California Plug-in Electric Vehicle Owner Survey

SCAG PEV Coordinating Council
September 19, 2012
Outline

- Overview of CCSE & Transportation Programs
- California & SCAG PEV Adoption
- PEV Owner Survey Overview
  - Driver Demographics and Vehicle Use
  - Access to Public and Workplace Charging
  - Solar and PEV Adoption
  - Knowledge and Utilization of PEV TOU Rates
CCSE

Transportation Programs

- Statewide Clean Vehicle Rebate Project
- PEV Planning (San Diego and San Joaquin)
- DOE Clean Cities- San Diego Coordinator
- “Second-Use” Electric Vehicle Battery Research Program (CEC and NREL)
- San Diego Airport Vehicle Incentive Program
- Sustainable Transportation Advisory Services

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SCAG PEV Rebates
(Zip Code)

CA:
SCAG,000,600
PEV Owner Survey Overview

Survey population
2,526
Survey respondents
1,419

Distribution of survey respondents

Survey Highlights:
Cohort: PEV Ownership of 6 months or longer
Administered: February – March 2012
Longitudinal: Tracking behavior every 6 months

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Driver Demographics

96% of survey respondents who are Nissan Leaf owners

71% of primary PEV drivers are male

Household income of California new car buyers

- PEV buyers
  - Less than $50,000: 3%
  - $50,000 to $100,000: 19%
  - $100,000 to $150,000: 27%
  - $150,000 or more: 10%

- Conventional vehicle buyers
  - Less than $50,000: 18%
  - $50,000 to $100,000: 25%
  - $100,000 to $150,000: 54%
  - $150,000 or more: 44%

Educational level of respondents

- High School or less: 2%
- Some college, no degree: 4%
- Associate degree: 35%
- Bachelor's degree: 4%
- Post-graduate degree: 35%
Household Characteristics

- 91% reside in a single-family home with an attached garage
- 6% reside in a single-family home with a detached garage
- 3% reside in an apartment
- <1% reside in other dwellings
- 91% have installed a residential charger

- 7% of respondents reside in households of two people
- 41% of respondents reside in households of two people
- 20% of respondents reside in households of two people
- 32% of respondents reside in households of two people

- 75% of respondents park their vehicle in a garage

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Vehicle Use

PEV vs. conventional vehicle use by activity

95% of respondents also own a conventional fuel vehicle

Average miles driven per day

- 51% Up to 15 miles
- 28% 15 to 30 miles
- 15% 30 to 45 miles
- 6% 45 or more miles
Public and Residential Charging

83% expressed varying levels of dissatisfaction with public charging infrastructure.

56% received a free or subsidized Level 2 charger.

91% have installed a residential charger.

Importance of subsidy for decision to purchase a Level 2 charger:
Public and Workplace Charging

**Reported cost for use of nonresidential charging**
- Workplace: 11% Free, 89% Not Free
- Public: 10% Free, 90% Not Free

**Access to public and workplace charging**
- Workplace charging only: 12%
- Public charging only: 29%
- Both workplace and public charging: 20%
- Neither workplace nor public charging: 39%

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PEV Adoption & Solar PV Ownership

39%

Respondents: 1,396
Respondents who are considering sizing PV to offset PEV load by utility

Survey Highlight:

- Average of 60% of respondents who did not initially size their PV system for their PEV state that they plan to expand their system within the coming year.
PEV TOU Rates

Survey Highlights:
- SDG&E customers most aware at 85%
- ~1/3 of customers across other utilities did not know TOU rates were offered

Survey respondents knowledge of TOU rates by utility

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PEV TOU Rates

Survey Highlights:
- Excludes Solar Customers
- Likely charging on a standard domestic rate
- Between $0.24 – $0.34 per kWh
- The equivalent of $2.70 – $4.70/gallon

PEV survey respondents (non-solar owners) charging on a standard rate
Survey Highlights:

- PEV Drivers react to price signals
- Drivers on a TOU rate more likely to charge off-peak than those not on a TOU rate

Charging behavior of owners on a TOU rate vs. not on a TOU rate
Summary

- Longitudinal survey administered twice a year
- Cohort includes PEV owners of at least 6 months
- Well defined early adopter demographic that are energy/environmentally savvy
- Consumer desire for greater infrastructure deployment
- Utility rate design important in shaping charging behavior and manage PEV load
Questions?

California Center for Sustainable Energy
www.energycenter.org

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• Back Up Slides
Willingness to Pay

Keep in mind…

- 90% reported public charging was free
- Lack of public charging pricing models
- Limited infrastructure installed
- Importance of subsequent survey rounds

Stated willingness to pay for Level 2 and DC fast charging
Plug-in Electric Vehicle Owner Survey

Survey Overview:

- Administered: February – March 2012
- Survey sent to 2,554 CA PEV vehicle owners
- 1,396 unique respondents
- Cohort: PEV Ownership of 6 months or longer
- Longitudinal: Tracking behavior every 6 months
PEV Adoption & Solar PV Ownership

Percent of respondents with a PV system

Respondents who are considering sizing PV to offset PEV load by utility
Public and Residential Charging

83% expressed varying levels of dissatisfaction with public charging infrastructure.

56% received a free or subsidized Level 2 charger.

Importance of subsidy for decision to purchase a Level 2 charger:
- Not at all
- Very little
- Somewhat
- A lot
- Deciding factor