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Is 21st-Century Toll Collection Cost Competitive with Fuel Taxes?

By Robert W. Poole, Jr., Director of Transportation Studies, Reason Foundation

The single biggest problem facing the U.S. highway system is inadequate funding. The U.S. DOT's latest biennial "conditions and performance" report finds that just to maintain the current state-of-repair of highways and bridges, and to prevent congestion from getting any worse, would require annual spending of \$101 billion, compared with the current \$91 billion being spent at federal, state, and local levels. And to improve performance, via projects that pass a basic benefit/cost filter, we could be productively investing \$170 billion per year.

For the Interstate system alone, the same report finds we are about \$4 billion a year short of maintaining the status quo and that we could productively invest an additional \$43 billion per year to improve Interstate performance—by reconstructing worn-out corridors, rebuilding bottleneck interchanges, and adding capacity (such as truck-only lanes and express toll lanes). Long-term P3 concessions are a critically important project delivery tool, but they will only address the major funding shortfall if they are toll concessions, generating large amounts of new highway revenue to supplement gradually shrinking fuel tax revenues.

I'm preaching to the choir writing this for Public Works Financing readers, but we will never get where we need to go for reconstructing and modernizing the Interstates unless we can persuade highway users that toll-financed modernization is genuinely in their interest. And that means persuading powerful interest groups like AAA and the American Trucking Associations (ATA).

One of the strongest arguments raised by ATA is that fuel taxation is a highly efficient means of

raising highway revenue, while toll collection is highly inefficient (i.e. very costly). In May 2007 ATA's American Transportation Research Institute came out with a major report on highway funding alternatives. Its assessment of tolling asserted that collecting and enforcing toll payments consumed 22% to 33% of the revenue generated, which they compared to an estimated 1% of revenue used to collect fuel taxes. Such figures have become part of the conventional wisdom, even appearing in a 2011 report on this subject from the Transportation Research Board (NCHRP Report 689).

This conventional wisdom is being challenged by a new study this month from the Reason Foundation. (http://reason.org/files/dispelling_toll_and_gas_tax_collection_myths.pdf). Based on original research on the cost of collecting both types of revenue, it finds that the real cost of collecting revenue via fuel taxes is actually about 5% of the revenue. And it also finds that 21st-century all-electronic tolling (AET) can cost as little as 5% of the revenue collected.

The principal author of the study is Daryl S. Fleming, PhD, PE. Dr. Fleming has been helping implement electronic toll collection for 35 years as a researcher and consultant. He and one of his three co-authors helped develop the world's first AET system, implemented 15 years ago on the then-new Highway 407 electronic toll road in Toronto.

Dr. Fleming and colleagues critically analyzed three recent reports that assessed the cost of collecting highway revenues via tolling, including the ATRI report and NCHRP 689. All three studies were primarily backward-looking, thereby capturing costs that are rapidly disappearing as toll facilities shift from cash to electronic tolling. The ATRI study also misleadingly lumped ferries and toll facilities together, and also counted one-time capital investments as part of annual costs, rather than amortizing them over their useful life.

Fleming and his co-authors also identified and studied in some detail three U.S. toll operators that have pioneered cashless all-electronic tolling: Colorado DOT's I-25 managed lanes, the Fort Bend County Toll Road Authority in Texas, and the Tampa-Hillsborough Expressway Authority. Despite all three being small agencies, they were able to achieve the low costs of collection that might be expected of much larger agencies that can spread fixed costs over a larger volume of transactions. Extrapolating their findings to larger toll roads, they estimate that AET can achieve a cost of toll collection as low as 5% of the revenue collected, using streamlined business models.

Fleming and colleagues also used information from a recent National Cooperative Highway Research Program report (and other sources) to re-estimate the cost of collecting highway revenue via per-gallon fuel taxes. Thanks in part to recent information on fuel-tax evasion and exemptions, as well as tax costs hidden within the fuel-delivery supply chain, they estimate that the true cost of fuel-tax collection is close to 5% of the revenue collected—i.e., in the same ballpark as best-practice AET.

These findings have major implications for the future of highway finance and funding. They directly counter the trucking industry argument that shifting from increasingly inadequate per-gallon fuel taxes to a per-mile charging system would be ruinously expensive. Consequently, these findings give advocates of mileage-based user fees a stronger case for proceeding with further research on

alternative ways of making such a transition.

In this context the authors make a bold proposal. They suggest that this country begin the transition now, focusing on the limited-access highway system (i.e., urban expressways and major highways such as the Interstates). Doing this would not require any expensive new technology (such as a Big Brother GPS box in every vehicle). All it would take is today's low-cost transponders in vehicles and the installation of AET equipment at on-ramps and off-ramps. Each vehicle's miles driven would thereby be recorded and charged appropriately, based on vehicle type.

To be consistent with my recommended "value-added tolling" principle, this transition to per-mile charging would be phased in, corridor by corridor, as each Interstate corridor was reconstructed and modernized over the next two decades or so. No one would be asked to pay a toll to drive on existing, unimproved Interstates. They would only start paying once the corridor in question was rebuilt and modernized for better performance.

Needless to say, this report will be controversial. The very first media call I received upon its release was from Transport Topics, a trucking industry publication. Those who favor greatly expanded use of toll concessions should get familiar with this important new research.