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Authors

Fulton, Lewis
Schiffman, Julie
Tal, Gil

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Can California Sustain Its Commitment to Providing Zero-Emission Vehicle Rebates?

Lew Fulton, Julie Schiffman, and Gil Tal
Institute of Transportation Studies
University of California, Davis

For more information, contact: Lew Fulton
lmfulton@ucdavis.edu

POLICY BRIEF

Issue

The State of California has developed a range of programs to accelerate the adoption of zero-emission vehicles (ZEV). California's ZEV mandate will require 15% of vehicles sold in the state to be ZEV or transitional ZEV (TZEV) by 2025¹. To incentivize the purchase of these vehicles, California established the Clean Vehicle Rebate Project (CVRP), which provides consumer rebates of \$5,000 for fuel cell vehicles, \$2,500 for battery electric vehicles, and \$1,500 for plug-in hybrid electric vehicles². Currently, revenues collected from California's Cap-and-Trade Program and motor vehicle fees fund the CVRP.

As ZEV sales increase, the amount of funding needed to provide rebates will likely increase as well. In FY 2015 – 2016, California allocated \$75 million to fund the CVRP, though the California Air Resources Board has identified the need for an additional \$55 million to meet demand³. Based on ZEV sales projections, it is assumed the CVRP will need \$200 million per year through 2018, and even more after that. A key question is how California will continue to fund the CVRP.

One potential mechanism for providing a stable source of revenue is applying a fee to non-ZEV/TZEV vehicle sales. A fee structure can be a powerful mechanism since it can generate a sustainable revenue stream to support incentives while also directly encouraging consumers to buy ZEVs via price signals in the marketplace. Additionally, fee structures can be developed to address equity concerns by minimizing impacts on low-income households.

Research Findings

To explore equity implications of a fee system in California, six alternative fee structure scenarios were developed, each capable of raising \$200 million per year. Vehicle fees in each scenario reflect varied assumptions related to vehicle CO₂ emissions, household income, and/or vehicle Manufacturer Suggested Retail Price (MSRP). Each scenario is described in greater detail in Table 1.

Across the six scenarios, the fee for different types of vehicles, and average fees for different income households varies considerably (Figure 1). Depending on the design, it appears possible to construct a fee system that raises \$200 million annually, with the average vehicle fee not to exceed \$150, and the maximum fee paid kept below \$250 per vehicle. The highest ratio of vehicle fee to vehicle MSRP in the scenarios is about 1.8%, with an average ratio of 0.5%. Other key findings include:

- Exempting very low-CO₂ emitting vehicles does not change the relative fee incidence on different income level households significantly, but does provide vehicle options with no fee.
- Exempting households that earn less than \$75,000 per year increases the average fee for higher-income households from about \$150 to over \$200 per vehicle.
- Exempting low-priced vehicles is another way to lower the average fee for lower-income households, but can result in exemptions for some high-CO₂ vehicles. Exempting only low-CO₂ vehicles for low-priced vehicles may provide a compromise in this regard.

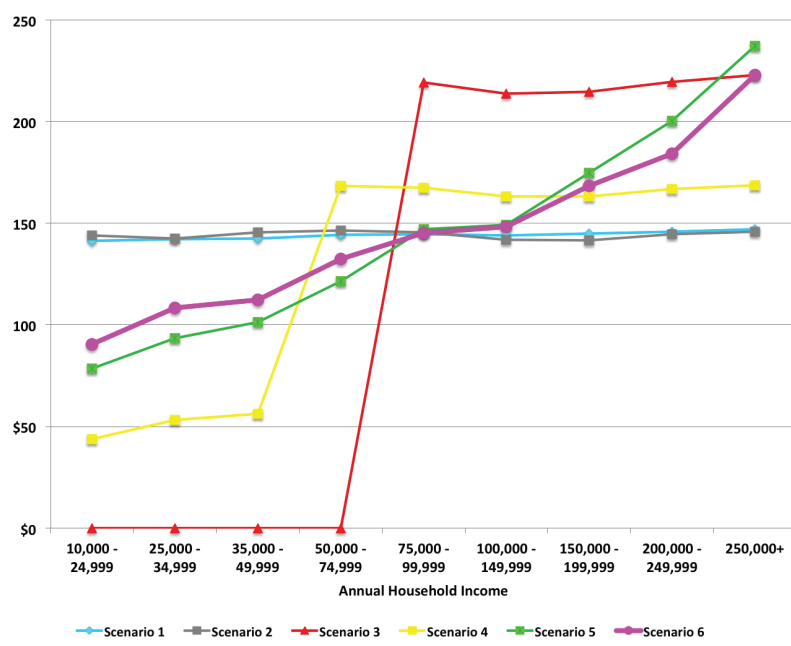
Table 1: Scenario Overview

	Scenario Description	Avg. Vehicle Fee	Avg. Vehicle Fee for HH Earning < \$75,000	Min. Vehicle Fee	Max. Vehicle Fee	Vehicle fee at 90th percentile
Scenario 1	No exemptions, all vehicles and incomes pay a fee	\$144	\$143	\$120	\$210	\$158
Scenario 2	Vehicles that emit < 250g CO ₂ /mile are exempt	\$144	\$145	\$135	\$230	\$168
Scenario 3	Households with income < \$75,000 are exempt	\$152	\$0	\$186	\$413	\$267
Scenario 4	Households with incomes < \$75,000 and vehicles emitting < 400g CO ₂ /mile are exempt	\$150	\$80	\$150	\$283	\$198
Scenario 5	Vehicles < \$27,000 are exempt	\$150	\$99	\$193	\$583	\$390
Scenario 6	Vehicles < \$27,000 and emit < 400g CO ₂ /mile are exempt	\$150	\$111	\$215	\$519	\$352

Future Research Considerations

The results of this study are most relevant to the CVRP through 2018. As a next step, a more detailed projection of California vehicle sales to 2025 by household type could be created that also incorporates expected evolution of income and demographic characteristics, as well as changing vehicle technologies and potential reductions in new conventional vehicle CO₂ levels. The role of consumer response to higher per vehicle fees may also become more relevant post-2018, as vehicle fee levels increase in response to growing ZEV sales and the rising funding level requirements for the CVRP. Other revenue raising concepts and their equity impacts are also worth exploring, such as annual registration fees across all owned vehicles (not just new ones) or vehicle in-use fees (e.g. fuel pricing, road pricing, or vehicle miles traveled fees) that could be related to both CO₂ emissions and to electric versus non-electric driving.

Figure 1: Average fee per vehicle per annual household income



Further Reading

This policy brief is drawn from the report, *Equity Impacts of Fee Systems to Support Zero Emission* by Lew Fulton, Julie Schiffman, and Gil Tal and can be downloaded at: <http://ncst.ucdavis.edu/project/ucd-dot-001>.

¹California Air Resources Board (ARB). July 10, 2014. Zero-emission vehicle standards for 2018 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles. arb.ca.gov/msprog/zevprog/zevregs/1962.2_clean.pdf.

²California Clean Vehicle Rebate Program (California CVRP). 2015. EV consumer survey dashboard. energycenter.org/clean-vehicle-rebate-project/survey-dashboard.

³California Air Resources Board (ARB 2016). April 4, 2016. Discussion Document, Public Workshop on the Development of the Fiscal Year (FY) 2016-17 Funding Plan for Low Carbon Transportation and Fuels Investments and the Air Quality Improvement Program. www.arb.ca.gov/msprog/aiqip/meetings/040416_discussion_doc.pdf

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