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VEHICLE MILES TRAVELLED (VMT) TRANSPORTATION FUNDING

By: Paul Frisman, Principal Analyst

You asked about the Vehicle Miles Travelled (VMT) approach to funding highway maintenance, repair, and construction, and about Oregon's pilot VMT program.

SUMMARY

A VMT fee or tax system charges motorists a fee for each mile they drive. The amount of the fee and the roads or highways on which it applies can vary, depending on what the system is designed to accomplish. Proponents say a VMT system would be a more reliable way to fund highway repair and construction than the current funding method, which is primarily through federal and state motor fuel taxes.

There are several reasons for this: First, the amount of revenue from motor fuel taxes is expected to decrease as motor vehicles become more fuel efficient and more people turn to vehicles powered by alternative fuel (e.g., electric vehicles). At the same time, the cost of repairing and maintaining the nation's transportation infrastructure is growing dramatically. According to *Paying Our Way*, a 2009 report by the National Surface Transportation Infrastructure Financing Commission, "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 highway and transit systems."

Sandra Norman-Eady, Director
Phone (860) 240-8400
FAX (860) 240-8881
http://www.cga.ct.gov/olr

Connecticut General Assembly
Office of Legislative Research

Room 5300
Legislative Office Building
Hartford, CT 06106-1591
Olr@cga.ct.gov

Proponents of a VMT system contend that a VMT fee system is also a more precise and fair way to pay for the highway system because it is based on a driver's actual mileage. "The efficiency argument for VMT taxes starts with the fact that, especially for passenger vehicles, most costs of highway use are related to miles driven," a 2011 Congressional Budget Office (CBO) report states. But, under the current system, owners of fuel-efficient vehicles pay less in taxes than owners of less efficient vehicles who travel the same distance.

According to a 2010 report by the Council of State Governments (CSG) at least three federal bipartisan commissions recommend that the U.S. move to a VMT-based system. The authors of *Paying Our Way* called on Congress to begin working on a VMT system immediately and commit to implementing a comprehensive system by 2020. Depending on how it is designed and how long it takes to implement, a VMT system also could supplement the current fuel tax-based system.

The benefits of a VMT system's include significant revenue potential and stability; more equitable distribution of highway costs among drivers of different types of vehicles; the ability to optimize highway use (e.g., by charging higher fees during peak traffic times); and use of proven technology, such as GPS systems.

Its disadvantages include overcoming the public's privacy concerns and aversion to adoption of a new and unfamiliar fee or tax; significant upfront costs; and a lengthy phase-in process. Also, a VMT fee, like the fuel tax, would be subject to inflation. But, unlike a fuel tax, a VMT system does not offer an incentive for drivers to buy more fuel-efficient (and environmentally friendly) vehicles.

Several states, most notably Oregon, have experimented or are experimenting with a VMT system. The Oregon Department of Transportation (ODOT), which conducted a small-scale pilot program, found that a VMT system is workable, can be successfully integrated with the fuel tax, and can be paid at the pump, as now occurs with the fuel tax. The federal Department of Transportation is funding a University of Iowa VMT study involving drivers in a number of states.

BACKGROUND - MOTOR FUEL TAXES AND THE HIGHWAY TRUST FUND

Federal motor vehicle fuel taxes have been the primary means of paying for highway maintenance and construction since 1956, when the Highway Revenue Act created the Highway Trust Fund (HTF) to ensure a stable financing source for the federal highway system. Under the act,

motor fuel taxes, which had been deposited in the General Fund, were credited to the HTF to pay for the expanding highway system. In 1956, the federal gasoline tax was 3 cents per gallon. It was last increased in 1993, to 18.4 cents per gallon. (States may impose their own gasoline taxes on top of the federal tax.)

According to *Paying Our Way,* the failure to increase the federal gas tax since 1993 has reduced its purchasing power by 33% and drastically undercut its ability to keep pace with rising infrastructure costs and with inflation.

Inflation is one of several reasons that the outlook for the fuel tax's long-term future as a viable funding source is not promising. Other reasons include (1) the increasing fuel efficiency of new vehicles and growing popularity of such alternative fuel vehicles as electric vehicles, which means drivers will buy less gas and pay less in taxes; (2) the possible diversion by Congress of fuel tax revenue for non-highway purposes; and (3) the likelihood that rising fuel costs could cause motorists to drive less or take public transportation.

According to *Well Within Reach: America's New Transportation Agenda,* a 2010 report by the University of Virginia's Miller Center of Public Affairs, linking the fuel tax to highway construction and maintenance "made sense as long as fuel use was closely aligned with road use and as long as the revenues raised by the fuel tax were adequate to meet highway funding needs. Increasingly, however, that is no longer the case."

"Many proponents of transportation reform have concluded that the best approach to ensure adequate funding and re-align incentives for road use is to return to a pay-as-you-go system. This means taxing road use (instead of fuel consumption) via a VMT tax…This approach would restore the original intent of the HTF: that users fund the transportation system in proportion to their use of it."

In addition to addressing the specific issues we list below, discussion of a VMT system necessarily involves a number of policy and political decisions, such as whether:

- a VMT system should be implemented nationally or on a state-by-state basis
- it should require drivers to participate or make participation optional

- to continue to exempt government motor vehicle fleets that are now exempt from the fuel tax

The answers to these and other policy questions will necessarily affect the VMT system's design and the revenue it produces.

We present a selection of arguments for and against implementing a VMT fee-based system below. Please see the cited reports for more detailed discussion of these and other issues. For the purposes of this report we focus on changes to the federal motor fuel tax and suggestions for a national VMT system.

VMT FEES

Arguments in Favor

It is Politically Difficult to Increase the Federal Fuel Tax to Pay for Needed Highway Maintenance and Improvements

Raising the federal fuel tax is one alternative to a VMT fee system. But recent studies agree that such a move would be politically unpopular. "It has been suggested that over a longer period of time, a substantially higher fuel tax (increases as high as 54 percent have been proposed by some) would create incentives for higher mileage or alternative fuel vehicles," state the authors of *Well Within Reach*. "While this might be desirable from a number of other policy perspectives (notably as a way to address environmental and energy security concerns), it is politically unfeasible."

Similarly, *Paying Our Way* states that "while a 25¢ increase in the federal motor fuel tax rates could raise enormous revenue ($45 billion per year in 2008 dollars), today many transportation funding experts believe that such a rate lies beyond the realm of political viability."

The CSG report concurs. "While increasing fuel taxes to account for improved fuel economy – as well as the effects of inflation – would seem a logical solution, that has proved politically difficult in many states as the recession continues and as anti-tax sentiments grow."

VMT Fees are a More Precise and Fairer Way to Reflect Actual Highway Use

The CBO, in its study of highway funding alternatives, found that while "some costs of highway use, such as those associated with emissions of greenhouse gases and the nation's dependence on foreign oil, are directly related to fuel consumption…the larger share of costs – for pavement damage, congestion, accidents, and noise – is more directly tied to the number of miles traveled." According to CBO, "fuel-related costs for passenger vehicles traveling on urban and rural highways are roughly 1 to 2 cents per mile, well below estimated mileage related costs of 10 cents a mile."

VMT fees, in addition to being set to more accurately reflect the costs of highway travel, can also be set to reflect the specific impacts of different types of vehicles, such as passenger cars and heavy trucks. "Different types of vehicles traveling in different locations contribute differently to the social costs of highway use," the CBO report said. "Passenger vehicles log more than 90% of all miles traveled on U.S. highways, and they are responsible for the largest share of the total costs of highway travel… Heavy trucks travel less than 10% of all vehicle miles, but their costs per mile are far higher than are those for passenger vehicles, and they are responsible for most pavement damage."

VMT Fees Could Be Varied To Achieve Different Goals

The various reports all note that a VMT system can be designed not only to raise revenue, but to modify driver behavior to improve traffic flow and to reduce wear and tear on the nation's transportation infrastructure.

"Because highway costs are more directly determined by miles driven than by fuel used," CBO states, "appropriately designed VMT taxes an do more to improve the efficiency of road use than fuel taxes can. Specifically, VMT taxes that account for the type and weight of a vehicle and the location and time of its use could provide appropriate incentives to reduce congestion, pavement damage, local air pollution from passenger vehicles, noise, and risk of accidents."

CBO says that VMT fees could be set at one rate for off-peak travel times with an additional charge on certain roadways during peak travel times. The CBO noted that the Federal Highway Administration estimates that such congestion pricing "could reduce by nearly one-third the investment needed to sustain the operational performance and condition of the highway system – an average savings of $41 billion per year."

As noted earlier, VMT fees can also vary by vehicle type.

VMT Fees Could Generate Significant Revenue

According to *Well Within Reach,* VMT fees "could generate significant revenues. A fee of just one penny per mile would equal the revenue currently collected by the fuel tax; a fee of two cents per mile would generate the revenue necessary to support an appropriate level of investment over the long term."

The authors of *Paying Our Way* concur. According to the report, several states that looked into replacing their fuel taxes with VMT fees "have typically estimated that a fee of 1–2¢ per mile (average for both cars and trucks) would be required." (According to the IRS, the overall cost of owning a car in 2011 was 51 cents a mile.)

The report's authors also evaluated several scenarios associated with a national VMT system. They estimated the VMT fees needed to replace the HTF based on current funding levels, and the fees needed to fund the entire current federal highway and transit program. The report notes that current federal program obligations exceed current HTF receipts by about $17 billion annually. (The calculations are in 2008 dollars).

"If fees were charged at a flat rate on all travel, regardless of where it occurred," the report found, "the required VMT fees would need to be about 0.9¢ per mile for cars, SUVs, vans, and pick-ups, and 5¢ per mile for heavy trucks (an average of 1.2¢ per mile). The fees required to pay for the entire current federal program would be about 1.3¢ per mile for cars, SUVs, vans, and pick-ups, and 7.3¢ per mile for trucks (an average of 1.8¢ per mile)."

The report's authors also developed "rough estimates" of the VMT charges required to raise enough money to address the average annual federal investment amount needed to (1) maintain the current highway and transit system and (2) improve it, between 2008 and 2035. It found that the VMT fee needed to meet the annual level ($77.6 billion) would be 1.9¢ per mile for cars, SUVs, vans, and pick-ups, and 10.6¢ per mile for

trucks (an average of 2.6¢ per mile). The charges required to pay to improve the system ($96.2 billion) would be 2.3¢ per mile for cars, SUVs, vans, and pick-ups, and 13.2¢ per mile for trucks (an average of 3.2¢ per mile).

The report notes that these fees would be 18% higher if drivers were charged only for miles they drive on the federal highway system, rather than on all roads and highways. (The federal highway system covers those highways eligible for federal funding—roughly one-quarter of all roads in the United States.) The estimated VMT fees also do not account for additional fees needed to administer a federal VMT system.

Arguments against a VMT System

Public Reluctance to Accept a New Financing Mechanism

According to a November 2009 Texas Transportation Institute (TTI) report, the public has been "uneasy" with the idea of VMT fees and has "doubts about the necessity of abandoning the fuel tax." The report attributed public uneasiness about the VMT system to the system's novelty and complexity. It said the public is wary about abandoning the fuel tax because the current tax is both familiar and largely invisible as part of the total price paid at the pump. "The public…might therefore view a different and more transparent system, as an added fee, regardless of the individual fiscal impact," it said.

> "Implementing pricing on facilities that have been previously regarded as 'free' will require extensive work on the part of policy makers in terms of public outreach," the report said. "This is due to the fact that the public has yet to make the connection between increasing fuel efficiencies and declining future fuel tax revenues and the added transparency [of] a mileage-based fee…Therefore, implementing mileage-based user fees will require strong advocates, which will only be created with the prospect of significant rewards."

The report says, for example, that "ensuring that revenues are used to maintain and/or expand roadway networks will be crucial in gaining the support of the trucking industry."

A VMT Fee System Would Have Potentially Significant Upfront Costs

Although new and improving technology makes a VMT system practical, the CBO report states that "the operational costs of VMT systems are higher then the costs associated with current fuel taxes, and they have high start-up costs as well." But CBO says there is not much information on how expensive such a system would be.

Paying Our Way breaks down the costs of a national system into three components: start-up costs; installing technology in vehicles; and operating costs.

The report says start up costs for a national system would be high – preliminary research for the federal DOT estimate that initial costs for hardware, system development, and start-up would be "in the range of $10 billion." To these must be added the cost of installing GPS technology on vehicles. This cost would depend on whether vehicles already on the road are retrofitted with the devices or whether the technology is installed only in newly manufactured vehicles. Finally, the report says the federal DOT estimated annual operating costs at 1.7% of estimated revenue. "Although this is more than the cost of administering the current motor fuel taxes, estimated at 1.01% of revenues, it would still represent a comparatively inexpensive fee to administer," the report said.

On a state level, the ODOT estimated Oregon's capital costs of $33 million for the initial setup of data transfer and service station infrastructure in that state, but said costs could be greater depending on the level of technology used. It estimated annual operating costs of $1.6 million.

A 2009 report by the RAND Corporation, which examined proposals that would enable nationwide adoption of VMT fees by 2015, said it would be costly to retrofit vehicles already on the road with the appropriate VMT technology.

A VMT System Would Take Many Years to Implement

There are a number of variables affecting phase-in of a VMT system. For instance, it would take much longer to deploy such a program if only new vehicles are equipped with VMT technology and cars already on the road are not appropriately retrofitted. In that case the older cars might continue paying the fuel tax until they were retired. Such a phase-in could take 20 years, the CSG report said.

As noted below, ODOT estimated that implementation could take more than 10 years unless the federal government, or a large state such as California, with nearly 14% of the nation's vehicles, took the lead. ODOT estimated that without retrofitting, full implementation of a comprehensive VMT system could take more than 30 years. And, as noted above, the commission that authored *Paying Our Way* called for immediate congressional action to deploy a comprehensive federal program by 2020.

Privacy Issues

The more detailed information that a VMT system generates, the more efficient it is, but this level of detail also generates the greatest privacy concerns.

The CBO report suggests several ways to resolve privacy issues. For instance, a system can limit the type of information gathered, or rely on less precise data (as the Oregon study did, see below) with the understanding that less precise data means less effective traffic management. Another possibility would be to limit the government's access to data that is gathered.

CBO also suggests allowing concerned motorists to opt out of the VMT system and instead continue paying fuel taxes. In such cases, these motorists would pay a higher tax rate that includes the per-gallon equivalent of the VMT fee, plus a premium designed to prevent people from opting out simply because their VMT charges would be higher than average.

Other Concerns

Environmentalists may be concerned that a VMT fee eliminates the fuel tax-related incentive to buy a fuel efficient vehicle. People who bought fuel efficient vehicles may feel they are being "punished," the CSG report says. One way to address this problem, it says, is by structuring the fee so that owners of "environmentally friendly" vehicles receive a discount.

Another potential issue is the VMT fee's unresponsiveness both to inflation and the continually increasing costs of an aging infrastructure, which could be resolved by either indexing the fee or periodically increasing it. However, this would pose the same political problem as that affecting the current fuel tax.

Evading the VMT fee by tampering with on-board vehicle technology is another problem. Oregon addressed this in its pilot program by require that people who tampered with the GPS device pay the fuel tax instead.

OREGON PILOT STUDY

The Oregon legislature created the Road User Fee Task Force in 2001 to design a new revenue collection system. After considering 28 different funding ideas, ODOT in 2006 began a one year pilot program to study the VMT system. The study included 285 volunteer vehicles, 299 motorists, and two service stations in Portland.

Oregon collected mileage data and VMT fees when participating motorists bought gas at the pump. Their vehicles were fitted with a GPS device, but, because of privacy concerns, the devices only identified various zones in which miles driven were calculated. No specific vehicle locations or trip data was stored or transmitted. The only data centrally stored were the identification of the vehicle, zone mileage totals, and the amount of fuel purchased. Customers received a bill that included the mileage fee and fuel price minus the state fuel tax.

Major Findings

The study concluded that:

- A VMT-based system is viable
- Paying at the pump works
- The program could be phased in alongside the gas tax, and
- Privacy could be protected

Oregon's Projected System Implementation Timeline

ODOT concluded that implementation of a local, state, or national VMT fee system is years away. "Without the lead of the U.S. Department of Transportation or the state of California," the report states, "industry acceptance, manufacturing integration and service station installations may take over 10 years. Public acceptance is the wild card. Without effective and consistent messaging by officeholders and other policy makers across the nation, the experience of disasters may be necessary for the public to accept the change to per-mile charges."

"In the absence of large, widely supported effort, broad scale implementation might be feasible in 10 to 12 years, on a phased basis. Since retrofitting [existing vehicles with appropriate technology] is not yet viable, a phased implementation would be necessary as only new vehicles would contain the necessary technology. Complete implementation under this scenario…would thus occur over a 30 to 35 year period."

The final ODOT report on the VMT study is available at: http://www.oregon.gov/ODOT/HWY/RUFPP/docs/RUFPP_finalreport.pdf?ga=t.

UNIVERSITY OF IOWA STUDY

According to CSG, the University of Iowa is testing the feasibility and public acceptance of a VMT system as part of a $16.5 million study financed by the U.S. DOT. It involves volunteer drivers in a number of states, including California, Iowa, Maine, Maryland, North Carolina, and Texas.

ADDITIONAL INFORMATION

We have attached TTI primer on VMT fees in addition to copies of some of the cited reports. Also, OLR Report 2010-R-0446 discusses the future of transportation finance in Connecticut, and its particular implications for the state's Special Transportation Fund.

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