Target EV Consumer Segments & Incentivizing Dealers (to educate consumers)

EV Roadmap 10, 20 June 2017, Portland

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Thanks also to Clair Johnson, Georgina Arreola, Colin Santulli, and others at CSE
CSE Electric Vehicle Activities

Incentives Design & Administration

Consumer & Dealer Outreach

Stakeholder Engagement

Fleet Assistance & Clean Cities

PEV, Alt.-Fuel, & ZEV Planning & Implementation

2nd Life Battery Research & Vehicle-Grid Integration
## EV Incentive Programs: Rebate Amounts

<table>
<thead>
<tr>
<th>Category</th>
<th>Fuel-Cell EVs</th>
<th>All-Battery EVs</th>
<th>Plug-in Hybrid EVs</th>
<th>Zero-Emission Motorcycles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSRP</strong></td>
<td>$5,000</td>
<td>$2,500</td>
<td>$2,500 (i3 REx)</td>
<td>$900</td>
</tr>
<tr>
<td><strong>&gt; 18 kWh</strong></td>
<td>$3,000</td>
<td>$2,500</td>
<td>$2,500</td>
<td>$750</td>
</tr>
<tr>
<td><strong>&gt; 10 kWh</strong></td>
<td>$3,000</td>
<td>$2,500</td>
<td>$1,500</td>
<td></td>
</tr>
<tr>
<td><strong>&lt; 10 kWh</strong></td>
<td>$1,500</td>
<td>$900</td>
<td>$1,500</td>
<td></td>
</tr>
<tr>
<td><strong>e-miles ≥ 20 only; Consumer income cap and increased rebates</strong></td>
<td>$1,000 max.</td>
<td>MSRP ≥ $60k only; dealer assignment; $300 dealer incentive</td>
<td>MSRP &gt; $60k only; MSRP &gt; $60k only; dealer assignment; $500 max.</td>
<td>point-of-sale</td>
</tr>
</tbody>
</table>

- **e-miles**
  - ≥ 120: $2,000
  - ≥ 40: $1,700
  - ≥ 20: $1,100
  - < 20: $500
How can consumer research help us grow markets for electric vehicles?

1. “Adding fuel to the fire”: understand existing, generally enthusiastic adopters to target similar consumers
   - Segment: all-battery vs. plug-in hybrid EVs
   - Characteristics, motivations, and trends
   - Who is “pre-adapted” to adopt? (e.g., Williams and Kurani 2006)

2. “Tough nuts to crack”: understand and break down barriers faced by consumers targeted based on policy priorities
   - Multi-unit dwellers
   - Disadvantaged Communities
   - Low-to-moderate income consumers

3. “Expand market frontiers”: understand the margins of the market to target consumers who can be induced to join
   - Adopters most influenced by incentives (“rebate essentials”)
   - Adopters with low initial interest in EVs (“converts”)
Weighted EV Consumer Survey
(CVRP vehicles acquired Sep 2012 thru May 2015)

Survey sample
19,460
individuals responded to the survey**

Vehicles driven by respondents

- Nissan LEAF: 24%
- Chevrolet Volt: 20%
- Tesla Model S: 19%
- Toyota Prius Plug-in: 15%
- FIAT 500e: 13%
- Other: 9%

*Through May 2015, 150,287 new PEVs were adopted in California, 75,748 PHEVs and 74,539 BEVs.
**Results have been weighted to be representative of the entire program with respect to county, vehicle model, and vehicle age.

The Clean Vehicle Rebate Project

June 2017
Prepared for
California Air Resources Board
Prepared by
Center for Sustainable Energy®

https://cleanvehiclerebate.org/eng/program-reports
Adding Fuel to the Fire:
Who is participating in the market?
Majority Characteristics of CVRP Consumers

CVRP-All
(EV Consumer Survey 2014)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>40–59 years old</td>
<td>55%</td>
</tr>
<tr>
<td>≥ Bachelor’s</td>
<td>82%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>49%</td>
</tr>
<tr>
<td>Male</td>
<td>74%</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>63%</td>
</tr>
<tr>
<td>Detached homes</td>
<td>80%</td>
</tr>
<tr>
<td>$50–200k/y household income</td>
<td>62%</td>
</tr>
</tbody>
</table>
## Majority Characteristics of CVRP Consumers

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>CVRP-All (EV Consumer Survey 2014)</th>
<th>New-vehicle “intenders” (CHTS 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40–59 years old</td>
<td>55%</td>
<td>52%</td>
</tr>
<tr>
<td>≥ Bachelor’s Postgraduate</td>
<td>82%</td>
<td>66%</td>
</tr>
<tr>
<td>Male</td>
<td>74%</td>
<td>49%</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>63%</td>
<td>76%</td>
</tr>
<tr>
<td>Detached homes</td>
<td>80%</td>
<td>75%</td>
</tr>
<tr>
<td>$50–200k/y household income</td>
<td>62%</td>
<td>58%</td>
</tr>
</tbody>
</table>

Weighted CHTS and CVRP data
How can the program **expand** the market for EVs through targeted outreach?
Target Consumers: “Rebate Essential” Segment

Characteristics statistically associated with being rebate essential:

- **Vehicle characteristics**: lower price, bought (vs. lease)
- **Demographics**: younger, male, non-white, lower HH income, higher education
- **Motivations and interest**: less motivated by environmental impacts, more motivated by saving money on fuel and energy independence, lower initial interest in EVs
- **Information gathering**: found it more difficult to find info on EVs, spent more time researching online, learned about the rebate before going to the dealership
Summary “Profiles”
The rebate is more essential to consumers:

• focused on “financial and practical” aspects of adoption
• who face “greater contextual constraints” or are otherwise less easily able to adopt
• whose adoption is driven less by “green enthusiasm” than other values
• with “challenging informational environments”
The convert is more likely:

• less demographically specific/constrained
• driven less by “energy and the environment” than traditional vehicle-operation reasons
• with “challenging informational environments”
• “switching from old to new”
Incentivizing Dealers
(to educate consumers)
The Role of Dealerships in EV Market Development

Of the visits to dealerships with at least one EV on the lot, volunteers indicated that only about 50% of the salespeople they spoke with provided information on how to fuel the EV while traveling.

Buyer satisfaction with the new vehicle purchase experience

- Plug-in Vehicle Buyer (non-premium segment, N=768)
- Conventional Vehicle Buyer (non-premium segment, N=4,658)
- Conventional Vehicle Buyer (premium segment, N=8,807)
- Tesla (premium segment, N=168; California data unavailable)

Many who work at dealerships may not have much experience in dealing with EVs.

(Sierra Club, 2016)¹
(Kress, 2015)²
(Cahill & Davies, 2014)³

¹ http://www.sierraclub.org/
How is the dealer incentive working?

Evaluating the Connecticut Dealer Incentive for Electric Vehicle Sales

June 2017

Prepared by
Center for Sustainable Energy

Please indicate how effective you think each of the following types of consumer incentives is in advancing the sale of EVs.

<table>
<thead>
<tr>
<th>Incentive</th>
<th>Not at all effective</th>
<th>Slightly effective</th>
<th>Moderately effective</th>
<th>Very effective</th>
<th>Extremely effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>State rebate applied at the point of sale by the dealer</td>
<td></td>
<td></td>
<td></td>
<td>4.49</td>
<td></td>
</tr>
<tr>
<td>State rebate applied for by the consumer and received after the sale</td>
<td></td>
<td></td>
<td>2.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal tax credit</td>
<td></td>
<td></td>
<td></td>
<td>4.35</td>
<td></td>
</tr>
<tr>
<td>Parking incentives</td>
<td></td>
<td></td>
<td></td>
<td>3.99</td>
<td></td>
</tr>
<tr>
<td>Free charging/fueling</td>
<td></td>
<td></td>
<td></td>
<td>4.31</td>
<td></td>
</tr>
<tr>
<td>Carpool or HOV lane access</td>
<td></td>
<td></td>
<td></td>
<td>3.99</td>
<td></td>
</tr>
<tr>
<td>Toll discount program</td>
<td></td>
<td></td>
<td></td>
<td>4.08</td>
<td></td>
</tr>
</tbody>
</table>

Respondents = 80  
1 = Not at all effective, 5 = Extremely effective
Percentage of Vehicle Rebates Assigned to the Dealership

Rebate assignment

- Consumer 19%
- Dealer 81%

Who will receive the rebate?
- Consumer
- Dealer
To what extent are you motivated by the current dealer incentive to do each of the following?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not at all motivated</th>
<th>Slightly motivated</th>
<th>Moderately motivated</th>
<th>Very motivated</th>
<th>Extremely motivated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spend time learning about EVs</td>
<td></td>
<td></td>
<td>3.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spend time teaching other staff about EVs</td>
<td></td>
<td></td>
<td>3.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spend time with a customer to teach them about EV ownership and use†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.67</td>
</tr>
<tr>
<td>Try to convert customers interested in conventional vehicles to EVs †</td>
<td></td>
<td></td>
<td>3.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In general, try to sell more EVs</td>
<td></td>
<td></td>
<td>3.54</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question only asked of respondents who said they were aware of the dealer incentive; Respondents=57
† Third and fourth statements only appeared to sales employees; Respondents=40
1 = Not at all motivated, 5 = Extremely motivated
To what extent are you motivated by the current dealer incentive to do each of the following?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Have Never Owned an EV</th>
<th>Have Owned an EV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spend time learning about EVs</strong></td>
<td>3.20</td>
<td>3.75</td>
</tr>
<tr>
<td><strong>Spend time teaching other staff about EVs</strong></td>
<td>3.20</td>
<td>3.88</td>
</tr>
<tr>
<td><strong>Spend time with a customer to teach them about EV ownership and use</strong></td>
<td>3.24</td>
<td>*</td>
</tr>
<tr>
<td><strong>Try to convert customers interested in conventional vehicles to EVs</strong></td>
<td>3.15</td>
<td>3.85</td>
</tr>
<tr>
<td><strong>In general, try to sell more EVs</strong></td>
<td>3.33</td>
<td>4.00</td>
</tr>
</tbody>
</table>

† Fourth and fifth statements only appeared to sales employees; respondents=40
*Statistically significant difference ($p < 0.05$)

Respondents=57
Additional information...

Data Dashboards and Program Evaluation
Where can I get the data?: CSE Transparency Tools

- Public, online, interactive dashboards facilitate informed action
  - Data characterizing >200,000 EVs and consumers
  - >$430M in rebates processed
  - >19,000 survey responses statistically represent >90,000 consumers

Also: zevfacts.com

cleanvehiclerebate.org

ct.gov/deep

mor-ev.org
Participant Evaluation Examples

- **Evaluation of the CT Dealer Incentive** (Report)
- **Target Consumer Segments**: Converts, Rebate Essentials (BECC pres 2016 and TRR 2017 journal article)
- Results of 19,460 survey responses representing 91,085 rebated consumers (survey summary document)
- Progress in **Disadvantaged Communities** (AEA pres 2016)
- **Information Channels** (EV Roadmap pres, 2016)
  - Exposure & importance of various channels, consumer time spent researching various topics
- **Infographics**
  - Overall (CVRP infographic, 2016)
  - Disadvantaged Communities (CVRP DAC infographic, 2017)
- **Characterization of Participating Vehicles and Consumers** (CVRP research workshop pres, 2015)
- **Program Participation** by Vehicle Type and County (CVRP brief 2015)
- **Dealer services**: Importance and Prevalence (EF pres 2015)
We work nationally in the clean energy industry and are always open to exploring partnership opportunities.

Thank You for Your Attention

What would you like to know more about?
What decisions are you facing?
brett.williams@energycenter.org