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Funding the Department of Transportation in a connected-car era

With Sen. Barbara Boxer (D-Calif.) intent on introducing a transportation bill as early as April, lawmakers are scrambling to bail out the transportation trust fund—a fund which may fall short of its obligations by August, according to U.S. Transportation Secretary Anthony Foxx. Citing widespread congestion and poorly preserved roads, bridges, and tunnels, some would argue for raising fuel taxes to pay for maintenance and expansion of highway and public transportation systems. But most Americans strongly oppose increased fuel taxes because state and federal governments have a well-documented record of misspending transportation dollars.

A more equitable and more accountable solution is to replace fuel taxes with a vehicle miles traveled (VMT) charge—an alternative now feasible, thanks to the birth of telemetry-based car networks. The state of Oregon already pilot-tested this technology, and earlier this month **Secretary Foxx announced his goal** of moving toward vehicle-to-vehicle communication technology. Look for federal regulators to propose guidance on how connected cars should correspond with other cars and infrastructure.

Connected cars offer improved reaction times for first responders following an accident, stolen-vehicle tracking, and GPS navigation. As technology evolves, automobile accidents and emissions may decline as well. The innovation could also boost transportation funding to help improve the nation's infrastructure, reduce traffic congestion, eliminate the gas tax, and encourage a more efficient use of tax dollars.

Connected car technology enables on-board units to record mileage and charge drivers for using all roads, not just limited-access highways. The U.S. Department of Transportation's National Surface Transportation Infrastructure Financing Commission (appointed to propose solutions for highway funding problems) also recommends this approach. VMT charges can vary by location and time of day, making it possible to reduce congestion and earn revenue roughly proportional to how much drivers value each particular highway. VMT charge proposals may raise privacy concerns about where and when people travel, but pilot projects suggest solutions. One approach is to store travel data locally, within each vehicle, calculating charges before transmitting only those charges to the billing office.

The VMT charge is a more equitable way to ensure that all drivers—including those of hybrid or electric cars that pay less or no fuel tax—still share the cost of maintaining the roads they use. This also goes beyond initiatives to impose tolls on select, limited-access highways. In the past, the U.S. DOT promoted pilot projects to toll existing freeways, and encouraged states to allow public-private partnerships to finance new highways with tolls. Although private companies now manage toll roads in several states, public opposition thwarted attempts to charge tolls on existing freeway lanes. The public perceives imposing tolls on some freeways but not others, as inequitable.

It's also crucial to understand that when one highway requires a toll, traffic spills over to alternate routes. These diversions produce greater congestion on non-tolled highways while eliminating some of the revenue that tollways generate to cover costs. Charging for all highways is more equitable and would reduce unintended traffic diversion.

With clear market signals from VMT charge data, policymakers can make better data-driven decisions to target spending on the roads that require maintenance or expansion.

Some argue this will result in reduced funds for public transportation; however, evidence suggests that subsidized agencies do no not manage transit efficiently (e.g., running trains and busses with too many empty seats and not keeping costs under control). Instead of relying on buses, which can be cost-effective in cities with moderate density, some cities squander billions in subsidies to invest in urban rail systems. Compared to locations where rail systems are vital to mobility—such as Tokyo, New York, London, and Paris—most U.S. cities have lower population density. Furthermore, most U.S. rail systems built after 1970 don't attract enough riders to cover operating costs: during that time, the share of commuters who drive to work actually increased in 12 out of 15 cities with rail systems. Reduced subsidies force agencies to more efficiently manage transit.

Using connected car technology to replace fuel taxes with VMT charges will enhance transportation efficiency in several ways. Market-clearing prices may reduce or eliminate highway congestion. Incentives may prompt drivers to better manage the time when they travel, take fewer trips, car pool or switch to public transit. Prices based on demand also provide better information and incentives about where to build highways. If drivers and public transportation riders paid market prices for each trip, the choice of how to travel would better reflect preferences and resource scarcity, which ultimately leads to greater mobility.

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