

Dr. Leonard Sherman
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Speaker's Bio

My name is Len Sherman and I appreciate the opportunity to share my perspective with the DOT Reform Commission this afternoon. By way of background, I earned a doctoral degree in Transportation Systems Analysis from MIT in 1975 and have worked in the transportation and automotive industry arena ever since, most recently with my current employer, Accenture, a management and technology consulting company. I also teach part time in at the Northeastern and Columbia graduate schools of business. I have been a resident of Westport, CT for nearly 25 years during which, like most citizens, I have witnessed the tremendous growth and strains on our statewide transportation systems.

Speaker's Comments

The Need and Opportunity for Change

My comments this morning are framed around two fundamental beliefs:

- First, Connecticut has the *need and opportunity* to reexamine how it funds and develops its transportation systems to achieve five overall objectives: to enhance mobility, promote public safety, reduce adverse impacts on the environment, stimulate the state's economy, while maintaining fiscal responsibility on behalf of its citizens.
- Second, the state's current approach to funding its transportation systems (which today is largely tax-based) and to delivering transportation services (which today is largely balkanized and decentralized) reflects outdated circumstances that are no longer well suited to accomplish the state's critical transportation needs.

The *need* for change is manifest in insufficient sources of capital to keep pace with the growing transportation needs of the state, which is already struggling with high levels of congestion, inadequate public transportation, insufficient commuter rail parking and aging transportation infrastructure.

The good news is that I believe that the Connecticut DOT has significant *opportunities* to enhance the quality of transportation services in the state provided that it can address shortcomings with prevailing policies and approaches in two areas:

- The sources of funds used to develop and maintain state transportation systems
- The need for a more holistic view of creative new transportation services, leveraging promising new technologies and unconventional partnerships

With respect to funding, most of us are aware of the factors that led Connecticut to eliminate tolls in favor of a variety of tax sources two decades ago. But circumstances have significantly changed that now clearly call into question current funding policies. Simply stated, Connecticut cannot and should not continue to rely on general tax revenues to support its transportation needs. By exploiting proven technologies for fully electronic toll collection and other fee-for-use charges, Connecticut, like an increasing number of states across the US, can ensure it has the capital required to provide critically

needed multi-modal transportation services, manage congestion while also ensuring that revenues are collected efficiently and equitably.

The second key area of opportunity is for the state DOT to seek creative new transportation services derived from a holistic view of technology-enabled multi-modal operations supported by both conventional and unconventional partnerships and alliances.

I'd like to spend the next few minutes amplifying on these points in the hope of stimulating new ideas this Commission may choose to pursue further.

Holistic Solutions

Let's start with the types of problems the state DOT is trying to solve and the types of solutions it should be pursuing. The main point I want to convey here is that given the severity and complexity of transportation needs in the state, the Connecticut DOT needs to embrace a holistic view of mobility needs and be prepared to forge non-conventional partnerships and alliances to implement creative solutions.

As an example, we all know that our towns in southwest Connecticut face a shortage of commuter rail parking spaces that constrain public transportation ridership. As a result, many citizens who would actually prefer using Metro North reluctantly drive to work adding to the congestion that clogs our major thoroughfares every day.



The problem is clearly multi-modal in nature: the supply and quality of services on one mode impacts the supply and demand for services on others. At first glance, one might suggest the obvious solution: why not just build more parking spaces at Connecticut's Metro North stations? However, it's not that simple. For one thing, the Connecticut DOT doesn't control all the parking facilities in many towns. Parking facilities at Metro North stations are generally leased back to

individual towns, where residents often resist proposals to build large, unsightly parking garages. And then there's the cost: garage construction can easily amount to \$15,000 per space for new facilities - requiring capital that neither the state nor towns have sitting idly by.

In many towns there are additional access modes available: bus collector services and preferential bicycle and motorcycle/scooter spaces to provide additional access. But for many citizens, use of a personal vehicle remains the only viable option.

I would encourage the state DOT to consider creative new approaches to transportation problems such as this, which in some cases would require new types of partnerships. For example, in this instance, what we really should be looking for is how to get better utilization from *existing* parking facilities, or at minimum, reduce the need to build expensive and unpopular new garages.

One possibility is to consider a program which would encourage the use of ultra-compact automobiles for commuter use. For example, in less than 6 months, Mercedes-Benz will be introducing a new car in the US – the “fortwo” which is less than half the length of traditional large size cars and SUV’s that currently clog our station parking lots. With vehicles like the “fortwo”, commuter rail parking facilities could accommodate twice as many vehicles relative to current conditions. Doesn’t it make sense to consider programs which would encourage such use? But doing so would require a partnership between all the necessary constituencies impacted by such a program:

- The Connecticut DOT, to provide overall program management for statewide implementation
- Individual towns who would have to agree to implementation guidelines that would give preferential treatment to owners of such vehicles
- Private vehicle manufacturers who would help promote qualified vehicle sales for the intended application.



In my home town in Westport, residents seeking new parking stickers are currently required to wait upwards of 4-5 years for a permit. It seems to me that a program which provided preferential, immediate access for owners of mini-cars could yield a win-win-win solution:

- For the state DOT, more rail commuters and less congestion on state road facilities.
- For Westport, better utilization of its current facilities without the need for disruptive and expensive new infrastructure
- For residents, the opportunity for enhanced mobility, now
- For Penske Automotive – the US distributor of the fortwo -- and perhaps other manufacturers of mini-cars as well, the opportunity to tap an attractive market segment
- For all of us, an environmentally sound transportation alternative to the current approach.

I mention this as just one example of creative transportation solutions that the Connecticut DOT should consider that take a holistic view of current transportation problems and creative multi-modal solutions. In so doing, it is likely that the DOT may need to consider unconventional partnerships and alliances to achieve superior outcomes.

As another example consider the merits of *demand management rather than supply side solutions*. Traditionally, state DOT's have viewed their charter principally in terms of providing and maintaining adequate transportation infrastructure to meet statewide travel needs – i.e. supply-side solutions. But from a holistic point of view, demand management should also receive priority attention. After all, from a resource consumption point of view, the most efficient trip of all is the one not taken!

But as successful telecommuting programs of several companies in Connecticut already attest, effective demand management can allow us to have our proverbial cake and eat it too: less travel, higher productivity, and enhanced employee and customer satisfaction. The Connecticut DOT has already made a good start in promoting such demand management solutions, and its emphasis in this area should be expanded, including consideration of congestion charging programs to further optimize the use of the state's scarce transportation resources.

Technology

A number of recent technology developments open new possibilities for Connecticut to improve the efficiency of its transportation systems and meet the mobility needs of its citizens. Notable examples include:

- Fully automated vehicle identification
- Remote sensing
- Predictive insight technologies with application to dynamic vehicle routing, public transportation maintenance and infrastructure repair

Let's explore a few examples, starting with a variety of technologies that allow for fully automated vehicle identification. We're all familiar with onboard transponders used in the EZ Pass system in our neighbor states of New York, New Jersey and Massachusetts. However recent advances in video technology now allow the complete elimination of toll booth structures, enabling free flow tolling operations. The impacts can be dramatic as shown in the comparison below between current toll road operations in Dublin, Ireland and free flow operations in Tampa, Toronto, and Tel-Aviv, to name but three global examples of Open Road Tolling (ORT).



Dublin recently committed to replace its conventional transponder plus toll collection system with a fully electronic open road, video-enabled tolling system to achieve greater speed, safety, capacity and revenue generation.

Of course the same technologies can also be used to enable congestion charges in major urban areas or to automate fee collection in garages and other public use facilities. London, Singapore and Stockholm have already implemented congestion charge programs that are meeting their objectives to reduce discretionary auto use, increase public transportation ridership, generate revenues to support additional transportation investment and reduce adverse environmental impacts. In a minute, I will advocate the merits of Open Road Tolling and congestion charges for Connecticut. Suffice it to say here that the enabling technology is proven and available today.

The second and third significant technology trends relate to advances in remote sensing and predictive insight technologies. We now have the ability to cost effectively measure everything from the average speed and traffic volume on any thoroughfare, to the number of passengers and wait times at every bus stop to the exhaust gas cylinder temperatures on every public bus to continuous monitoring of structural defects in I-beams and other critical structural supports of bridges and highway overpasses.

The availability of real time transportation systems data is a considerable technology achievement in its own right. But when combined with predictive insight technologies that facilitate automated analysis and decision support, transportation operators can optimize system performance in a number of critical areas such as:

- Fully electronic toll collection (FETC) and congestion charging --as already noted
- Dynamic traffic alert systems -- to minimize commuter travel times
- Garage parking space guidance - eliminating the need to drive in circles looking for that one open spot
- Dynamic scheduling of public transportation systems -- directing vehicles where most needed
- Predictive maintenance of both public transportation vehicles and infrastructure -- focusing preventative maintenance where most needed to lower costs and avoid catastrophic failures.

The technology-enabled potential for improving transportation services in Connecticut is an exciting topic, clearly warranting more attention than possible this afternoon. Suffice it to say here that I believe an important role for the Connecticut DOT is to formulate an ambitious yet achievable transportation technology strategy for the state.

Funding

Now for the hard part. While it's inspirational to envision holistic, creative technology-enabled transportation services, the problem remains where and how to fund such solutions. A bit of context is in order here.

Connecticut, like other states faces a daunting financial challenge. A colleague of mine at Northeastern University, Professor Joseph Giglio, sums it up this way: "*The most serious problem facing the nation's transportation systems - especially roadway networks -- is a choking shortage of money*". The reasons are clear -- across the country:

- States face political resistance to increasing gas taxes, particularly since the post 9/11 run-up in gas prices

- Gains in vehicle fuel efficiency are decreasing fuel consumption per mile traveled, While this is great for the environment, it effectively decreases the states' revenue yield per vehicle mile traveled.
- Rapid increases in commodity prices – steel and crude oil in particular – have put strong inflationary pressure on road construction & maintenance costs

The net result, according to Federal Highway Administration estimates is a \$2 trillion shortfall in surface transportation funding in the US over next 20 years. Whatever Connecticut's share of this funding gap is, it's a big number, underscoring the urgency of finding new sources of capital without choking the state's economy.

In this regard, Connecticut is in the minority of states eschewing toll road operations. According to a 2006 US General Accounting Office survey of state transportation officials, there are toll road facilities in 24 states and plans to build toll road facilities in 7 others. Officials in states with current or planned toll roads indicate that their primary reasons for using a tolling approach are to address transportation funding shortfalls, finance new capacity, and manage congestion.

So why not reinstate tolls in Connecticut? Certainly the original reasons for abandoning tolls are no longer relevant

- Safety concerns with operating toll booths on state highways are now not a factor with the availability of fully electronic toll collection.
- Constraints on federal funding for toll road facilities are now relieved by the SAFETY-LU federal highway legislation of 2005

Moreover, tolling makes good economic sense and good public policy. As noted earlier, the Connecticut DOT faces the challenge of trying to manage the supply and demand for scarce transportation resources and the best mechanism towards this end is market pricing. We expect travelers to pay on a per use basis for riding public forms of transportation, often with higher fares during peak periods. Why shouldn't the same fee-for-use mechanism be applied for road transportation as well? Proven technology now makes tolling feasible, efficient and flexible, including the ability to facilitate variable toll rates by time of day or congestion level.

Connecticut's current approach to funding transportation services from income taxes, sales taxes and fuel taxes is inefficient and regressive. It also removes an important state policy lever to influence highway use and poses a significant barrier to future development of the state's infrastructure.

I believe it is time to fundamentally reexamine Connecticut's sources and uses of transportation funds. Towards this end, my recommendation would be for the state DOT to provide:

- Better visibility on the investment and full lifecycle costs required to deliver and maintain enhanced transportation systems to the residents of CT, including the comprehensive range of multi-modal solutions envisioned
- A detailed understanding of the potential funding shortfalls relative to current sources of revenue
- An objective evaluation of alternative funding sources, including
 - Reinstatement of tolls on major CT highways, utilizing fully electronic toll collection technologies

- Congestion charges and dynamic pricing, tied to a full accounting of the lifecycle costs of road operations
- Selective use of private/public partnerships to tap additional sources of capital.

In summary, I believe Connecticut has the need and opportunity to reevaluate its current approaches to meeting its charter to cost effectively enhance mobility, safety, environmental integrity and economic growth in the state. I've suggested three promising directions towards this end:

- Development of holistic, creative multi-modal transportation solutions supported by non-traditional partnerships and alliances where necessary
- Exploitation of emerging technologies in automated vehicle identification, remote sensing and predictive insight methodologies to expand the range of possibilities
- Revamping of the state's current source of funding, replacing general taxation by fee-for-use mechanisms on our road networks

I hope these ideas stimulate a useful dialogue by this important policy commission.

Thank you for your attention.