TPB R10-2010
October 21, 2009

NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
777 North Capitol Street, N.E.
Washington, D.C. 20002

RESOLUTION APPROVING THE SUBMISSION OF A VALUE PRICING GRANT PROPOSAL TO THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) TO STUDY PUBLIC ACCEPTABILITY OF PRICING MAJOR ROADWAYS IN THE WASHINGTON METROPOLITAN REGION

WHEREAS, the National Capital Region Transportation Planning Board (TPB), which is the metropolitan planning organization (MPO) for the Washington Region, has the responsibility under the provisions of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU) of 2005 for developing and carrying out a continuing, cooperative and comprehensive transportation planning process for the Washington Metropolitan Area; and

WHEREAS, the TPB has played a leadership role in recent years in conducting analysis of value pricing and encouraging discussion of pricing options, including the completion in February 2008 of a study of a regional network of value priced (VP) highway lanes, which was conducted with a 2006 grant from the Federal Highway Administration's Value Pricing Pilot (VPP) Program; and

WHEREAS, the FHWA on August 5, 2009 issued a Request for Proposals that invited States, along with their local government partners and other public authorities, to apply to participate in the VPP grant program for fiscal years 2009 and 2010; and

WHEREAS, staff from the FHWA in September 2009 invited the TPB to submit a grant proposal under the VPP grant program in partnership with the Brookings Institution, which in June 2009 published a report titled "Road-use Pricing: How Would You Like to Spend Less Time in Traffic?"; and

WHEREAS, distance-based road pricing has become more technologically feasible in recent years, but questions of public acceptability remain largely unanswered; and

WHEREAS, on October 2, 2009, the TPB Technical Committee and TPB Steering Committee were briefed on a sketch proposal entitled: “Public Acceptability of Regional Road Pricing: Can it be Designed to Garner Public Support?;” and

WHEREAS, the TPB Technical Committee and TPB Steering Committee were supportive of submitting a potential grant proposal and both committees provided useful suggestions and comments that have been incorporated into the attached draft; and

WHEREAS, after receiving the sketch proposal for review, FHWA staff indicated that

they look forward to reviewing the final proposal for VPP program funds if submitted by November 3, 2009 and compliant with all the requirements of the August 5, 2009 Federal Register, and provided the following comment: “This proposal needs to provide a task-by-task budget, and needs to clearly identify Federal funds requested vs. total funds;” and

WHEREAS, the proposed study budget is for $400,000 ($320,000 federal, $80,000 local), and the Metropolitan Washington Council of Governments (COG) will provide a match of $80,000, which is an amount previously authorized by COG for a TPB grant application in October of 2008 to the FHWA Value Pricing Pilot program that was not funded; and

WHEREAS, the COG Executive Director has been authorized to enter into an agreement with the FHWA and the Virginia Department of Transportation, for the purposes of conducting a study under the FHWA's Value Pricing Pilot Program on the public acceptability of road pricing; and

WHEREAS, on October 21, 2009 the Board was briefed on the attached draft proposal entitled: “Public Acceptability of Regional Road Pricing: Can it be Designed to Garner Public Support?” from the TPB and the Brookings Institution for a Value Pricing grant to be submitted to FHWA by November 3, 2009;

NOW, THEREFORE BE IT RESOLVED THAT THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD approves the submission of a proposal entitled: “Public Acceptability of Regional Road Pricing: Can it be Designed to Garner Public Support?” to the Federal Highway Administration's Value Pricing Pilot (VPP) by November 3, 2009.

Adopted by the Transportation Planning Board at its regular meeting on October 21, 2009.

National Capital Region Transportation Planning Board
777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202 TDD: (202) 962-3213

MEMORANDUM

TO: Transportation Planning Board

FROM: Ronald Kirby, Director, Department of Transportation Planning

SUBJECT: Approval of a Value Pricing Grant Proposal to the Federal Highway Administration (FHWA)

DATE: October 15, 2009

The TPB will be asked at its October 21 meeting to approve the submission of a study grant application titled "Public Acceptability of Regional Road Pricing: Can it be Designed to Garner Public Support?" to the Federal Highway Administration's Value Pricing Pilot (VPP). The grant application is due November 3, 2009. The attached draft proposal provides a description of the concept and work plan for this project.

The FHWA issued a Request for Proposals on August 5, 2009 inviting new applications for grants under the Value Pricing Pilot Program. The applications are due November 3, 2009. Knowing the TPB's track record of research and interest in the subject of value pricing, FHWA staff in August invited the TPB to submit a proposal in partnership with the Brookings Institution. Earlier this year, Brookings released the attached report recommending that the Washington region should implement an area-wide road-pricing demonstration project.

TPB staff on September 21 submitted a "sketch proposal" to FHWA. The announcement for this grant program suggested that interested parties submit such a sketch proposal in order to receive preliminary feedback on the proposal. Following the submission of this sketch proposal, the following developments have occurred:

- FHWA staff provided comments to TPB staff on October 8 noting that "This proposal needs to provide a task-by-task budget, and needs to clearly identify Federal funds requested vs. total funds." The attached draft proposal addresses these comments.
- Staff from the Virginia Department of Transportation indicated on September 29 that VDOT has agreed to submit the proposal on behalf of the TPB.
- The TPB Technical and Steering Committee discussed the sketch proposal on October 2. Comments and suggestions from those meetings have been incorporated into the attached draft proposal.
- The Metropolitan Washington Council of Governments Board of Directors on October 14 approved the required 20% match in the amount of $80,000.

If the TPB agrees on October 21 to submit a proposal based upon the concept and work plan described in the attached draft proposal, TPB staff will develop a formal application that will be submitted by the deadline of November 3.

Public Acceptability of Regional Road Pricing:
Can it be Designed to Garner Public Support?

Draft Proposal
For a Value Pricing Pilot Program Grant
From the Federal Highway Administration

The National Capital Region Transportation Planning Board (TPB)
Working in Partnership with the Brookings Institution
To be Submitted by the Virginia Department of Transportation on behalf of the TPB

October 15, 2009

Overview

While distance-based road pricing has become more technologically feasible, questions of public acceptability remain largely unanswered. How can road pricing be politically viable? Can decision makers effectively address concerns about privacy and equity? What would it take to convince voters that road pricing is "worth it"? What would it take to convince political leaders that it's worth supporting such a policy?

This research project will investigate these concerns in a comprehensive and objective manner. Using the metropolitan Washington region as a case study, the project will employ focus groups and public opinion surveys to test a variety of pricing options and assess opportunities and obstacles to implementation.

Background

The Washington region's pattern of rapid growth is forecast to continue in the coming decades. The Metropolitan Washington Council of Governments projects that the metropolitan area will add 1.6 million new residents and 1.2 million new jobs by 2030. These new people and new jobs will increase the stress on an already burdened transportation system. At the same time, transportation funding is tight and the future funding forecasts are bleak. Revenue sources have simply not kept up with needs, in large part because fuel tax revenues have not been increased with inflation.

TPB travel demand forecasts reveal a disturbing mismatch between demand and capacity. Between 2008 and 2030, vehicle miles of travel (VMT) are anticipated to increase 23 percent, while freeway and arterial lane miles will only increase 13 percent increase. The number of lane miles of peak-hour congestion will grow by 41 percent in the same period.

As congestion grows and funding shrinks, decision makers have increasingly turned to transportation pricing mechanisms. Today, three out of the five most expensive projects planned for the next six years are toll projects—Virginia's two HOT lanes projects (on the

Beltway and I-95/39) and Maryland's Intercounty Connector. Toll revenues are also a key funding component for the Dulles rail project. The TPB's 2006 long-range financial analysis found that tolls and private sources can be expected to provide seven percent of anticipated revenues between now and 2030. A similar analysis in 2003 found that toll and private money accounted for just one percent of anticipated revenues.

In 2003, the TPB convened more than 200 elected officials, community leaders, planners and academics for a conference that was the region's first major public event to discuss value pricing. The conference helped to galvanize regional interest in pricing as a solution to the region's perpetual transportation funding shortfall.

In 2008, the TPB released a study funded by the FHWA Value Pricing Pilot Program that analyzed the potential effects of widespread pricing in the Washington region. The study "Evaluating Alternative Scenarios for a Network of Variably Priced Highway Lanes in the Metropolitan Washington Region" outlined several different scenarios for adding new priced lanes, pricing existing highways, and enhancing bus services.

While leaders in the Washington region have increasingly responded to the transportation funding shortfall with toll-lane projects, the national debate has shifted in recent years to the inadequacies of the gas tax as a transportation funding mechanism. Many leading experts have called for the gas tax to be replaced by a system of user fees based on vehicle miles of travel (VMT). If fees could be based on location and time of day of vehicle travel, such a system could increase revenues and improve system performance by reducing congestion and emissions, including greenhouse gases.

In February, the National Surface Transportation Infrastructure Financing Commission issued its final report to Congress. The report recommended moving to a VMT charge within a decade because the fuel tax is "likely to erode more quickly than previously thought." National transportation policy makers expressed interest earlier this year in further investigation of a VMT tax, but political sensitivities on Capitol Hill and the Administration seem to have thwarted outright endorsement of such a major policy shift. Nonetheless, distance-based road pricing has been the subject of numerous public discussions and reports, including a study released in June 2009 by the Rand Corporation on behalf of the American Association of State Highway and Transportation Officials (AASHTO), which evaluated the effectiveness and practicality of nine different VMT fee mechanisms.

In June 2009, the Brookings Institution linked the concept of distance-based pricing to the Washington region with a bold proposal for an area-wide demonstration project that would replace state gas taxes in our region with a system of road pricing. The proposal, titled "Road-use Pricing: How Would You Like to Spend Less Time in Traffic?" called for a GPS-based pricing system that raise new revenues from vehicle travel while simultaneously providing a means to reduce traffic congestion and pollution and improve public transportation.

The Proposal

Research on road pricing is already extensive. Leading proponents have articulated a rational and persuasive case in support of pricing policies. Experts are confident that technological challenges can be addressed. But our understanding of the political implications of such policies often seems to be based upon limited information and poorly grounded assumptions.

The TPB and the Brookings Institution intend to submit a proposal to the FHWA Value Pricing Pilot Program that will seek to answer key questions related to the public acceptability of road pricing. Our project proposes to study the pricing of all or most roadways in the Washington metropolitan area, as defined by TPB's planning area.

In an iterative process, the project will develop and refine estimates of social, economic, and equity effects of a pricing program. An initial technical assessment will be made of several viable options for regional road-use pricing and the various ways in which they could be implemented. A telephone survey will be used to evaluate public attitudes toward a menu of pricing options. Focus groups will build on that work and explore how various options address public concerns and political challenges. Findings will be summarized and presented to the TPB. Members of the TPB, which includes key elected officials from throughout the region, will be invited to participate actively throughout the study process.

The project will proceed according to the following phases:

1. The TPB and Brookings and will convene a working group of 10-14 regional experts on transportation and road-use pricing. This working group will develop a menu of implementation options for comprehensive regional road-use pricing. These options will fall under three main categories: geography, technology, and pricing strategy. For example, the geographic area priced could be determined by relative proximity to transit and/or level of congestion; the technology used to assign prices to motorists could be GPS-, cell phone tower-, or camera-based; while pricing strategy might vary by time of day or ability to pay.

2. The TPB will contract with a private consultant for a telephone survey that presents respondents with a basic road-use pricing scenario and then asks them, given the scenario, to rate each of the pricing menu items based on their effect on the respondents' willingness to support road-use pricing. The TPB will identify a consultant with an extensive level of expertise in both public opinion research and public policy. Preference will be given to firms with experience in transportation planning or policy.

3. The TPB, Brookings and the working group will develop a series of alternate road-use pricing scenarios, with an emphasis on menu items most likely to garner public support based on survey response.

4. The TPB will contract with a private consultant to convene stakeholder focus groups to discuss, evaluate, and refine the pricing scenarios.

5. The scenarios produced by the focus groups will be subjected to a deeper technical and benefit/cost analysis performed with the assistance of an outside contractor. This analysis will focus on engineering feasibility and cost, effect on congestion, economic impact including productivity, and impact on equity (including spatial equity).

6. Based on the survey and focus groups, and the analytic work, the working group will summarize public feedback on pricing scenarios. The results will be presented to the National Capital Region Transportation Planning Board.

Schedule

The project is anticipated to last a period of 12 months, beginning in January 2010 and finishing in December 2010.

Funding

Total funding for the project will be $400,000. Given the 80:20 match requirement, the COG/TPB funding request from FHWA will be $320,000. COG/TPB will provide a match of $80,000, which was approved by the COG board on October 14, 2009.

Preliminary Budget

Task 1: Initiate working group, months 1-2	$50,000
Task 2: Conduct public opinion survey, months 3-4	$100,000
Task 3: Identify scenarios based upon survey, months 5-7	$75,000
Task 4: Test scenarios in focus groups, months 8-9	$50,000
Task 5: Conduct further analysis, months 10-11	$75,000
Task 6: Summarize findings and present to TPB, month 12	$50,000
Total	$400,000

Grant Implementation

The Transportation Planning Board at COG will act as lead agency responsible for grant implementation, while the Virginia Department of Transportation (VDOT) will be the direct recipient of the grant. TPB staff will be responsible for project management and oversight, technical analysis, and outreach with stakeholders in the region. Brookings Greater Washington will provide support in convening experts, conducting project research, and providing project guidance. The TPB staff and Brookings will jointly develop the final research report, including the articulation of findings. Additional tasks will be performed by consultants, including survey development and administration and focus group moderation.

GREATER WASHINGTON RESEARCH AT BROOKINGS

Road-use Pricing: How Would You Like to Spend Less Time in Traffic?

Benjamin K. Orr and Alice M. Rivlin

"The national capital region should serve as an example of what truly sustainable transportation policy looks like for the rest of the nation."

Severe congestion and underfunded public transportation systems in the Washington, D.C. region and nationwide call for a more sustainable way of pricing transportation. This brief proposes replacing state gas taxes with regional road-use pricing that takes into account the effects of vehicle travel while simultaneously providing incentives to reduce traffic congestion and pollution and improve public transportation.

To achieve this, a demonstration project should be launched in the Washington region that uses GPS transponders to categorize motorists' travel based on distance, level of congestion, and type of vehicle. The transponder would calculate the totals for each category and drivers would be charged accordingly when they purchased gas. Tourists and other motorists lacking the GPS device would continue to pay the full gas tax. At an average price of between 9 and 15 cents per mile, such a policy could reduce congestion by 75 to 80 percent.

I. Introduction

According to the Texas Transportation Institute, Washington D.C. area commuters on average wasted a workweek and a half (60 hours) due to traffic congestion in 2005, the second worst in the nation.[1] The cost to the average commuter in terms of time and gas wasted was the equivalent of almost $1100. Since 2000 this delay has increased by an entire workday. For comparison, in 1982 area commuters were only delayed 16 hours, amounting to barely $143 (in 2005 dollars) in losses.

Additionally, over a quarter of area workers 16 or older not working at home had one way commutes longer than 45 minutes in 2007. Three percent had commutes longer than 90 minutes.

More recently, traffic has eased slightly as vehicle miles traveled fell three percent in the spring of 2008 versus a year earlier in a study conducted by the Metropolitan Washington Council of Governments. However, this reduction was due to the poor economy and last year's record gas prices. The price of gas has since fallen and the recession will not last forever; therefore the decrease in traffic is almost certainly temporary.

And there are more of us every year. From 2005 to 2007 the Washington area added 88,877 people over the age of 16 to the commuting labor force (those who do not work from home). The Metropolitan Washington Council of Governments projects that the metropolitan area as a whole will add 1.6 million new residents by 2030, working 1.2 million new jobs—a recipe for ever-increasing congestion.

The traditional response to traffic congestion has been to build more and bigger roads. Increasing road capacity seemed like a reasonable response, and yet congestion kept getting worse. The problem was that the demand for roads always rose to meet (and quickly exceed) capacity and congestion kept getting worse.

Economists suggest the reason: Except for a few toll roads, motorists do not directly pay to use the road. If something is free—or appears to be—demand tends to outstrip supply. Motorists do pay gas taxes, which roughly relate to the miles they drive, but once they have a full tank the price of using any road is zero, whether it is a country lane or a congested commuter route. However, as roadways reach capacity each additional motorist imposes costs on everybody else. A motorist who enters I-95 at rush hour, thereby adding to traffic

congestion, does not pay more for imposing this cost on others. In a very real sense our transportation policy has been to subsidize ever worsening congestion.

Moreover, the gas tax is proving to be an inadequate source of revenue for transportation needs. As vehicles become more fuel-efficient, revenue from gas taxes falls. A more sustainable solution to financing transportation, both here and in the nation as a whole, is road-use pricing.

II. What is Road-Use Pricing?

Road-use pricing is a way of charging motorists both for distance traveled and for the costs they impose on others, especially by using heavily traveled roads at times of high congestion. Charging for vehicle miles traveled (VMT) is straightforward. VMT tolling schemes charge motorists a set fee for each mile traveled. The price per mile may vary with the weight or other characteristics of the vehicle to reflect wear and tear on the road and environmental impact. Road use pricing adds congestion fees to VMT charges. Congestion pricing is a form of tolling in which people pay more to drive on congested roads. The combination of VMT charges and congestion fees provides motorists and other travelers with information about the total costs they impose on the transportation system and other travelers (including increased congestion, pollution, likelihood of accidents, and infrastructure maintenance) by adding another vehicle to the roadway. In principle, travelers then are able to decide which mode and time of travel is really the best option.

There are several different ways to implement congestion pricing (see table below for specific examples). Individual roads (or lanes) may be tolled; or individual facilities. Vehicles might be charged to enter a specific cordoned off area (an idea which has been successfully implemented in central London, while New York rejected a similar idea for downtown Manhattan). Or a comprehensive pricing plan can be introduced covering an entire regional road network.

Types of Congestion Pricing	Description (all four types of tolls may vary by level of congestion and type of vehicle)	Examples
Road pricing	Toll is charged to drive along a specific road or lane at specific times; adjacent roads or lanes are free. Similar to VMT pricing, tolls are calculated based on the distance traveled.	Virginia HOT lanes (under construction) New Jersey Turnpike California State Route 91
Facility pricing	Toll is charged to pass through a point. Tolls do not consider the distance which the vehicle travels to get to the facility or after leaving it.	Delaware Memorial Bridge
Cordon pricing	Toll is charged to enter a specific area. Does not vary by distance traveled	Central London New York City proposal
Comprehensive pricing	All roads are tolled. Similar to a cordon charge, in that it only applies to a specific (though usually much larger) region. Tolls may include distance traveled calculations.	Singapore

A comprehensive road-use pricing initiative in the Washington metropolitan area would be an extremely ambitious experiment. It would require Maryland, Virginia, and the District's transportation authorities to work closely together—never an easy assignment. Leadership and upfront investment from the federal government would also be essential to get the experiment off the ground and ensure comprehensive implementation. Some recent indications of interest at the federal level suggest that this might be possible. Transportation Secretary Ray LaHood has recently stated that, due to the failure of the Manhattan congestion pricing initiative, the U.S. Department of Transportation still has funds available for pilot congestion pricing programs. He has also floated the possibility of transitioning from the gas tax to a VMT tax (though this met with White House resistance). Rep. James Oberstar (D-MN), chairman of the House Committee on Transportation and Infrastructure, has also come out in favor of switching to a VMT tax—and soon. Other members of Congress,

notably Rep. Earl Blumenauer (D-OR), also appear favorably disposed toward alternative transportation financing mechanisms.

The Congressional Budget Office (CBO) recently published a report weighing the benefits and costs of congestion pricing at the national level. CBO found that congestion could be substantially reduced (by as much as 30 percent in the London cordon example). Reduced congestion in turn would produce shorter and more reliable travel times (particularly benefiting delivery, freight, and other logistics companies, as well as individuals). Finally, governments are able to make more efficient infrastructure investments: As VMT falls so do maintenance costs, while persistent demand along certain routes in the face of pricing provides planners with information about which roads are most in need of future investment.

CBO also found that congestion pricing creates serious challenges. Foremost among these is the unequal distribution of benefits (prior to any mitigating use of the revenues generated). Higher-income drivers are most able to afford the peak charges, and the time saved is more valuable to those drivers with higher incomes (because their hourly wage is higher). Lower income drivers are more likely to have to change their behavior so that they drive when charges are less, or switch to other modes of travel. Low-income motorist are also more likely to own less-fuel efficient vehicles, so any congestion pricing policy that takes vehicle type into consideration will fall upon them disproportionately.

Other challenges include protecting drivers' privacy, the cost and difficulty of implementation (though the Oregon example discussed below suggests that the cost need not be prohibitive), and the operating costs associated with toll collection (these are falling all the time as technology improves and becomes more widespread).

The CBO suggested four broad areas of opportunity where the federal government could make it easier for local jurisdictions to implement congestion pricing.

First, states could be allowed to toll federally-financed highways (they are currently barred, with a few exceptions), and specifically allowed to introduce congestion pricing outside of the extremely limited Value Pricing Pilot Program of the U.S. Department of Transportation. Second, the mechanism through which federal transportation funds are disbursed could be modified to promote congestion pricing. Third, Congress could establish a framework for mitigating inequality issues. This could be accomplished through requiring that toll revenues from federally-funded roads be used to support alternate modes of travel—especially transit—or by reimbursing low-income users directly. Finally, the federal government could take the lead in reducing toll collection costs by mandating electronic toll collection and supporting a national standard for transponder toll collection systems.

Congress will have a chance to consider new ways of pricing transportation this fall, when the surface transportation bill is up for reauthorization. Given Congress and the administration's interest in greener, more efficient transportation policies (as demonstrated in the stimulus package and budget proposals), road-use pricing is likely to figure in the debate. A national shift to road-use pricing would be far too radical a change to evoke wide support, but trying the idea out in a major metropolitan area with serious congestion problems would have substantial appeal, and the large federal presence in the Washington area makes it a natural venue. The Washington region has an opportunity to lead the way toward improved transportation for the rest of the nation by taking steps now to plan a comprehensive road pricing pilot in our area.

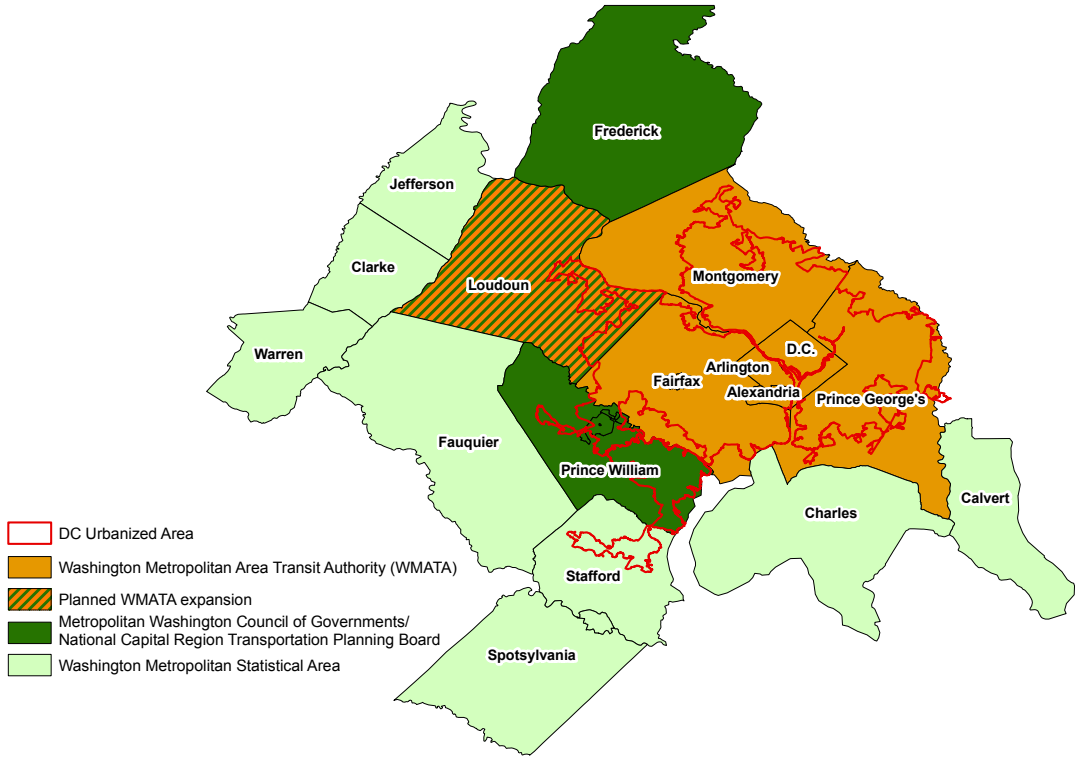
This idea might seem radical, but it is not new. Fifty years ago the economist William Vickrey, in testimony before Congress, called for the introduction of comprehensive congestion pricing in metropolitan Washington using radio transmitters. New technologies such as GPS and E-ZPass make this idea far more feasible today than it was fifty years ago—and the growth of traffic congestion in the area has made it far more appealing. In fact, according to analysis by Resources for the Future (RFF), a D.C.-based think tank, a road-use pricing system that incorporated all of the external costs of congestion would be the most effective and efficient way to reduce its effects in the national capital region—more effective than a simple tax on vehicle miles traveled, and far more effective than freeway tolls or a London-style cordon.

III. Implementing Road-Use Pricing In the DC Area

RFF modeled the effects of congestion pricing in the Washington area and found very significant reductions in congestion. They estimated that almost all (94 percent) of the reduction in vehicle miles traveled would be attributable to individuals shifting from cars to mass transit. If this is true, using toll revenues to improve transit in this region would be well targeted toward those who are forced to change their behavior. We therefore propose that a pilot introduction of road-use pricing should

first encompass the 1,500 square mile Washington Metropolitan Area Transit Authority (WMATA) service area. Contingent areas served by other transit systems could also be added on a case by case basis. As transit service expanded the tolled area could be enlarged.

The Geography of Transportation in Metropolitan Washington



Motorists registered within this area would be charged based on how far they drove, how congested the roads were when they were driving, and what type of vehicle they drove. Vehicles would be classified in terms of fuel efficiency, safety, and how much wear and tear they cause the roadway (i.e. trucks would be charged more than compact cars).[2] RFF calculated that charges over the larger metropolitan area as defined by the federal government would likely average 9.3 cents per mile. The Federal Highway Administration's own analysis of congestion pricing along several freeways in the Washington region suggested charging 15 cents per mile. Charges in the smaller, more congested, area proposed here would likely be within that range. It should be noted that motorists driving at peak times on highly congested roads would face a higher price. At the same time, charges for driving in uncongested parts of the region would be much lower, perhaps approaching zero in rural areas for certain types of vehicles.

Vehicles would be fitted with a GPS transponder device similar to an E-ZPass, perhaps as part of the registration process. If the program expanded nationally, manufacturers might even integrate transponders into new vehicles, similar to General Motors' OnStar system. Insurance companies could also encourage motorists to use transponders as the companies transition to their own VMT-based risk model, as some have already begun to do.

This device would record the type of vehicle, the distance traveled, and the time and location of travel. The transponder would sort the data into various toll categories (peak/off-peak, car/truck, highway/arterial/rural, etc.). Patterned after the recent Oregon pilot program (see box below), when the motorist refueled the transponder would transfer these totals (not the actual location tracking data) to the gas pump. The pump would calculate the amount owed by comparing the vehicle totals with a periodically updated rate schedule. The pump would then deduct the state gas tax charged and add the appropriate road-use fees to the fuel bill. Private motorists lacking the transponder, such as tourists or commuters from further afield, would pay the full gas tax. Travel outside the area would not be recorded by the GPS transponder. Implementation costs would likely be close to Oregon's $33 million estimate for expanding their pilot program to the entire state. These costs could be partially offset by charging vehicle owners a small fee for each transponder.

Oregon's Road User Fee Pilot Program

In April of 2006, Oregon began its year-long Road User Fee Pilot Program.[i] While designed to test a VMT-based replacement for the gas tax, the program model is highly applicable to congestion pricing as well and therefore to road-use pricing.

The Road User Fee Pilot Program installed GPS devices in volunteers' cars that tracked how far they drove, as well as in which of two zones. This information was stored on the device itself; no location information was transmitted while driving. When refueling at participating gas stations, the devices communicated the total mileage within each zone to the fuel pumps. The pump computer deducted the state gas tax from the bill, replacing it with the appropriate VMT charge.

Oregon found that replacing the gas tax with the VMT tax was relatively seamless and that revenues collected were roughly the same as they would have been using the gas tax. Survey results showed that 91 percent of pilot participants supported expanding the VMT tax statewide. While the participants overwhelming support for expanding the program is likely partly due to selection bias, it does suggest that participating in the program was a positive experience. The Oregon Department of Transportation estimated that the cost of implementing the program statewide would be roughly $33 million, far less than the $440 million London's camera-based congestion cordon cost.[ii] Though the Oregon program focused on charging for vehicle miles traveled within the two zones, the devices could be modified to also record time of travel and type of vehicle. It demonstrates the viability of an innovative comprehensive pricing infrastructure that also provides particular benefits in terms of protecting motorists' privacy.

[i] Whitty, J. M. (2007). Oregon's mileage fee concept and road user fee pilot program: Final report. Salem Or: Oregon Department of Transportation. Retrieved April 7, 2009, from http://www.oregon.gov/ODOT/HWY/RUFPP/docs/RUFPP_finalreport.pdf.

[ii] Santos, G. (2008). London congestion charging. In G. Burtless & J. R. Pack (Eds.), Brookings-Wharton Papers on Urban Affairs 2008 (pp. 177-234). Washington D.C.: Brookings Institution Press.

RFF found that a similar comprehensive congestion pricing policy in the Washington metropolitan area would result in 19.4 million fewer vehicle miles traveled per day, a reduction of more than 11 percent. The Federal Highway Administration found that a reduction in traffic on congested freeways in the Washington region of 10 to 14 percent would result in a 75 to 80 percent reduction in travel delay. RFF also found that emissions of volatile organic compounds would be reduced by 18.7 percent and of carbon monoxide by 16.8 percent. When RFF calculated and priced all of the social welfare benefits (time saved as well as reduced congestion, pollution, accidents, climate change, oil dependency, noise, etc.) of this reduction in driving, they found that residents of the metropolitan area as a whole would gain the equivalent of $1.1 billion in value—even before the revenues were disbursed.

IV. Privacy

One of the most common criticisms of road-use pricing plans (whether they use cameras or a GPS based system) is that they are intrusive and violate motorists' right to privacy. This is a valid concern as tolling systems do collect significant information about where individuals are, but not an insurmountable one. Part of the solution lies in extending the current legal framework for tolling systems. At a minimum the information collected should receive the same privacy protections as E-ZPass records. While these vary by state, in general E-ZPass records are only released upon court order. Individuals should be allowed to access their own travel records, both for bill auditing purposes and to defend themselves in court.

In general, motorists should be given as much control over their own data as reasonably possible. Cameras (particularly in the numbers required for an area-wide system such as this) are inherently more invasive than transponders; they tell you not only where the vehicle was and when, but who was driving it and what was going on nearby. Transponders are a much better choice, but their use must also be well thought out. As mentioned above the only data communicated to the governing agency via the pump should be the totals in each category. Motorists should be able to download the underlying location specific data through a physical connection so that they can audit their travel and charges. Law enforcement should be able to do this as well—but only if they have a warrant. Neither party should be able to upload or delete data from the device.

The device will likely have to automatically delete the data periodically to free up memory, but should not do so too frequently. Updating the maps would be handled by the governing agency and would require opening up the device so as to connect to an internal input—possibly achieved by exchanging the transponder so as to minimize inconveniencing motorists. Paired with tamper-detection technology, cheating should be minimized and personal information protected.

V. Revenues

State gas taxes raise approximately $420 million in the Washington urbanized area every year. Revenues from the road-use pricing scheme described above would be between $2.96 billion and $4.79 billion, depending on the average fee. While this seems wildly out of proportion to the gas tax it is very much in line with total local and state transportation spending in the region, which amounts to $3.75 billion annually (not counting transit fare revenue or the federal contribution). If road-use pricing revenue replaced the property and sales taxes used to pay for local roads, jurisdictions could reduce the local tax burden or redirect the funding to education or other purposes. Intriguingly, replacing property and sales taxes with road-use pricing could improve equity, as motorists are more able to control this expense through their own behavior.

The revenue generated should be used to mitigate road-use pricing's inequitable distribution of benefits and improve transit options. Net revenues could be split between improving mass transit (particularly buses), a need-based refund or discount, and roadway maintenance. Improving the frequency, convenience and quality of transit is particularly important. Secure funding would also reduce WMATA's vulnerability to fluctuations in state and local government funding (which currently accounts for 42.4 percent of its annual budget).

The need-based refund for low-income motorists could be administered in a number of ways. Low-income motorists could receive a tax credit, which might plausibly be extended to all low-income travelers regardless of mode. Alternatively, low-income motorists could pay a discounted road-use fee. Another option might be to help them upgrade to lighter, more fuel efficient vehicles that qualify for lower road-use rates. Such a program could build on federal and state programs, or local nonprofits that already help low-income households purchase vehicles.

Regardless of how they are spent, a significant portion of the revenues should be returned to the jurisdictions in which they were incurred. Not only is this more equitable, it is also more politically viable—especially if revenues from road-use pricing are intended to replace local transportation revenue. Revenue transfers could take the form of cash transfers to those jurisdictions so that they could disburse them in the ways outlined above. However, jurisdictions might reallocate the funds to uses unrelated to transportation. A better policy would be to return the funds in-kind; using them to directly improve mass transit, assist low-income motorists or travelers, and maintain roadways and bridges within the jurisdiction.

VI. Conclusion

A full-scale regional pilot of road-use pricing in the Washington area would be a bold, ambitious undertaking that would test the ability of public leaders to work together and of citizens to adapt to change. However, if successfully implemented, the pilot might demonstrate to the nation the potential road-use pricing has to reduce travel times, decrease greenhouse gas emissions, and make public transportation more convenient. Over time, residential patterns in the area might shift in ways that produce denser, more walkable neighborhoods and reduce sprawl.

The region is already implementing or planning some innovative solutions based on congestion pricing principles, including Virginia's HOT lanes and Maryland's Inter-county Connector. Perhaps the most familiar example is the Metro system, which already charges fares determined by the time of day and distance traveled. These are good ideas, but they must be expanded if the region is to continue to grow and be a leader in sustainable development. The nation's capital region should serve as an example of what truly sustainable transportation policy looks like to the rest of the nation. Piloting the implementation of road-use pricing would do just that.

Notes

[1] The Annual Mobility Report looks at the Washington, DC-VA-MD Urbanized Area, which is roughly 185 miles across. The American Community Survey data reported here also uses this geography.

[2] While a complete technical discussion of tolling by type of vehicle is beyond this paper, it should be noted that setting appropriate toll levels for large trucks and tractor-trailers can be tricky. In many tolling systems these vehicles are charged based on the number of axles they have in an attempt to charge for the additional damage their greater weight does to the road surface. Yet charging per axle gives truck drivers an incentive to minimize the number of axles on their vehicles, resulting in the opposite effect of that intended. As the vehicle's weight is concentrated on fewer axles the road surface is subjected to ever greater pressure. A better policy would be to charge trucks based on their average weight per wheel. Better built roads could also improve this situation.
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For more information

Benjamin K. Orr
Phone: (202) 797-2969
Email: borr@brookings.edu

BROOKINGS

1775 Massachusetts Avenue, NW
Washington D.C. 20036-2188
telephone 202.797.6000
fax 202.797.6004
web site www.brookings.edu

Metropolitan Policy Program
at BROOKINGS
telephone 202.797.6139
fax 202.797.2965
web site www.brookings.edu/metro

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PAYING OUR WAY

A New Framework for Transportation Finance

Final Report of the National Surface Transportation Infrastructure Financing Commission

February 2009

This report is a product of the National Surface Transportation Infrastructure Financing Commission (and not of the U.S. Department of Transportation).

Additional information on the Commission is available at: http://financecommission.dot.gov

NATIONAL SURFACE TRANSPORTATION INFRASTRUCTURE FINANCING COMMISSION

February 26, 2009

The Honorable Joseph R. Biden, Jr.
President of the United States Senate
Washington, DC 20510

The Honorable Nancy Pelosi
Speaker of the United States House of Representatives
Washington, DC 20515

Dear Mr. President and Madam Speaker:

We are pleased to transmit to you the final report of the National Surface Transportation Infrastructure Financing Commission entitled "Paying Our Way: A New Framework for Transportation Finance." Over the last two years the Commission has worked to respond to Congress's charge in Section 11142 of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act—A Legacy for Users to assess future federal highway and transit investment needs, evaluate the future of the federal Highway Trust Fund, and explore alternative funding and financing mechanisms for surface transportation.

In developing this report, the Commission benefited from extensive input from a wide array of experts from organizations in the private and public sectors. This investigative effort was aided by the release of our interim report in February, 2008, "The Path Forward: Funding and Financing Our Surface Transportation System," which identified guiding principles and a systematic approach that have underpinned our evaluation of alternatives and the resulting policy recommendations included in this report.

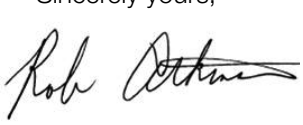
The recommendations we offer focus on transforming the way we, as a nation, pay for critically needed surface transportation investments and, in so doing, respond to the urgent need for fundamental reform. The Commission recognizes that while such change will neither be easy nor occur overnight, the transportation system and the nation cannot afford to wait. Expansion of short term, conventional funding measures will be required in the interim.

This report is signed on behalf of all fifteen Commissioners and represents a carefully deliberated consensus of opinion about the various strategies that we believe, together, can help solve our surface transportation investment crisis and provide a useful road map for transitioning to a new financial policy framework.

We appreciate having the opportunity to serve on the Commission and we trust the findings and recommendations contained in this report will aid your efforts to address the current challenge and put the transportation system back on track toward a safe, effective, efficient, fair and sustainable future.

As required by statute, this report along with an identical letter is being transmitted to the Secretary of Transportation, the Secretary of the Treasury, the Committee on Ways and Means of the House of Representatives, the Committee on Finance of the Senate, the Committee on Transportation and Infrastructure of the House of Representatives, the Committee on Environment and Public Works of the Senate, and the Committee on Banking, Housing, and Urban Affairs of the Senate.

Sincerely yours,



Robert D. Atkinson
Chair

Martin Schultz
Vice Chair

The nation faces a crisis. Our surface transportation system has deteriorated to such a degree that our safety, economic competitiveness, and quality of life are at risk.

As a nation, we have reaped the benefits of previous generations' foresight and investment, generations that developed and built a transportation system that became the envy of the world. Over the last few decades we have grown complacent, expecting to be served by high-quality infrastructure, even as we devoted less and less money in real terms to the maintenance and expansion of that infrastructure. Not only have we failed to make the needed and substantial investment; we have failed to pursue the kind of innovation necessary to ensure that our infrastructure meets the demands of future generations.

This is not to say the nation is asleep at the wheel. The United States Congress has recognized the dangers of inattention and delay and has asked for assistance to re-envision the way the federal government funds and finances our national surface transportation infrastructure. Congress established the National Surface Transportation Infrastructure Financing Commission to provide recommendations for policy and action. This report offers the results of the Commission's investigative efforts and deliberations. It provides a new framework for consideration by policy makers with responsibility for financial stewardship of the nation's surface transportation network—and for all Americans traveling that network through cities and rural areas from coast to coast.

The Commission sought out the best ideas, the latest data, and the strongest research. Commissioners vigorously debated the options and developed recommendations for improved methods to fund and finance our national surface transportation infrastructure. While no first draft of a major reform is perfect, the Commission respectfully *and unanimously* offers its report as a road map for the transition to a new funding and finance framework, in the hope that this will inspire and inform further efforts toward a national surface transportation system that is more efficient, more effective, and more sustainable. The Commission's recommendation to shift from our current funding approaches, based largely on indirect user fees in the form of federal motor fuel taxes, toward a new system built around more direct user charges in the form of fees for miles driven will require hard work, thoughtful attention to myriad policy issues and implementation details, and the cooperation and support of the American people.

- **Real highway spending per mile traveled has fallen by nearly 50 percent since the federal Highway Trust Fund was established in the late 1950s. Total combined highway and transit spending as a share of gross domestic product (GDP) has fallen by about 25 percent in the same period to 1.5 percent of GDP today.**
- **Because it is not adjusted for inflation, the federal gas tax has experienced a cumulative loss in purchasing power of 33 percent since 1993—the last time the federal gas tax was increased.**

ROOTS OF THE PROBLEM AND WIDENING INVESTMENT GAP—BACKGROUND

The roots of our current crisis lie in our failure as a nation to fully understand and, more important, act on the costs of deferred investment in our surface transportation infrastructure, especially in the face of an aging infrastructure, a growing population, and an expanding economy. From 1980 to 2006, the total number of miles traveled by automobiles increased 97 percent and the miles

traveled by trucks 106 percent. Over the same period, the total number of highway lane miles grew a scant 4.4 percent—meaning that over twice the traffic was traveling on essentially the same roadway capacity. And that says nothing about the mounting neglect of the system: over half of the miles that Americans travel on the federal-aid highway system are on roads that are in less than good condition, more than one-quarter of the nation's bridges are structurally deficient or functionally obsolete,[1] and roughly one-quarter of the nation's bus and rail assets are in marginal or poor condition.[2]

Traffic congestion in many of the nation's metropolitan areas is endemic, with the cost of congestion—including lost time, wasted fuel, and vehicle wear and tear—topping $78 billion per year for the nation's 437 urban areas.[3] Transit ridership has recently surged, leaving some systems operating near or beyond their physical capacity. Many rural areas currently do not have any transit services and in areas that do have service the quality and coverage are inconsistent.

The federal government does not bear sole responsibility for the current crisis. All levels of government are failing to keep pace with the demand for transportation investment. Increasingly, policy makers at all levels must use existing revenues simply to attempt to keep pace with the preservation and maintenance of an aging system, leaving few or no resources for vitally needed new capacity and improvements to the system.

EXHIBIT ES–1: AVERAGE ANNUAL CAPITAL NEEDS AND GAP ESTIMATES, ALL LEVELS OF GOVERNMENT, 2008–35 (in 2008 dollars)

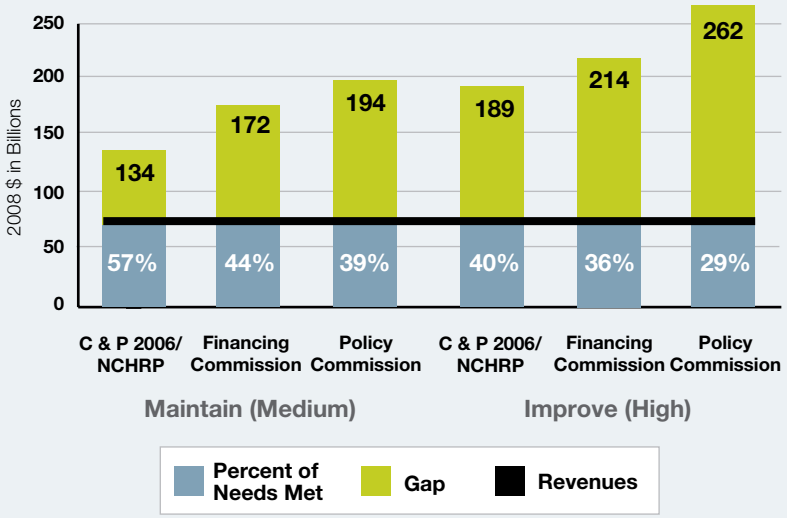
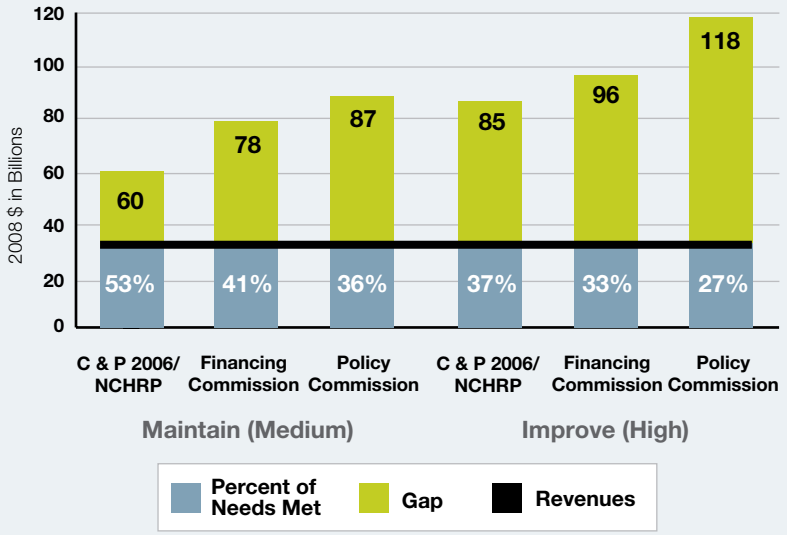


EXHIBIT ES–2: AVERAGE ANNUAL CAPITAL NEEDS AND GAP ESTIMATES, FEDERAL GOVERNMENT, 2008–35 (in 2008 dollars)



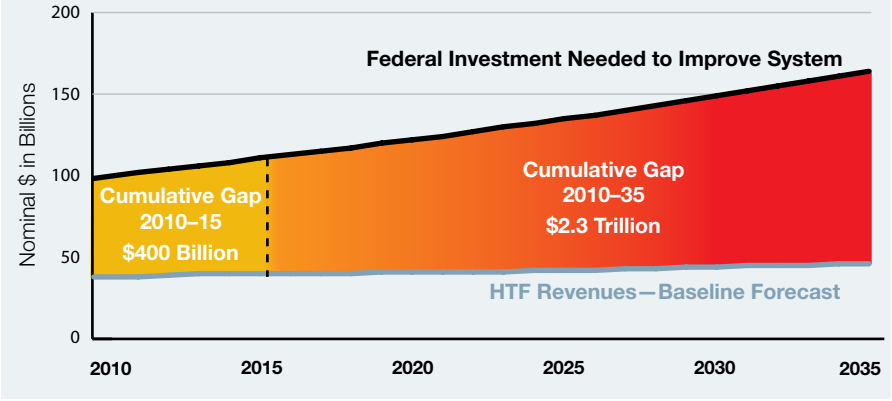
An ever-expanding backlog of investment needs is the price of our failure to maintain funding levels—and the cost of these investments grows as we delay. Without changes to current policy, it is estimated that revenues raised by all levels of government for capital investment will total only about one-third of the roughly $200 billion necessary each year to maintain and improve the nation's highways and transit systems. (See Exhibit ES–1.) At the federal level, the investment gap is of a similar magnitude, with long-term annual average Highway Trust Fund (HTF) revenues estimated to be only $32 billion compared with required investments of nearly $100 billion per year. (See Exhibit ES–2.)[4]

Meanwhile, the federal Highway Trust Fund faces a near-term insolvency crisis, exacerbated by recent reductions in federal motor fuel tax revenues and truck–related user fee receipts.

- **Urban travelers are delayed in rush hour traffic nearly one week (40 hours) per year, and in total Americans spend 4 billion hours per year stuck in traffic.**
- **As of 2006, over half of the total vehicle miles traveled on the overall federal-aid highway system occurred on roads that were in less than good condition, many of which are in rural areas that connect these regions to each other and to urban centers.**
- **Due in large part to ridership growth, many existing transit systems are operating near or in excess of their physical capacity and above a level that provides acceptable passenger comfort and safety.**

Sources: TTI 2007 Urban Mobility, FHWA 2006 C&P, TCRP 2008 State and National Public Transportation Needs.

EXHIBIT ES–3: A LARGE AND WIDENING GAP BETWEEN FEDERAL REVENUES AND INVESTMENT NEEDS, 2010-35 (in nominal dollars)



This problem will only worsen until Congress addresses the fundamental fact that current HTF revenues are inadequate to support current federal program spending levels. Comparing estimates of surface transportation investment needs with baseline revenue projections developed by the Commission shows a federal highway and transit funding gap that totals nearly $400 billion in 2010-15 and grows dramatically to about $2.3 trillion through 2035. (See Exhibit ES–3.)

The problem, however, is not simply insufficient investment. Our system is underpriced. Basic economic theory tells us that when something valuable—in this case roadway space—is provided for less than its true cost, demand increases and shortages result. Shortages in our road system are manifested as congestion. All too often the prices paid by transportation system users are markedly less than the costs of providing the transportation services they use (including pavement repair)—much less the total social costs (including traffic congestion and pollution). This underpayment contributes to less efficient use of the system, increased pavement damage, capacity shortages, and congestion.

If the federal government fails to act now, and to act dramatically, we will only compound these problems for future administrations and Congresses and for the next generation of Americans. We will face increasingly deteriorating roadways, bridges, and transit systems. We will suffer from more accidents and fatalities on our transportation system. We will endure ever greater spans of our lives stuck in traffic, wasting our time and robbing our businesses of vital economic activity and productivity. We will waste non-renewable petroleum and harm our environment unnecessarily. And, finally but importantly, every day of delay is a day when inflation, neglect, and inefficient use waste scarce taxpayer and system-user dollars.

SEARCHING FOR SOLUTIONS—THE FINANCING COMMISSION'S CHARGE AND DELIBERATIVE PROCESS

In response to these challenges, Congress established the National Surface Transportation Infrastructure Financing Commission to embark on an investigative and analytical effort to assess the funding crisis and make recommendations to address the growing transportation infrastructure

investment deficit. Specifically, Section 11142(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users established the Commission and charged it with analyzing future highway and transit needs and the finances of the Highway Trust Fund, making recommendations on alternative approaches to funding and financing surface transportation infrastructure, and reporting back to Congress within two years (by April 2009). While the Commission recognizes the important intersection between highways and transit and other forms of transportation, including freight rail, intercity passenger rail, inland waterways, and aviation, the focus of its work was highways and transit.

The Commission consists of 15 individuals from diverse backgrounds—economics, finance, government, industry, law, and public policy—united by a passion to help develop a more viable model to fund and finance our national surface transportation system. Its final report has drawn heavily on available literature, ongoing debates and forums, and, most important, input offered directly by a wide range of experts and user group representatives—for which the Commissioners are extremely grateful.

In charting its course, the Commission was mindful of the important work of the National Surface Transportation Policy and Revenue Study Commission (referred to here as the Policy Commission). Given the Policy Commission's thorough treatment of how investments should be prioritized and delivered, the Financing Commission focused its efforts primarily on the question of how revenues should be raised, including whether there are other mechanisms or funds that could augment the current means for funding and financing highway and transit infrastructure. As it relates to this core question, the Commission also considered how much revenue is actually needed and a few key issues related to how it should be invested.

To guide its work, the Financing Commission established a set of goals for the national surface transportation system—that it be *safe, effective, efficient, fair, and sustainable*. And to achieve these fundamental goals, the Commission developed a set of overarching principles to guide consideration of funding and finance approaches.

Readers should recognize that there are inherent and unavoidable trade-offs among these principles, which require some subjective balancing among them. The Commission strived to achieve such a balance in its final recommendations. ***Chapter 1 lays out these principles in greater detail and provides additional background on the nature of the Commission's charge.***

The Commission relied heavily on previous efforts by the U.S. Department of Transportation, the Policy Commission, and others to define the extent of the needs and forecast revenues for the future. The Commission did, however, develop from these resource materials its own refinements to account for currently available information as well as its hypotheses for the future. ***Chapter 2 establishes the investment needs and revenue forecasts developed by the Commission and used as the baseline for its deliberations.***

Working directly from the guiding principles and the baseline estimates, the Commission next developed systematic evaluation criteria to apply to the widest range of alternative funding approaches for the federal program, and indirectly for state and local programs, feasible for a study of this scale. ***Chapter 3 presents the 14 evaluation criteria that the Commission developed and the results of a preliminary screening of a comprehensive range of alternative funding mechanisms.***

GUIDING PRINCIPLES TO SHAPE A NEW FUNDING AND FINANCE FRAMEWORK

- The funding and finance framework must **support the overall goal of enhancing mobility** of all users of the transportation system. The range of mobility needs throughout the nation requires an intermodal transportation network that ensures easy access, allows personal and business travel as well as goods movement without significant delays, and permits seamless transfers and choices among complementary transportation systems and services.
- The funding and finance framework must **generate sufficient resources to meet national investment needs on a sustainable basis**, with the aim of closing a significant funding gap. The framework must enable the federal government to raise sufficient funds and also support the ability of other levels of government to raise sufficient funds and make appropriate investments.
- The funding and finance framework should **cause users and direct beneficiaries to bear the full cost of using the transportation system to the greatest extent possible** (including for impacts such as congestion, air pollution, pavement damage, and other direct and indirect impacts) in order to promote more efficient use of the system. This will not be possible in all instances, and when it is not, any cross-subsidization must be intentional, fully transparent, and designed to meet network goals, equity goals, or other compelling purposes.
- The funding and finance framework should **encourage efficient investment** in the transportation system—recognizing the inherent differences between and within individual states—such that investments go toward projects with the greatest benefits relative to costs.
- The funding and finance framework should **incorporate equity considerations**—for example, with respect to generational equity, equity across income groups, and geographic equity.
- The funding and finance framework should **support the broad public policy objectives of energy independence and environmental protection**. Revenue-raising mechanisms that impose the full cost of system use (including externalities such as carbon emissions) can support reduced petroleum consumption and improved environmental outcomes.

After examining the full range of potential funding approaches, the Commission conducted an additional level of review for a subset of the most promising options or those that otherwise required more in-depth analysis. *Chapters 4, 5, and 6 provide the results of these in-depth analyses for motor fuel tax mechanisms, freight-related funding options, and facility-level tolling and broad-based pricing mechanisms.*

In recognition of the supporting role that financing mechanisms can play in leveraging resources—as distinct from the underlying revenue-raising mechanisms that generate net new resources—the Commission considered alternative financing approaches, including private-sector financial participation, that can help meet the investment challenge. *Chapter 7 summarizes the results of this assessment, recognizing that these financing approaches are enhancements to rather than substitutes for much needed funding increases.*

Finally, and critically, the Commission arrived at specific policy recommendations to help narrow the federal funding gap and transform the overall funding and finance framework for the nation's investment in surface transportation infrastructure. *Specific recommendations are offered in detail in Chapter 8 and in summary form here.*

THE FINANCING COMMISSION'S RESPONSE—FINDINGS AND RECOMMENDATIONS

Through its wide-ranging investigative and deliberative process, the Commission makes the following critical findings:

- **There is no easy "silver bullet" solution to the problem of insufficient funding.** As an important corollary, not all approaches work equally well throughout a geographically and economically diverse country. The Commission assembled a broad and balanced menu of options for Congress to consider, with an assessment of the pros and cons of each approach.

- **The current federal surface transportation funding structure that relies primarily on taxes imposed on petroleum-derived vehicle fuels is not sustainable in the long term and is likely to erode more quickly than previously thought.** This is due in large measure to heightened concerns regarding global climate change and dependence on foreign energy sources, which are creating a drive for greater fuel efficiency, alternative fuels, and new vehicle technology.

- **The current indirect user fee system based on taxes paid for fuel consumed provides users with only weak price signals to use the transportation system in the most efficient ways.** This results from three primary factors: system users are typically unaware of how much they pay in fuel taxes (as distinct from the price of gasoline), such that daily swings in price mask the tax component and blunt its effect on demand; fuel taxes and other direct and indirect user fees currently account for less than 60 percent of total system revenue (federal, state, and local), so that users do not bear anywhere near the full costs of their travel; and fuel taxes have no direct link to specific parts of the system being used or to times of the day and thus cannot be used to affect these kinds of traveler choices.

- **A federal funding system based on more direct forms of "user pay" charges, in the form of a charge for each mile driven (commonly referred to as a vehicle miles traveled or VMT fee system), has emerged as the consensus choice for the future.** The Commission cast a wide net, reviewed many funding alternatives, and concluded that indeed the most viable approach to efficiently fund federal investment in surface transportation in the medium to long run will be a user charge system based more directly on miles driven (and potentially on factors such as time of day, type of road, and vehicle weight and fuel economy) rather than indirectly on fuel consumed. At the same time, this choice for the federal system provides a foundation for state and local governments that choose to use it to develop their own mileage-based systems that piggyback on the federal system in order to raise their share of needed revenues in ways that spur more efficient use of the system. The Commission believes that such a system can and should be designed in ways that protect users' privacy and civil liberties, that incorporate any necessary cross-subsidies (for instance, to benefit the national network or to meet social equity objectives), that do not interfere with interstate commerce, and that support goals for carbon reduction. Moreover, greater use of pricing mechanisms, including both targeted tolling and broad-based VMT pricing systems, may spur more efficient use of our highway network and, by shifting demand to less congested periods of the day or to other modes, may in turn enable more efficient investment, thus reducing the additional capacity that needs to be built.

INFRASTRUCTURE STIMULUS WILL NOT SOLVE THE PROBLEM

An economic stimulus spending package that includes investments in surface transportation, while helpful, will not solve the immediate or the longer-term problems of funding system needs. The current investment shortfall is just too great.

The Highway Trust Fund will continue to need significant augmentation beyond whatever an immediate short-term stimulus plan can provide. For instance, a stimulus package that includes nearly $40 billion for highway and transit infrastructure, while important in addressing the short-term economic crisis, will pay for only about three months of the identified annual national funding gap to maintain and improve the system—a gap that repeats itself and compounds year after year.

EXHIBIT ES–4: REVENUE OPTION EVALUATION SUMMARY*

Strong	Moderate	Weak	Not Applicable/ Seriously Flawed**
Federal Options			
• Vehicle miles traveled fee • Automobile tire tax • Motor fuel tax • Carbon tax/cap and trade • Customs duties • Truck/trailer sales tax • Vehicle registration fee • Heavy Vehicle Use Tax • Container fee • Tariff on imported oil • Sales tax on motor fuels • Truck tire tax	• Freight waybill tax • Vehicle sales tax • Harbor maintenance tax • General fund transfer	• Freight ton-mile tax • Driver's license surcharge • Bicycle tire tax • Dedicated income tax • Auto-related sales tax • Freight ton-based tax • General sales tax	• Vehicle inspection and traffic citation surcharge • Vehicle personal property tax • Windfall profits tax • Petroleum franchise tax • Minerals severance tax • Federal tax on local transit fares • Federal tax on local parking fees
State and Local Options Benefiting from Federal Action			
• Facility level tolling and pricing	• Proceeds of asset sales, leases, and concessions	• Cordon area pricing • Passenger facility charges	• Development and impact fees • Tourism-related taxes • Tobacco, alcohol, and gambling taxes

**For revenue options that are dependent upon utilization of a targeted investment fund as a basic premise for feasibility, such a fund is assumed for evaluation purposes (e.g., for all freight-related funding mechanisms and more specifically those more narrowly targeted to intermodal port and harbor-related investment).*

*** State and local options in this category may have applicability but there is no relevant federal action or role.*

- **As a nation, we cannot afford to wait for a new revenue system to be put in place to start addressing the fundamental investment challenge. And, in the short term, effective and feasible options are limited.** Given the significant current funding shortfall, the Commission concluded that the best near-term options for federal investment are increases to current federal fuel taxes and other existing HTF revenue sources. After reviewing a wide array of options and suggesting several viable candidate approaches (see Exhibit ES–4), the Commission concluded that increasing and indexing existing mechanisms satisfies the key evaluation criteria most effectively—primarily in raising significant sums with relatively low implementation costs or other hurdles. That is not to say that other options are not possible should Congress choose to pursue other avenues as well, but increases in existing HTF revenues present the best option in the near term, the Commission believes.

- **Federal actions can help expand the options available to states and localities to fund their shares of investment.** While many state and local funding options are not reliant on the federal government for implementation, several key federal actions could help facilitate and encourage the greater application of some—specifically, user-backed funding approaches such as tolling and pricing—to help meet a portion of state and local government investment needs, including their required matching of federal support.

- **Finally and importantly, financing approaches—as distinct from revenue-raising mechanisms—are not a substitute for solving the underlying problem of insufficient funding.** Properly structured financing techniques and government financial programs, including those focused on facilitating partnerships with the private sector, can play an important supplementary role. Their success, however, will depend on their ability to leverage new revenue streams to repay upfront capital investments. Even with this, financing approaches will have limited positive impact if not coupled with substantial net new resources.

The Commission realizes that the transition from the current funding and finance model to a new model cannot be made overnight and that the immediate needs are simply too critical to wait until such a system is put in place. The Commission therefore makes the following recommendations for a multi-pronged approach to meet both short-term and longer-term challenges. More detailed recommendations are provided in Chapter 8.

Ensuring the Security and Sustainability of the Highway Trust Fund

The Commission recognizes the fundamental value of the Highway Trust Fund—not only today but also as the appropriate foundation for any new user-based revenue system for surface transportation investment in the future—and offers the following overarching recommendation.

- **Preserve the Highway Trust Fund mechanism and take any necessary actions to help ensure its security and sustainability in the near and longer term.** This should include ensuring the integrity of the trust fund structure premised on the link between direct and indirect user fees and transportation spending upon which the HTF is based. It also should include continued efforts to reduce and minimize tax evasion and methods to align spending and receipts, with interest earned on any balances accruing to the HTF.

Positioning Federal Funding for the Longer Term

In order to transition to the longer-term solution of funding based on mileage charges, the Commission makes the following recommendations:

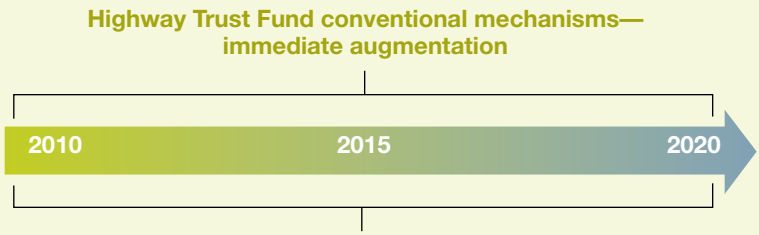
- **Commence the transition to a new, more direct user charge system as soon as possible and commit to deploying a comprehensive system by 2020.** Because of the complexity inherent in transitioning to a new revenue system and the urgency of the need, the Commission recommends that Congress embark immediately on an aggressive research, development, and demonstration (RD&D) program. This would identify and address critical policy questions such as privacy, administrative methods and costs, and the interplay with climate change and other national policy goals, in order to inform Congress as it moves forward. This will require investment in research and technology, including a variety of demonstration programs of mileage-based user fee systems. A research agenda of the nature envisioned would be best overseen by a body within the U.S. Department of Transportation that combines technology, policy, tax administration, and systems expertise. It also could benefit greatly from an expert independent advisory committee to help review and advise on funding of RD&D programs, further explore policy issues, and make specific recommendations to Congress.

- **Ensure that, once implemented, mileage-based fees and any other charges are set to meet the designated federal share of national surface transportation investment needs, and index these rates to inflation.** Simply shifting from one revenue system to another will not solve the under-investment problem if rates are not set at sufficient levels and maintained over time to meet the needs. While a mileage-based direct user fee system is sustainable in the long term, it will suffer at least some of the same consequences as the motor fuel tax system if rates are not set and maintained at adequate levels. For illustrative purposes, the Commission estimates that to meet the base case "Need to Maintain and Improve" annual investment level, the federal VMT fee assessed on all miles driven, regardless of the system where they occur, would be roughly 2.3¢ per mile for cars (equivalent to a 48.4¢ gas tax). To equal the amount raised by the Commission's short-term HTF augmentation recommendations, the fee level for cars would be about 1.4¢ per mile; to match current HTF revenues, about 0.9¢ per mile. These rates would be somewhat higher if assessed only on miles traveled on the federal-aid highway system as opposed to all highway miles. However much revenue Congress decides to raise at the federal level, the Commission believes it is critical to move forward with a VMT fee system.

- **As the new mileage-based fee system is put in place, reduce and ultimately eliminate current fuel and other vehicle-related charges as the primary mechanism for funding the surface transportation system, recognizing that the fuel tax may play a role in meeting other important national policy objectives.** Once a national VMT fee system is in place, and assuming that rates are set at a sufficient level, the need for the motor fuel–based revenue sources for the HTF will be eliminated. To the extent, however, that surface transportation fuels are subject to a charge in the future to account for their carbon emissions (e.g., a carbon tax or priced through carbon trading), an appropriate portion of those proceeds should be credited to the HTF and dedicated to funding carbon-reducing transportation strategies.

- **Establish VMT technology standards and require original equipment vehicle manufacturers to install standardized technology by a date certain that will accommodate the desired 2020 comprehensive implementation.** Any technology deployed should be designed to accommodate the full range of potential charge systems in anticipation of the potential for state, local, and private toll roads to piggyback on the national system. These state, local, or private systems should be required to be interoperable with the national VMT standard. Ideally such systems also should incorporate in-vehicle or after-market Global Positioning System (GPS) devices.

MILEAGE-BASED USER FEE SYSTEM: 2020 IMPLEMENTATION



- **Initiate an extensive public outreach effort to create a broad understanding of the current funding problem, the proposed solution, the intended method of implementation, and the anticipated impact on individual system users.** This kind of public outreach effort is imperative to a successful transition, for once individuals understand better both the current predicament and the opportunity

to achieve positive change, they are more likely to embrace it. With the current indirect system (cents per gallon at the pump, hidden to most consumers in the price of gasoline), most people do not know what they are paying now relative to what is being provided and, more important, what is required to achieve an effective surface transportation system. The direct user charge system being proposed has the potential to make the connections much more evident and thus improve the willingness of individual system users to pay their fair share of the cost. But it will require education and outreach to reach that point.

Addressing the More Immediate Federal Funding Crisis

The stakes are too high and the hole we have dug for ourselves too big to wait for a new revenue system to be put in place. The Commission therefore offers the following recommendations for the federal surface transportation funding system in the short to medium term (i.e., starting with the upcoming reauthorization of federal surface transportation programs if not before).

- **Enact a modest 10¢ increase in the federal gasoline tax, a 15¢ increase in the federal diesel tax, and commensurate increases in all special fuels taxes, and index these rates to inflation.** These adjustments should be enacted in conjunction with the upcoming reauthorization of the federal surface transportation programs if not sooner. The Commission recognizes that the increases recommended here are not easy to achieve, especially in the context of the current economic recession, and that larger increases would be even more difficult to enact. The Commission, however, views the need for this increase as urgent and critical to begin to stem the degradation of the Highway Trust Fund and make positive strides forward.

The proposed 10¢ gas tax increase to maintain the current federal surface transportation program level equals:

- **½¢ per mile**
- **$5 a month per vehicle**
- **$9 a month per household***

**Based on 1.89 vehicles per household and 11,818 miles driven per vehicle (2006 Highway Statistics), and 20.4 average MPG (EIA 2008 estimates).*

These adjustments approximate the amounts required to recapture the purchasing power lost to inflation since 1993, the last time the federal HTF taxes were raised. They translate into approximately $20 billion per year in additional revenue for the Highway Trust Fund. While this is necessary to fund the current level of federal commitments and helps alleviate a portion of the funding gap, it does not eliminate it—closing approximately 43 percent of the "cost to maintain" federal funding gap and 31 percent of the "cost to improve" gap for the combined highway and transit system based on the Commission's estimates. Addressing the remaining annual funding gap will require either more substantial increases or other revenue streams, or both.

The impact on individual households of the recommended gas tax increase is that on average they would pay approximately $9 per month more in federal gas taxes (individual households now pay on average $17 per month). By comparison, the average household pays about $300 per month to operate and maintain its cars (and about $800 per month to own and operate them).[5]

- **Double the Heavy Vehicle Use Tax (HVUT) to account for the fact that it has not been increased since 1983 and to recapture lost purchasing power, and index the HVUT and the excise tax on truck tires to inflation going forward. Meanwhile, maintain the current sales tax on tractors and trailers, which as a sales price-based tax is inherently adjusted (at least relative to the price of these items).** The Commission considered a number of alternative freight-related revenue sources but determined that, while several of them may be viable options, the best way to increase funds from freight sources in the short run is by adjusting the fees that the entire trucking industry currently pays into the Highway Trust Fund. In addition, the Commission recommends that Congress authorize a study to assess whether a shift toward freight users paying a greater share of total surface transportation infrastructure based on the costs they impose on the system is warranted.

Historically, states and localities have contributed over 55 percent of transit and highway capital investment and shouldered primary responsibility for the extensive costs of operating and maintaining the system.

Facilitating Non-Federal Investment in the Short and Medium Term

Beyond the immediate steps necessary to address the federal funding crisis and position the nation for a new direct user charge system, the Commission believes important steps are imperative to expand the ability of states and localities to use other options to fund non-federal surface transportation infrastructure investment. Historically, states and localities have contributed over 55 percent of transit and highway capital investment, and they have shouldered primary responsibility for the extensive costs of operating and maintaining the system. The Commission believes that carefully targeted federal incentives can help spur new approaches at the state and local level, including tolling and pricing, thereby fostering greater overall investment that will in turn allow federal dollars to go farther. Although other funding mechanisms undoubtedly are important at the state and local level, federal policy does not generally play a significant role.

- **Expand the ability of states and localities to impose tolls on the Interstate System by allowing tolling of net new capacity.** This recommendation builds on the currently enacted Interstate System Construction Toll Pilot Program and would remove the limit on the number of facilities that can take advantage of the program. In considering this and subsequent recommendations, and to ensure full adherence to the commerce clause of the Constitution, any potential adverse impacts on interstate commerce and local travel should be thoroughly analyzed and appropriately mitigated as a requirement for implementation.

- **Allow tolling of existing Interstate capacity in large metropolitan areas (of 1 million or more in population) for congestion relief.** This recommendation builds on the Express Lanes Demonstration Program, expands its potential applications, and removes some of the pilot requirements.

- **Continue the Interstate Highway Reconstruction and Rehabilitation Pilot Program and expand it from three slots to five.** This pilot program allows tolling of existing Interstate capacity for reconstruction and rehabilitation. If tolling the existing Interstate System is determined to be the appropriate solution by a particular state, this pilot program enables the state to use this option to help meet its funding gap. States that participate in the pilot program must ensure that there are appropriate protections for system users and interstate commerce.

- **Support standardization of tolling and information systems by completing necessary rulemaking regarding electronic tolling and interoperability.** A key role of the federal government is to spearhead the coordination that is required to ensure frictionless transitions throughout the system and to provide users with the information they need to make smart choices.

- **Reauthorize the federal credit program for surface transportation (originally authorized by the Transportation Infrastructure Financing and Innovation Act of 1998 and now commonly referred to as TIFIA) with a larger volume of credit capacity, broadened scope, and greater flexibility. In conjunction with core credit assistance, authorize incentive grants to support and encourage the development and financing of user-backed projects. The Commission recommends a total of $1 billion per year in budget authority for the following purposes:**

  Credit Assistance ($300 million in annual budget authority)—to fund core credit assistance. The Commission also recommends several programmatic refinements, including having greater flexibility to make credit commitments.

  Pre-construction Feasibility Assessment Grants ($100 million in annual budget authority)—designed to address a key obstacle that states and localities face in advancing user fee-backed projects. The program would provide funding (in the form of grants or "conditional loans" to be repaid when possible) for a portion of the costs that a state or local sponsor must incur to undertake early planning, feasibility studies, environmental clearance, and other development-stage activities. The Commission believes that such a program could create substantial leverage of limited federal assistance.

  Capital Cost Gap Funding Grants ($600 million in annual budget authority)—to provide incentive grants to states to complement TIFIA credit assistance. Recognizing that there are many projects for which partial (but not 100 percent) funding through user-backed revenue streams is possible, this program would provide grant funding to help close a portion of the estimated gap between the amount of capital for construction that can be derived from future user fees and the amount necessary to complete and maintain the facility for its useful life. Such a program could help spur states and localities to seek to build more projects that rely at least in part on user-backed revenues, allowing federal funds to go farther since they would be supplemented by additional user-based revenues.

- **Invest $500 million per year ($3 billion over a six-year authorization period) to re-capitalize State Infrastructure Banks (SIBs) and continue to allow states to use their federal program funds for this purpose as well.** While the TIFIA program focuses on large projects of national and regional significance, there are similar opportunities for smaller projects that the SIB model is well positioned to serve. Providing this level of new capitalization funding could help support a wide range of smaller projects that have the potential to leverage user-backed payments and other new revenue streams but that lack access to capital markets on a cost-effective basis.

- **Take actions to facilitate and encourage private-sector financial participation where this can play a valuable role in providing cost-effective and accelerated project delivery, and support user fee–based funding approaches to meet the country's capacity needs and, in particular, its urban congestion challenges. At the same time, ensure that appropriate governmental controls are in place to protect the public interest in all respects.** Private capital can help deliver more projects and thus play a role in helping to address the investment gap. It should only be pursued, however, with appropriate protections for the public interest. These should include, above all else, ensuring appropriate maintenance of and access to privately operated facilities and requiring that any proceeds generated for state or local project sponsors be used for additional surface transportation investment within the state or relevant jurisdiction. Federal policy in this area should recognize the respective purviews of federal and state governments and should preserve and support the ability of state and local officials to impose appropriate restrictions on these arrangements. The federal government should support the development of best practice information to inform state and local efforts, including working with appropriate stakeholder and industry groups to develop guidelines for transparency and accountability for public-private partnerships.

- **Expand the highway/intermodal Private Activity Bond (PAB) program from its current $15 billion national volume cap to $30 billion and limit the use of the program to projects that create net new capacity.** Once the turmoil in the financial markets subsides, it is anticipated that the existing capacity of the PAB program will be consumed quickly. More states and local sponsors will be looking to take advantage of this mechanism to lower financing costs for projects with private-sector financial participation by making private provision of infrastructure eligible for the same exemption from federal taxation that state and local governments have for publicly provided infrastructure.

- **Consider authorizing the issuance of tax credit bonds to support capital investments with public benefits.**[6] The Commission encourages Congress to consider the use of tax credit bond financing as an appropriate tool for surface transportation projects where the public benefits cannot be fully monetized by direct users or other beneficiaries and where traditional HTF revenue-based programs are inadequate. Examples of investments with broad national benefits that could potentially be strong candidates for this type of federal subsidy include intercity passenger rail and goods movement projects. Use of such tax incentives, however, should be carefully targeted to capital investments with clear public benefits.

Commentary on Potential Federal Financing Institution

If Congress chooses to create a national infrastructure financing entity, the institution should be structured in a manner that addresses actual funding and credit market gaps and that targets assistance to projects that are essential to the national network but that lack access to sufficient resources through existing programs or other sources. Congress also should ensure that any such entity is properly integrated with or a logical extension of current programs, most notably federal credit programs such as TIFIA.

Any proposal to create a national infrastructure financing entity, as has been discussed in recent months in the form of a National Infrastructure Bank or National Infrastructure Reinvestment Corporation, must be considered in relation to its ability to provide necessary

financing unavailable through current government programs or the private markets and to be more effective than current programs in delivering the financial subsidies. It should be noted that the Commission's finance-related recommendations can be achieved within existing agencies and programs (e.g., the TIFIA credit assistance program) and do not require the creation of a new national-level entity. Either way, the Commission urges that important steps be taken (through fundamental reform of existing programs and/or proper structuring of a new entity) to support infrastructure investment that provides the highest societal returns while leveraging limited tax dollars with private-sector investment and new sources of revenue—particularly from direct user fees.

Any existing or new federal financing for targeted investments should be structured to offer one or more of the following benefits: access to capital that is difficult to obtain in private markets, lower-cost financing and more flexible terms than available from other sources, credit enhancement to help projects gain access to private markets, or financial assistance for projects of importance to the national transportation system that cannot be fully funded with identified revenues. The Commission cautions that the potential role of a new infrastructure financing entity should be examined in the context of long-term funding needs and not only as an immediate response to the current disruption in the credit markets.

Finally, the Commission emphasizes that the focus on new or enlarged funding programs and financing techniques should not be seen as a substitute for generating revenue by raising taxes, expanding tolling capabilities, or developing other sources. The institutional mechanisms being proposed, whatever their merit, will not in and of themselves directly address the core problem of insufficient revenue to support needed investment.

THE PATH FORWARD—CONCLUSIONS AND NEXT STEPS

The Commission has evaluated a wide range of options that could begin to close what has become an unacceptable and unsustainable investment deficit in our nation's surface transportation infrastructure. The Commission assessed each option's ability to raise significantly more resources at the federal level and to support the ability of state and local governments to do the same. In offering Congress the results of this analytical and deliberative process, the Commission recognizes that there are no easy solutions. Looking to the future, the Commission endorses the growing consensus that transitioning to a funding approach based more directly on use of the transportation system is the right foundation.

In the twentieth century, surface transportation was largely about steel and concrete: extending and expanding the physical network of roads, bridges, and rail systems and the cars, buses, and trucks that operated on it. The goal was to raise the money needed, from whatever sources, to build a robust enough system to meet the nation's mobility needs.

Looking to the future, the Commission endorses the growing consensus that transitioning to a funding approach based more directly on use of the transportation system, including mileage-based user fees, is the right foundation.

In the twenty-first century, steel and concrete will of course continue to be the foundation of our surface transportation infrastructure, and raising the resources needed to support that system will still be important. New capabilities of the system, however, will need to be not just big but also "smart." We are now able to use technological advances to significantly improve how

people pay for their use of the transportation system. Importantly, doing so will enable the delivery of a host of other benefits, including real-time information to vehicle drivers to help reduce congestion, improve safety, and reduce emissions, to transit operators to improve the convenience and reliability of public transit, and to system managers to better monitor and manage the system and improve the allocation of transportation infrastructure resources.

The Commission's core recommendations focus on the first attribute of this new intelligent system: improving how the system is funded, specifically in ways that are more sustainable and more efficient. The Commission's other recommendations also play vital roles in ensuring overall funding security and staving off further system degradation through immediate action that will afford the nation the time to realign the funding framework.

Transitioning from a fuel tax–based system to one based more directly on use of the highway system measured by miles driven undoubtedly will require a great deal of planning and public education. But that is no reason to delay initiating the transition. As one Commissioner warns, "If we don't start, we won't ever get there." And, as this process commences, policy makers will need to ensure that all stakeholders are consulted and involved in the decision making for all aspects of the transition.

In closing, if we fail to address the immediate funding crisis and longer-term investment challenge facing our surface transportation system, we will suffer grim consequences in the future: unimaginable levels of congestion, reduced safety, costlier goods and services, an eroded quality of life, and diminished economic competitiveness as a nation. Our alternative future—with increased federal revenue, new funding approaches, and new technology as a foundation—is an integrated national transportation system that is less congested and safer and that promotes increased productivity, stronger national competitiveness, and improved environmental outcomes. That future is waiting for us to embrace it.

Endnotes

1. Federal Highway Administration (FHWA), *2006 Status of the Nation's Highways, Bridges, and Transit: Conditions & Performance* (Washington, DC: U.S. Department of Transportation, 2007) (2004 data).
2. Federal Transit Administration, *Transit State of Good Repair* (Washington,DC: October 2008).
3. Texas Transportation Institute, *The 2007 Urban Mobility Report* (College Station, TX: September 2007).
4. Needs estimates are National Cooperative Highway Research Program revised estimates based on FHWA, op. cit. note 1; on 2007 estimates in National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow* (Washington, DC: 2007); and on Financing Commission estimates developed from data provided by FHWA. Revenue estimates developed by Financing Commission.
5. Based on information from AAA's 2008 edition of *Your Driving Costs* (Heathrow, FL: AAA, 2008) for average sedans and on data from FHWA, *Highway Statistics 2006* (Washington, DC: U.S. Department of Transportation, 2008).
6. Tax credit bonds are a form of debt financing that significantly subsidizes the borrowing cost of the project sponsor (debt issuer) by having the federal government pick up part or all of the interest expense through the provision of tax credits to the investors.