

TOP STORY

States have historically relied on motor fuel taxes to fund highway infrastructure, but with revenue declining, cash-strapped states could turn instead to high tech "road user fees" to build and fix our roads.

SNCJ Spotlight

Ridin' with a tax collector onboard

With gasoline hovering at \$2 a gallon these days, owners of gas guzzling vehicles are being forced to take a second look at more fuel-efficient transportation. And with buyers no longer forced to compromise on space as they did when purchasing the innovative Honda Insight or Toyota Prius they can now satisfy their lust for size, power and fuel economy by choosing hybrid full size pickup trucks, SUVs and high performance sedans. But transportation experts say the large-scale acceptance of these new fuel-efficient vehicles will also have a long-term impact on the nation's transportation infrastructure.

The historical backbone of state transportation revenue has been the motor fuel tax. This tax has declined annually as inflation has reduced its value, and as drivers have steadily purchased more fuel-efficient vehicles. This decline will accelerate even more if and when consumers demand en masse alternative fuel vehicles, such as those powered by hydrogen fuel cells.

CALIFORNIA Governor Arnold Schwarzenegger (R), recognized the growing demand for alternate fuel vehicles this year when he signed an executive order creating a public/private partnership to develop a network of 150 to 200 hydrogen-fueling stations throughout California. The executive order calls for approximately one station every 20 miles on major highways. "We are the caretakers of our golden state, and the hydrogen highway will help us protect our extraordinary coastline...spectacular forests and our wonderful mountains and deserts," said Schwarzenegger in April 2004.

All of the new fuel efficient vehicles are a worrisome trend for

transportation professionals who rely on petroleum-based gas tax revenue to maintain transportation infrastructure. In 1970, the average passenger car fuel efficiency rate was 11.8 miles per gallon; by 2002 fuel efficiency was up to 19.7 miles per gallon.

Mary Peters, Federal Highway Administrator for the Transportation Research Board in Washington D.C., acknowledged the problem at a January highway finance session, saying, "The bottom line is we cannot depend on fossil fuel-based taxes in the future." Peters suggests the solution to declining revenue is a "public utility model where we pay for what we use, based on the time of day we use it, and how many other people want to use it." In effect this would be a market-based solution for allocating a limited resource -- a congestion and pollution free roadway.

While all states are faced with this growing dilemma of declining revenue some are taking action, seeking feasible "utility models." In November 2001 the OREGON legislature created the "Road User Fee Task Force" to look at the problem. The MINNESOTA Department of Transportation followed suit with a study that examined alternative mechanisms for financing road and highway construction and maintenance, including how to charge users by where they traveled on public roadways utilizing a "users pay" principle rather than a flat fuel tax. Minnesota used an on-board computer, a differential Global Positioning System receiver, digital maps and map-matching software to compute the real time location of the test vehicles. Differential GPS uses a ground-based transmitter to supplement radio signals, from a constellation of satellites, to improve accuracy to less than a foot. This accurate position data enabled the computer to calculate the miles traveled, time of travel, road jurisdiction, and type. When roads and jurisdictional boundaries are in close proximity high location accuracy is required to resolve the vehicle location to a specific state and county. NEW JERSEY would be upset, for example, if vehicles were using their roads but the collection system was sending tax revenue to PENNSYLVANIA.

The final report published in September 2003 found that GPS had the desired accuracy in rural areas; however, the position accuracy was compromised in urban settings where tall buildings blocked satellite signals or signals bounced off buildings. Minnesota concluded that an electronic odometer was needed to track the miles traveled in downtown areas.

The study also found that the digital maps available in 2001 were not accurate enough to resolve closely spaced jurisdictions. "They are not designed for distinguishing roads at the levels required by a road usage charging system, and may lead to inaccurate and unfair charges," the report said. The study also recommended that additional testing be done when more accurate digital maps are available.

Working in parallel with Minnesota, the Oregon Road User Fee Task Force looked at 28 different revenue sources to replace the lost motor fuel tax revenue. The Oregon Legislature adopted the Task Force findings, which recommended a road user fee based on the distance traveled, phase in over twenty years. The fee would be calculated based on vehicle miles traveled using an electronic odometer and GPS location system, with the information downloaded over a wireless transmitter at the gas pump. Vehicles without the electronic odometer, such as transit vacation vehicle (RV's) from other states, or older vehicles without the internal electronics and computers, would continue to pay motor fuel taxes at the pump. An onboard Global Position System will determine when the vehicle is in Oregon.

In a follow-up to the Minnesota study, the University of Iowa's Public Policy Center has proposed a national six-year test using a more accurate GPS technique and smart cards to collect the data on board the vehicle. This data would then be transferred to a collection station using the removable smart card. This multi-state system will test the ability to charge long distance travelers by jurisdictions, county or state, on cross county trips. Pool funding partners also include, California, CONNECTICUT, IOWA, KANSAS, MICHIGAN, Minnesota, MISSOURI, NORTH CAROLINA, OHIO, Oregon, TEXAS, SOUTH CAROLINA, UTAH, WASHINGTON, and WISCONSIN. However, funding is contingent on passage of the federal Transportation Re-authorization Bill some time in 2005.

But systems that record where vehicles travel or where data is stored are major concerns for privacy advocates. "One key factor is whether the device will track location, or just the distance traveled," said Chris Jay Hoofnagle, Associate Director for the Electronic Privacy Information Center. "It's also important that the data reside in the car, if at all possible. If the data can be stored at the station, that creates a honey pot for law

enforcement information requests."

The Oregon Task Force also recognized privacy concerns, and developed a system designed to protect the vehicle owner's privacy, eliminating any possibility of their movements being tracked or transmitted to a third party. However, the Task Force also found that charging higher fees for traveling over certain congested highway segments was feasible, and should be tested. This may present additional privacy challenges.

But congestion pricing, coupled with user fees, fits the model proposed by Peters, who envisions an alternative motor vehicle tax system that allocates resources by time of day and the number of vehicles on the road. Oregon will test road pricing as part of a one-year alternative gas tax collection program to start in the fall of 2005. Vehicles belonging to 250 volunteers will be retrofitted during a pilot project in the City of Eugene, where three gas stations will be modified so gas pumps can accept data transmitted from the vehicle's onboard computers, and then calculate the appropriate gas tax.

"The most important thing is that this new system is not too much different from existing systems," says James M. Whitty, manager of Oregon's Office of Innovative Partnerships and Alternative Funding. "Drivers will fill up just like they do now, the only difference is how the gas tax is calculated." The tax will be based on miles driven, rather than gallons dispensed.

"We are the only state so far to come up with a concept that is affordable administratively doable, and technologically feasible," said Whitty.

But Whitty says he also expects other states to soon follow suit, specifically mentioning Texas, New York, Utah, and Washington as possible candidates for a similar test run in the near future. California could jump into the fray as well, with the recent appointment of John Borucki as the head of the state Dept. of Motor Vehicles by Gov. Schwarzenegger. Although Schwarzenegger has yet to take a stand in either direction, Borucki is a strong supporter of the "by-the-mile" tax system. That doesn't surprise Whitty at all.

"This is a real program," he says. "And a number of other states are looking at it real hard."

-- By State Net correspondent RUSS STEELE

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