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Gender Imbalance in the Plug-in Electric Vehicle Market Threatens to Slow Future Market Growth

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POLICY BRIEF

Issue

Early sales and leases of plug-in electric vehicles (PEVs) appear to be skewed towards men.¹ Data from California's Clean Vehicle Rebate Project and reports from auto industry observers indicate the ratios of male-to-female buyers of PEVs were in the range of four-to-one to nearly six-to-one during the period 2011 to 2014.^{2,3} This is alarming given the ratio of male-to-female buyers for the full vehicle market is about one-to-one and deviations usually favor more women than men.

A skew toward men in the early PEV market should not be dismissed merely as "boys and their toys" motivated to purchase PEVs because of interest in new technology (even if, as this study supports, men are more likely than women to express an interest in PEV technology). Research on early PEV owners indicates that for their many similarities, females and males talked about their PEVs in ways that suggest female PEV drivers' experiences may carry less influence to shape the future of PEVs and charging infrastructure than males' experience. For example, females (more likely than males) point to PEVs as a practical tool to accomplish their daily travel and males (more likely than females) describe PEVs as a personal R&D project.⁴ If future PEV performance and charging infrastructure deployment are guided by early buyers' feedback, male-dominated feedback will shape a system to which women will have to adapt.⁵ Unless attention is paid to understanding how sex identity and gender roles affect both supply and demand for PEVs, there is a continued risk of limiting PEV market growth.

Research Findings

Among all new car buyers, females and males express the same level of interest in PEVs. Females and males who do not own PEVs express the same level of interest in a PEV as their next household vehicle. The male-to-female ratios are about one-to-one for plug-in electric hybrid vehicles (PHEVs) and battery electric vehicles (BEVs). Given females and males equally express interest in PEVs, there is no reason why a gender imbalance in PEV purchases should persist.

The primary impediment to continued PEV market growth is lack of awareness, regardless of gender. Both females and males report low levels of experience, name recognition, knowledge of how different PEVs operate, and awareness of vehicle charging and fueling infrastructure. In addition, a vast majority of respondents (regardless of gender) report no to little prior consideration of purchasing a PEV for their household.

Market growth can be increased by attending to the ways interest in PEVs converges and diverges between females and males. Asked for their assessments of PEVs and charging infrastructure, female respondents are more likely than male respondents to simply say, "I don't know." For example, female respondents are more likely to say they simply don't know enough about PEVs to offer an assessment of them. Males are more likely to offer some assessment, but to characterize PEVs or FCEVs as "risky." Both female and male respondents, on average, slightly disagree there is enough charging for PEVs: females

disagree slightly more strongly than males and females are more likely than males to say they don't know enough to offer an assessment.

Female and male respondents tend to agree air quality in the region they live poses a public health threat and they personally worry about it. However, females, more likely than males, talk about the connection between air quality and PEVs in terms of responsibility—their responsibility as individuals to affect larger outcomes and the responsibility of automobile manufacturers to sell a less polluting product. Males, more likely than females, will talk about the connection between air quality and PEVs in terms of its credibility—either skeptically if they believe not all emissions associated with electricity are being accounted for or optimistically if they imagine charging PEVs with solar electricity.

The same actions to prompt greater consideration and more purchases of PEVs may work for both females and males, but for different reasons. For example, more knowledge and experience of PEVs are required for people to assess whether a PEV is right for their household but increased knowledge and experience of PEVs may affect females and males differently. A female is more likely than a male to move from a status of “I don't know” to one of informed consideration and possible purchase of a PEV as her knowledge and experience of PEVs increases. In contrast, a male is more likely than a female to have

his existing assessment of PEVs challenged as his knowledge and experience of PEVs increases. The opportunity is to make his decision to buy a PEV seem less risky and to address questions of the credibility of PEVs environmental credentials.

In summary, new car buyers, women and men, seem to be equally interested in PEVs, they just arrive at that interest by slightly different paths. Returning to the air quality example, framing it as a matter of human health and providing information on the comparative effects of electricity vs. gasoline and diesel allows anyone—female or male—to act in a responsible, credible manner. It is just that responsibility may appeal to more women and credibility to more men. Ensuring PEV policies and programs recognize and address these gender differences will open the market for PEVs to everyone.

Further Reading

This policy brief is drawn from the “Are we Hardwiring Gender Differences into the Market for Plug-in Electric Vehicles?” research report by Kenneth S. Kurani, Nicolette Caperello, and Jennifer TyreeHageman with the University of California, Davis. To download the report, visit: ncst.ucdavis.edu/project/are-we-hardwiring-gender-differences-into-the-plug-in-electric-vehicle-market.

¹PEVs include battery electric vehicles (BEVs) that are powered only by electricity and are charged from the electrical grid and plug-in hybrid electric vehicles (PHEVs) that can both be powered by electricity from the grid and fueled with gasoline.

²Center for Sustainable Energy (2016). California Air Resources Board Clean Vehicle Rebate Project, EV Consumer Survey Dashboard. Retrieved 9/29/2017 from <http://cleanvehiclerebate.org/survey-dashboard/ev>

³Automotive Alliance (2013) Women and Autos: The Engine of the Auto Economy. January 30.

⁴Caperello, N., J. TyreeHageman, K. S. Kurani. Engendering the Future of Electric Vehicles: Conversations with Men and Women. In Bridging the Gap: Proceedings 5th International Conference on Women's Issues in Transportation. Paris. 14-16 April 2014. http://wiit-paris2014.sciencesconf.org/conference/wiit-paris2014/pages/Proceedings_The_5th_International_Conference_on_WiIT_1.pdf

⁵Donatelli, C. Driving the suburbs: Minivans, gender, and family values. *Material History Review* Vol. 54, No. 1, 2001, pp. 84-95.

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