U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

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June 7, 2007

SUMMARY OF SUBJECT MATTER

TO: Members of the Subcommittee on Highways and Transit

FROM: Subcommittee on Highways and Transit Staff

SUBJECT: Hearing on Congestion and Mobility

PURPOSE OF HEARING

The Subcommittee on Highways and Transit is scheduled to meet on Thursday, June 7, 2007 at 10:00 a.m., to receive testimony on the problem of congestion facing our nation's surface transportation system and some of the options to deal with the problem. Witnesses scheduled to testify include officials from the U.S. Department of Transportation, state departments of transportation, and an academic institution.

BACKGROUND

Transportation congestion exists when the demand for a highway facility or a transit vehicle or facility exceeds its carrying capacity, resulting in a significant decline in service quality in terms of vehicle flow speeds, travel comfort, vehicle operating cost, or driver stress.

Congestion tends to be concentrated in major metropolitan areas, especially around ports, airports, freight distribution centers, and places where major highways intersect. Because of this, not everybody experiences congestion on a daily basis and, therefore, it may not be seen as a major national problem. The U.S. surface transportation system involves a national network of facilities serving the mobility needs of the entire country. Localized congestion—whether affecting travelers trying to reach the airport to catch a flight or packages being shipped for just-in-time manufacturing—often has effects that ripple across the nation. The interconnected nature of the network and the broad nationwide impacts of regionalized congestion have led many experts to believe that a national response is warranted.

The most comprehensive report on the state of congestion and its impacts has been conducted by the Texas Transportation Institute ("TTI") at Texas A&M University. Using data collected from the U.S. Department of Transportation ("DOT") and the states, the report assesses the magnitude of our nation's congestion problem by examining congestion in 85 urban areas. TTI first issued the Urban Mobility Report in 1982. The most recent report was released in May 2005.

The 2005 Urban Mobility Report found that congestion continued to grow in the 85 regions studied. This congestion is costing the country more in wasted time and wasted fuel when vehicles and motorists are stuck in traffic. Major findings of the 2005 report include:

- Congestion has grown in urban areas of every size, with the problem being more severe in larger areas.
- Overall traffic delay totaled 3.7 billion hours in 2003—up from 700 million hours in 1982.
- An extra 2.3 billion gallon of fuel was consumed in 2003 due to congestion—up from 400 million gallons in 1982.
- The total cost of congestion in 2003 was estimated at $63.1 billion—up from $12.5 billion in 1982.
- Congestion is affecting more segments of regional road networks for longer periods of time.
  - Roadways experienced the "worse congestion levels" during 40 percent of peak travel periods, up from 12 percent in 1982.
  - Roadways experienced "severe congestion" for longer periods of time, and on more segments of regional road networks, causing the average annual delay of motorists traveling during peak hours to increase to 47 hours—up from 16 hours in 1982.
- Public transit provides a significant amount of peak period travel; had transit services been absent and riders traveled in private vehicles instead, delays in the 85 urban areas would have been 1.1 billion hours higher in 2003.

The report concludes that there is no "single solution" to addressing urban congestion. Rather, a "balanced approach" in regional efforts, and a range of policy options designed to increase travel options, are needed to mitigate congestion. This includes expanding roadway and transit capacity, improving the operational efficiency of transportation networks, better demand management, and better alignment among land use, development, and transportation planning decisions.

A 2006 report by the Victoria Transport Policy Institute ("VTPI") evaluated rail transit benefits based on a comprehensive analysis of transportation system performance in major U.S. cities. The report found that cities with large, well-established rail systems have significantly higher per capita transit ridership and less traffic congestion than otherwise comparable cities with less or no rail transit service.

POTENTIAL OPTIONS FOR ADDRESSING CONGESTION

Expand Capacity

Expanding road capacity is the common response to congestion. According to Federal Highway Administration ("FHWA") data, road capacity, as measured by paved centerline miles of

highways and streets,[1] grew at approximately the same rate as traffic demand, as measured by vehicle-miles traveled ("VMT"), from mid-1940s to early 1960s. Much of the growth in traffic was spurred on by having emerged from the Great Depression and the Second World War, with much higher available income from forced savings during the war and plentiful jobs following the war to meet the pent-up demand for consumer products including personal automobiles. Road capacity also increased rapidly during this time period due largely to the construction of Interstate highways.

Beginning in the early 1960s, roadway capacity and traffic volumes diverged, and the gap continued to widen. FHWA data show that VMT on all roads grew at an average annual rate of 3.23 percent between 1961 and 2005, while paved centerline miles only went up at half the pace—by an average annual rate of 1.64 percent—during the same period. With better information beginning in 1980, FHWA data show that VMT on arterials rose by an average of 2.98 percent a year between 1980 and 2005 while the growth in arterial lane miles lagged far behind, at an average of 0.86 percent per year in the same timeframe.

Congress substantially increased federal investment in roadway construction and maintenance activities in recent reauthorizations of the surface transportation programs. The Transportation Equity Act for the 21st Century of 1998 ("TEA 21") provided a 40 percent increase in federal funding (in nominal terms) over its predecessor, the Intermodal Surface Transportation Efficiency Act of 1991 ("ISTEA"). Guaranteed federal funding provided in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users of 2005 ("SAFETEA-LU") was further increased, on an average annual basis, by 55 percent (in nominal terms) over TEA 21. Despite this increased federal investment, roadway capacity continued to lack behind demand.

In addition, surface transportation laws contain programs designed to relieve congestion at specific targeted areas. For example, the Congestion Mitigation and Air Quality Improvement Program ("CMAQ") established in ISTEA focuses mostly on metropolitan regions that do not meet national ambient air quality standards under the Clean Air Act. The National Corridor Planning and Development Program and the Coordinated Border Infrastructure and Safety Program established in TEA 21 attempt to, respectively, smooth the traffic flow along major highway corridors and address traffic congestion and safety problems at international border crossings. Under SAFETEA-LU, these latter programs were revised and strengthened. Moreover, the Projects of National and Regional Significance program was created to provide additional assistance for high-cost projects that generate very substantial congestion relief benefits, which are dispersed over wide geographical areas and multiple political jurisdictions.

Skeptics have questioned whether building new highway capacity alone will ever solve the traffic congestion problem, not to mention the high cost of such an approach, including prolonged traffic disruption. They argue that the new capacity will be quickly filled by additional traffic induced by the temporary improvement in congestion. But over time, congestion will return—albeit at a higher level.

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[1] Paved centerline miles of highways and streets measure only the length of roads with a bituminous surface in one direction; it does not account for the additional capacity on highways with more than one lane in each direction. As a result, total lane miles of arterials are a better measure of roadway capacity. FHWA did not begin to provide such data until 1980.

Increasing transit capacity in some areas can provide significant congestion reduction benefits, even if it only carries a small portion of total regional travel, because it offers an alternative on the most congested corridors. For example, a Transportation Research Board report found that — a 5 percent reduction in peak-hour traffic volumes on a road at 90 percent capacity can reduce delay by 20 percent or more, demonstrating that a reduction of just a few percent of vehicles on such roads can significantly reduce congestion costs. To reduce congestion, transit must attract discretionary riders (travelers who have the option of driving), which requires fast, comfortable, convenient and affordable service. When transit is faster and more comfortable than driving, a portion of travelers shift mode until congestion declines to the point that transit is no longer faster. As a result, the faster, more reliable and more comfortable the transit service, the faster the traffic speeds on parallel highways.

Both the TTI and VTPI reports found that congestion costs decline in cities with grade-separated transit systems. The TTI report found that these "Large Rail" cities have much greater transit congestion reduction benefits than other cities with smaller or no rail transit systems. Of the 50 largest cities, "Large Rail" cities average $279 savings per capita, compared with $88 "Small Rail" cities, and $41 for "Bus Only" cities. These savings total more than $14.0 billion in "Large Rail" cities, $5.4 billion in "Small Rail" cities, and $1.8 billion dollars in "Bus Only" cities (considering only the 50 largest U.S. cities), indicating that rail provides $19.4 billion annual congestion cost savings. These savings approximately equal total U.S. public transit investment.

Improve Operational Efficiency

A lower cost option to relieve congestion is to operate existing facilities more efficiently. This will enable the facilities to handle a greater volume of traffic per unit of time (such as an hour) with the fixed physical capacity. Methods of achieving greater efficiency include, among many others, providing real-time travel information and weather information, implementing incident management and event management plans, installing ramp meters, operating traffic management centers, and synchronizing traffic signals.

A 2005 FHWA report shows that 40 percent of road traffic congestion was the result of capacity problems (bottlenecks). That leaves over one-half of the congestion problem not being the result of inadequate capacity. Among these other causes are: traffic incidents (e.g., accidents, fallen debris on the roadway) (25 percent), bad weather (15 percent), work zone (roadway construction) (10 percent), poor signal timing (5 percent), and special events (e.g., sporting events, concerts) and other (5 percent). Unlike bottlenecks, these non-recurring causes of congestion cannot be effectively addressed by enhancing the physical capacity of the facility. Instead, they can be mitigated—faster and at much lower cost—by means of improved operational efficiency.

For example, when an accident causes severe traffic backup, congestion can be relieved if the accident scene is cleared up quickly. A simple way to do that is by pre-positioning tow trucks along busy highways. Another thing that can be done is to expedite accident investigation by law enforcement agencies. Methodical and thorough investigation of accidents is a primary concern of law enforcement agencies. This leads to delays in the clearing of roadways to relieve congestion.

Road construction often restricts traffic flow by removing one or more lanes from service. In addition, construction workers and equipment encroaching on the traffic lanes can cause

accidents. Finally, changing traffic pattern caused by construction and materials such as barriers placed on the roadway are traffic hazards. Congestion occurs when drivers slow down at work zones or after an accident. Traffic management at highway construction sites provides substantial benefits to congestion relief.

Manage Demand

In addition to expanding capacity or improving the throughput of existing facilities, another congestion mitigation option is to manage the demand for facility usage. Proponents of this approach argue that so long as users of highways are not required to pay the cost of using the highways, they will continue to use them without restraint. This is the traditional economic argument against "free goods", as cost-free products inevitably result in over-consumption. According to economic theory, efficiency in resource allocation (investing only sufficient resources in highways to maximize total net benefits) and consumption (having only those users on the highways whose total net personal benefits are maximized) can be achieved if the price of using a facility is set to equal to the marginal cost of providing the facility.

Congestion pricing,[2] also called value pricing, is proposed on the basis of such economic arguments. It is an aggressive form of road pricing. Unlike a flat rate charged on most toll roads, congestion pricing schemes will vary the rates throughout the day to reflect changing traffic conditions so that tolls will be higher during morning and evening rush periods and lower during the rest of the day, especially late at night when there is little traffic on the road. Like all prices, congestion pricing is basically a rationing device to make transportation facilities available to those who value the services provided by the facilities at least as much as, and can afford to pay, the price. Those who are either unwilling or unable to pay the congestion price will not be allowed to use the facilities. By eliminating those who do not pay, fewer vehicles will be using the facilities and, as a result, congestion will be reduced or eliminated on the highways.

With technology that is currently available congestion pricing can be implemented quickly, not too expensively, and with minimal interruption to traffic. Intelligent transportation system technology using infra-red readers and vehicular transponders allows cash-free transaction at highway speed. Safety issues arising from slowing down and speeding up at toll booths are eliminated.

Smooth flowing traffic can also improve air quality as engines idling in traffic jams will be reduced. Finally, state and local governments that impose congestion pricing can receive a steady stream of revenues that they can use for transportation improvements or other purposes.

Opponents of congestion pricing point to the negative impacts on low-income drivers. Tolls, like sales taxes, are regressive—that is, they adversely affect low-income individuals to a larger extent than they do high-income drivers because a much smaller proportion of high-income individuals' disposable income is spent on tolls. As congestion charges go up, particularly during rush periods, more and more low-income drivers will be "priced out of the market". This may be a particularly acute problem because low-income individuals most often do not have a choice on their

[2] Congestion pricing can be implemented in several different forms: impose tolls on selected lanes of a road, on the entire road, around a specified area such the downtown of a city, or over a wider region.

working schedules, and therefore cannot plan to drive during off-peak periods. Over time as congestion toll rates continue to rise to match worsening congestion, only very high-income individuals can afford to drive on the roads on a regular basis. Critics call this phenomenon "Lexus Lanes" or "Limo Lanes," and it reflects a sense of social unfairness.

Having been priced out of the roads by congestion pricing schemes, low-income drivers in the United States could have difficulty finding attractive or feasible transportation alternatives. Other roads in the area that do not have tolls may be congested—more so than prior to the imposition of congestion pricing due to traffic diversion—so driving may become even more difficult. Part of the argument by proponents of congestion pricing is that it will encourage users of highways to switch to public transportation. But switching to public transportation may not be any better or even possible. If public transportation is available, it will become more congested as a result of similar switch by other individuals. Service quality of public transportation is likely to suffer as a result, unless additional resources are available to maintain or improve the service. But often in the United States, convenient public transportation service is simply not available. In such a situation, low-income drivers who have been priced out of the road are left with very few options.

Finally, congestion pricing is not entirely consistent with the economic argument of equating the price (tolls charged under congestion pricing) with the cost of providing the service for an additional driver (marginal cost). Since the road capacity is basically fixed, the marginal cost of accommodating an additional driver is extremely low. Toll rates set for congestion pricing invariably are orders of magnitude higher than the marginal cost. Setting prices in such a manner discourages consumption, and society is left worse off by having too few drivers using the road. That may have been the reason why significant traffic drop-offs have been observed following the implementation of congestion pricing. The question is whether the traffic outcome is economically efficient.

U.S Department of Transportation's Congestion Initiative

In May 2006, DOT initiated an effort to reduce congestion on the nation's transportation network. The National Strategy to Reduce Congestion on America's Transportation Network (Congestion Initiative) is designed to assist state and local governments to develop and implement strategies to mitigate congestion.

Major surface transportation components of the initiative include:

- *Urban Partnership Agreements*—DOT issuing urban partnership agreements to establish partnerships with metropolitan areas willing to implement "a comprehensive policy response plan." The plans would include: congestion pricing demonstrations, development or expansion of bus rapid transit services, increased use of telecommuting and flex scheduling, and utilization of advanced technology to improve operational performance of the regional transportation system. DOT plans to support "Urban Partners" with financial resources, regulatory flexibility, and personnel.

- *Public-Private Partnerships*—As part of the initiative, DOT plans to utilize under the authority of the Value Pricing Pilot, Interstate Reconstruction Pilot, Interstate Construction Toll Pilot,

Express Lanes Demonstration Programs to incent "private sector investment in the construction, ownership, and operation of transportation facilities."

- *Corridors of the Future*—DOT is currently conducting a competition to select 3-5 corridors for inclusion in the Corridors of the Future Program (CFP). CFP is designed to assist states to accelerate the development of projects that expand capacity and improve operations along heavily congested multi-state, multi-modal travel and trade corridors. Under the CFP, DOT will work with "multi-State coalitions to identify alternative funding sources for corridors of national and regional significance in need of investment for the purpose of reducing congestion." The "primary goal of the CFP is to encourage States to explore innovative financing as a tool to reduce congestion on some of our most critical trade corridors, improve the flow of goods across our Nation, and enhance the quality of life for U.S. citizens." The CFP is designed to demonstrate "the value of applying market-based principles to transportation investment."

- *Reducing Southern California Freight Congestion*—DOT is working to bring together public- and private-sector officials to develop solutions to reduce freight congestion in Southern California.

- *Reducing Border Congestion* — DOT is working with public- and private-sector stakeholders to identify and implement solutions to congestion at border crossings that facilitate trade and travel without compromising motor vehicle safety or security.

The Administration's Fiscal Year 2008 budget proposed to fund the congestion initiative at $175 million. Included within this total is $100 million for Urban Partnership Agreements. The remaining $75 million will be divided equally among three programs: $25 million to support CFP; $25 million to support Real-Time System Management Information Programs (section 1201 of SAFETEA-LU); and $425 million to expand congestion-related research activities under the Intelligent Transportation Systems Research and Development program.

WITNESS LIST

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