

ARB Public Workshop Emergency Diesel Engine ATCM

March 1, 2010

Emergency Diesel Engine Issue

- **Current ATCM Requires New Emergency Diesel Engines to Meet Nonroad Tier 4 Emission Standards for PM, NOx, Hydrocarbons**
- **Meeting Tier 4 Nonroad Standards Will Generally Require PM and NOx Aftertreatment**
- **Addition of Aftertreatment Controls Adversely Affects Emergency Engine Performance, Creates Installation/Operation Problems, and Adds Large Costs**

Tier 3 and 4 Emissions Standards

<u>Engine Size</u>	<u>Tier 3 Standards g/kWh</u>	<u>Tier 4 Date g/kWh</u>	<u>Tier 4 Standards g/kWh</u>	<u>Aftertreatment To Meet Tier 4</u>
100 kW	Nox+NMHC 4.0 PM 0.3	<u>2012</u> <u>2012</u> <u>2104</u>	NOx 3.4 PM 0.02 NOx 0.40	? <u>Yes</u> <u>Yes</u>
300 kW	Nox+NMHC 4.0 PM 0.2	<u>2011</u> <u>2011</u> <u>2014</u>	NOx 2.0 PM 0.02 NOx 0.40	? <u>Yes</u> <u>Yes</u>
600 kW	Nox+NMHC 4.0 PM 0.2	<u>2011</u> <u>2011</u> <u>2015</u>	NOx 3.5 PM 0.10 NOx 0.67	? ? <u>Yes</u>
900 kW	Nox+NMHC 4.0 PM 0.2	<u>2011</u> <u>2011</u> <u>2015</u>	NOx 0.67 PM 0.10 PM 0.03	<u>Yes</u> ? <u>Yes</u>

US EPA NSPS – New Compression Ignition Engine Standards

- Requires Manufacturers to only Supply Certified Engines
- Requires Compliance to Nonroad Engine Emissions Standards
- Exception for Emergency CI Engines
 - Emergency CI engines must be certified to Tier 2 to Tier 3 nonroad CI emissions standards, and Tier 4 nonroad engine standards that do not require add-on controls
 - No DPFs or SCR aftertreatment systems are required for Emergency CI engines under the NSPS

Tier 4 ATCM Compliance Problems

- Insufficient Run Time and Temperature For Aftertreatment
- Potential Performance Degradation and Failure
- Accumulated DPF Content and Potential Burn-Out
- Limited/Restricted Space for NOX Aftertreatment Devices
- Unresolved Seismic Standard Compliance Issues
- Very Small Emissions Benefit
- NSPS Engine Certification Conflicts
- Reduced Reliability and Availability

ATCM Compliance Consequences

- Reduced Performance During Emergency Operations
- Increased Engine Failure Rates
- Limited or No Emissions Benefit
- High Cost for Compliance
- Unique California Product
- Reduced Emergency Availability

ATCM Emergency Diesel Solution

- Revise ATCM Regarding Adoption of Tier 4 Emissions Standards
- Continue with Current Standards for PM and Tier 3 Nonroad Standards for NOx, CO, HC When Tier 4 Nonroad Standards Become Effective in 2011
- Align ATCM with NSPS Approach of Not Requiring Aftertreatment Forcing Standards
- Allow Sufficient Maintenance and Testing Run Times to assure Proper DPF Operation