Amendments to The Airborne Toxic Control Measure (ATCM) for Portable Diesel Engines and The Statewide Portable Equipment Registration Program (PERP) Regulation

November 16, 2017
Enforcement Division
Overview

- CARB diesel fleet rules require transition to cleanest technology available
- Current ATCM is not technologically feasible or economically achievable
- Proposing amendments to maintain long-term emissions and technology target
- Amendments impact Portable Engine ATCM and PERP Regulation
Outline

- Introduction to Portable Equipment
- Current Regulations
- Proposed Amendments
- Benefits of Proposed Amendments
- Recommendation
What is Portable Equipment?

- Engines and equipment units

- Permitted by local air districts
Uses for Portable Equipment

- Portable equipment includes
  - Generators
  - Compressors
  - Pump
  - Equipment Units

- Engines equipped with Emission Control Label
Off-Road Engine Certification
Emissions Standards

- Tier 4 engines are the cleanest available
  - 25 to 40 times lower PM than Tier 1
  - 10 to 15 times lower PM than Tier 3

<table>
<thead>
<tr>
<th>Tier</th>
<th>Newly Introduced Emission Control Technology</th>
<th>PM Standard (g/bhp-hr)</th>
<th>NOx Standard (g/bhp-hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NA</td>
<td>none (default 1.0)</td>
<td>none (default 14)</td>
</tr>
<tr>
<td>1</td>
<td>Turbocharger, Aftercooler</td>
<td>0.4</td>
<td>6.9</td>
</tr>
<tr>
<td>2</td>
<td>Engine Control Module</td>
<td>0.15</td>
<td>4.9</td>
</tr>
<tr>
<td>3</td>
<td>Exhaust Gas Recirculation</td>
<td>0.15</td>
<td>3</td>
</tr>
<tr>
<td>4 interim</td>
<td>Diesel Particulate Filter</td>
<td>0.015</td>
<td>1.5</td>
</tr>
<tr>
<td>4 final</td>
<td>Selective Catalytic Reduction</td>
<td>0.01</td>
<td>0.3</td>
</tr>
</tbody>
</table>
## Population of Portable Engines

<table>
<thead>
<tr>
<th>PERP Engines 50-750 bhp</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>4,086</td>
<td>15%</td>
</tr>
<tr>
<td>Tier 2</td>
<td>4,367</td>
<td>17%</td>
</tr>
<tr>
<td>Tier 3</td>
<td>10,125</td>
<td>38%</td>
</tr>
<tr>
<td>Tier 4 interim</td>
<td>5,831</td>
<td>22%</td>
</tr>
<tr>
<td>Tier 4 final</td>
<td>2,025</td>
<td>8%</td>
</tr>
<tr>
<td>Total</td>
<td>26,434</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PERP Engines &gt;750 bhp</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>252</td>
<td>14%</td>
</tr>
<tr>
<td>Tier 2</td>
<td>1,196</td>
<td>68%</td>
</tr>
<tr>
<td>Tier 4 interim</td>
<td>276</td>
<td>16%</td>
</tr>
<tr>
<td>Tier 4 final</td>
<td>23</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>1,747</td>
<td>-</td>
</tr>
</tbody>
</table>

### Typical PERP Engine Applications

- **Generators**: 15%
- **Pumps**: 40%
- **Compressors**: 22%
- **Brush/Wood Chippers**: 9%
- **Other**: 15%

---

CARB
Portable Engines are a Small Part of the Emissions Inventory

**Statewide PM (TPD)**

- All Other Diesel Exhaust
- PERP Engines

**Statewide NOx (TPD)**

- All Other Diesel Exhaust
- PERP Engines
Outline

• Introduction to Portable Equipment
• Current Regulations
• Proposed Amendments
• Benefits of Proposed Amendments
• Recommendation
Regulation of Portable Equipment

• District Permits required since the 1990’s

• PERP Regulation adopted in 1997 to provide voluntary alternative to district permitting

• Airborne Toxic Control Measure (ATCM) adopted in 2004 as part of the Diesel Risk Reduction Plan
Partnership with Air Districts

• CARB
  ➢ Establishes requirements
  ➢ Issues registration

• Districts
  ➢ Inspect registered engines and equipment units
  ➢ Retain permit authority
  ➢ Check for unpermitted equipment
  ➢ Enforce the ATCM
Portable Equipment Registration Program (PERP)

• 28,000 engines, 5,000 equipment units, and 3,000 Tactical Support Equipment currently registered

• Registration granted after review of submitted application

• Valid for 3 years
Portable Engine ATCM

• Applicable to all engines $\geq 50$ bhp statewide regardless of how permitted or registered

• Three strategies to reduce diesel PM:
  - Removal of non-certified engines by specific dates
  - Limited eligibility for newly permitted or registered engines
  - Fleet emission standards for PM

• Requires Tier 4 engines by 2020
To achieve compliance, fleets would have to take the following actions:

- Natural turnover
- Level 3 retrofits
- Engine repowers
- Equipment replacement
Rationale for Proposed Amendments

• Compliance not technologically feasible for >750 bhp engines
  ➢ Certification standard exceeds ATCM emissions limit
  ➢ Tier 4 engines not yet available in some applications

• Compliance not economically achievable
  ➢ Tier 4 late to market, fleets recently bought Tier 3
  ➢ Retrofits and repowers not feasible in most cases
  ➢ Tier 4 engines twice as expensive as Tier 3
  ➢ Fleets must purchase new equipment by 2020
Outline

• Introduction to Portable Equipment
• Current Regulations
• Proposed Amendments
• Benefits of Proposed Amendments
• Recommendation
Goals for Proposed Amendments

- Transition fleet to cleanest engines
- Reduce exposure and protect public health
- Provide affordable and less complicated compliance pathway
- Improved enforceability
Public Process

• Conducted 9 workgroup meetings
• Held 8 public workshops
• Numerous conference calls
Framework for Amendments to ATCM and PERP Regulation

• Add tier phase-out schedule to simplify requirements
• Offer revised fleet average option for large fleets
• Amend low-use engine provisions
• Expand incentives and credits
• Other amendments
# Proposed Tier Phase-Out Schedule in the ATCM

<table>
<thead>
<tr>
<th>Engine Certification</th>
<th>Engines rated 50 to 750 bhp</th>
<th>Engines rated &gt;750 bhp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large Fleet</td>
<td>Small Fleet</td>
</tr>
<tr>
<td>Tier 1</td>
<td>1/1/2020</td>
<td>1/1/2020</td>
</tr>
<tr>
<td>Tier 2 built prior to 1/1/2009</td>
<td>1/1/2022</td>
<td>1/1/2023</td>
</tr>
<tr>
<td>Tier 2 built on or after 1/1/2009</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Tier 3 built prior to 1/1/2009</td>
<td>1/1/2025</td>
<td>1/1/2027</td>
</tr>
<tr>
<td>Tier 3 built on or after 1/1/2009</td>
<td>1/1/2027</td>
<td>1/1/2029</td>
</tr>
<tr>
<td>Tier 1, 2, and 3 flexibility engines</td>
<td>December 31 of the year 17 years after the date of manufacture</td>
<td></td>
</tr>
</tbody>
</table>
Proposed Large Fleet Option (Fleet Average) in the ATCM

- Fleet average emission standards for PM

<table>
<thead>
<tr>
<th>Compliance Date</th>
<th>Fleet PM Standard (g/bhp-hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1/20</td>
<td>0.10</td>
</tr>
<tr>
<td>1/1/23</td>
<td>0.06</td>
</tr>
<tr>
<td>1/1/27</td>
<td>0.03</td>
</tr>
</tbody>
</table>

- Must register all engines in PERP to qualify
Proposed Amendments for Low-Use Engines in the ATCM

- Allowable use extended to 200 hours/year
- Exempt from fleet emission requirements
- Enhanced recordkeeping and reporting
Expanded Incentives in the ATCM

- Encourage the use of zero-emission technology
- Additional scenarios for electrification credit
- Benefits for reducing emissions early
Other Proposed Amendments

- Protect public health
- Improve implementation
- Address stakeholder concerns
- Provide clarity
Amendment in PERP Regulation to Further Protect Public Health

• Multiple registered engines are sometimes used together

• Mechanism added to ensure exposure is limited from these operations

• Extreme ozone non-attainment districts can evaluate potential AAQS exceedences and require mitigation
Proposed ATCM Amendments for Consumer Protection

- Prohibition of sale of non-compliant engines
- Disclosure of applicability keeps operators informed of requirements
Clarifying Allowable Use of Generators Registered in PERP

• Registered generators may not power stationary sources, with some exceptions

• Clarified when registered generators may be used for specific situations
  ➢ Temporary replacement of stationary backup generator with same or lower emissions
  ➢ Electrical upgrades
Amending PERP Regulation Provision for Emergency Events

• PERP allows unpermitted engines to operate during an emergency event

• Extended drought put California fleets at economic disadvantage

• Limit to certified engines and duration of one calendar year
Evaluating Concerns About Tier 4 Engine Technology

• Stakeholder concerns about Tier 4 engine operational problems

• Staff studied the concerns raised

• Tier 4 engines work
  ➢ Issues are rare, but can occur
  ➢ Issues can be prevented or resolved

• Will provide assistance on request
Drilling operations may cause combustible gas release that poses a safety hazard

Spark-proof engines may be needed for safety

Proposing exemption for EPA certified hazardous location engines

Amendments to ATCM and PERP Regulation
Streamline Application Processing
Provisions in the PERP Regulation

- Provide better customer service
- Streamline processing timelines
- Temporary registration for cleanest engines
Proposed Fee Increase in the PERP Regulation

- Authority to review and set program fees to cover costs
- Recent analysis shows deficit
- Increase initial registration from $620 to $805
Proposed 15-Day Change

- Definition of “Engine Failure” in registration program
- Revise to include associated equipment
  - Definition is used in the temporary replacement of backup generator provision
  - Need to invoke if associated generator fails, not just engine
• Introduction to Portable Equipment
• Current Regulations
• Proposed Amendments
  • Benefits of Proposed Amendments
• Recommendation
Amendments Ensure Emissions Reductions

- Meets long term emissions and technology targets
- Reduces peak year costs by 50% so fleets may comply
- Protects against exceedences caused by large projects in ozone non-attainment areas
- Improves implementation and enforcement
Statewide Portable Engine Emissions: Particulate Matter

![Graph showing Statewide PM (TPD) over years 2016 to 2030]

- **No Regulation**
- **Proposed Portable Regulatory Amendments**
- **100% Compliance with Existing ATCM**

**PM (TPD)**

- 1.2
- 1.0
- 0.8
- 0.6
- 0.4
- 0.2
- 0.0

**Years:** 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030
Statewide Portable Engine Emissions: NOx

Statewide NOx (TPD)

- No Regulation
- Proposed Portable Regulatory Amendments
- 100% Compliance with Existing ATCM

NOx (TPD) vs. Years (2016-2030)
Additional Impacts

- Environmental Justice
- California Environmental Quality Act
- Economic Impacts
Improved Implementation

• Registration will be issued more quickly

• Less complicated emission requirements will result in greater compliance rates

• Programs fully funded
Strengthened Enforcement

• Tier phase-out enforced by expiration

• Fleet average handled by CARB

• Different placards for easy identification
Outline

• Introduction to Portable Equipment
• Current Regulations
• Proposed Amendments
• Benefits of Proposed Amendments
• Recommendation
Recommendation

• Adopt the proposed amendments to the Portable Engine ATCM and the PERP Regulation