Clean Trucks Rule 2021

Advisory Committee Meeting #1
July 12, 2021

Facilitator:
Karen Williams
Air Quality Planner

DEQ Staff Leads:
Rachel Sakata, Air Quality Planner
Eric Feeley, Air Quality Planner
Clean Trucks Rule Advisory Committee Charter

• Committee Objectives
  – Provide input on DEQ’s rule development of the Advanced Clean Trucks Rule and Heavy-duty Low NOx Omnibus rules

• Roles
  – Committee members:
    • Attendance at all meetings; if cannot attend appoint an alternate
  – Facilitator:
    • Encourages open, candid and robust dialogue
  – DEQ:
    • Provide materials in advance of the meetings

• Decision making
  – Looking for input - not seeking consensus or vote casting
Clean Trucks Rule – Background

Why are we here?
Clean Trucks Rule – Background

- Diesel PM causes cancer and other health effects
- Diesel trucks are a major contributor to smog-forming pollution
- Diesel engine exhaust disproportionately impacts communities of color
- Transportation, including freight, is the largest source of GHG emissions in Oregon
Diesel Background – Strategy

Replace and retire the oldest diesel engines

Adopt new and cleaner technologies

Support owners and operators transition their fleets
GHG Emissions from Transportation - Strategy

Multi-State Medium- and Heavy-Duty Zero Emission Vehicle

Memorandum of Understanding

WHEREAS, the Signatory States and the District of Columbia recognize the importance of state leadership and coordinated state action to ensure national progress in the effort to reduce greenhouse gas (GHG) emissions and stabilize global warming;

WHEREAS, the Signatory States have statutory obligations or otherwise seek to significantly reduce statewide GHG emissions by 2050, consistent with science-based targets;

WHEREAS, transportation is now the nation’s largest source of GHG emissions, and, after light-duty vehicles, medium- and heavy-duty trucks are the next largest source of transportation sector GHG emissions;

WHEREAS, the Signatory States have a statutory obligation to provide their citizens with air quality that complies with national health-based air quality standards, which are required to be protective of health and the environment with an adequate margin of safety;

WHEREAS, fossil fuel related emissions from medium- and heavy-duty vehicles (MDVs) are a major source of nitrogen oxides (NOx), particulate matter, and toxic air emissions, which are preventing many densely populated areas from achieving compliance with federal ambient air quality standards;

WHEREAS, emissions from MDVs are a widely acknowledged, but understated, environmental justice problem that disproportionately impacts disadvantaged communities located near freight corridors, ports, and distribution centers;

Governor’s Executive Order 20-04

Every Mile Counts

Statewide Transportation Strategy: A 2050 Vision for Greenhouse Gas Reduction

Multi-Agency Implementation Work Plan

June 2020 - June 2022

Oregon Department of Transportation, Oregon Department of Land Conservation and Development, Oregon Department of Energy, Oregon Department of Environmental Quality
Legal authorities – Section 177 state

• Clean Air Act allows California to set separate motor vehicle emission standards
• If states opt-in to California standards, must adopt them identically
• Oregon has been a Section 177 state since 2005, when it opted-in to the light-duty vehicle Low Emission Vehicle rules
Advanced Clean Trucks (ACT) Rule

- Background
- Specific rules, applicability and ZEV sales requirements
- Compliance
  - Credit program
- Questions for RAC
  - Early credits
  - Fleet reporting
Rules to adopt by reference

- 13 CCR 1963 – ACT purpose, applicability, definitions, general requirements
- 13 CCR 1963.1 - Deficits
- 13 CCR 1963.2 – Credit Generation, Banking, Trading
- 13 CCR 1963.3 – Compliance determination
- 13 CCR 1963.4 – Reporting and Recordkeeping
- 13 CCR 1963.5 - Enforcement
Applicability
(vehicle classes subject to requirements)

<table>
<thead>
<tr>
<th>Class 2b-3</th>
<th>Class 4-8</th>
<th>Class 7-8 Tractors</th>
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</thead>
<tbody>
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<td><img src="image1.png" alt="Image" /></td>
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<tr>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
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<tr>
<td><img src="image6.png" alt="Image" /></td>
<td><img src="image7.png" alt="Image" /></td>
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<tr>
<td><img src="image8.png" alt="Image" /></td>
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<tr>
<td><img src="image10.png" alt="Image" /></td>
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<tr>
<td><img src="image12.png" alt="Image" /></td>
<td><img src="image13.png" alt="Image" /></td>
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<tr>
<td><img src="image14.png" alt="Image" /></td>
<td><img src="image15.png" alt="Image" /></td>
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</tr>
</tbody>
</table>
ZEV Sales Percentage Requirements

Figure 1: Zero-emission sales percentage schedule by vehicle group and model year.

ACT Compliance

• Credit/deficit program
  – Manufacturers generate a deficit for each ICE vehicle it sells
  – Manufacturer must generate enough credits to offset deficits within the same truck type
  – Heavier vehicles generate more deficits and credits

Weight class modifier

<table>
<thead>
<tr>
<th>Weight Class Modifier</th>
<th>Vehicles in the Class 2b-3</th>
<th>Class 4-5 Vehicles in the Class 4-8 Group</th>
<th>Class 6-7 Vehicles in the Class 4-8 Group</th>
<th>Class 8 Vehicles in the Class 4-8 Group</th>
<th>Vehicles in the Class 7 and 8 Tractor Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.8</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>2.5</td>
</tr>
</tbody>
</table>
## ACT Compliance – Example calculation

### Deficit Calculation

<table>
<thead>
<tr>
<th>Weight class</th>
<th>Total OR sales in 2025</th>
<th>2025 MY ZEV sales requirement</th>
<th>Weight class modifier</th>
<th>Deficits</th>
<th>Total deficits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 2b-3 trucks</td>
<td>100</td>
<td>x 7%</td>
<td>x 0.8</td>
<td></td>
<td>5.6</td>
</tr>
<tr>
<td>Class 4-5 rigid trucks</td>
<td>100</td>
<td>x 11%</td>
<td>x 1</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Class 6-7 rigid trucks</td>
<td>100</td>
<td>x 11%</td>
<td>x 1.5</td>
<td></td>
<td>16.5</td>
</tr>
</tbody>
</table>

- **5.6** Class 2b-3 trucks
- **27.5** Class 4-8 rigid trucks

### Credit Calculation and Compliance Determination

<table>
<thead>
<tr>
<th>Weight class modifier</th>
<th>ZEV sales</th>
<th>Credits</th>
<th>Total Credits</th>
<th>Total Deficits</th>
<th>Compliance (credits minus deficits)</th>
<th>Overall compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 2b-3 trucks</td>
<td>0.8</td>
<td>x 15</td>
<td>= 12</td>
<td>12</td>
<td>5.6</td>
<td>6.4 credits (can be banked or used for other weight classes)</td>
</tr>
<tr>
<td>Class 4-5 rigid trucks</td>
<td>1.0</td>
<td>x 10</td>
<td>= 10</td>
<td>25</td>
<td>27.5</td>
<td>-2.5 deficits (manufacturer needs to cover the deficits)</td>
</tr>
<tr>
<td>Class 6-7 rigid trucks</td>
<td>1.5</td>
<td>x 10</td>
<td>= 15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question for RAC

• Early credits - Allow manufacturers to begin earning credits prior to 2025 model year requirements?
  – DEQ is considering allowing credits to be banked starting with 2024 model year
• One-time reporting requirement on existing fleet operations. Affects:
  – Fleet owners, with 50 or more trucks with a facility in Oregon
  – Large employers (gross annual revenue above $50M, 2021 tax year)
    • Includes profit and non-profit
  – State, local and federal government agencies
  – Brokers that dispatch 50 or more vehicles that operate in Oregon
Fleet Reporting Requirement – Reporting Information

• General entity information
  – Company or government entity information
    • Name, address, contact information
    • Identification and permit numbers
  – Contracted trucks
    • How many companies contracted to deliver items or perform work in OR for the reporting entity
    • Number of subhaulers, vehicles operated by subhaulers and number of vehicles operated by subhaulers that operated under the reporting entity’s motor carrier authority
  – # of vehicles owned and operated in OR but are not based in OR
Fleet Reporting Requirement – Reporting Information

• Vehicle’s home base information
  – Address
  – Facility type
  – Owned or leased by entity
  – Fueling infrastructure at home base
  – Types of trailers present at facilities being used as home base for a tractor
Fleet Reporting Requirement – Reporting Information

• Information on vehicles operated from the home base
  – Body type, weight class bin, and fuel type
  – Percent of vehicles in each vehicle group, including daily and annual mileage, usage patterns, on-site refueling, trailer towing, hours on-site, and age of vehicles
  – Vehicle retention
  – Ownership of vehicles (fleet owner or brokerage)
Fleet Reporting Requirement

• Collect data from 2021
• Submission date is April 2022
• Report via fillable PDF available online and submitted via email
Fleet Reporting – Questions for RAC

• All entities are subject to reporting
  – CARB exempts schools, school districts, and transit agencies
Heavy-Duty Low NOx Omnibus Rule

• Description of major rule elements
• Estimated pollution reduction
• Discussion topics
  – Diesel-fueled transit bus and engine exemption
  – High horsepower engine exemption (>525 hp)
Major Low NOx rule categories

• Lower NOx and PM Certification Standards
  – NOx reduced by 75% in 2024; 90% in 2027
  – PM reduced by 50% in 2024
• Improved In-Use Testing Methods
• Durability Demonstration
• Longer Useful Life and Warranty Requirements
• Warranty Reporting Requirements
• Improved Credit Banking System
• Phase 2 greenhouse gas rules for trucks and trailers
Estimated Pollutant Reductions

**M/H Diesel Truck Emissions - Low NOx Rule**

- **NOx Reduced**
  - 2035 Estimate: 18,000 TONS/YEAR
  - NOx reduced: 2,000 TONS/YEAR
  - Reduction: -14%

- **Particulate Reduced**
  - 2035 Estimate: 400 TONS/YEAR
  - PM reduced: 40 TONS/YEAR
  - Reduction: -8%

**Modeled Ozone Reductions – Select Oregon sites**

<table>
<thead>
<tr>
<th>County</th>
<th>Modeled Ozone in 2028 (ppb)</th>
<th>Ozone reduction (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clackamas</td>
<td>61.2</td>
<td>3.0</td>
</tr>
<tr>
<td>Multnomah</td>
<td>53.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Washington</td>
<td>49.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Washington</td>
<td>55.5</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Heavy-Duty Low NOx Omnibus Rule

- Description of major rule categories
- Estimated pollution reduction
- Discussion topics
  - Diesel-fueled transit bus and engine exemption
  - High horsepower engine exemption (>525 hp)
Transit Bus and Engine Exemption

- Current CARB proposal
  - Exempts diesel-fueled transit bus and engines
  - Tied to the CA Innovative Clean Transit Rule
  - Exemption waivers for Transit Agencies
    - Enables continued diesel engine purchases
    - Approval letter allows manufacturers to sell buses to Transit Agency
  - Agencies with CNG buses would have to provide explanation when buying new diesels
Transit Bus and Engine Exemption

• Questions for consideration:
  – Should Oregon exempt transit agencies or manufacturers/dealerships?
  – Should the exemption be permanent or should it have to be renewed after a certain period (annually or after 3, 5 or 10 years)?
  – DEQ is considering a yearly reporting requirement. What would be important to include in those requirements?
    • Number of exempt new diesel engines and buses delivered to all transit agencies in Oregon?
    • Bus type, make, model, engine serial number, VIN, etc.?
High Horsepower Engine Exemption

- Manufacturers are not planning to design or sell high-hp (>525 hp) compliant products under the new standards.
- Current CARB proposal
  - Tied to 2018 or 2019 sales
  - Exempts up to 110% of 2018 or 2019 sales
- DEQ plans to propose adoption of the same exemption (based on the percentage of total Oregon high-hp sales in 2018 and/or 2019)
- Question for RAC
  - Should Oregon adopt the same exemption? Why or why not?
    - Erratic or unique sales in 2018 or 2019; not reflective of long-term trends?
    - Effect of low sales volumes; set a minimum number of allowable engines?
Clean Trucks Rule 2021

Low Emission Vehicle (LEV) Rule Updates for LDV

Advisory Committee Meeting #1
July 12, 2021
CARB’s Low Emission Vehicle (LEV) Rule

• Updates to maintain existing identicality with LEV rules
  – On-Board Diagnostic (OBD II) requirements for light-duty vehicles
Clean Trucks Rule 2021

Next Steps

Advisory Committee Meeting #1
July 12, 2021
Next steps

July 12, 2021
Rule Advisory Committee meeting #1

Aug. 5, 2021 (tentative)
Rule Advisory Committee meeting #2
(includes fiscal review of rules)

30-day public comment
August/September 2021

Public comment hearing
Mid-late September 2021

November 2021
EQC consideration
Overview of Low NOx Actions

CA, state and local agencies petition EPA\(^1\)

EPA responds to States\(^2\)

CARB begins Low NOx discussion

EPA Cleaner Trucks Initiative

EPA solicits comment on CTI pre-proposal; ODEQ submits comments

CARB approves Low NOx Omnibus

OR – “Every Mile Counts” includes new engine standards

ODEQ announces intention to propose adoption of Low NOx Rules

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NOx standards - Details

<table>
<thead>
<tr>
<th>Model Years</th>
<th>MDDE/LHDD/MHDD/HHDD</th>
<th>MDOE/HDO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FTP</td>
<td>RMC-SET</td>
</tr>
<tr>
<td>Current</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>2024 - 2026</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>2027 and later</td>
<td>0.02</td>
<td>0.02</td>
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</tbody>
</table>

*a MDDE: Medium-duty diesel engines 10,001-14,000 lbs. GVWR, LHDD: Light heavy-duty diesel engines 14,001-19,500 lbs. GVWR, MHDD: Medium heavy-duty diesel engines 19,501-33,000 lbs. GVWR, HHDD: Heavy heavy-duty diesel engines >33,000 lbs. GVWR, MDOE: Medium-duty Otto-cycle engines 10,001-14,000 lbs. GVWR, and HDO: Heavy-duty Otto-cycle engines >10,000 lbs. GVWR.*  
*For HHDD standards beyond 2027 are higher at full useful life to allow for deterioration.*
Table 4. Current and Proposed Warranty Periods

<table>
<thead>
<tr>
<th>Model Year</th>
<th>LHDD</th>
<th>MHDD</th>
<th>HHDD</th>
<th>HDO</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2018 Step 1</td>
<td>110,000</td>
<td>150,000</td>
<td>350,000</td>
<td>50,000*</td>
</tr>
<tr>
<td>Warranty 2022-2026</td>
<td>5 years</td>
<td>5 years</td>
<td>5 years</td>
<td>5 years</td>
</tr>
<tr>
<td>2027-2030</td>
<td>150,000</td>
<td>220,000</td>
<td>450,000</td>
<td>110,000</td>
</tr>
<tr>
<td>7 years/7,000 hours</td>
<td>7 years/11,000 hours</td>
<td>7 years/22,000 hours</td>
<td>7 years/6,000 hours</td>
<td></td>
</tr>
<tr>
<td>2031 and Subsequent</td>
<td>210,000</td>
<td>280,000</td>
<td>600,000</td>
<td>160,000</td>
</tr>
<tr>
<td>10 years/14,000 hours</td>
<td>10 years/30,000 hours</td>
<td>10 years/8,000 hours</td>
<td>10 years/8,000 hours</td>
<td></td>
</tr>
</tbody>
</table>

* Not included under Step 1 Warranty, but current periods are shown here for completeness.