenance, capital reconstruction, and expansion?

Don't get me wrong. These questions and others are all reasonable questions. But, they are meaningless until we know what we are trying to accomplish with transportation. This is the content issue, the strategic issue, and we must deal with it before we can address the tactical questions of how we do things.

To borrow from Gertrude Stein when it comes to a national transportation strategy, "There is no there, there." For me, a national transportation strategy is the blueprint to save time, lives, and money, to move people and goods efficiently without harming the environment and in an energy sustainable fashion.

Equally important, a national strategy should focus on the way we create value through the configuration and coordination of all transportation modes.

All of you who manage enterprises understand full well that a major management challenge is how you manage each mode, each strategic business unit in such a way to maximize the value of the entire portfolio of assets, in this case, transportation assets.

This is the way successful multi-market, multi-product enterprises such as Proctor & Gamble, HP, GE, J&J and others operate. They don't rely on academically voluminous SOPs to coordinate and exercise oversight. They give each strategic business unit a series of measurable goals, emphasizing outcomes, consistent with the explicit corporate and global strategy.

It is important to remember that "value" is ultimately realized at the operating level, in the case of transportation at the state and metropolitan regions that deliver the service, the product.

Now let me suggest one simple and direct approach to developing a national strategy that just maybe folks sitting around the kitchen table can understand.

Specifically, let's modestly try and suggest some answers to these three questions:

1. What should we stop doing?
2. What should we keep doing?
3. What should we start doing?

O.K. What should we stop doing?

For one thing, we should stop the politicizing investment decisions at the national level by assaulting earmarks. The last transportation bill had $1 out of every $14 authorized devoted to earmarks. This is not chop liver.

Still further, out of sheer fiscal necessity, states such as Texas, Indiana, Florida and others are pursuing P3s.

Now, brace yourself for a flood of history. From the early days of the republic until the 1930s, America's infrastructure was built using a variety of financing tools and project delivery methods.

In other words, we used a portfolio of approaches that recognized 1 size does not fit all and we lived in a resource-constrained world.

The private sector played a pivotal role in infrastructure development, finance, and management. Indeed, the federal government "pushed" projects considered crucial to developing commerce and trade such as harbors, navigable river improvements, public buildings, and military roads, and they "pulled" projects from the private sector through indirect means such as land grants and franchises: projects such as canals, post roads, rail power, telegraph, telephone, etc.

This approach was a leveraging strategy since it allowed more development than could have occurred through direct funding along and a hedging strategy since it allowed public funding to respond to changing conditions.

America's priorities shifted in the 1930s and the Great Depression made infrastructure an instrument of social policy to provide jobs—then the Interstate Highway System resulted in a national environment where "pulling" infrastructure projects from the private sector became virtually impossible because of the creation of the Highway Trust Fund. In the late 1980s and 1990s, studies undertaken argued that U.S. public facilities were wearing out faster than they could be replaced, and reduced infrastructure funding was at fault. One refrain of these studies was the recognition that increased private participation and innovative funding methods were needed to reduce the backlog of infrastructure projects and confront future requirements.

Now we are shifting to the dual track strategy again. Privatization is as American as handguns.

Second Question—What should we keep doing?

For starters, we should continue to provide states with incentives to try market-based approaches to managing and financing the transportation network just as we do for other non-discretionary and essential goods and services.

Among other things, this means simplifying, streamlining, and consolidating federal programs to give states greater flexibility and to encourage regional solutions. Ex.: The Interagency Group which is responsible for deploying electronic toll collection on the I-95 corridor in the east. It consists of 22 agencies encompassing 12 states without federal involvement. I could go on but you all receive my meaning.

Finally, the last question: What should we start doing? First, we should start allocating resources where they generate the greatest return. Explain. Second, we should accelerate the deployment of ITS technology to expedite the transition to alternative revenue sources. We should remember we did not get out of the stone-age because we ran out of stones. By the way, these new technologies will enable us to manage each mode in an integrated fashion, again to maximize the value of the entire portfolio of transportation assets as well as to improve safety and congestion.

But in the best of all possible worlds, technology enables us to generate revenues in ways that encourage better service and operating efficiencies as well as provide an adequate level of net new resources. We can't bend the laws of time and space to recount all the charms of technology. Indeed, some of you may be suffering from technology fatigue. Still, let me take a moment and try and demystify the implications of technology.

In my view, finance is about more than just money. This is not an easy sentence to say with a straight face. Obviously, money itself is quite important. Since how much we have determines how much we can build and how well we can manage the assets we have. But how we raise money affects what we do and how well we do it. Here, I am not just talking about 1 favor of Bonds versus another. Rather, the issue relates to the fundamental economic linkage between price and service quality.

Think about it. Finance is really about prices. Prices that reflect the quality of the product sold or the value of the service provided. That is the amount of revenue an enterprise books relates directly to the quality of the service it provides. The new technologies not only enable us to interact with customers but also to start developing a new pricing orientation. Yes, I know a price is ultimately just a number, driven in transportation by bond covenants and political expediency. But price is a verb as well as a noun. "To price" is to determine how much, when, where and how a customer will pay for your offering.

The technological breakthroughs we are witnessing in transportation provide for activity-based costing, data mining, yield management, and revenue maximization. They provide a wealth of customer specific data available on a real time basis to make direct measurement and enforcement of performance outcomes possible someday maybe even leading to money back guarantees. Answering the pricing challenge requires not only an intimate understanding of the customer but a willingness to lead rather than simply following. But I may be drifting into utopianism here. Because even I recognize the limits of my chutzpah let me move to wrap and pack my presentation by quoting Einstein, a writer who is more widely quoted than read: "We can't solve today's problems by thinking about them in the same way we did when we created them." A corollary is that we can't rely on the folks who created our transportation challenges to bring fresh ideas to the table.

Time is the enemy. You can stop counting now.

About The Texas Lyceum

In the spring of 1980, a group of young Texans met in Dallas to discuss a proposed convocation of Texas business, political, educational and civic leaders to debate the effects of the 1980s on Texas. The Texas Lyceum Association emerged from that meeting.

The first lyceum can be traced more than 2300 years ago to ancient Greece. Aristotle and the leadership of Athens gathered in an oak grove called Lyceum to share their knowledge and ideas about economics, government, science and philosophy. It was a blending of the practical and the philosophical—a unique merger of men and women of ideas and worldly experience.

The Texas Lyceum was created to provide a forum where contemporary Texas leaders could assemble to exchange their own blend of facts and ideas, and develop a uniquely Texas point of view on pivotal issues of the day…and of the future.

The Texas Lyceum provides a framework for establishing a working relationship among individuals, organizations and institutions (both public and private) which are seeking to represent Texas' interests.

The Texas Lyceum serves as a catalyst for bringing together diverse opinions and expertise to focus on state and national issues. In this process, the Texas Lyceum emphasizes the value of individual initiative and responses to the problems and opportunities confronting our state and nation.

To accomplish its purposes, the Texas Lyceum:

- Conducts periodic public forums and sponsors events and activities to develop and discuss key economic and social issues of the day.
- Identifies and develops emerging Texas leadership.
- Promotes an appreciation of the responsibilities of stewardship of the values, traditions and resources of Texas.

The Texas Lyceum is a non-profit, non-partisan organization.

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