Crafting Incentives, Developing Policies, and Building Consumer Awareness

• Moderator
  • Charles Knutson, Senior Policy Advisor, Office of Governor Jay Inslee

• Speakers:
  • Janea Scott, Vice Chair, California Energy Commission
  • David Bauer, Senior Manager of Government Affairs, Hyundai Motors
  • J.R. DeShazo, Ph.D., Director, Luskin Center for Innovation, UCLA
Crafting Incentives, Developing Policies, and Building Consumer Awareness

Janea Scott, Vice Chair, California Energy Commission
Decarbonizing California’s Transportation Sector

National Governors Association
West Regional Transportation Electrification Workshop

Janea A. Scott
California Energy Commission
April 4, 2019
Background: California's GHG Emissions by Sector

429.4 MMTCO2e
2016 Total CA Emissions

- 23% - Industrial
- 41% - Transportation
- 10% Electricity (In State)
- 6% Electricity (Imports)
- 8% Agricultural
- 7% Residential
- 5% Commercial
- >1% Not Specified

Source: California Air Resources Board
Policies: California’s Low Carbon and Zero-Emissions Targets

Paving the way towards California carbon neutrality by 2045.

- ~ 1.5M ZEVS
- 250,000 EV chargers
- 200 Hydrogen Stations

- 513K ZEVs
- 18K Chargers
- 39 Hydrogen Stations

- At least 5M ZEVS
- Supporting Infrastructure

- GHG reduction 50% below 1990 level
- Reduce carbon intensity of fuels by 20%

- GHG reduction 40% below 1990 level
- Increase to 60% renewables

- GHG reduction 60% below 1990 level
- GHG reduction 80% below 1990 level

2018

2020

2025

2030

2045

2050
California’s ZEV Mandate: Requirement for auto manufacturers to produce a number of ZEVs and plug-hybrids each year based on the total numbers of vehicles sold by each manufacture.

Credits = vehicle sales x credits per vehicle
*Per vehicle credit based on vehicle range (longer range battery gets higher credit)

Source: CARB
Regulations: California’s Zero-Emission Vehicle Mandate

Minimum Expected ZEVs and Plug-In Hybrids in California

Source: CARB
Incentives: California Invests in Transforming Transportation

California’s Cap-and-Trade Program: Sets statewide emission limits on sources responsible for greenhouse gases and creates incentives to reduce greenhouse gas emissions below allowable levels. Proceeds are invested in programs and projects that further the state’s climate goals. Over the past 5 years over $1.2 B has gone to low carbon transportation investments.

State Investment Programs:

Low Carbon Transportation Program (Cap and Trade)
- $455 M for vehicle incentives, transportation equity projects, and heavy duty pilots

Air Quality Improvement Program
- $28 M for transportation projects that reduce criteria pollutants

Alternative and Renewable Fuel and Vehicle Technology Program
- $100 M annually to support low-carbon fuels and advanced vehicle technologies

School Bus Replacement Program
- $75 M to replace oldest and most polluting school buses
The California Energy Commission is California’s lead agency for ZEV infrastructure planning

- Since 2009, CEC has invested nearly $95 million to install 9,655 charging connectors in California.
  - residential, multifamily, public, corridor, fleet, workplace, corridor/urban metro
- Targeted incentives to address specific regions’ EV charging needs.
- Modeling for the quantity and types of charging infrastructure needed at local level.
- California State Legislature had directed the Energy Commission to:
  - Conduct a statewide assessment of ZEV infrastructure need to meet state ZEV goals.
  - Ensure equitable deployment of ZEV infrastructure.
Infrastructure: Spurring the Development of a Robust Charging Network

**Electric Utility Investments:**
Investments in PEV Infrastructure - $2 B requested with over $1 B approved to date

**Other Investments:**
Volkswagen Infrastructure Settlement - $800 M over 10 years for ZEV investments through Electrify America (Appendix C)

Evgo - $100 M in electric vehicle infrastructure

New Energy and Industrial Technology Development Organization - Installation of 55 DCFC

Air Districts - Providing incentives ranging from $2,000 – $25,000 for charging infrastructure

Tesla – Installation of over 3,500 charging stations
Thank You!

Janea A. Scott
California Energy Commission
Janea.Scott@energy.ca.gov
Crafting Incentives, Developing Policies, and Building Consumer Awareness

David Bauer, Senior Manager of Government Affairs, Hyundai Motors
Hyundai Snapshot

• Hyundai Motor America established in 1986
• Hyundai Motor Company is part of the 5th Largest Auto Group in the World by sales volume
• American HQ in Fountain Valley, California
• R&D Center in Ann Arbor, MI and Chino, CA
National Market

NATIONAL SALES OVERVIEW

2.0%  
Market share of new EV sales nationwide January-December 2018

1.9%  
Market share of new EV sales in 9 ZEV States January-December 2018

8.5%  
Market share of new EV sales in California January-December 2018

47%  
Percent of national EV sales that occurred in California January-December 2018

NEW VEHICLE SALES MARKET SHARE

January - December 2018

Several factors affect EV sales in different states: investment in infrastructure and consumer incentives; consumer awareness; consumer preference; and climate and geography. California and nine other states require that 8% to 10% of new vehicle sales be EVs in 2025.

Source: IHS Automotive Vehicle Registration Data
TABLE – COMPARISON OF NEW VEHICLE SALES – BY PERCENTAGE

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Electric Vehicle Market Share</th>
<th>AWD vs. 2WD Sales</th>
<th>Car vs. Truck Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>10.2%</td>
<td>27/73</td>
<td>47/53</td>
</tr>
<tr>
<td>Western S177 States</td>
<td>6.0%</td>
<td>68/32</td>
<td>30/70</td>
</tr>
<tr>
<td>Colorado</td>
<td>3.7%</td>
<td>75/25</td>
<td>26/74</td>
</tr>
<tr>
<td>Oregon</td>
<td>6.3%</td>
<td>65/35</td>
<td>30/70</td>
</tr>
<tr>
<td>Washington</td>
<td>8.1%</td>
<td>64/36</td>
<td>34/66</td>
</tr>
<tr>
<td>Eastern S177 States</td>
<td>2.7%</td>
<td>67/33</td>
<td>31/69</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3.2%</td>
<td>74/26</td>
<td>33/67</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>6.3%</td>
<td>49/51</td>
<td>47/53</td>
</tr>
<tr>
<td>Delaware</td>
<td>2.9%</td>
<td>55/45</td>
<td>34/66</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>3.5%</td>
<td>21/29</td>
<td>31/69</td>
</tr>
<tr>
<td>Maryland</td>
<td>3.6%</td>
<td>51/49</td>
<td>37/63</td>
</tr>
<tr>
<td>Maine</td>
<td>3.1%</td>
<td>78/22</td>
<td>22/78</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2.2%</td>
<td>64/36</td>
<td>36/64</td>
</tr>
<tr>
<td>New York</td>
<td>2.6%</td>
<td>71/29</td>
<td>29/71</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2.3%</td>
<td>68/32</td>
<td>30/70</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>2.4%</td>
<td>68/32</td>
<td>22/67</td>
</tr>
<tr>
<td>Vermont</td>
<td>3.8%</td>
<td>80/20</td>
<td>23/77</td>
</tr>
<tr>
<td>All 50 States</td>
<td>3.4%</td>
<td>45/55</td>
<td>33/67</td>
</tr>
</tbody>
</table>
Policy Incentives

- Rebates: Cash on the Hood
- Exemption from vehicle inspection
- Discount on toll prices
- Reduced rates for EV charging
- Tax credit for home charging installation
- HOV lane access: Some “buy the sticker and get a car”
- Workplace charging
- Federal $7,500 tax credit: Sustained funding = Consumer confidence
- Equal treatment between BEV and FCEV = Consumers will choose based on needs (climate, lifestyle)
- Utilities: reduced rates based on time-of-usage
- Don’t forget about dealers....
Company Incentives Require Creativity

IONIQ UNLIMITED+
## Progress

<table>
<thead>
<tr>
<th>State</th>
<th>EVs sold since 2011 (cumulatively)</th>
<th>ZEV target by 2025 (cumulatively)</th>
<th>Progress made toward target</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>506,931</td>
<td>1,500,000</td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>10,805</td>
<td>154,000</td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>2,473</td>
<td>65,000</td>
<td></td>
</tr>
<tr>
<td>Maryland</td>
<td>17,849</td>
<td>289,000</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>22,788</td>
<td>302,000</td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td>25,776</td>
<td>635,000</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>46,645</td>
<td>843,000</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td>21,384</td>
<td>133,000</td>
<td></td>
</tr>
<tr>
<td>Rhode Island</td>
<td>1,948</td>
<td>43,000</td>
<td></td>
</tr>
<tr>
<td>Vermont</td>
<td>3,324</td>
<td>35,000</td>
<td></td>
</tr>
</tbody>
</table>

Note: Through December 2018
Learning Curve: The story of Georgia

U.S.A (Georgia) Electric Vehicle Sales

<table>
<thead>
<tr>
<th>YEAR</th>
<th>BATTERY-RUN ELECTRIC VEHICLE REGISTRATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>9,948</td>
</tr>
<tr>
<td>2015</td>
<td>6,259</td>
</tr>
<tr>
<td>2016</td>
<td>1,522</td>
</tr>
<tr>
<td>2017*</td>
<td>1,025</td>
</tr>
</tbody>
</table>

*DATA FOR 2017 IS INCOMPLETE
SOURCE: IHS/POLK
NEXO PRODUCT OVERVIEW
KONA ELECTRIC PRODUCT OVERVIEW
2019 Kona Electric

Best-in class range:
258mi

Advanced Hyundai SmartSense

EV-Unique Features

Remote Charging via Hyundai Blue Link®

Smart Regenerative Braking System
THANK YOU!
Crafting Incentives, Developing Policies, and Building Consumer Awareness

J.R. DeShazo, Ph.D., Director, Luskin Center for Innovation, UCLA

#WeTheStates
The Benefits of Targeting and Tiering Clean Vehicle Rebates

J.R. DeShazo
Director, UCLA Luskin Center for Innovation
Why target and tier rebates

• **Target income groups** with different rebate levels
  o Rebates have larger incentive effect on lower income consumers—increase incremental purchases—so more cost effective: incremental vehicle sold per $ spent
  o Achieves equity goals: largest % of rebates go to relatively lower income households

• **Tier rebates** by expected environmental benefits per sale—more cost effective: emissions reduced per $ spent
Two Examples

1. New Car Rebate Program

2. Moderate & Low-income Clean Vehicle Program
New Car Rebate Program (CA)

Annual household income must be at or below the income caps listed below.

$150,000/single filers

$204,000/head-of-household filers

$300,000/joint filers

<table>
<thead>
<tr>
<th>Income Category</th>
<th>Vehicle Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PHEV</td>
</tr>
<tr>
<td>Standard Rebate</td>
<td>$1,500</td>
</tr>
<tr>
<td>Rebate for Lower-Income Consumers</td>
<td>$3,500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Match Annual Income with Household Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual income limit for lower income households</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>$35,640</td>
</tr>
</tbody>
</table>

For families/households with more than eight persons, add $12,480 for each additional person. Based on 2016 Federal Poverty Guidelines.
## Moderate & Low-income Clean Vehicle Program (CA)

<table>
<thead>
<tr>
<th>Income Eligibility</th>
<th>Program</th>
<th>Eight Years Old or Newer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conventional Vehicle 20+ MPG</td>
<td>Hybrid 20+ MPG</td>
</tr>
<tr>
<td>Low Income ≤ 225% FPL</td>
<td>Total</td>
<td>$4,000</td>
</tr>
<tr>
<td>Moderate Income 226% - 300% FPL</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Above Moderate Income 301% - 400% FPL</td>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>