Proposed Advanced Clean Trucks Regulation
Sacramento, California
December 12, 2019
Today’s Overview

• Introduction
• Manufacturer ZEV sales requirement
• Large entity reporting
• Next steps
Zero-Emission Key to California’s Future

• The Advanced Clean Trucks (ACT) regulation advances the first wave of zero emission (ZE) vehicles
• Goal of 100% ZE pickup and delivery goal by 2040
• Assisting the San Pedro Bay Ports’ goal of 100% ZE drayage by 2035
• Exceeds SIP obligation for “Last Mile Delivery”
Suite of Mobile Source ZE Measures

- Zero-Emission Operation
- Innovative Clean Transit
- Advanced Clean Trucks
- ZE Airport Shuttle
- ZE Powertrain Cert
- ZE Ships at Berth
- ZE Airport GSE
- Rail Yard Idling
- ZE TRUs
- ZE Forklifts
- ZE Truck Fleets
- ZE Drayage Trucks
- ZE Cargo Equipment
## Heavy-duty Electric Market Growing

<table>
<thead>
<tr>
<th>Class</th>
<th>Range</th>
<th>Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2B-3</td>
<td>(8,501 – 14,000 lbs.)</td>
<td><img src="image1.png" alt="Vehicles" /></td>
</tr>
<tr>
<td>4-5</td>
<td>(14,001 – 19,500 lbs.)</td>
<td><img src="image2.png" alt="Vehicles" /></td>
</tr>
<tr>
<td>6-7</td>
<td>(19,501 – 33,000 lbs.)</td>
<td><img src="image3.png" alt="Vehicles" /></td>
</tr>
<tr>
<td>8</td>
<td>(33,000 lbs. and over)</td>
<td><img src="image4.png" alt="Vehicles" /></td>
</tr>
</tbody>
</table>

Today's Commercial Vehicles: ![Vehicles](image5.png)
Major Suppliers and Service Providers Entering Market

- Established suppliers entering ZE truck supply chain
  - Partnering with existing ZE vehicle/drivetrain manufacturers
  - Numerous demonstrations underway
- Established companies servicing, distributing, training, leasing ZE trucks

Electric Powertrain Providers
- Bosch
- Cummins
- Dana
- Meritor
- Roush

Service, Support, Training
- Penske
- Ryder

Successful HD ZEV Transition

Positive fleet experience

Greater vehicle availability

Education, workforce training, service network

Predictable, affordable electricity rates

Streamlined infrastructure build-out

Battery improvements and cost reductions
Staff Proposal
Advanced Clean Trucks Summary

**Manufacturer ZEV Sales**
Must sell ZEVs as a percentage of annual sales

**Large Entity Reporting**
- One time reporting in 2021
- Vehicles, facilities, contracted vehicle services
ZEV Sales Requirements

- Applies to manufacturers with >500 annual California sales
- Percent of California sales must be zero-emission
- Use Zero-Emission Powertrain Certification starting with 2024 MY
- Early action credits with 2021 MY
- Partial credit for near-zero emission vehicles (NZEV)

<table>
<thead>
<tr>
<th>Model Year (MY)</th>
<th>Class 2b-3</th>
<th>Class 4-8</th>
<th>Class 7-8 Tractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2024</td>
<td>3%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>2025</td>
<td>5%</td>
<td>9%</td>
<td>5%</td>
</tr>
<tr>
<td>2026</td>
<td>7%</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>2027</td>
<td>9%</td>
<td>13%</td>
<td>9%</td>
</tr>
<tr>
<td>2028</td>
<td>11%</td>
<td>24%</td>
<td>11%</td>
</tr>
<tr>
<td>2029</td>
<td>13%</td>
<td>37%</td>
<td>13%</td>
</tr>
<tr>
<td>2030</td>
<td>15%</td>
<td>50%</td>
<td>15%</td>
</tr>
</tbody>
</table>

1. Excludes pickups until 2027 MY
2. 2030 MY requirements continue after 2030

Note: Class 2B-3 (GVWR: 8,501-14,000 lb.), Class 4-8 (GVWR: 14,001 lb. or greater), Class 7-8 tractor (GVWR: 26,001 lb. or greater)
Deficit/Credits System for Flexibility

- Deficits for each vehicle sold
- Credits for each ZEV sold
  - 5 year credit life from beginning of MY
- Weighted deficits/credits
  - Sell more or less vehicles in one category
  - Tractor sales met with tractor credits
- Banking and trading

Class 2b-3: 0.6x
Class 4-5: 1x
Class 6-7: 1.5x
Class 7 Tractors and All Class 8: 2x
Near-Zero-Emission Vehicles

- Hybrid electric vehicles with all-electric range earn partial ZEV credit
  - Credit value increases with higher all-electric range
  - Up to 75% of equivalent ZEV credit
  - Consistent with California Phase 2 GHG regulation criteria
- Can be used for up to 50% of a manufacturer’s deficits
  - Ensures minimum ZEV production
- NZEV credits available until 2030
Additional Details

• Count Class 2b-3 ZEV sales towards Advanced Clean Cars or ACT
• Reporting similar to California Phase 2 GHG for simplicity
• ZEV sales may also earn Phase 2 GHG credit
• Total California sales and credits will be published annually
• Transit buses, motor coaches, and articulated buses are excluded
• Coordination with upcoming Low-NOx Omnibus effort
Benefits of Proposed Regulation

• Health benefits, especially in disadvantaged communities
• Climate benefits
• Expanded green jobs and trained workforce
• Reduces energy use and petroleum dependence
• Establish foundation to expand zero-emission heavy-duty market
• Other societal benefits
Projected NOx & PM$_{2.5}$ Emission Benefits

- NOx – 5.0 tons per day (tpd) benefit by 2031, 16.9 tpd by 2040
- PM$_{2.5}$ – 0.16 tpd benefit by 2031, 0.46 tpd by 2040
  - Includes reduced brakewear PM emissions
Projected GHG Emission Benefits

- Cumulative well-to-wheel CO$_2$e
  - 11.2 million metric ton reduction above and beyond Phase 2 GHG requirements by 2040

![GHG Emissions Graph](image-url)
Manufacturer ZEV Sales - 15-Day Changes

- Match Phase 2 GHG credit life
- Add limited flexibility for low annual tractor sales
- Deficit makeup period clarifications
- Prevent double-counting NZEV credits between ACT and ACC
- Adjust credit retirement order
- Other clarifying updates
Proposed Large Entity Reporting
## Applicability For One-time Reporting

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| **Businesses**  | >$50 Million in Revenue  
• With facilities in California (may or may not own vehicles) |
| **Large Fleets**| Own 100+ Vehicles  
• With facilities in California |
| **Brokers**     | Directing 100+ Vehicles  
• To or from California |
| **Government**  | All Levels  
• Municipalities, State, Federal Agencies |

1. Vehicles with GVWR greater than 8,500 lbs
Information To Be Reported

General Entity Info
- Business type
- Subcontractor/subhauler counts
- Facility locations

Grouped Facilities
- 10 Categories
- # by category
- Characteristics
- Contract types

Representative Facility
- Details
- Location
- Size
- Truck Trips
- # of Suppliers

Grouped Vehicles
- Assigned Facility
- Truck type
- Vehicle operation
- Existing infrastructure
Need for Large Entity Reporting

To craft effective ZEV fleet strategies, more information is needed.

Support ZE regulatory frameworks
- Fleet standards, purchasing requirements, must contract with ZE fleets, ZE zones

Ensure level playing field
- Large fleets vs. small fleets
- Owned trucks vs. contracted services

Assessing infrastructure needs
- Energy demand, barriers, build-out planning

Match technology with duty cycles
- Understanding spectrum of existing use cases
Large Entity Reporting - 15-Day Changes

• Reduce reporting obligation if majority of regulated entities report before 2021
• Add guide posts for one week truck trip data collection
• Clarify definitions and language
  • Change “subcontractor” definition
  • Provide guidance on determining where a vehicle is assigned
ACT and ZEV Fleet Rule Timeline

2019
- ACT Board Hearing Today

2020
- February – First ZEV Fleet Rule Workshop
- May – ACT Second Board Hearing

2021
- Large Entity Reporting due April

2022
- ZEV Fleet Rule to Board

2024
- Implementation of Both Rules Begin
Staff Recommendations

• Adopt resolution directing staff to return with final proposed Advanced Clean Trucks regulation for adoption
• Direct staff to propose a ZEV fleet rulemaking no later than 2022
  • Implementation to begin in 2024