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Plugging In: Exploring the Behavior of Early EV Adopters in California

A new generation of electric vehicles (EVs) are hitting the market across the United States. These vehicles are changing the EV landscape from one dominated by do-it-yourselfers and enthusiasts to one with mass market appeal, capable of achieving widespread adoption. Policy makers at all levels are supporting this shift, based on the belief that it can reduce the transportation sectors environmental impact, while at the same time maximizing the utilization of grid resources. The actual impact of mass EV adoption, however, will depend on how owners use their vehicles and interact with the grid. An examination of early EV adopters can shed light on these issues and provide insights into policy mechanisms that may be necessary to support desirable outcomes. Given this need, the California Center for Sustainable Energy (CCSE), in coordination with the California Air Resources Board (ARB), launched a longitudinal study of electric vehicle (EV) owners in California. This survey-based study is the largest of its kind and leverages the State's Clean Vehicle Rebate Program database to collect information on demographics, vehicle use, charging behavior, electric rate selection, and photovoltaic integration among EV owners. Early data has revealed valuable insights on the link between access to charging infrastructure, vehicle use, and vehicle charging behavior, willingness to pay for charging, EV-rate adoption and PV adoption. These preliminary findings have important implications for utilities and policy makers alike as they work to expand the EV market, while guiding owners toward behaviors that minimize grid impact and maximize greenhouse gas reductions.