Equity Impacts of Fee Systems to Support California ZEV Sales

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Question
Can California provide a sustainable funding source for the Clean Vehicle Rebate Program (CVRP) by applying new vehicle purchase fees in an equitable way?

Background
California wishes to accelerate the adoption rates of Zero Emission Vehicles (ZEVs) and transitional ZEVs (TZEVs). California’s ZEV mandate requires that 22% of new vehicle sales must be ZEVs or TZEVs by 2025. The CVRP provides $5,000 for purchasing new Fuel Cell Vehicles (FCEVs), $2,500 for Battery Electric Vehicles (BEVs), and $1,500 for Plug-in Hybrid Electric Vehicles (PHEVs). Senate Bill 1275 places a cap on household income in order to receive a rebate, and reduces rebate amounts for the top tier income group. Purchase incentives may be needed for many years, until the new technology costs associated with manufacturing these vehicles decrease.

Goal
This research creates potential revenue streams that can pay for new vehicle rebates issued through California’s CVRP. The goal to generate $200 million is thought to be sufficient out to 2018, with increased funding requirements as ZEV/TZEV sales grow.

Fee Structure Scenarios
This research created six fee structure scenarios based on various combinations involving household income, vehicle emissions, and MSRP to generate revenue by assessing a new vehicle purchase fee on poor emitting vehicles. Each scenario must generate $200 million to fund California’s CVRP (to 2018), with a minimum $100 fee.

The Data Set
The data came from the 2010-2012 California Household Travel Survey, encompassing 42,431 households, over 70,000 vehicles, and divided by self-reported income groups. Data was filtered to study only 2011-2013 model year vehicles (some 2013 vehicles were available for early purchase). Vehicle MSRP and fuel economy (converted to g CO2/mile) was obtained from Edmunds.com.

Results and Conclusions
• A $140 flat fee per non-ZEV purchased would be sufficient to fund California’s CVRP at the $200 million level, through 2018.
• Alternatively, a flat 0.5% tax on vehicle price would also achieve this.
• Exempting households earning < $75,000 shifts the average fee for other households to $200+ per vehicle. Combining the $75,000 income exemption and < 400 g CO2/mile emissions requirement results in a $50 average fee for those lower income households (with some paying nothing and others paying more than $100 per car).
• Exempting vehicles with MSRP < $27,000 has a significant effect, since 55% of all new vehicles purchased were below this price. Household average fees rise in direct proportion to income. Also, requiring vehicles to have < 400 g CO2/mile does not substantially change this result.
• CO2 emissions fees can send a signal to buyers regarding the CO2 impacts of their purchases. However, varying fee structures by household income or vehicle MSRP can have a significant impact on the distribution of fees across household income levels.
• Excluding vehicles emitting < 250 g CO2/mile has a small impact on the average fees for vehicles emitting 250+ g CO2/mile, but may be an important element that highlights to consumers which models achieve zero fees.
• Any incentives or fee systems should be included as part of the information on the car window sticker so it is obvious at time of sale.
• Lower income households buying a new car use a large share of their income (neglecting financing options to spread out costs over time). Such households may be quite sensitive to incentive schemes for purchasing cleaner vehicles.
• Overall, it appears possible to construct vehicle fee systems that raise the $200 million (to 2018) with greater impacts on higher income households.

Emissions and MSRP per Household Income

Funding Projections

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