The Automobile and our Energy Future

Michael J. Stanton
President, CEO
Association of Global Automakers
Fuel Economy Standard for Cars and Light Duty Trucks

- **Phase I** (2012-2016):
  - Passenger Car: 30.1 miles per gallon
  - Combined: 35.5 miles per gallon
- **Phase II** (2016-2025):
  - Passenger Car: 54.5 miles per gallon
  - Combined: 54.5 miles per gallon

Mid Term Review (2016)

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But Many Unknowns...

– Consumer Acceptance
– Advanced Technology Vehicles

Mid-term Review will allow the Government to adjust the standards for 2022-2025 as appropriate
Hybrid Electric Vehicle Models

Available Models

1 2 2 3 3 4 6 10 13 17 21 30 33 44 47

1 2 3 4 6 10 13 17 21 30 33 44 47
0 5 10 15 20 25 30 35 40 45 50

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Hybrids Far From “Mainstream” Vehicles

2012 Sales
- Total Car Sales: 97%
- Hybrid Sales: 3%

SOURCE: R.L. POLK 2012
California Zero Emission Vehicle Mandate

The ZEV Mandate Has Evolved Over Time

Today’s Goal

Goal
Reduce Smog

1990

California

GHG Reductions

1990 Goal
Reduce Smog

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California MY 2018-2025 ZEV Mandate

- California
- Connecticut
- Maine
- Maryland
- Massachusetts
- New Jersey
- New York
- Oregon
- Rhode Island
- Vermont

Accounts for about 30% of Total U.S. Sales

4 Million ZEVs by 2025

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What Qualifies as a ZEV?

Plug-In Hybrid Electric Vehicles (PHEVs)
- TOYOTA PRIUS PLUG-IN

Battery Electric Vehicles (BEVs)
- NISSAN LEAF

Hydrogen Fuel Cell Electric Vehicles (FCEVs)
- HONDA FCX CLARITY
## Plug-In Hybrid Electric Vehicles

<table>
<thead>
<tr>
<th>Year</th>
<th>Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011 (1)</td>
<td>• Chevy Volt</td>
</tr>
</tbody>
</table>
| 2012 (3) | • Chevy Volt  
| | • Ford C-Max Energi  
| | • Toyota Prius Plug-in |
| 2013 (5) | • Chevy Volt  
| | • Ford C-Max Energi  
| | • Toyota Prius Plug-in  
| | • Ford Fusion Energi  
| | • Honda Accord Plug-in |
# Battery Electric Vehicles

<table>
<thead>
<tr>
<th>Year</th>
<th>Model(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Nissan Leaf, Mitsubishi iMiEV</td>
</tr>
<tr>
<td>2012</td>
<td>Nissan Leaf, Mitsubishi iMiEV, Ford Focus, Honda Fit EV, Toyota RAV4 EV, Smart EV, Tesla S</td>
</tr>
<tr>
<td>2013</td>
<td>Nissan Leaf, Mitsubishi iMiEV, Ford Focus, Honda Fit EV, Toyota RAV4 EV, Smart EV, Tesla S, Fiat 500E, Chevy Spark</td>
</tr>
</tbody>
</table>
## Fuel Cell Vehicles

<table>
<thead>
<tr>
<th>Current</th>
<th>2015</th>
<th>2017</th>
<th>2019 →</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honda Clarity</td>
<td>Toyota</td>
<td>Ford</td>
<td>GM</td>
</tr>
<tr>
<td>Chevy Equinox</td>
<td>Hyundai</td>
<td>Mercedes</td>
<td>BMW</td>
</tr>
<tr>
<td>Mercedes F-Cell</td>
<td></td>
<td>Nissan</td>
<td>Honda</td>
</tr>
</tbody>
</table>

*Source: Global Automakers*
Consumer awareness/acceptance is limited. ZEV purchase costs remain high. Incentives are needed.

BEVs: EV chargers / Affordable charging

FCEVs: Hydrogen / Sale of hydrogen / Incentives for station owners

Climate/Geography
City vs. Rural Commuting
Differing Markets
Infrastructure
Consumer Codes and standards
Require ZEV purchase for state fleets
Permitting
Dealer/first responder training

Other Considerations

If We Build It Will They Come?
## CA vs. ZEV States – Within State Control

<table>
<thead>
<tr>
<th>Issue</th>
<th>CA</th>
<th>NE States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incentives for PEVs</strong></td>
<td>$2,500/BEV</td>
<td>Minimal</td>
</tr>
<tr>
<td></td>
<td>$1,500/PHEV</td>
<td></td>
</tr>
<tr>
<td><strong>Codes, Standards, Exec Orders</strong></td>
<td>Governor’s ZEV Executive Order</td>
<td>Non-existent</td>
</tr>
<tr>
<td><strong>Public Infrastructure</strong></td>
<td>Chargers: 1,387 H2 Fueling:</td>
<td>Chargers: 824 total in 8 states</td>
</tr>
<tr>
<td></td>
<td>• 8 Current</td>
<td>H2 Fueling: 0</td>
</tr>
<tr>
<td></td>
<td>• 100 funded by legislation</td>
<td></td>
</tr>
</tbody>
</table>
## CA vs. ZEV States – Out of State Control

<table>
<thead>
<tr>
<th>Issue</th>
<th>California</th>
<th>NE States</th>
</tr>
</thead>
</table>
| Weather – Temp & Snowfall | Avg Winter: 46°F N-CA 58°F (S-Cal)  
Avg Snow: 0”           | Avg Winter: 26°F  
Avg Snow: 52.7”  
Winter temps impact vehicle range/ performance, while snowfall dictates vehicle choice AWD/4WD. |
| HOV Lanes                 | 1,400 miles                                    | 158 miles total                                                          |
California Action Plan to Advance ZEVs

- Complete Needed Infrastructure and Planning
- Expand Consumer Awareness and Demand
- Transform Fleets
- Grow Jobs and Investment in the Private Sector

Source: California ZEV Action Plan
State MoU to put ZEVs on Roads by 2025

October 2013 -
California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island and Vermont, signed a MoU to take specific actions to put 3.3 million zero emission vehicles on the roads in their states by 2025, along with the refueling infrastructure required to support those vehicles.
Proposed State-Auto Workgroups

Automakers will work with the section 177 states and California in the development of their multi-state action Plan through four proposed workgroups.

1. Consumer Education and Awareness
2. Dealer Engagement
3. State Policy and Incentives
4. Infrastructure
State Policy & Incentives Workgroup

- Model legislation with "package" of incentives
- Develop effective alliances to support state actions
- Roadmap of existing incentives
- State fleet purchase commitments
- Harmonized incentives and program reciprocity
- Charging signage best practices
Infrastructure Workgroup

- Utility / PUC engagement
- Charging station supplier engagement
- Uniform Codes & standards/Streamlined permitting
- Electrician training
- Interoperability
- Charging and parking best practices/resource management
- Federal right-of-way issue
- Hydrogen infrastructure assessment
Failure Is Not An Option

We Need to Work Together

Environmental Protection Agency

California

Automakers

Section 177 States

Global Automakers
Thank you

www.globalautomakers.org