Future of Mileage-Based User Fees

When Congress passed legislation to authorize federal surface transportation programs in the summer of 2012, state governments welcomed the action. After nearly three years of short-term extensions of the previous legislation, known as SAFETEA-LU, states could finally have some longer-term certainty about committing federal and state transportation dollars to transportation projects.

But in order to pass the new legislation, known as MAP-21, Congress had to come up with the funds necessary to keep spending for federal transportation programs at current levels. Revenues from the federal gas tax that go into the Highway Trust Fund were going to be inadequate and the Congressional Budget Office had projected in January 2012 the fund would go broke in 2013. Between 2008 and 2010, the U.S. Treasury already had bailed out the fund to the tune of $35 billion in general fund revenues. So to fully fund MAP-21 through September 2014, Congress authorized the transfer of an additional $18.8 billion in general funds to again extend the life of the trust fund.

What Congress did not do was make any commitments about what happens after 2014. In order to ensure the future of the Highway Trust Fund and federal transportation programs beyond that date, Congress will likely need to figure out what to do about a revenue source many believe is now in decline. At 18.4 cents per gallon for gasoline and 24.4 cents for diesel, the federal gas tax has not changed since 1993. With no adjustment for inflation, the tax has failed to keep up with the rising cost of highway construction. Revenues from the tax now buy only about half the concrete, steel and other materials they did two decades ago. Moreover, increased fuel efficiency and increases in the number of hybrid and electric vehicles have meant the amount drivers pay to help fund road repairs no longer accurately reflects their overall usage of those roads.

“The gas tax served our country extremely well as long as the amount that people drive continued to go up and people continued to get lousy gas mileage,” told The Wall Street Journal in September 2012. Now that that’s no longer the case, Rahn said, “We do not have a sustainable way of paying for our transportation system.”

The situation is likely to get worse. In August 2012, the U.S. Department of Transportation and the Environmental Protection Agency published a rule that will dramatically increase Corporate Average Fuel Economy standards for cars and light trucks by 2025. According to the American Road and Transportation Builders Association, the Highway Trust Fund—assuming it continues to exist and continues to receive gas tax funding—would lose a cumulative total of nearly $72 billion by the time the new standards are fully in place due to the increased fuel efficiency.

In seeking a replacement for the gas tax that could raise the revenues needed to improve the nation’s infrastructure, would be more sustainable, would account for alternative fuel vehicles and would better correlate with usage of the transportation system, some states have explored a system that would charge motorists based on vehicle miles traveled. These explorations have taken place, for the most part, in pilot projects conducted by state departments of transportation, universities and other entities.
The Council of State Governments in 2010 explored the earliest of these experiments in a policy brief as part of its “Trends in America” series. Since that time, the research has continued and evolved. Today, the concept is often referred to as a mileage-based user fee rather than a vehicle miles traveled tax. The level of political support, however, particularly at the federal level, appears to have waned.

Now, with just two years to go on the latest federal authorization, with no consensus on how to create a more sustainable system and with states struggling to meet their infrastructure needs in the absence of federal leadership, some wonder whether it may be time to take a deeper look at a vehicle miles traveled tax and to seek answers to the questions that have given some policymakers pause to this point. The latest vehicle miles traveled research and the efforts to persuade the court of public opinion about the feasibility and merits of such a system are the focus of this follow-up brief.

Experiments Yield Success

The Oregon Department of Transportation first tested a vehicle miles traveled system in a yearlong pilot project beginning in 2006. The vehicles of more than 200 volunteers were outfitted with a GPS-based receiver that identified the zones through which they traveled. When drivers went to the gas station to fill up, stored mileage totals from the device were transmitted wirelessly via short-range radio frequency to the gas station’s point-of-sale system for the fees to be applied. Customers received a bill that included both the mileage fee and the fuel purchase price minus the state fuel tax, from which the pilot participants were exempt.

As outlined in a final report on the pilot program, state officials determined that:

• Such a system was feasible;
• Paying vehicle miles traveled fees at the gas pump could work;
• The fees could be phased in;
• Integration with current systems could be achieved;

• Various pricing options could be available;
• Privacy could be protected;
• It could place minimal burdens on business;
• The potential for evasion was minimal; and
• The cost of implementation and administration could be kept low.4

Since Oregon’s initial pilot project, other tests of mileage-based systems have been conducted, most notably a two-year national field study by the University of Iowa. Preliminary findings from the multi-state field study, which was federally funded, showed such a system could work on a nationwide scale and the public could accept the concept once exposed to it.

Iowa’s field study included 2,600 volunteer participants in 12 sites around the country who drove an average of 9,000 miles each. A prototype onboard unit installed in each participant’s vehicle computed mileage-based user charges for federal, state and local jurisdictions. The units periodically uploaded accrued charges via a cellular link to a central billing center, where monthly billing statements were compiled and sent to participants.

The design of the field study even took into account often-expressed concerns about protecting privacy in a system that tracks a motorist’s every move. While the onboard device did use GPS to determine where the driver was for assessing varying state and local charges, the system did not retain or transmit any specific location or route information. Nevertheless, participants said they actually preferred a more detailed billing statement that included a daily review of miles traveled.

In a Transportation Research Board paper discussing the preliminary findings of the study, University of Iowa professors Paul Hanley and Jon Kuhl said the test showed a nationwide system of mileage-based fees is completely feasible using existing technology. Moreover, they report those who took part in the test had a more positive view of mileage fees by the time it was over. A 42 percent positive view at the start of the study became a 70 percent positive view by the study’s conclusion.5

Another test of a mileage-based user fee is, as of this writing, underway in Minnesota. The Minnesota Road Use Test began in May 2011 and is scheduled to end in December 2012. Five hundred volunteers from two counties—one urban and one rural—are participating in the test, which uses smart phones and GPS-based applications. The phones are specially programmed to allow motorists to submit information the Minnesota Department of Transportation can use to evaluate whether the device can provide reliable travel data from each trip a motorist takes. The department also is testing whether other applications can be used to effectively communicate safety messages to motorists, including real-time traffic alerts that provide information on construction zones, crashes, congestion and road hazards.

The 500 volunteers are split into three different groups, which are testing the devices for six months each. They are paid a nominal stipend and fee to
Skepticism Persists, Federal Support Wanes

The initial success of early research like the Oregon pilot was enough to convince two bipartisan, federally appointed commissions to recommend that the nation transition to a system based on vehicle miles traveled. In its 2009 final report, the National Surface Transportation Infrastructure Financing Commission said, “Direct user charges in the form of mileage-based user charges are the most viable and sustainable long-term ‘user-pay’ option for the federal government to raise adequate and appropriate revenues to provide the federal share of funding for the system.”7

But that recommendation has come up against some harsh political realities at the federal level. The week before the commission’s report was released, U.S. Transportation Secretary Ray LaHood told The Associated Press that a vehicle miles traveled tax was an idea “that should be looked at.” But Robert Gibbs, who was then the White House press secretary, walked back LaHood’s endorsement, telling reporters a vehicle miles traveled tax wasn’t official Obama administration policy.8

The administration in 2011 similarly had to deny it was interested in exploring such a system after a draft surfaced of the president’s proposed budget that included a study framework for a pilot vehicle miles traveled project.

Then during the summer of 2012, as Congress was debating the 2013 spending bill for the Department of Transportation and other agencies, Rep. Chip Cravaack, R-Minn., introduced an amendment to block any money in the bill from being used to explore a vehicle miles traveled system. The House approved Cravaack’s language by voice vote. Cravaack argued that such a system would “hurt rural drivers, cost a lot to implement since it would require devices in each car … and could impinge on privacy rights.”9

A rejection of a mileage-based user fee system on those grounds, however, is arguably premature, researchers and advocates say. Research on vehicle miles traveled taxes is ongoing. There is no universally agreed upon technology or system to track mileage, so it’s impossible to know how such a system could impact rural drivers, whether there could be accommodations made for those who must drive long distances regularly or whether such a system might first be employed only in urban areas. Since there is no universally agreed-upon technology, there’s also no way to know how much the equipment would cost—if anything—or whether GPS tracking information on every U.S. driver would be at the government’s fingertips.

Oregon Continues Research

But the hesitation at the federal level doesn’t seem to have slowed things down in Oregon and elsewhere.

In the fall of 2012, Oregon transportation officials are again studying whether a vehicle miles traveled tax might be a suitable gas tax replacement. This time, there are some notable differences in their approach.

A group of 50 volunteers will be taxed by the mile as part of a three-month demonstration program. A variety of onboard technologies and smartphone applications will be used to track mileage and participants will be able to choose the one with which they’re most comfortable. The volunteers will be able to use their smartphones to link to onboard devices—such as GM’s OnStar, Ford’s SYNC, Nissan’s CARWINGS and Toyota’s Entune—in order to report their miles.10

“The government will not be a provider of devices,” the Oregon Department of Transportation’s James Whitty told “Streetsblog Capitol Hill” in August. “We just won’t be. We can’t be. It stops the discussion of this. People don’t want the government to have anything to do with providing their technologies.”

Importantly, the use of GPS also will not be a requirement. For those who reject all the private sector technology options despite being able to choose between them and despite their information not being transmitted to a government entity, another option would allow drivers to pre-pay for the miles they expect to drive at a rate based on 35,000 miles minimum annually. Those drivers will pay a substantially higher flat fee than what most drivers whose mileage is more closely tracked will likely average.

Instead of paying at the pump as participants in the initial pilot program did, motorists will pay at the end of the three-month demonstration. State transportation officials foresee monthly or quarterly charges if the system were to be adopted on a statewide basis.

On that front, it will be up to the state legislature to decide how to implement such a system. A task force within the state DOT will assemble findings from the demonstration program to present to lawmakers in 2013.

Whitty said if the latest test is successful and the legislature decides to move forward, a gradual ramping up of a vehicle miles traveled system could start with fees being charged only for vehicles not paying their fair share in gas taxes—namely electric vehicles.
and hybrid cars and very fuel-efficient cars that get more than 40 miles per gallon.\textsuperscript{11} Per mile charging of electric and hybrid vehicles could begin as early as mid-2015, Whitty said.

“We’re approaching 2 percent of vehicles in the state of Oregon being hybrids,” Whitty told Traffic Technology International magazine earlier this year. “We can’t really predict what’s going to happen, but current trends indicate that within a decade most new vehicles will likely feature some form of alternative power and as a result their collective fuel efficiency will continue to improve.”

A bill in the Oregon state legislature to put in place a charge for drivers of electric vehicles made it through two House committees in 2011, but was sidetracked by concerns from the automobile manufacturing industry.

Whitty said his department’s entire strategy since then has been to clear up any lingering concerns in the legislature about the movement toward a mileage-based system. To that end, state legislators sitting on the transportation and revenue committees are among those invited to participate in the latest demonstration.

“If the next step is to pass legislation, their involvement is critical, especially if they can see how the system works, how it offers a range of choices to motorists, how easy it is, doesn’t impede driver privacy, etc.,” Whitty told the magazine.\textsuperscript{12}

**Future Prospects for a Vehicle Miles Traveled System**

Of course, it’s not just policymakers who have concerns about vehicle miles traveled and who will require persuading if such a system is to become a reality nationwide. Richard Baker, an associate researcher at Texas A&M University’s Texas Transportation Institute, has conducted focus groups and researched public perceptions of mileage-based fees.

As he told The Atlantic “Cities” blog last year, the biggest obstacle to a future of mileage fees is not whether researchers can come up with the right kind of technology to put in cars; it all comes down to the average citizen and how he or she feels about it.

“There’s a lot of folks, it doesn’t matter what you tell them will be collected, there’s this insidious suspicion,” he said. “It doesn’t matter what sort of location encryption is being used. It doesn’t matter if the data upload is only occurring once a month. There’s a perception that they’re being actively tracked whenever they get in a car, that government is watching them go down the road. Not everybody has that (belief), but we did get a lot of that (in the focus groups): total distrust.”

Baker suggests the answer may be to take government out of the equation as much as possible. The public might be more willing to accept a private sector application or tool from a trusted company that also provides consumer-demanded content—for example, real-time traffic reports—that commercial of-the-shelf technology—which is already available and in use for other purposes in the marketplace—can be used to report miles driven.

Oregon transportation officials are hoping the private sector will be able to demonstrate it can collect the mileage data and process and collect the taxes too, eliminating the need for any large new government bureaucracy to manage a future vehicle miles traveled system, Whitty said. The Oregon DOT ultimately would only be involved in certifying technology providers and products, auditing the system and performing an enforcement function.

Whitty is under no illusions that full adoption of a vehicle miles traveled system statewide or nationally can happen quickly. But he has heard from colleagues in many other states who are watching what Oregon is doing very closely, simply because they face the same transportation funding shortfalls that Oregon does.

“We are not doing this to reduce driving or congestion—it’s all about revenues,” Whitty said. “We will demonstrate not only to policymakers but to the industry, the entire nation, the world, that such a system can succeed, and isn’t going to cause big problems, that it can easily accommodate and meet the needs of users.”\textsuperscript{14}

Outside of Oregon, there is no shortage of other ideas about how a vehicle miles traveled system might take shape and gain acceptance in the years ahead. A March 2011 Congressional Budget Office report offered some additional ideas.

“One step in developing per-mile charges would be to determine the goals of VMT taxation; different goals would require different charges,” the report said.

Mileage-based taxes would need to vary by vehicle type and by time and place of travel if they were intended to maximize the efficiency of highway use and an equitable user system. For heavy-duty trucks
with high weight per axle, the amount of tax assessed might need to be higher than for small passenger vehicles, the budget office said. Vehicles could be assessed more to travel on crowded roads at peak hours or on less congested roads at any time, as well. Separating those who drive on rural roads versus urban roads would also allow for a more equitable assessment of the tax and a distribution of revenues back to the most heavily trafficked roads.

The Congressional Budget Office report also points out that vehicle miles traveled taxes could be put in place on a more limited basis for only some vehicles or only some roads, similar to toll roads and weight-and-distance charges on trucks.

“Expansion of existing systems could focus on highly congested roads or on entry points into congested areas; that targeted approach could cost less to implement if it required relatively simple in-vehicle equipment,” the report said.

The budget office cites as one example the E-ZPass transponder, which enables the electronic collection of tolls in 14 states.

A vehicle miles traveled system also could begin by focusing on trucks alone.

Although less than 4 percent of the nation’s fleet is made up of trucks (excluding light-duty trucks), they account for roughly 25 percent of all costs highway users impose on others, including almost all of the costs associated with pavement damage,” the Congressional Budget Office said.

Recent research indicates a truck-only vehicle miles traveled system could find support in the trucking industry. A 2011 study examined the feasibility of using existing GPS-based technology to implement a truck-only vehicle miles traveled system that could replace all existing truck fees and taxes in New York state. Trucking companies that took part in the study told researchers they liked the idea of replacing the current combination of fuel taxes, registration fees, tire taxes, mileage fees and tolls with a single mileage-based charge. They also expressed support for using technology already installed in trucks for fleet management purposes to keep track of their mileage. The technology was deemed sufficient to determine routes with enough accuracy to assess mileage fees. While an initial assessment of the costs to implement a truck-based vehicle miles traveled fee system showed that collection costs would be higher than for gas taxes, the costs would be significantly less than those associated with collecting other transportation fees, including registration fees and tolls.

**Overcoming Privacy Concerns**

As noted earlier, privacy remains perhaps the top concern of many who come in contact with the vehicle miles traveled system concept and ultimately may prove to be the toughest hurdle for the mileage-based approach to overcome. Even after various safeguards are explained, many remain skeptical.

When it comes to transportation and quickly changing technology, concerns about privacy and legal rights may not be entirely without merit. The Associated Press reported that agencies in seven E-ZPass states provide electronic toll information in response to court orders in criminal and civil cases, including divorces.

“E-ZPass is an E-ZPass to go directly to divorce court, because it’s an easy way to show you took the off-ramp to adultery,” a New York divorce lawyer colorfully told the AP in 2007.

But some believe steps could be taken in the implementation of a vehicle miles traveled system that might restore faith that privacy would be a hallmark of such as system. In a post for “Streetsblog Capitol Hill” earlier in 2012, Liisa Ecola, a senior project associate at the RAND Corporation, outlined several. Among them:

- **Use the devices people already have**—The pilot program in Minnesota uses smartphones and Bluetooth devices attached to the diagnostics port on a vehicle to capture location data. Participants are allowed to select which wireless carrier they use for service and if one carrier isn’t sufficiently careful with their personal data, they can switch to another.

- **Make participation voluntary**—In the Minnesota pilot, drivers can opt whether to turn their smartphone on and make their location data available in exchange for potentially lower user fee rates or keep the phone off and pay more based solely on an odometer reading. As noted, the Oregon pilot will offer a range of metering options as well.

- **Provide anonymous accounts**—Ecola cites a Canadian road, the 407 ETR, with electronic toll collection that allows drivers with privacy concerns to set up anonymous accounts and pay tolls exclusively with cash.

- **Call in the watchdogs**—Ecola said third-party organizations dedicated to protecting privacy, like the American Civil Liberties Union, can be tapped to provide independent reassurance that privacy concerns are taken seriously with vehicle
miles traveled fee collection. The ACLU is among the organizations represented on a panel overseeing Minnesota’s pilot program that helped design the pilot’s approach to protecting privacy.

- Design safeguards into the technology—In-vehicle devices used to tabulate mileage can be what are sometimes called “fat clients.” That means they store more information internally than what is ever transferred to a transportation agency server. Ecola gives this hypothetical example of how a fat client approach works: “The onboard unit stores, let’s say, a month’s worth of data and determines the amount owed to different jurisdictions based on the amount of travel in each. Then at the end of the month, the onboard unit sends two messages to the billing agency. The first includes the vehicle ID along with the total amount owed, with no location data. The driver is billed based on this total. A second message is sent anonymously—stripped of vehicle ID information—with the number of miles traveled in each jurisdiction. The billing agency aggregates the anonymous messages by jurisdiction so that Virginia and D.C. (for example) each get the funds for miles driven on their roads. Once both messages are sent, the onboard unit deletes the detailed travel records.”

But Ecola warns that none of these methods can, by themselves, secure political and public acceptance for mileage-based user fees. Moreover, she argues, it would be difficult, if not impossible, for government agencies to prove they don’t have access to location and mileage data for every motorist. With the help of privacy watchdogs and careful checks and balances, however, it may be possible to mitigate potential risks, Ecola said. That could go a long way toward convincing the skeptics and making a vehicle miles traveled future possible.

Role of State Governments

Oregon, which is planning to pioneer the mileage-based user fee concept on the state level, was the first state to pass a gas tax in 1919, after which the concept spread to other states and then to the federal level. Many believe that just as the gas tax began with states, the mileage-based user fee will first prove its worth there as well.

“VMT charges and more extensive use of tolling and other user charges almost certainly will be first introduced at the state and local levels,” wrote Emil Frankel, visiting scholar at the Washington, D.C.-based Bipartisan Policy Center and former U.S. Department of Transportation official, in April. “In our federal system of government, where states are the laboratories of democracy, this is probably preferable. User charges can be ever more widely tried at the state and local level; indeed, states are likely to have to turn to such revenue sources, as federal funding for transportation improvements continues to decline and to become ever more uncertain.”

Others argue that a vehicle miles traveled system faces several key obstacles at the federal level that together seem nearly insurmountable. Chief among these, according to Joshua Schank, president and CEO of the Eno Center for Transportation, a Washington, D.C.-based transportation think tank, is that the debate continues as to whether the federal government should have a continued role in transportation.

“We have not yet articulated a clear enough need for a federal program to convince the public to pay any fee at all,” he wrote in an April 2012 National Journal blog post. “We have an existing mechanism in place—the federal gas tax—that would work just fine for the near future if we had the political will to increase it. But instead of support for an increase, we see more evidence of support in Congress for devolving the program to the states.”

Schank said the privacy issue and potential administrative costs of a vehicle miles traveled system also are working against it, at least for the moment.

“The VMT-fee concept at the federal level is so toxic that we cannot even get anyone to agree to spend federal money to study it,” he said.

While that could change in the future with new technological innovations and education efforts aimed at policymakers, Schank argues that the energy at the federal level should for the time being be spent on “making the case for the federal program using existing funding mechanisms, and giving states the tools they need to make such transitions at the state level.”

“Once people accept the concept within states, perhaps the federal government will have a shot,” Schank wrote.