

# **Proposed Amendments to Stationary Compression Ignition Engine ATCM**

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**Board Hearing**

**Sacramento, California**

**May 26, 2005**



**California Environmental Protection Agency**  
**Air Resources Board**

# Public Process

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- **ATCM adopted February 26, 2004**
- **New engine requirements took effect January 1, 2005**
- **Emergency amendments March 17, 2005**
  - **Effective April 4, 2005**
  - **Expire August 3, 2005**



# Public Process (continued)

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## Board's Emergency Action:

- For new agricultural pump engines  $>50$  to  $<175$  hp, replaced  $0.15$  g/bhp-hr PM standard with requirement to comply with New Off-Road Engine Certification PM Standards
- Directed ARB staff to:
  - Develop a recommendation for agricultural engines
  - Investigate  $>50$  to  $<175$  hp emergency standby engines



# **Public Process (continued)**

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- **Initial Statement of Reasons published  
April 8, 2005**
- **Two Public Workshops**
  - **Sacramento April 22, 2005**
  - **Fresno May 4, 2005**
- **Numerous meetings and conference  
calls with stakeholders**

# Other Issues Investigated

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- **New >50 to <175 hp agricultural wind machine engines**
- **New direct-drive emergency standby fire pump engines**
- **In-use emergency standby engine:**
  - **Missile launch tracking**
  - **Maintenance and testing at hospitals**
  - **Maintenance and testing at schools where students also live**
- **New >50 to <175 hp emergency generators**

# Agricultural Pump Engines Background

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- Used to irrigate crops, pump water for stock
- $>50$  to  $<100$  hp - availability very limited
- $100$  to  $<175$  hp - not available in all sizes for all manufacturers
- $\geq 175$  hp
  - fully available
  - already meet  $0.15$  g/bhp-hr PM



# **Proposal for New Agricultural Pump Engines**

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**Propose to make emergency regulation permanent:**

- Limited 0.15 g/bhp-hr PM-compliant >50 to <175 hp engine availability expected to continue**
- Technical and economic constraints associated with pump engine replacement (e.g., engine compatibility with existing systems)**
- Potential loss of emission reductions from voluntary engine replacement**

# Agricultural Wind Machine Engines Background

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- Used during sustained freezes to protect crops and trees
- About 10-15% diesel-fueled
- Annual Operation:
  - Range 0-80 hours
  - Typical  $\leq 45$  hours
- About 10 new diesel purchased each year



# **Proposal for New >50 to <175 hp Agricultural Wind Machine Engines**

**Propose to treat the same as agricultural pump engines:**

- Same availability and equipment compatibility issues as agricultural pump engines**
- Very few new engines purchased**
- Very low annual operating hours**

# **Direct-drive Emergency Standby Fire Pump Engines - Background**

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- Engine directly coupled to water pump used for water-based fire protection systems
- Same engines as agricultural pump engines, but special National Fire Protection Act (NFPA) performance and reliability requirements
- About 100-150 new diesel purchased in 2004



# **Proposal for New Direct-drive Emergency Standby Fire Pump Engines**

**Propose to treat >50 to <175 hp the same as agricultural pump engines and, in addition, extend initial Tier 3 and Tier 4 standard compliance 3 years:**

- Same availability issues as agricultural pump engines plus NFPA certification criteria**
- For  $\geq 175$  hp, time is needed to design, test, and produce auxiliary equipment to meet special performance criteria and Tier 3 (2006)**
- Critical for water-based fire protection systems**

# Missile Launch Emergency Standby Engines - Background

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- Department of Defense satellite stations use emergency standby engines to abort missile launches
- Three launch stations in California
- Infrequent test launching



# **Proposal for Missile Launch Emergency Standby Engines**

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**Propose to clarify that missile launch tracking is an emergency use:**

- Critical for protecting the safety of nearby persons and property**
- Infrequent activity**

# Proposal for Maintenance and Testing at Hospitals

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- **New 2005 Joint Commission on Accreditation of Healthcare Organizations (JCAHO) standards require more frequent hospital emergency power system testing**
- **Staff propose to amend the ATCM to be consistent with those new standards**



# **Proposal for Maintenance and Testing at School Sites**

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- **Current ATCM does not allow emergency standby engine maintenance and testing in the presence of students at schools**
- **Propose to clarify ATCM to allow maintenance and testing at schools where students live on-site**

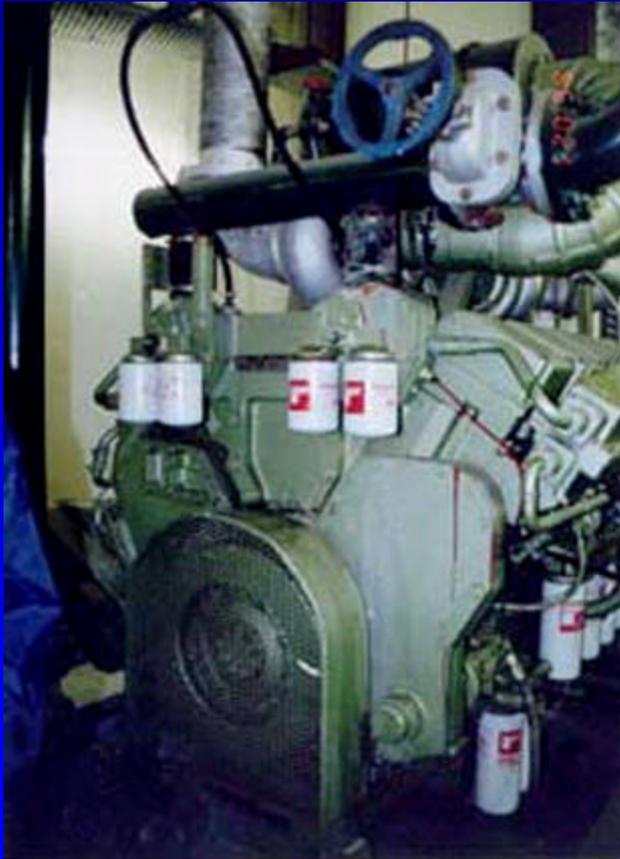
# Other Changes

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- Clarify “Initial Start-up Testing” definition
- Clarify the sale of new diesel CI engines less than or equal to 50 bhp
- Clarify Compliance with Emission Limits Section (D)1. and 2.
- Clarify Section 4(D)(E), Notification of Non-Compliance
- Clarify Section (f) and (g) compliance
- Clarify Section (h)(1) & (2), Emissions Data

# Emergency Generators Background

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Prime mover (diesel engine) of the emergency generator set

- Used to provide electrical power during power failures, fires, and floods
- Testing and maintenance requirements
- Concerns were expressed about new  $>50$  to  $<175$  hp availability at March 17, 2005 meeting

# **New Emergency Generators**

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**Staff proposes to maintain current ATCM requirements:**

- **Availability has not changed since ATCM adopted in February 2004**
  - **In >50 to 99 hp range: 5 manufacturers and 11 engine models**
  - **In 100 to <175 hp range: 2 manufacturers and 5 engine models**
- **Auxiliary equipment compatibility not a major issue for replacement**

# **New Emergency Generators (continued)**

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- **Public health concern**
  - **Generally located in urban areas**
  - **Fairly high volume sold each year**
- **Staff commit to work with stakeholders regarding the ability of new >50 to <175 hp emergency generators to meet 2007-2008 certification standards**

# Environmental and Health Impact

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- **No significant increase in diesel PM emissions or health risk**
- **Potential for reduced diesel PM emissions and health risk from voluntary replacement**



# Economic Impacts

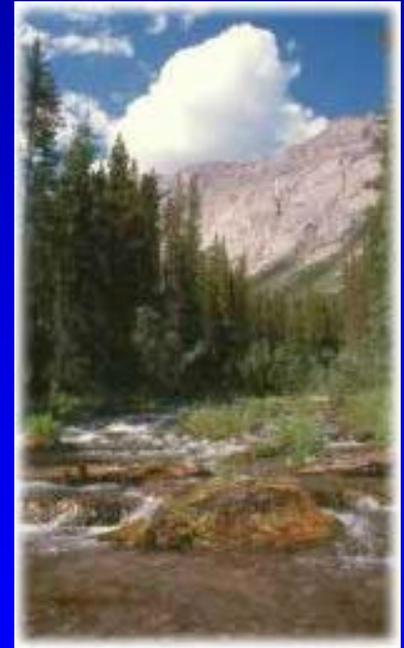
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- **No increase in cost for agricultural pump, agricultural wind machine, or direct-drive emergency standby fire pump engines**
- **Potential cost relief for some farmers and others**

# Staff Recommendation

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- Approve the Proposed Amendments with 15-day changes
- Direct ARB staff to:
  - Request immediate effective date
  - Encourage Carl Moyer Program incentive funding priority for ag. engines meeting 0.15 g/bhp-hr PM
  - Continue to monitor the availability of emergency standby engines meeting 0.15 g/bhp-hr PM



# Emergency Generators Currently Meeting 0.15 g/bhp-hr PM

Mfc.	A	B	C	D	E	F	G	H	I	J
>50-99 hp	*	0/2	1/1	4/10	0/7	1/2	2/2	0/4	0/4	3/3
100-<175 hp	*	0/2	1/1	4/5**	0/7	0/1	*	*	*	*
Complying/ Total per Mfc.	NA	0/4	2/2	8/15	0/14	1/3	2/2	0/4	0/4	3/3

\* Manufacturer does not produce generator-type engines in that size range

\*\* 1 of the 4 complies based on 5-mode certification test cycle data

## Summary:

-16 of 51 (31%) of engine models/families comply

- 5 of 10 (50%) of manufacturers have one or more compliant engine models/families