

**THE CHALLENGES OF AMERICA'S FUTURE
SURFACE TRANSPORTATION SYSTEM**

Testimony of
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Mr. Chairman, distinguished members of the Subcommittee, thank you for the opportunity to discuss the future of transportation. Our country's transportation system already faces a number of challenges and those will undoubtedly grow and evolve. I am optimistic that our society can overcome them. I welcome your questions today, or at other times in the future.

First, a summary of my ideas. We have studied urban congestion issues for more than two decades and I believe I am safe in predicting that congestion problems will continue to challenge our metropolitan regions in the future. But the problem has many aspects and likewise, the solutions will also have many elements. Some of the problems have clear technology or infrastructure 'fixes'. Some can only be solved with better information or different policies, programs or incentives. Most of the challenges we face, however, can benefit from a combination of these two approaches. I think of this as a type of niche marketing – there isn't one big program, technology or idea that will solve the congestion problems. There will be many different solutions. And the solutions will look different in almost every region and situation. Larger population centers will have a different mix than smaller areas; suburbs will benefit from a different set of projects, programs and policies than more densely developed urban areas; and regions of the same size will decide to do things differently because their citizens make different decisions.

The Future Situation

I believe I have some ideas of how those problems and solutions will look in the future, but I'd like to start with some idea of what type of land use and travel pattern we might be trying to serve. Many of the current homes, shops and offices will still be in place and other developments to handle the millions of new urban residents will look similar to the current mix. Suburbs will continue to grow, commuters will travel – sometimes long distances – between their home and their job and not everyone will move into high-rise apartments or town homes. But it also appears that there will be more people with short commutes between home and job, whether that is because they move their home and job closer together, or their job involves an electronic connection to their office rather than a physical one. It is clear that people choose to live and work where they do for a variety of reasons and congestion is not at the top of that list in every case. The increase in freight movement will accentuate those concerns and provide unique difficulties at the local, regional and national level.

Today's teenagers will be key constituents, business leaders and decision-makers of 2040 and 2050. They are much more active producers and consumers of information than you or I are. They are more comfortable with text messaging, producing their own videos and using the internet to acquire what they need. They are not interested in waiting for *anything* – job satisfaction, arrival at work, access to information, etc. They want safe and secure travel, they appear to be ready to trade some job-related income and advancement possibilities for a better lifestyle and, if the high school and college students I know are any indication, they believe they will change the world just as every other generation has.

Desirable cities will have the same elements they currently do – mobility, low housing prices, good schools, a supportive business environment and desirable quality of life. These cities can attract the 21st Century work force—a group of people who will increasingly be able to live

where they want and use the internet to make a nice living. Jobs in the service and information developing and providing sectors are likely to be a much larger part of employment growth than manufacturing sectors. The work force of 2040 will have many more location options for their homes and jobs.

So I do not believe we can “get by” with a less than adequate transportation system. We need to aim for very well operated, cost-efficient systems that serve a wide variety of needs with exceptional reliability. I do not think that is considered an achievable vision in most regions or agencies.

The Solutions

Our Urban Mobility Report has consistently recommended a broad set of strategies to solve congestion problems. This same approach works well for many other transportation challenges as well. Equally important, however, is the question of “who should implement the change?” There is a temptation to put the responsibility for addressing congestion, safety, air quality and other challenges on road and public transportation agencies or private sector road operators. This is a mistake. It ignores the aspects of the problems caused by poor decisions by travelers and eliminates the enormous power of employers and citizens to make choices that reduce congestion and improve safety. I do not think these choices would be made “to” reduce congestion; the objectives would be more relevant – improve profits, operational efficiency or the quality of life. But decisions to drive carefully, travel between home and office during off-peak hours or develop residential, office and commercial areas could have a range of beneficial transportation effects.

The spread of congestion to more routes, more hours of the day, and more neighborhoods and job centers has resulted in longer travel times, less predictable arrival times, traveler frustration and business sector concerns. We’ve come through a period where no-toll and free-flow travel was a lofty but seemingly realistic goal for all hours of the day. I think those days are passed, but high-speed and reliable service is still an achievable target for most hours even in the largest megapolitan regions and all day for many medium and small cities. Some of the solution, then, might be in modifying the expectations for transportation systems toward achievable goals. These would not represent surrender to economy-strangling congestion, but rather would recognize that there will be traffic congestion during one or two hours in both the morning and the evening peak hours in larger urban regions and near popular rural tourist spots as a product of their desirability. This congestion does not, however, have to result in unpredictable arrival times, broken operating equipment, poor road quality, high collision rates or poor air quality.

The solution strategies must also strongly emphasize the need to expand the traditional transportation systems. We must add highways and public transportation service to our metropolitan areas. America’s big cities have a transportation problem now, and most of them face growing population over the next two generations. If there are going to be one to three million more people in an already congested metropolitan region, there needs to be an expansion of roads, buses, trains, ferries, sidewalks and bike lanes. This expansion is very important.

Current private sector manufacturing and freight movement operations might be a good model for future personal travel systems – freight shippers have schedule expectations that vary by the goods being shipped, their importance and they react to incentives such as time savings and cost. But different than many current commuters, truck, ship and rail operators are also very well informed and are willing to change their trip plans, modes and routes to take advantage of time or cost incentives. Consider the commuting, safety and air quality parallels to these aspects of retailing and service delivery:

- Brick-and-mortar retailers have systems that let them know what item is sold and when, as well as the trends for each item on a daily, weekly and seasonal basis.
- Those companies have suppliers that react to trends in demand with incredible speed, changing the type of product and schedule as customer purchase patterns change.
- Delivery companies can tell where a shipment is at all times and can estimate when it will arrive or if there may be problems along a route be delivered.
- On-line merchandise companies can learn from transactions and search trends to tailor advertisements, discounts and products for each individual.

Expanding the systems, therefore, must be combined with efficient operations that react to events that may not be regular, but certainly occur frequently. The varying amount of extra time that travelers and freight shippers have to allow for crashes, breakdowns, weather problems and special events are a significant part of the congestion problem. Traveler frustration can be reduced if these seemingly simple issues can be dealt with. Of course the solutions are not simple, but if we can clear collisions quickly, tell riders when their bus or train will arrive, time the traffic signals so that groups of cars move through a series of green lights and allow shoppers to get to stores without tying up traffic trying to move on major streets, we have a chance to meet expectations and convince the taxpayers their funds are being spent wisely.

Education can also play a role in attacking congestion. There are many available travel options and information on routes, modes, fares, tolls and travel times will be ubiquitous. The missing element may be properly motivated travelers and employers who understand that their communities and their bottom-line will benefit from a more flexible approach to commuting, working, manufacturing process and delivery processes.

Safety improvements traditionally come from a combination of design changes, education and enforcement of traffic laws. All of those elements can also benefit congestion – the Ohio DOT showed as much when their collision and congestion maps identified most of the same locations. It goes without saying that with traffic crashes being the leading cause of death for people between 4 and 34 years of age, that safety should be a significant priority and innovative strategies deployed.

The Benefits

Please do not make the mistake of thinking this issue is only about what to do and the often discussed topic of how to pay for it. I hope you also ask about the benefits of attacking the congestion problem. The fuel consumption, congestion delay, safety, air quality and other benefits are not only substantial, they are also the way to help citizens and businesses understand

the reasons for doing the improvements. Transportation projects, after all, are not ultimately about faster travel, they are about supporting an economy that competes in a global market, supports families, encourages innovation and creates options that allow citizens to improve their lives.

A study for the Texas Governor's Business Council used information developed by the state's metropolitan planning organizations and the Texas DOT to estimate the benefits of improving mobility. To keep the relatively high level of congestion experienced in major Texas cities from getting worse will require an increase in spending from \$108 billion to \$123 billion between now and 2030. The more desirable outcome of eliminating serious congestion will increase spending to \$174 billion. That \$66 billion increase generates \$540 billion in savings from lower travel delay, reduced fuel consumption and business efficiency, an 8 to 1 return ratio. Reductions in fuel purchases that would result from less stop-and-go driving were estimated at \$37 billion alone, more than half of the cost of the program.

I'd like to suggest that benefit estimates like this are an important aspect of the challenge. Connecting projects, programs and plans to attributes that provide information for decision-makers like service quality, travel reliability, potential employee markets and quality of life should be a key component. If we focus our nation's transportation investments on programs, policies and projects that will enhance the quality of life, it will be easier to make a case for transportation investment. If all the discussion is on the cost of the program and funding mechanisms, we may be consigned to irrelevancy.

Possible Guiding Principles for Change

I have a few suggestions on how to translate the future situation I have outlined and the challenges, we face into tangible advice for members of the Subcommittee. Many of the trends I describe exist in part because of the manner in which government at all levels has structured its decision making and how that structure has worked to produce a transportation system that enables these trends.

1. Recognize some problems are regional and interregional but many of the operating and governance structures are not. How do we make them match or work better?

First, Congress must recognize that the current system of decision making for transportation is based on states or metropolitan regions. States and regions examine their own boundaries when attempting to develop solutions to current transportation problems and in planning for their future transportation systems. The current federal highway program reinforces the natural inclination to stop solutions at borders, whether they are the edge of states or metropolitan regions. This results in a patchwork of solutions to large interregional problems with little to no continuity. The mismatch occurs where the current problem, and more perilously future problems, do not track the decision-making entity boundaries. We already recognize regional and in some cases national consequences flowing from any of a number of transportation problems.

A good example of this is the consequence of rising transportation costs created by the bottlenecks at the ports along the West Coast. As congestion rises at these ports and in the inland infrastructure, costs rise. The costs are born by consumers thousands of miles away, in states other than California, Oregon and Washington. Under the current regime, downstream state transportation decision makers do not have incentives to trace back their consumer's costs to the West Coast and undertake a problem solving exercise with the West Coast states. Congress should consider ways to match the decision making and governing structure to the nature of the problems. Our problems are, and will continue to be, interregional and national.

2. People will react to incentives - price and time as examples - but we rarely provide them opportunities to do so. At the same time, states and regions have the responsibility to maximize the efficiency of their transportation infrastructure.

These two facts can work together to re-capture the unused, existing capacity through the use of tools that spread demand out over larger periods of time. Concentrated travel demand is our single worst problem in highly urbanized cities. Transit, congestion pricing, car pooling, telecommuting etc, are all tools to manage concentrated travel demand. Heretofore however, these different tools were individually urged by Congress.

Congress from one reauthorization to the next would alternatively encourage tele-commuting or car pooling, and most recently congestion pricing and tolling. The problem with this approach is that Congress never collected these tools together in an incentive to commuters. People react to incentives, but they also demand choice. Instead of Congress elevating one choice over another, it should incentivize states to provide to commuters choices from among these tools that make the choices as nearly equal as possible. This empowers a commuter with choice. States and regions can also provide more options to commuters with emerging technologies and better information. If the goal is congestion reduction is there a role for a commodity market in peak period trips? Can people auction off their rights to travel by themselves in a car?

3. No one is really paid for eliminating congestion. Why?

Agencies conduct many studies and evaluate options; many congested states and metro regions are managing roads and transit systems to achieve productivity improvements. But it is clear that more aggressive approaches exist. Operations that target serious problems with aggressive treatments plans usually combine technology, information, policies, regulatory changes, private sector partners and public agency operators – each element doing what it is best at, without regard for jurisdictional boundaries or “turf” issues. The federal program could reinforce these aggressive approaches with support for innovation and coordinate monitoring, reporting and performance standard development. States or regions could be rewarded for achieving and maintaining congestion and safety standards.

This concept could also be extended to other transportation program elements. A move away from budgets for specific programs or treatments and toward an emphasis on congestion, safety, asset value, pavement ride quality and other measurable factors could accentuate a shift from “what gets done” to a more relevant question like “how does it perform?”

The problems in states and metropolitan regions are similar but not the same and there's no reason to think the goals and solutions will be the same. We have much better access to monitoring data now than when the federal transportation program was begun. Emphasis could be placed on the process to develop standards at the state and region level. Many processes and measures will result, but if every program examines the range of concerns, improvements will happen.

4. Data driven and results-oriented approaches to problems have proven their effectiveness in many fields of government and business; we should expand them.

The analytical process, monitoring data and communication strategies are important both for improving operations and planning and for generating the support of the public. The need to be responsive to customer requests for information and the ability to change operations will characterize newer and more aggressive approaches to alleviating transportation problems. The cycle of planning, testing, deployment and evaluation may turn over much more rapidly in the future. Congressional support for data collection and analysis improvements will be returned in better service, improved communication with the public and reliable operations.

Thank you for allowing me to share some ideas on the future we might be facing.

More information on mobility research at the Texas Transportation Institute can be found at: <http://mobility.tamu.edu> and <http://tti.tamu.edu>