

Impact of Electric Vehicle Adoption on Electricity Consumption and Generation:

Evidence from California

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ABSTRACT

The market share of electric vehicles (EV) is growing in the USA, and there are substantial numbers of federal, state, and county-level incentives for EV consumers. These incentives are in place primarily due to environmental concerns. This study focuses on two different but interrelated aspects of EV adoption. First, using monthly county-level data from 2010 to 2019, this study reveals that electric vehicles and their supportive infrastructures, such as charging stations, have a significant effect on residential and commercial electricity consumption in California. Second, analyzing electricity generation information by county, I find a significant negative relation between electricity usage and the share of electricity that comes from renewable sources. Although electric vehicles emit lower greenhouse gases (GHG) than conventional vehicles, they require a significant amount of electricity for charging. If the electricity generation does not involve renewable or cleaner sources, public spending on EV adoption may not contribute to a cleaner environment as much as expected.

Keywords: Electric vehicle adoption, Residential and Commercial electricity consumption, Renewable electricity generation

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