THE UTILITY ROLE IN DRIVING POLLUTION OUT OF THE TRANSPORTATION SECTOR

NRDC

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Are Electric Vehicles Green?

The graph shows lifetime fuel use and battery manufacturing greenhouse gas emissions (g/mi) for different vehicles over two years (2015 and 2050). The vehicles compared are CV (29 MPG) and PEV (48 MPG), both with base GHG* emissions. The bar graph also includes emissions for PEV with lower GHG* emissions in 2050.
Are Electric Vehicles Green?
Grid Impacts from EV Charging

% of PEVs Requiring Upgrade

- PG&E: 0.19%
- SCE: 0.23%
- SDG&E: 0.09%
- All IOUs: 0.19%
Benefits from Widespread EV Adoption

Figure 2: NPV Cumulative Societal Net Benefits from NY PEVs – 80x50 Penetration

NPV Cumulative Net Benefits from Plug-in Vehicles in New York
(80x50 Scenario - Off-peak Charging - Low Carbon Electricity)

$ billions

- PEV Owner Savings
- Utility Customer Benefits
- Social Value of CO2 Reductions

Year
- 2030
- 2035
- 2040
- 2045
- 2050

$0
$10
$20
$30
$40
$50
$60
$70
$80
Electric Vehicles as Energy Storage
Electric Vehicles as Energy Storage
EVs Can Provide Dynamic Grid Services

**FIGURE 12** Vehicle Performance from Target (100 kW)

The vehicle pool contributed an average of 20% of the target kW reduction.
Scope of Transportation Electrification
Different Models for Utility Support

Electric Distribution Infrastructure

- Electric Distribution Service
- Electric Vehicle Supply Equipment (EVSE)

Utility Distribution Network
Utility Pad Mounted Transformer
Meter
Panel
Conductor (Boring/Trenching)
EV Charger
Electric Vehicle

EV Service Connection
EV Supply Infrastructure
EV Charger Equipment
DRIVING OUT POLLUTION:  
How Utilities Can Accelerate the Market for Electric Vehicles

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GUIDING PRINCIPLES FOR UTILITY PROGRAMS TO ACCELERATE TRANSPORTATION ELECTRIFICATION

The electrification of the transportation sector is not only a key pathway by which to meet air quality and climate goals, but also a singular opportunity for the electric industry. The United States spends more than $436 billion annually on gasoline and diesel.1 Diverting a portion of that expenditure to the electric sector can spread the costs of the transmission and distribution grid over more sales, putting downward pressure on the price of electricity while also providing consumers relief from volatile gasoline and diesel prices.

The early electric vehicle (EV) market has been strong, and battery prices have decreased 70 percent in the past six years. 2 There are now more than 500,000 EVs on the United States alone. 3 In a period of about two weeks in April 2016, some 40,000 people put down $10,000 deposits for the Tesla Model S, which will soon be available for $35,000 before incentives, and which has a range of 220 miles (with an option for a 310 mile version). 4 However, unlike a growing charging infrastructure gap is closed, many of them may take back their deposits in the market could stall. Likewise, if consumer acceptance is incomplete, existing and improved performance, such as the Chevrolet Bolt EV, Motor Trend’s “Car of the Year,” which has a range of 238 miles and can be acquired for around $30,000 after a federal tax credit.

Electric utilities are uniquely situated to help overcome these barriers and meaningfully accelerate the adoption of light-, medium-, and heavy-duty EVs. In concert with environmental organizations and other relevant stakeholders, utilities can develop proposals that address gaps in charging infrastructure deployment, increase consumer awareness of the benefits of EVs, and improve the utilization of the electric grid to the benefit of all customers. The successful implementation of these programs can both accelerate transportation electrification and lower the cost of integrating renewable energy by leveraging the energy storage inherent in EV batteries to manage an increasingly dynamic grid.
THANK YOU

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