



Energy+Environmental Economics

# Plug-in Vehicles from the Utility, Ratepayer and Grid Perspective

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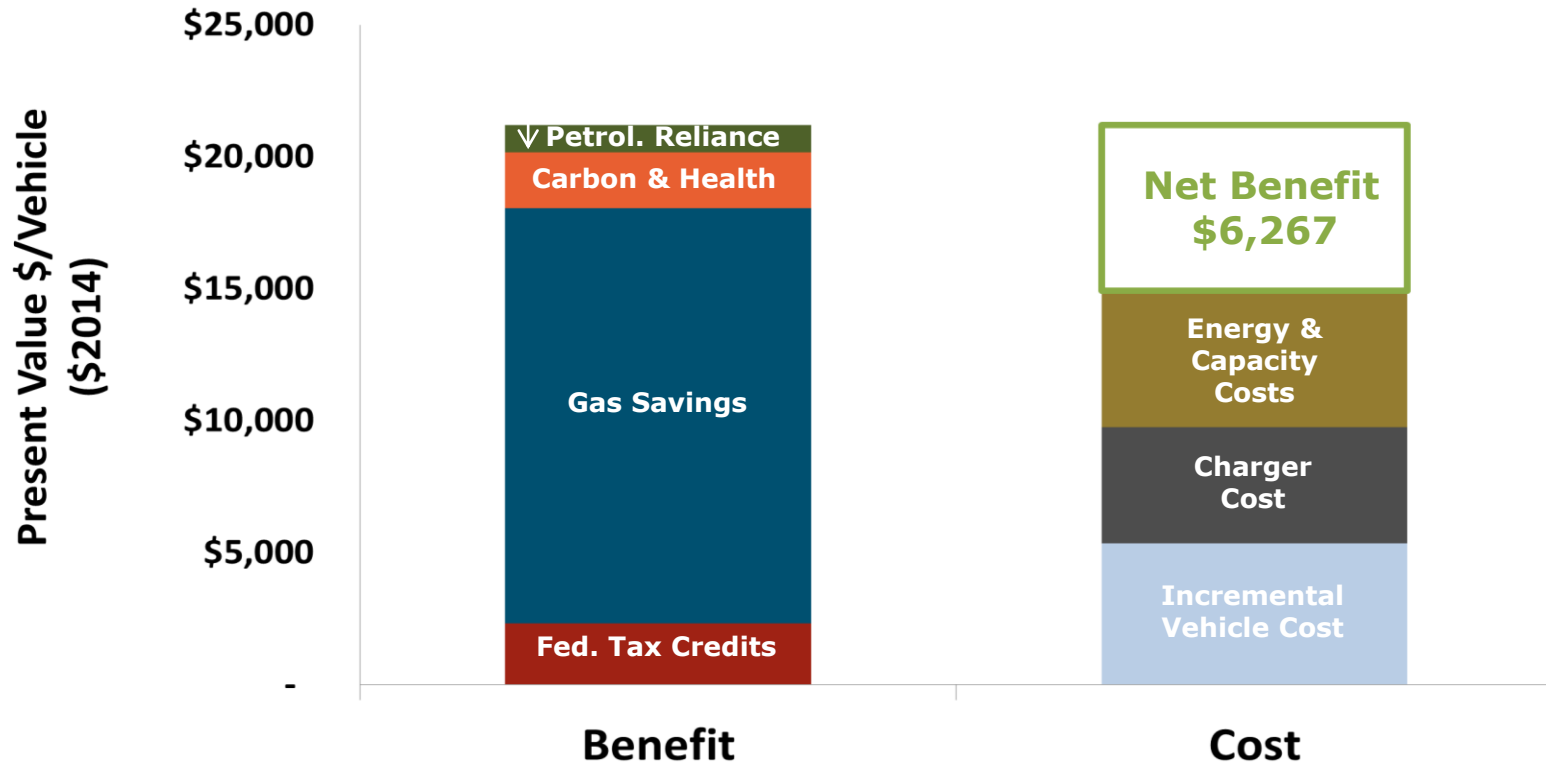
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# Electrification benefits society, mainly due to lower fuel costs

## Net Societal Benefits from PEV Charging Load

Illustrative results for California Utilities

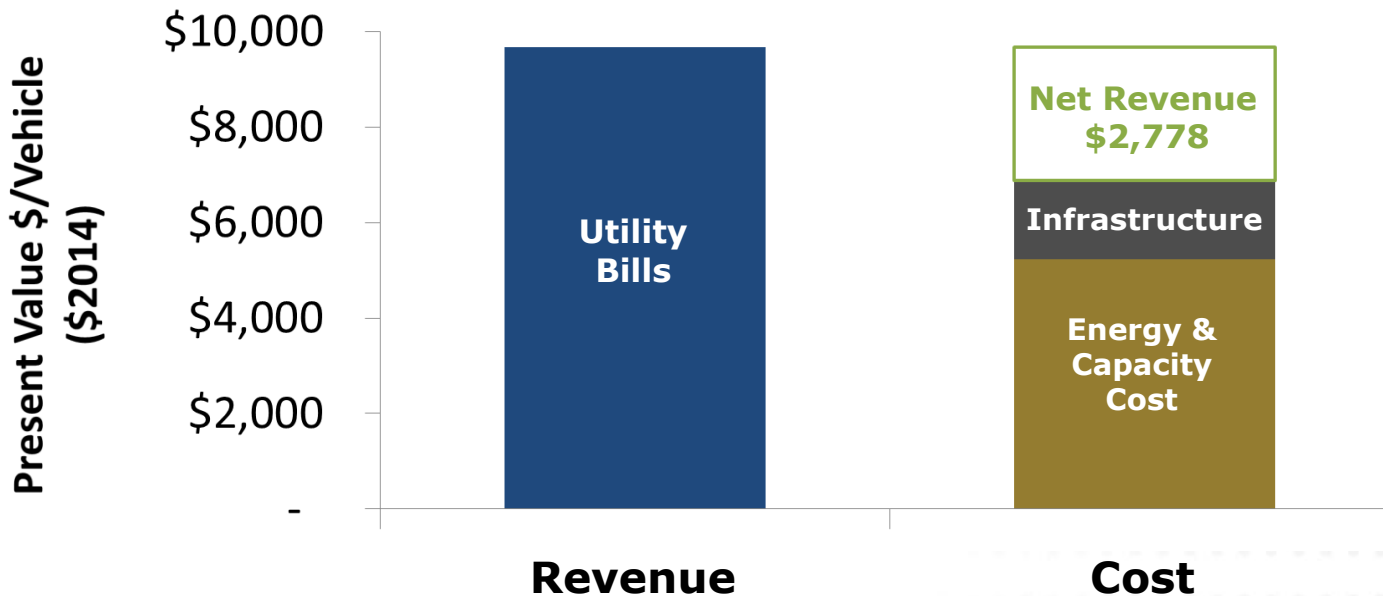


- + PEVs use primary energy more efficiently than conventional vehicles
- + Costs and benefits span the power and transportation sectors, complicating policy



# PEV load benefits ALL utility ratepayers

## Net Revenues from PEV Charging Load Illustrative results for California Utilities



- + Utility rates are higher than the marginal cost of delivered energy in most hours
- + PEVs are unique in providing environmental and customer benefits while putting downward pressure on rates



# Utility and Ratepayer Perspective: PEVs are the opposite of PV and EE



GHG & Emissions



Total Energy Consumption



Utility Infrastructure



Retail Rates



**+ PV and EE shift costs to other ratepayers**

**+ EVs increase utility asset utilization → lower rates**



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# Thank You

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