Panel Discussion: Energy and Sustainability

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Introduction

• Consumers’ decision making, perceptions, and information with regard to electric vehicles
  • Example of ranking gasoline, hybrids, and electric vehicles (EVs) given information about five-year fuel savings and total cost of ownership
  • Simple way of increasing consumers’ interest in alternative fuel vehicles

• Comparison of emissions from electric and gasoline vehicles
  • Zero (tailpipe) emission vehicles
  • State-by-state comparison
Consumer Decision Making: EVs

- Higher initial purchase price but lower operating cost for plug-in electric vehicles compared to gasoline vehicles
  - Do consumers process information with respect to five-year fuel cost savings?
  - Do consumers process information with respect to total monthly cost of ownership (TCO)?

- Research design
  - Presentation of EPA labels with and without TCO information

- Results
  - Consumers do not respond to five-year fuel cost savings.
  - Consumers' preference ranking of vehicles change if total cost of ownership information is available.
EPA Labels and Total Cost of Owner

Gasoline Vehicle

- Fuel Economy: 31 MPG
- Annual fuel cost: $1,845
- Total Monthly Cost of Ownership: $460
- Price: $20,289

Hybrid Vehicle

- Fuel Economy: 42 MPG
- Annual fuel cost: $1,272
- Total Monthly Cost of Ownership: $448
- Price: $24,355

Plug-in Hybrid Vehicle

- Fuel Economy: 117 MPGe
- Annual fuel cost: $763
- Total Monthly Cost of Ownership: $384
- Price: $28,411

Electric Vehicle

- Fuel Economy: 115 MPGe
- Annual fuel cost: $528
- Total Monthly Cost of Ownership: $423
- Price: $35,108
Emissions from Electric Vehicles

Source: The International Council on Clean Transportation (ICCT) – Turning over a new leaf: Electric vehicle carbon emissions
Vehicle emissions are highly dependent on the fossil fuel mix used for electricity production.

**Beyond Tailpipe Emissions**

Charging profile of the electric vehicle user plays an important role as well (NREL 2016)

- Lowest level of emissions for drivers with ability to recharge at the workplace for majority of electricity production profiles.
- Charging restriction to off-peak hours results in higher emissions for all vehicle types.

Possibility to reduced emissions associated with driving an electric vehicle: Purchasing “green power”

- Generation or purchasing renewable electricity
Questions or Comments?

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