Critical Need for Actions to Accelerate the Transition to a Zero Emission Future

July 25, 2019
Challenges: Air quality and climate change impacts from transportation

California GHG Emissions (2017)
- Industrial: 21%
- Electric Power: 16%
- Light-Duty Vehicles: 29%
- Agriculture: 9%
- Residential & Commercial: 10%
- All Other Transportation: 7%
- Recycling and Waste: 3%
- High GWP: 5%

South Coast Air Basin NOx Emissions (2017)
- Light-Duty Vehicles: 18%
- Heavy-Duty Vehicles... Other Mobile Sources: 30%
- Stationary: 13%
- Areawide: 4%
- Mobile Sources: ~80%
- Other Mobile Sources: 30%

Mobile Sources: ~50%
California’s Key Targets

**NOx, South Coast, All Sources**

- **2023 South Coast Target**
- **2031 South Coast Target**

**GHGs, Statewide, All Sources**

- **Adopted Programs**
- **1990 Level**
- **SB 32 40% Reduction**
- **80% Reduction**
- **Carbon Neutrality**

*Adopted through 2017*
What Will It Take?

- Gasoline Vehicles
- PHEV
- ZEV

Statewide On Road Population (Millions)

- 2018
- 2022
- 2026
- 2030
- 2034
- 2038
- 2042
- 2046
- 2050

Annual ZEV and PHEV Sales %

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

CARB
California Light-Duty ZEV Market Growing

Sources: Auto Alliance Sales Dashboard, InsideEVs, and CA Auto Outlook
## Light-Duty ZEV Model Availability Expanding

<table>
<thead>
<tr>
<th>EPA Class Size</th>
<th>Number of Available Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minicompact</td>
<td>2</td>
</tr>
<tr>
<td>Subcompact</td>
<td>5</td>
</tr>
<tr>
<td>Compact</td>
<td>3</td>
</tr>
<tr>
<td>Mid-Size</td>
<td>14</td>
</tr>
<tr>
<td>Large</td>
<td>1</td>
</tr>
<tr>
<td>Small Wagon</td>
<td>4</td>
</tr>
<tr>
<td>Small SUV</td>
<td>4</td>
</tr>
<tr>
<td>Standard SUV</td>
<td>7</td>
</tr>
<tr>
<td>Mini-van</td>
<td>1</td>
</tr>
</tbody>
</table>

### Breakdown by Type:

- **BEVx**
  - Minicompact: 1
  - Subcompact: 1
  - Compact: 1
  - Mid-Size: 9
  - Large: 1
  - Small Wagon: 1
  - Small SUV: 2
  - Standard SUV: 2
  - Mini-van: 1

- **FCEV**
  - Minicompact: 1
  - Subcompact: 1
  - Compact: 1
  - Mid-Size: 1
  - Large: 4
  - Small Wagon: 3
  - Small SUV: 2
  - Standard SUV: 2
  - Mini-van: 1

- **PHEV**
  - Minicompact: 3
  - Subcompact: 0
  - Compact: 2
  - Mid-Size: 4
  - Large: 4
  - Small Wagon: 3
  - Small SUV: 2
  - Standard SUV: 2
  - Mini-van: 1

- **BEV**
  - Minicompact: 8
  - Subcompact: 2
  - Compact: 1
  - Mid-Size: 6
  - Large: 4
  - Small Wagon: 4
  - Small SUV: 1
  - Standard SUV: 1
  - Mini-van: 1
Medium- and Heavy-Duty ZEV Model Availability Expanding

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Number of Available Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargo van</td>
<td>5</td>
</tr>
<tr>
<td>HD truck</td>
<td>15</td>
</tr>
<tr>
<td>MD step van</td>
<td>3</td>
</tr>
<tr>
<td>MD truck</td>
<td>18</td>
</tr>
<tr>
<td>Refuse truck</td>
<td>9</td>
</tr>
<tr>
<td>School bus</td>
<td>6</td>
</tr>
<tr>
<td>Shuttle bus</td>
<td>12</td>
</tr>
<tr>
<td>Transit Bus</td>
<td>32</td>
</tr>
<tr>
<td>Yard tractor</td>
<td>4</td>
</tr>
</tbody>
</table>

- FCEV: 
  - Cargo van: 5
  - HD truck: 15
  - MD step van: 3
  - MD truck: 18
  - Refuse truck: 9
  - School bus: 6
  - Shuttle bus: 12
  - Transit Bus: 32
  - Yard tractor: 4

- BEV: 
  - Cargo van: 5
  - HD truck: 15
  - MD step van: 3
  - MD truck: 12
  - Refuse truck: 12
  - School bus: 12
  - Shuttle bus: 2
  - Transit Bus: 4
  - Yard tractor: 4
6 Million Light-Duty ZEVs Globally

Additional Heavy Duty ZEVs:
- 500,000 Electric Buses
- 100,000 Heavy Trucks

Cumulative global electric vehicle sales

Source: ICCT and EV-Volumes
Regulations
Help ensure ZEVs are produced and that fleets use them

Incentives
Help encourage consumers and fleets to purchase and test ZEVs

Supporting Programs
Help provide fueling infrastructure, education, and best practices

ZEV Programs
Light-Duty Vehicle Regulations that Impact ZEVs

• Advanced Clean Cars II (2021 board item)
  • Requirements on automakers for post 2025 MY
  • ZEV Regulation
  • GHG Regulation
  • Criteria Regulation

• Clean Miles Standard (2020 board item)
  • Requirements on ride hailing passenger vehicle services
  • Minimum required electric VMT to be included
Heavy-Duty On-Road and Off-Road Regulations that Impact ZEVs

- ZE Truck Fleets, including drayage
- ZE Cargo Handling Equipment
- ZE Forklifts
- ZE Truck/Trailer Refrigeration Units
- ZE Airport Ground Support Equipment
- ZE HD Certification
- Advanced Clean Trucks
- ZE Airport Shuttle
- Innovative Clean Transit

☑ Already considered by the Board
ZEV Policy Areas

1) ZEV Targets that Lead to a Full Transition to ZEVs

2) Making ZEVs More Financially Feasible
   - Increased incentive funding to provide purchase incentives with a focus on priority populations
   - Pricing strategies (e.g., Feebate or road-usage program that incentivize ZEVs)

3) Ensuring Fuel Prices Support Transportation Electrification
   - Accelerate efforts to design electricity rates to support transportation electrification
ZEV Policy Areas

4) Holistically Plan and Invest in ZEV Infrastructure
   • Extend alternative fuel funding programs with a focus on zero emission infrastructure
   • Prioritize infrastructure investments within or near priority populations, and for high-mileage passenger and delivery services

5) Strengthen Role of Local Governments to Incentivize ZEVs
   • Enable local jurisdictions to implement pricing and other policies that encourage ZEVs
ZEV Policy Areas

6) Increasing Zero Emission Miles in Fleets
   • Adopt zero emission mileage requirements in all high-mileage and new mobility fleets (e.g., delivery services, car sharing)
   • Establish ZEV and/or eVMT targets for government fleets

7) Expand ZEV Outreach and Education
   • Dedicate additional State funding for ZEV consumer and fleet outreach and education campaigns, and training for gov’t and building officials

8) Support the ZEV Transition Through Workforce Development and Training
Role of Fleets in ZEV Expansion

1) Assess current and future fleet needs
2) Understand zero emission options, infrastructure, incentives, and policies
3) Collaborate with internal and external stakeholders
4) Plan fleet and infrastructure roll-out
5) Share your ZEV fleet experiences with others
Conclusions

• The magnitude and speed of change needed to achieve California’s goals is unprecedented.
• The State has implemented many programs to promote ZEVs, but new programs and policies will be needed.
• Even under an aggressive scenario, need for significant VMT reductions and renewable fuels.