Facing the Future of Transportation Finance: Challenges and Opportunities in a New Century

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ABSTRACT

The nation and states are facing dramatic shortfalls in transportation revenues, the depth of which mark a turning point in the 80-year history of transportation finance. Fundamental reform is needed because the transportation system cannot be maintained, much less expanded, under current financing arrangements. The history of transportation finance illustrates that user financing is essential to assure both efficiency in system performance and equity in terms of sharing the burdens of payment. User fees also provide a path toward environmental sustainability. The history of user financing, going back to the beginning of the motor fuel tax before 1920, holds the key to solutions that are relevant 100 years later. While motor fuel taxes have served well, they are indirect user fees, and new technology enables us to gradually institute far more direct systems of user financing over the coming 20 years. Reliance on general taxes for transportation, such as local option sales taxes, are currently popular, but they are only useful in the short term as a transition to a system more fully based on direct user financing.

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After the Motor Fuel Tax
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Congress should seize the opportunity to shift to a system of direct user fees to support transportation activities.

Congress will soon begin considering a new transportation bill that is expected to carry a price tag of $500 billion to $600 billion to support a huge number of projects nationwide. Public debate over the bill is certain to be intense, with earmarks and “bridges to nowhere” being prominently mentioned. But what could become lost in the din is that Congress may well take an important first step in changing the very nature of how the nation raises funds to support its roads and other components of the transit system. Or Congress may lose its courage. If so, the nation will miss a critical opportunity to gain hundreds of billions of dollars in needed revenue for transportation, to reduce traffic congestion, and to price travel more fairly than has been the case for a century.

At issue is whether Congress will continue to rely on the federal motor fuel tax and other indirect user fees as the primary source of revenue for transportation projects, or whether it will begin a shift to more direct user fees. Many observers expect that Congress will step up to the job, but it is far from a done deal. If Congress does act, it will begin what is likely to be a decades-long transition to some form of direct charging on the basis of miles driven.

In its reliance on user fees to support transportation projects, the United States operates differently from most other nations. Most countries tax fuels and vehicles, but they put the proceeds into their general funds and pay for roads and transit systems from the same accounts they use for schools, health care, and other government programs. The United States has preferred to link charges and payments for the transportation system more directly, through a separate system of user-based financing. User fees include gasoline taxes, tolls, vehicle registration fees, and truck weight fees. User fees, imposed by all 50 states as well as the federal government, are intended to charge more to those who benefit from the transportation system and who also impose costs on the system by using it. At the federal level, the
largest source of revenue from users for half a century has been the federal excise tax on gasoline and diesel fuel. Proceeds are kept separate from the general budget at the federal level and in most states. Revenues are deposited into separate trust funds, with this money reserved for building, operating, and maintaining transportation systems to directly benefit those who paid the fees. User fees at the federal level, for example, paid more than 90% of the cost of building the national interstate highway system.

One problem, however, is that the federal motor fuel tax, which is a major source of transportation system support, has not been raised for many years; it has been set at 18.4 cents per gallon since Ronald Reagan was president. As the price of gasoline rose during this period, Congress proved reluctant to charge drivers more for road improvements. In fact, when the price of gasoline spiked recently, Congress briefly considered lowering the federal motor fuel tax but backed away after considering the enormous backlog of infrastructure needs and the deteriorating condition of the nation’s transportation system. In addition to losing value because of inflation with the passage of time, motor fuel tax revenue is falling in relation to road use because of improved vehicle fuel economy. Higher miles-per-gallon ratings are good for the economy, energy independence, and reduced air pollution. But better fuel economy also means that motorists drive more miles with each fill up at the pump and actually pay substantially less through fuel taxes per mile of driving than they did in past years.

Many supporters of transportation investments continue to believe that the best way to raise desperately needed money to maintain and expand highways and mass transit would be to raise those user fees rather than to turn to general taxes, which are also under stress and are used to fund many other critical programs. But the trend is in the opposite direction. Gradually, faced with a genuine national shortage of funds for transportation infrastructure because fuel taxes have not kept pace with costs, voters in several states have been asked to approve increases in sales taxes to fill the growing gap.
between transportation needs and the revenues available from user fees. Also, as the balance in the federal highway trust fund dipped below zero in September 2008, Congress approved a “one-time” transfer of $8 billion from the nation’s general fund into the trust fund to avoid the complete shutdown of federal highway programs. Another such transfer may soon be needed because the transit account within the trust fund is now approaching a zero balance as well.

**A century of taxes**

In their common form, motor fuel taxes were invented before 1920. With intercity auto and truck traffic growing dramatically, states were strapped in their efforts to pay for general funds for desperately needed highways. Because the need for and costs of state roads varied roughly in proportion to traffic levels, it made sense to cover the costs of those roads by charging the users. Tolls were considered at the time the fairest way to charge users, but they had a major drawback. The cost of collecting tolls—constructing toll booths, paying toll collectors, revenue losses from graft and pilfering, and delays imposed on travelers—absorbed such a large proportion of toll revenue that in some instances they exceeded the revenue generated. Further, developing interconnected road networks required the construction and maintenance of expensive-to-build links (over waterways or through mountain passes) and some lightly used links that could not be financed entirely by locally generated toll revenues.

The solution to this dilemma came when states, starting with Oregon in 1918, adopted an alternative form of user fee: motor fuel taxes. The state charged for road use in rough proportion to motorists’ travel, and charged heavier vehicles more than lighter vehicles because they used more fuel per mile of travel. Still, fuel taxes did not quite match tolls in terms of fairness, because they did not levy charges at precisely the time and place of road use. However, fuel taxes cost much less to collect and administer than tolls, and they soon became the nation’s principal means of financing its main roads. When the federal government decided in 1956 to implement intercity highways on a national scale, it increased federal fuel taxes and created the Federal Highway Trust Fund, emulating the user-pays principle that had been successful in the states.

Recently, however, two major changes suggest that even if the people and government of the United States prefer to continue to rely on user-based financing, the time may have come to end reliance on motor fuel taxes and to introduce a new approach. The first change is the result of recent improvements in technology. There no longer is a need to rely on toll booths and the manual collection of coins and bills to implement a more direct system of user fees. By charging road users more precisely for particular trips at particular times on specific roads, electronic toll collection—known in some regions as EZPass and FASTRAK—is efficient and widely accepted by motorists.

The second change is more subtle but probably more important. Reliance on the taxation of motor fuels as a source of program revenue in an era of growing concern about fuel efficiency and greenhouse gas emissions creates an unacceptable conflict among otherwise desirable public policy goals. Although higher taxes on fuels might in the near term generate more revenue and encourage the production of more fuel-efficient vehicles that emit less carbon dioxide, the seemingly beneficial relationship between taxation and the achievement of environmental goals breaks down in the longer term. If the nation succeeds in encouraging the vast majority of truckers and motorists to rely on plug-in hybrids and, later, on electric vehicles, vehicles powered by fuel cells, or even vehicles powered by solar energy, it will still be necessary to pay for road construction, maintenance, and transit systems. It can be argued that users should still logically be responsible for bearing their costs, even if they drive nonpolluting vehicles. The nation should not continue programs that discourage government pursuit of dramatic gains in energy efficiency over the longer term for fear that it will lose the revenue needed to build and operate highways and mass transit systems. And quite simply, the nation cannot rely on the gas tax as a road user fee when cars are no longer powered by gasoline.

**The road to direct user charges**

Motor fuel taxes can continue to provide a great deal of needed revenue for a decade or two. But several types of more efficient, and more equitable, user charges are ready to be phased in. For example, current technology will enable government agencies to institute vehicle miles traveled (VMT) charges as flat per-mile fees. Gradually, agencies could charge higher rates on some roads and lower rates on others to reflect more accurately than do fuel taxes the costs of providing facilities over different terrain or of different quality. This would end cross subsidies of some travelers by others and make travel more efficient by encouraging the use of less congested roads. Unlike gasoline taxes, more direct road user charges also could vary with time of day, encouraging some travelers to make a larger proportion of their trips outside of peak periods, easing rush hour traffic.

In the short term, direct user fees could simply replace fuel taxes in a revenue-neutral switch, but they are attractive, in part, because they can become more lucrative as
travel increases, while allowing charges to be distributed more fairly among road users. Initially, some vehicle operators might be allowed to continue paying motor fuel taxes rather than the newer direct charges, but eventually gas and diesel taxes would be phased out.

Several countries in Europe already are electronically charging trucks directly for miles they drive on major highways, and the Netherlands intends to expand its program to passenger cars. In the United States, Oregon and the Puget Sound Regional Council in the Seattle area have conducted operational trials demonstrating the feasibility of VMT fees, and the University of Iowa is carrying out six additional trials in other parts of the country. The results of these trials are quite encouraging, but questions remain, including questions about optimal technologies.

One thing is clear: Innovation is afoot. In the Oregon trial, for example, a clever innovation allowed drivers of vehicles equipped for the trial program to “cancel” their ordinary fuel taxes when filling up their tanks at service stations and to instead charge VMT fees as part of the bill. This enabled participating and nonparticipating vehicles to function in similar ways.

The most sophisticated trial systems make use of vehicles that are equipped with global positioning system (GPS) satellite receivers and digital maps that enable charges to be varied across political boundaries, by route, and by time of day. But GPS signals are not always available, and these systems also incorporate redundant means for metering mileage. For example, they may have a connection to the vehicle odometer or a link to an onboard diagnostic port that has been included in cars manufactured since 1996 to comply with environmental regulations. None of these systems is perfect, all have implementation costs, and not every vehicle is yet equipped to accommodate each device.

It also is clear that any technological innovation affecting hundreds of millions of vehicles is bound to be complicated by many social and political concerns. Indeed, one of the greatest barriers to the implementation of VMT fees may well be the widespread perception that this approach constitutes an invasion of privacy. It is not yet apparent that metering road use is any more threatening to privacy than using cell phones to communicate, but there is genuine concern that somehow the government will be able to track the travel of each citizen without his or her knowledge. Most technology and policy experts agree, however, that these systems can be structured so that privacy is maintained—for example, by maintaining records in individual vehicles rather than in a central repository and by erasing them after payments are made. It also is possible that many motorists would prefer to forgo privacy protection in order to have access to detailed bills showing each and every trip so that they can audit their charges to be sure they are paying for trips they actually made.

Such issues will need to be addressed sooner rather than later in a reasoned public discussion. For its part, Congress, as it debates the new transportation bill, should consider alternative paths that can be followed in order to ease the adoption of direct user fees. Of course, Congress could still reject such a transition and instead simply raise motor fuel taxes to provide needed revenue. Or in a less likely move, it could commit the nation to funding an increasing portion of its road and transit bills from general revenues.

But the hope in many quarters is that Congress will accept the opportunity and begin specifying the architecture of a national system of direct user charges. This early effort could address a number of questions, such as whether there should be a central billing authority, whether travelers should be able to charge their road use fees to their credit cards, and whether drivers should pay VMT fees each time they fill up the tank or pay them periodically, as with vehicle registration fees. Congress also should consider expanding the current trials in various locations to demonstrate some technology options on a much larger scale. Even better, it should complement such efforts by putting an early system into actual application on a voluntary or limited basis.

For numerous reasons, then, the time is near for Congress to act, and for citizens to ensure that it does. The debate that is about to begin will indicate whether the nation’s system of governance has the ability to make complex technological choices that are both cost-effective and just.

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