POLICY BRIEF | INSTITUTE OF TRANSPORTATION STUDIES

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California's Electric Opportunity for a Road User Charge

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Issue

The Road Repair and Accountability Act of 2017 (SB1) addressed the shortcoming in road infrastructure funding by increasing gasoline and diesel taxes, and implementing additional registration fees for vehicles. SB 1 also introduced a new $100 annual registration fee for owners of zero emission vehicles (ZEVs) to ensure ZEV owners are contributing to the upkeep and use of California's transportation infrastructure. California is one of 20 states that have assessed fees on Battery-Electric Vehicles (BEVs) or Plug-in Hybrid Electric Vehicles (PHEVs) . However, as California transitions towards more fuel-efficient vehicles and away from vehicles that use gasoline and diesel, there is concern that the state's current approach to funding transportation infrastructure is unsustainable.

Key Research Findings

The $100 ZEV registration fee will not raise enough revenue to make up for the growing shortfall in infrastructure revenue as California's fleet becomes more efficient. As internal combustion engine (ICE) vehicles continue to become more fuel efficient, the revenue shortfalls will continue. The annual fee for ZEVs and PHEVs will help to make up lost revenue but raises less funding per vehicle than the current fuel taxes. The average vehicle in California pays about $180 per year in gasoline taxes, whereas a BEV would pay $100 per year, and an average PHEV would pay $150 per year. If California meets its goal of having 5 million ZEVs on the road by 2030 (all of which pay the $100 annual registration fee) and current projections of fuel efficiency improvements are accurate, funding for transportation infrastructure will still decrease by $500 million/year by 2030.

An annual ZEV registration fee does not abide by a "user pays" principle. A gasoline excise tax applies a fee proportionate to the amount of driving, which translates to a "user fee" for road use. However, an annual registration fee does not apply this principle, so no matter how much one vehicle uses the road, the same amount is applied towards repair and maintenance for that vehicle. Furthermore, drivers are dis-incentivized from driving more than is necessary with a "user pays" model, which aligns with California's Vehicle Miles Traveled (VMT) reduction goals . Drivers of ZEVs pay the same amount no matter how much they drive.

Road user charges for electric vehicles enable a sustainable funding mechanism without needing a transition away from the gasoline tax. Table 1 (on the next page) summarizes the gasoline tax, an annual ZEV registration fee, a ZEV fuel tax, and a road user charge (VMT fee) as potential funding mechanisms. A ZEV fuel tax would function like the gasoline tax but is prohibitively expensive to implement for electric vehicles. While the road user charge suffers from relatively high administration costs, its revenue generation is stable, it conforms with the user pays principle, and it is more equitable than the gasoline tax. The ZEV road user charge is an opportunity to transition to a sustainable funding mechanism for the future.

Key Research Findings (continued)

= Very Poor = Poor = Fair = Good = Very Good

	Traditional gasoline tax	Annual ZEV registration fee	ZEV fuel tax	Road User Charge
Revenue meets funding requirements?	SB1 has improved sustainability of funding.	Aligns neither with the gas tax nor with funding requirements.	Would address funding deficits from ZEV adoption.	
Responsiveness to inflation?				
Revenue stability?	Stability hindered by improvements in fuel efficiency and shifts towards ZEVs.		ZEV adoption solved. Fuel efficiency gains will continue to be problematic.	Robust to changes in efficiency and to adoption of ZEVs. Long-term VMT shifts could be problematic.
Administrative cost?				Higher costs due to hardware and fee collection. Potential to lower costs exists (e.g., telematics).
User pays?	Efficiency benefits address some externalities but detract from stable funding.		Identical to gasoline taxes for all alternative fuel vehicles.	
Equitable?	Gas tax is relatively neutral as it closely aligns with "user pays" principle.		Identical to gasoline taxes for all alternative fuel vehicles.	Less regressive than the gasoline tax: lower income users tend to pay slightly less.

Table 1: Impact of transportation infrastructure funding mechanisms

Further Reading

This policy brief is a summary of the findings from "Assessing Alternatives to California's Electric Vehicle Registration Fee" report authored by Alan Jenn (University of California, Davis), which can be found at: https://www.ucits.org/research-project/assessing-alternatives-to-californias-electric-vehicle-registration-fee/

More information about electric vehicle and transportation policies can be found at the UC Davis Policy Institute for Energy, Environment and the Economy (*https://policyinstitute.ucdavis.edu)* and the UC Davis Plug-in Hybrid and Electric Vehicle Center (*https://phev.ucdavis.edu).*

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