BY ROBERT POOLE[1]

VMT CHARGES AND THE FUTURE OF TOLL ROADS

In recent years the United States has seen growing transportation community support for shifting highway funding from fuel taxes to some kind of charge based on vehicle miles traveled (VMT). I served on the Transportation Research Board special committee that concluded that fuel taxes will not be viable as the country's primary highway funding source. That report was released in 2006. Three years later, the National Surface Transportation Infrastructure Financing Commission fleshed out that case and proposed that we begin a shift from fuel taxes to VMT charges.

I'M CONCERNED THAT TO DATE THE TOLL ROAD INDUSTRY HAS BEEN VIRTUALLY IGNORED BY THOSE WORKING ON THE TRANSITION TO VMT CHARGING.

While we are still a long way from persuading most elected officials, let alone the general public, of the need for doing this, I'm concerned that to date the toll road industry has been virtually ignored by those working on the transition to VMT charging. This is ironic, since toll facilities are already being paid for by charges based on miles driven rather than gallons consumed. This neglect of the toll-road sector may disguise a possible threat to the tolled sector. If all roads become, in effect, toll roads, why would we need separate entities operating that minority of all highways that were

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developed using tolls? If a universal VMT charging system existed, wouldn't all the state DOTs become, in effect, toll agencies?

That certainly need not be the case, I will argue here, because the kind of universal VMT charging system that many people have in mind is highly unlikely to be feasible. Instead of a utopian system based on a costly GPS box in every vehicle, I will suggest a much simpler approach to replacing fuel taxes, one which also implies a larger role for the toll industry.

Let's first review the case for replacing fuel taxes with mileage charges. The real value of fuel tax revenues has been trending generally downward for the last three decades, creating an ever-widening gap between highway funding needs and actual highway-user-tax revenue. This has occurred for two reasons: most fuel taxes are not indexed for inflation, and the average fuel economy of motor vehicles has about doubled during this period of time. And if the Administration's proposed new Corporate Average Fuel Economy (CAFE) regulations go into effect, fuel economy will double again by 2025, further demolishing highway-derived revenue. Moreover, federal policy increasingly calls for reducing the carbon-intensity of our economy, so there will likely be increased government support for alternatives to petroleum-fueled vehicle propulsion.

By contrast with fuel taxes as a declining funding source, charging by the mile for road use has a number of advantages. First, even if it's not indexed for inflation (as it should be), a VMT charge will inherently keep pace with the amount of traffic using the highway system. Second, it is independent of the propulsion source used by vehicles, so it will not be affected by changes in technology, whether imposed by government policy or by market forces. Third, a VMT charge can be different for different categories of roadway, so that

those choosing to use very costly roads (e.g., Interstates and freeways) can be charged more than those who use inexpensive roads (e.g., two-lane country roads and local streets). Fourth, thanks to all-electronic tolling, a variable-rate VMT charge can be used for congestion management, on those portions of the highway system where congestion is a problem.

That is a powerful set of advantages. In addition to those points, many of those now writing academic papers about VMT charges see them as a vehicle for another agenda altogether: as a way to impose new taxes on motor vehicles to compensate for their negative externalities. At the 2012 Annual Meeting of the Transportation Research Board (TRB), there were many papers and presentations along these lines. One academic explained how her team's proposed per-mile charge was constructed by separately estimating the cost of a list of negative externalities (conventional tailpipe emissions, greenhouse gases, congestion, noise, runoff, etc.) plus (almost as an afterthought) a small charge for the cost of maintaining the highway infrastructure. The total came to 6.4 to 9.6 cents per mile, with only 0.3 cents of that being the infrastructure cost—all the rest were externalities! It's also worth noting that those favoring this kind of approach refer to what they are advocating as a "VMT tax."

By contrast, the presentations from researchers involved with focus groups

and field experiments on VMT charges were far less grandiose. In a growing number of applied research projects around the country, ordinary motorists are being asked to consider (or simulate) operating a vehicle under various forms of per-mile charging systems instead of today's fuel taxes. The general thrust of these TRB presentations was on simplicity and on paying for the costs of building and maintaining the infrastructure.

For example, at the conclusion of one such study, the Texas Transportation Institute (TTI) researchers suggested implementing a three-tiered system aimed at gaining public acceptance of VMT charging:

- The base tier would be a flat annual fee based on an assumed level of miles driven. This presumably would be set somewhat higher than what many people drive, but has the advantage of requiring no technology on the car at all.
- The second tier, which people could opt into, would require an annual odometer reading, performed during the annual vehicle inspection. This would be attractive to those who drive less than the tier one assumption. It also requires no new technology in the car.
- The third tier would be aimed at those who drive partly out of state (and who would be over-charged if the fee was based solely on their annual odometer reading). They could opt for on-board mileage recording using technology that could distinguish between in-state and out-of-state miles driven, administered by a third-party vendor (for privacy protection reasons).

Notice what these simple VMT-charge systems omit. There is no charging a different rate for different categories of roadway. There is no different charge for different sizes and weights of vehicles (except presumably for heavy trucks). There is no way to do congestion pricing. And there is certainly no way to fine-tune the charge to each vehicle, based on its noise level, tailpipe emissions, greenhouse gas production, number of occupants, etc. Yet even the very simple system proposed by the TTI researchers still poses some challenges to widespread acceptance by the public.

In the real world, making such a fundamental change in a highway funding system that has endured for over 90 years will be very difficult. Much of the public is highly skeptical of

government, especially when it comes to "taxation," what they see as Big Brother-type invasions of privacy, and "social engineering." Hence, the more functions that we expect a mileage-based user fee system to support, the more complex it will be and the greater the odds of political rejection. In particular, a system that requires a GPS box in every vehicle (which is believed to be the only way to have detailed enough information to charge for each type of roadway and to charge for congestion) will almost certainly face political rejection on Big Brother grounds (even though there are clever ways to protect people's privacy in such systems).

Consequently, I think it is incumbent on those of us who favor mileage-based user fees to do some hard thinking about the trade-offs involved. We can imagine a federal law mandating a costly GPS box in every car that distinguishes not only which road each mile is driven on but which lane is used, and that also knows the vehicle's propulsion source, weight, and even the number of passengers on board, so that the charge can be fine-tuned to account for every possible impact. But since that type of road user charging system has close to zero chance of being implemented, I don't think it's what any of us in transportation should be advocating.

Let's refocus on what we are trying to accomplish by switching from gallons consumed to miles driven. The number one problem facing our roadway system is the need to replace our current obsolescent highway funding system with one that is robust and sustainable for long term. Unless we can transition to such a funding system, our hugely valuable, multi-modal highway infrastructure is very much at risk.

In my view, urban traffic congestion (especially freeway congestion) is the second major problem we need to address. The 2011 TTI *Urban Mobility Report* puts the annual cost of just the lost time and wasted fuel at $101 billion nationwide. When you add to that the

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lost productivity in urban areas, the true cost is likely double that amount.

There is, of course, a set of negative externalities from the use of motor vehicles—smog and particulates, CO2 and other greenhouse gases, noise, and runoff. My first suggestion for simplifying the mileage-based user fee transition is to leave those problems to be solved by other tools. Catalytic converters and Corporate Average Fuel Economy (CAFE) regulations have already led to major reductions in conventional and CO2 emissions, and the latest CAFE standards will cut them in half again over the next several decades. Noise and runoff are increasingly being addressed by design standards required for environmental mitigation. Therefore, one huge simplification would be to eliminate this set of externalities from the system requirements for VMT charging.

Freeway congestion is easily addressed with current technology — low-cost transponders and license-plate imaging. This kind of charging could be phased in a lane at a time, starting with individual express or HOT lanes and building those into a seamless network of lanes with variable pricing, aimed at trips with the highest time value.

Once such networks are in operation, it would then be time to pursue modest peak-period pricing of the rest of the freeway system, to extend the benefits of pricing to the majority of far less time-sensitive trips. Again, no costly mandated GPS box is required for any of this.

Transponder and license-plate tolling can also be extended to limited-access inter-city highways, such as the Interstates. Here the rationale would be the growing need to reconstruct this most important component of our highway system as it begins wearing out, estimated to cost $2-3 trillion. Tolling would be added to an Interstate corridor only when that corridor needs significant rebuilding and modernization. I have called this approach "value-added tolling." It is being proposed now for a major reconstruction of I-70 across Missouri, Illinois, Indiana, and Ohio, in a project that would include the addition of truck-only lanes. Value-added tolling is the underlying principle of the revenue-use restrictions in the two federal pilot programs that permit using tolls for Interstates — one aimed at reconstructing worn-out Interstates and the other to fund the creation of brand-new Interstate routes (such as the proposed I-11 paralleling I-5, starting with the link between Phoenix and Las Vegas).

If we can address the funding and pricing of limited-access highways and freeways via low-cost all-electronic tolling, that leaves only the need for a baseline VMT charge to pay for all other (far less costly) roadways. And that need could be met by the kind of simple system based mostly on odometer readings that was suggested by the TTI researchers.

This approach would essentially convert all U.S. limited-access highways (freeways, Interstates, and some other principal highways) into toll roads, using AET. Doing so would open the door to the expertise of the toll industry, both government toll authorities and long-term toll concession companies. So instead of having its future put at risk by the transition to VMT charges, this approach positions the toll industry to take the lead in making the transition.

Even with this far less grandiose approach to VMT charges, there is still a huge amount to be done in figuring out how to make the transition. Would this transition process be led by the U.S. DOT or by state DOTs? What would

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the federal role be if each state can oversee charging all vehicles for all the miles they drive in each state? And how do we convince the public and their elected representatives that this transition is really needed?

Let me also offer a recommendation on semantics. Some advocates of per-mile charging use the term "VMT tax" or even "vehicle mile tax." Most of this is done carelessly (though some central-planning types really *do* want a VMT tax as a way to make driving so expensive that there is a lot less of it). If what we sell people is a VMT charge — whose purpose is to properly pay for the construction, operation, maintenance, expansion, and eventual reconstruction of roadways — the public can be brought to see that this is a good replacement for a fuel tax that is running out of steam. It would restore the users-pay/users-benefit principle that is less and less true of fuel taxes, given how much of that revenue is now diverted to non-highway uses. And it is entirely consistent with the continued growth and use of toll roads.

On the other hand, if we persuade people that what they need is a VMT tax, aimed at accomplishing a host of social-policy objectives, we will face much greater resistance from the driving (and voting) public. And if paying by the mile gets turned into that kind of tax, toll road providers risk being converted into tax collectors for social engineering. Taxing highway travel in order to discourage it is contrary to the purpose of toll road providers, which is to provide high-quality mobility at a fair price. In that sense, paying a future highway toll bill will become accepted just as paying the electric bill, the mobile phone bill, and the water bill are now.

CONCLUSION

My bottom-line to the toll road industry is simply this. Let's not shoot ourselves in the foot by being wedded to a high-tech solution that can do anything a transportation planner can dream up. Let's look past the idea that a single high-tech system must be defined and imposed, to solve all highway funding, congestion, and externality problems. That path almost certainly will lead to political failure — as well as threatening the future of the toll road industry. By separating the problem into its component parts, we can address each of them in ways that are cost-effective and politically feasible.

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