Proposed In-Use Stationary Diesel Agricultural Engine Requirements

Public Meeting Colusa/Durham
July 26, 2006

California Environmental Protection Agency

Air Resources Board
Background - Diesel Exhaust Particulate Matter (Diesel PM)

- Diesel PM Toxic Air Contaminant (TAC) 1998
  - Cancer
  - Noncancer Adverse Health Effects: premature death, lung irritation and allergic reactions, asthma exacerbation, heart disease

- Other Diesel Exhaust Pollutants
  - Arsenic, benzene, formaldehyde, and other TACs: cancer, reproductive/developmental problems, eye and lung irritation
  - Oxides of Nitrogen (NOx) + Volatile Organic Compounds (VOC) = Ozone: premature death, lung irritation, bronchitis, emphysema, crop loss, other environmental and material deterioration
Background - Stationary Diesel Engine Regulation

- Diesel Risk Reduction Plan October 2000
- Board Adopts Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines (ATCM) February 2004
  - Board Directs Staff to Investigate In-Use Agricultural Engine Regulation
  - ATCM Emission Limits for New Agricultural Engines Effective January 2005, Revised September 2005
- San Joaquin and South Coast Districts Adopt NOx Rules June 2005
Proposed Regulation Applicability

- Diesel-fueled Engine
- Greater Than 50 HP
- Used in Agriculture
Proposed Regulation Applicability (continued)

- **Stationary**
  - Permanently mounted, or
  - Located at a single site more than 12 consecutive months, * or
  - If seasonal operation, located at a single site 3 or more consecutive months for each of 2 or more consecutive years*

* “Site” means a specific location at the farm. Time spent by another engine at the site is included.
Examples of Stationary Engines

• A trailer-mounted pump engine is operated at the same site* for 3 months year after year
• A trailer-mounted pump engine is operated at the same site* for 3 months year after year, but a different engine is used each year
Proposed Regulation Applicability (continued)

- Exceptions:
  - Does Not Apply to Agricultural (Ag.) Wind Machines
  - Ag. Emergency Standby Generator Sets Are Exempt from Emission Limits
Proposed Regulation Applicability (continued)

- Primarily Expected to Affect Stationary Diesel Ag. Irrigation Pump Engines
  - 8,600 Statewide
  - Emissions
    - Diesel PM: 850 TPY
    - NOx: 12,800 TPY

- Also Expected to Apply to a Few Stationary Ag. Non-Emergency Generator Set Engines
Proposed Emission Limits Based On Off-Road CI Engine Certification Standards for New Engines

- Certified Engines Comply With Tier 1-4 Standards Phased In From 1996-2015
- Noncertified or “Tier 0” Engines Do Not Comply With Standards (e.g., Pre-1996 Engines)
- A Standard for Any Given Engine Is Based on Engine Size (Horsepower) and Model Year
- PM and Other Air Pollutant Standards Become More Stringent Over Time
## Proposed Non-certified In-Use Stationary Diesel Ag. Engine PM Emission Limits

<table>
<thead>
<tr>
<th>Non-certified (Tier 0) Engine HP</th>
<th>Off-Road Engine Cert. Standard</th>
<th>Proposed ATCM Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50 - 99</td>
<td>Tier 3 or 4</td>
<td>Dec. 31, 2011</td>
</tr>
<tr>
<td></td>
<td>Jan. 1, 2008</td>
<td></td>
</tr>
<tr>
<td>100 - 174</td>
<td>Tier 3</td>
<td>Dec. 31, 2010</td>
</tr>
<tr>
<td></td>
<td>Jan. 1, 2007</td>
<td></td>
</tr>
<tr>
<td>175 - 750</td>
<td>Tier 3</td>
<td>Dec. 31, 2010</td>
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<tr>
<td></td>
<td>Jan. 1, 2006</td>
<td></td>
</tr>
<tr>
<td>&gt;750</td>
<td>Tier 4</td>
<td>Dec. 31, 2014</td>
</tr>
<tr>
<td></td>
<td>Jan. 1, 2011</td>
<td></td>
</tr>
</tbody>
</table>
## Proposed T1,T2-Certified In-Use Stationary Diesel Ag. Engine PM Emission Limits

<table>
<thead>
<tr>
<th>Tier 1 or Tier 2 Certified Engine HP</th>
<th>Off-Road Engine Cert. Standard</th>
<th>Proposed ATCM Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50 - 174</td>
<td>Tier 4</td>
<td>Dec. 31, 2015*</td>
</tr>
<tr>
<td></td>
<td>Jan. 1, 2012</td>
<td></td>
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<tr>
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* or 12 years after initial installation
Proposed Emission Limits for Other Pollutants

- Emission Limits for Other Pollutants (NOx, NMHC+NOx, HC, and CO)
- Based on Engine Model Year and HP, Required to Meet Off-Road Engine Certification Standard Tier 1-4 Levels
Examples of Requirements

• 1995 Tier 0 Engine, 200 Horsepower
  ▶ By December 31, 2010, replace with electric motor, Tier 3 engine, or
  ▶ Meet equivalent Tier 3 PM standard and Tier 1 standards for NOx and other pollutants

• 2005 Tier 2 Engine, 100 Horsepower
  ▶ By December 31, 2017, replace with electric motor, Tier 4 engine, or
  ▶ Meet equivalent Tier 4 PM standard and Tier 2 standards for NOx and other pollutants

• Engine Replacement Is the Expected Compliance Strategy
Reasons to Use Engine Replacement as the Compliance Strategy

- Multiple Pollutant Emission Reductions
- Verified PM Control Devices Available for Tier 1 or Later Engines Only
- Incentive Programs
- Existing San Joaquin Valley and South Coast District NOx Rules Primarily Rely on Engine Replacement
More Stringent PM Emission Limits Near Residential Areas

- Tier 3 Engine May Result in Unacceptable Cancer Risk for Engines Located Near a Neighboring Residence or Residences
- Alternatives: Electrify, Tier 4-Compliant Engine, Tier 3 Engine Plus Retrofit Device, Relocate Engine, Spark-ignited Engine, and/or Alternative Fuels
Proposed Reporting Requirements

• **Purpose of Reporting:**
  - Outreach,
  - Target Incentive Funding,
  - Promote Equity

• **No Reporting Required If Districts Already Have Information**
Proposed Reporting Requirements (continued)

• General Reporting Requirements
  ▸ Owner/Operator contact information
  ▸ Engine make, model, serial number, size
  ▸ General description of engine location
  ▸ Estimated engine operating hours and fuel use (if non-diesel fuel is used)

• Reporting for Engines Near Receptors
  ▸ Estimated distance and direction from engine to receptor
  ▸ Specific engine and/or receptor location
Other Proposed Amendments

- ARB Staff Propose to Add In-Use Ag. Engine Requirements to the Existing Stationary Compression Ignition Engine ATCM

- Other Proposed Amendments Primarily Clarify Definitions, Requirements, and Acceptable Technologies for Non-Ag. Engines
Regulatory Process - Next Steps

- July 27, 2006 - Public Workshop, Sacramento
- Sept. 2006 - Staff Report, 45-Day Public Review and Comment
- Oct. 19, 2006 - Board Hearing
Further Information

- **Webpage:**  [http://www.arb.ca.gov/diesel/ag/inuseag.htm](http://www.arb.ca.gov/diesel/ag/inuseag.htm)
- **List Serve:**  [http://www.arb.ca.gov/listserv/inuseag.htm](http://www.arb.ca.gov/listserv/inuseag.htm)
- **Richard Boyd, Manager, Process Evaluation Section**, (916) 322-8285 or rboyd@arb.ca.gov; or
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