

Finding a new way to fund highway infrastructure

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By charging vehicles according to distance traveled, governments can reverse the decline in fuel tax revenue, and help ensure that drivers make an appropriate contribution to the safety and costs of a high-quality road network.

Almost since the inception of motorized transport, fuel or “gas” tax has provided an important source of revenue for local and national governments. Indeed, in the US, such levies are a main source of finance for the entire highway infrastructure.

However, as vehicles become more fuel-efficient, this income is falling each year in real terms, creating a widening funding gap. The emergence of electric and hybrid cars is only accelerating the decline. Estimates for the US predict a cumulative federal highway and transit funding gap of close to 400 billion US dollars (US\$) between 2010-15, growing dramatically to about US\$2.3 trillion by 2035.¹

Regular fuel tax increases are extremely politically sensitive, and would have to reach unacceptably high levels to compensate for the lost income from the newest generation of vehicles. Fuel tax is also inequitable, as most of the costs of using a highway – such as surface and pavement damage, congestion, accidents, air and noise pollution – are tied more closely to the number of miles traveled than to the amount of fuel consumed. It is all too easy for drivers to buy their fuel more cheaply in one state/country before traveling through a neighboring geography, thereby contributing nothing to the tax pot.

Tolls have successfully been used to fund specific stretches of highway, but tolling is not a practical solution for a complete road network. In addition, a flat toll charge fails to reflect the environmental impact of different types of vehicles. A large truck causes far more wear and tear and pollution per mile than a small compact.

As policymakers consider alternative ways to pay for roads and bridges, they are increasingly turning to fees on vehicle miles traveled (VMT). Several US states are evaluating this approach via pilot studies, while VMT is already in place for certain categories of heavy goods vehicles in Germany, Austria and Switzerland, and is set to be introduced in France in 2014 and Belgium in 2016. The Netherlands is going further, with plans for a comprehensive VMT system by 2018, incorporating both private and commercial vehicles.

These examples are delivering some valuable lessons on how to administer the fee, the appropriateness of the available technologies, the reactions of the public, businesses and the media, and the actual revenue derived.

¹ *Paying Our Way, A New Framework for Transportation Finance*, Report of the National Surface Transportation Infrastructure Financing Commission, 26 February 2009.

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Implementing an effective VMT fee model

A VMT fee can be a simple flat charge for each mile/kilometer traveled, or a charge that rises in increments when the vehicle reaches specific mileage levels. Larger and/or heavier vehicles could also be charged higher rates, reflecting the increased damage they cause to the infrastructure and the environment. The charges can vary according to the particular stretch of road and the time of the journey, to reduce congestion and pollution by encouraging targeted groups to travel at less busy hours.

To minimize resistance from people living in suburban and rural areas (who are more dependent upon cars), there could be a lower fee on highways and rural roads than on city roads.

Rather than installing electronic toll collection points on every road, a way to track usage and time of travel could be via Global Positioning Systems (GPS) fitted in vehicles, with payment made through the internet or at terminals within motorway service stations or rest areas.

The German road user fee, called LKW-MAUT (Lastkraftwagen-Maut, or ‘truck-toll’), which was introduced in 2005, uses GPS. The fee applies to trucks weighing 12 or more tonnes and is dependent upon the toll route, the pollution class of the vehicle, its weight and axle size.

Not surprisingly, data privacy is a hot button issue for both public agencies and the traveling public. Given that usage information could reveal individuals’ whereabouts and movements, system designers need to clarify who owns the data and ensure that it is securely transmitted to the administering agency for billing and collection. One US pilot study in the state of Oregon only collected necessary data for mileage fees, and did not capture the vehicles’ total travel history.

Interoperability is another factor, to ensure charging for mileage from drivers from outside of the country (or state, in a federal system). The proposed new Belgian system is also compatible with neighboring countries’ toll collection systems.

Building a VMT infrastructure is inevitably costly, with significant investment in hardware and systems, as well as ongoing administration costs to bill and collect fees relating to billions of transactions. The benefits should far outweigh these costs, many of which are one-off, upfront expenses. In the US at least, there also has to be strong direction over how the fee revenue is spent, to ensure optimal investment in the road infrastructure.

Opportunities for private-public partnerships

The imminent French and Belgian VMT systems both involve a significant level of private sector finance. In France, one private partner will be responsible for the whole system and manage the 15,000 kilometers of highway. The toll service system is to be provided by French petrol companies, which are also responsible for providing the on-board technology and other roadside travel services.

Similarly in Belgium, a private partner is to absorb most of the project risk, paying for design, construction, maintenance and collection of payments. The public sponsor reimburses the provider on a quarterly basis, subject to achievement of agreed performance standards.

Although many of the trials are at an early stage, initial results suggest that VMT has the potential to close the funding gap. Two recent national Commissions within the US (Policy and Finance) concluded that VMT is the only suitable alternative to fuel tax that can improve both revenue and efficiency. Additional benefits include more efficient use of transportation infrastructure, a cleaner environment, lower energy consumption, and higher productivity due to shorter journey times.

A full-scale transition may take several years, and requires collaboration between regional and national agencies and private investors and providers, as well as public understanding and acceptance of the rationale and benefits of VMT.

Main goals of a VMT (vehicle miles traveled) fee model

- to generate sufficient funding to meet national road infrastructure investment needs and safety goals
- to reduce congestion, pollution, total vehicle trips and average journey distances
- to reduce commercial vehicle travel times, thus raising productivity
- to ensure that vehicle charges accurately reflect their environmental impact (i.e. congestion, air pollution, road and pavement damage)
- to satisfy data privacy requirements.

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