

Public Workshop Proposed Amendments to the Verification Procedure



California Environmental Protection Agency

Air Resources Board



May 24, 2011

El Monte, CA

**Heavy-Duty Diesel In-Use
Strategies Branch**

Need for Amendments

- DECS manufacturers request for economic relief in regards to in-use compliance
- Fleet rule changes
- Global recession
 - Tighter margins for DECS manufacturers due to reduced sales
- Help minimize in-field issues
- Request to have a better defined application and approval process

Overview

- Verification Program Overview
- Proposed Amendments
 - In-use compliance
 - Application process
 - Miscellaneous updates
- Next Steps
- Contact Information

Verification Program Overview



ARB Verification Program

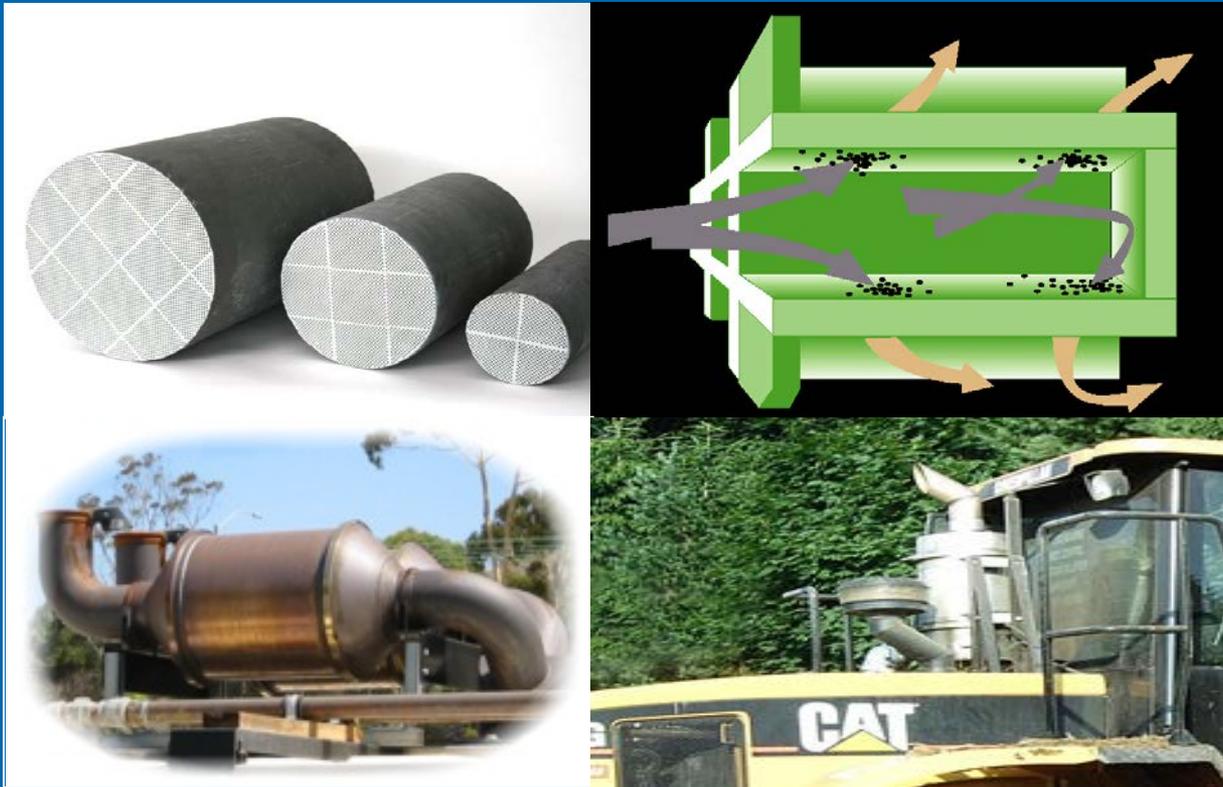
Adopted in 2002

- Amended in 2004, 2006, 2008, and 2010

Key principles

- Ensure emissions reductions
- Technologies must be based on sound principles of science and engineering
- Provide warranty protection to end-users
- Verify emissions reductions and durability through in-use testing
- No increase in other pollutants

Proposed In-Use Compliance Amendments



In-Use Compliance Requirements

Applicability

- Currently specifies On-road, Off-road, and Stationary applications
- Added language to specifically identify Marine applications, RTG Cranes, Auxiliary Power Units (APU's), Transport Refrigeration Units (TRU's), and entirely fuel-based strategies

In-Use Compliance Requirements

Current sales triggers – in-use testing is required when 50 units have been sold or leased in CA

Proposed sales triggers – require in-use testing based on CA unit sales or leases by application as follows:

- On-road and TRU – 300 units
- Off-road, RTG Crane, and APU – 100 units
- Stationary and Marine – 50 units
- EPA/ARB verified of identical on/off-road systems – 500 units nationwide
 - Regs specify criteria for “identical”

In-Use Compliance Requirements

Test Interval

- Combines previous Phase 1 and Phase 2 testing into a single Test Interval
- Reduces in-use testing by 50 percent
- Applicants must obtain and test 4 systems once they've been operated at least 60 percent of their minimum warranty period

In-Use Compliance Requirements

In-use compliance testing proposal requirements

- Cover letter and applicant information
- Test facility information
- List of 10 candidate test units with associated information on each unit including selection methodology
- Test engine/vehicle information
- Emissions test plan
- Functional/Visual test plan

In-Use Compliance Requirements

Selection of test units

- Applicants to determine the representativeness of the proposed test units
- Selection methodology
 - Sales data
 - Core size distribution
 - Statistical analysis, etc.
- Unit's cleaning history must be known
- Engine's "proper state of maintenance" defined if its emissions levels are within 10 percent of its original certification values

In-Use Compliance Requirements

Number of test units

- Applicants must test a minimum of 4 units
- For each failed unit, 2 more units must be tested
- Must not exceed 10 units
- Allowed 3 failures, if greater than 3, applicant fails to meet the in-use compliance requirements

In-Use Compliance Requirements

In-use compliance testing

- Requires system inspections and functionality tests to verify that all parts of the DECS are intact and functioning as originally verified
- These inspections/tests must be identified in the applicants testing proposal, must include pass/fail criteria, and must receive Executive Officer approval

In-Use Compliance Requirements

In-use compliance report

- Applicants now only submit 1 report – single test interval
- Submission of the final report due no later than 24 months after meeting the appropriate sales trigger
- Conditionally verified strategies must still submit their testing proposals but may delay submitting their final report for an additional year - 36 months after meeting the appropriate sales trigger

In-Use Compliance Requirements

Conditions for passing in-use testing

Proposed amendments modify the requirements for passing in-use compliance testing as follows:

- Level 3/+; strategy must maintain $\geq 85\%$ PM reductions
- All other Levels / Marks; must reduce emission by 90% of the lower bound they were verified to (including the NO_x component of a Level 3/+ system)
- If required, must meet the pass/fail criteria for all inspections/functional testing
- If required, must meet NO₂ requirements of the Procedure
- 70% of all units tested must meet the above standards

In-Use Compliance Requirements

Recall provisions

- Recall determination based in part on
 - In-Use Compliance Testing report
 - Remedial reports
 - Warranty report
 - Enforcement testing
 - Other relevant information
- Offsets elimination of 1 test phase and provides needed protections to end-users

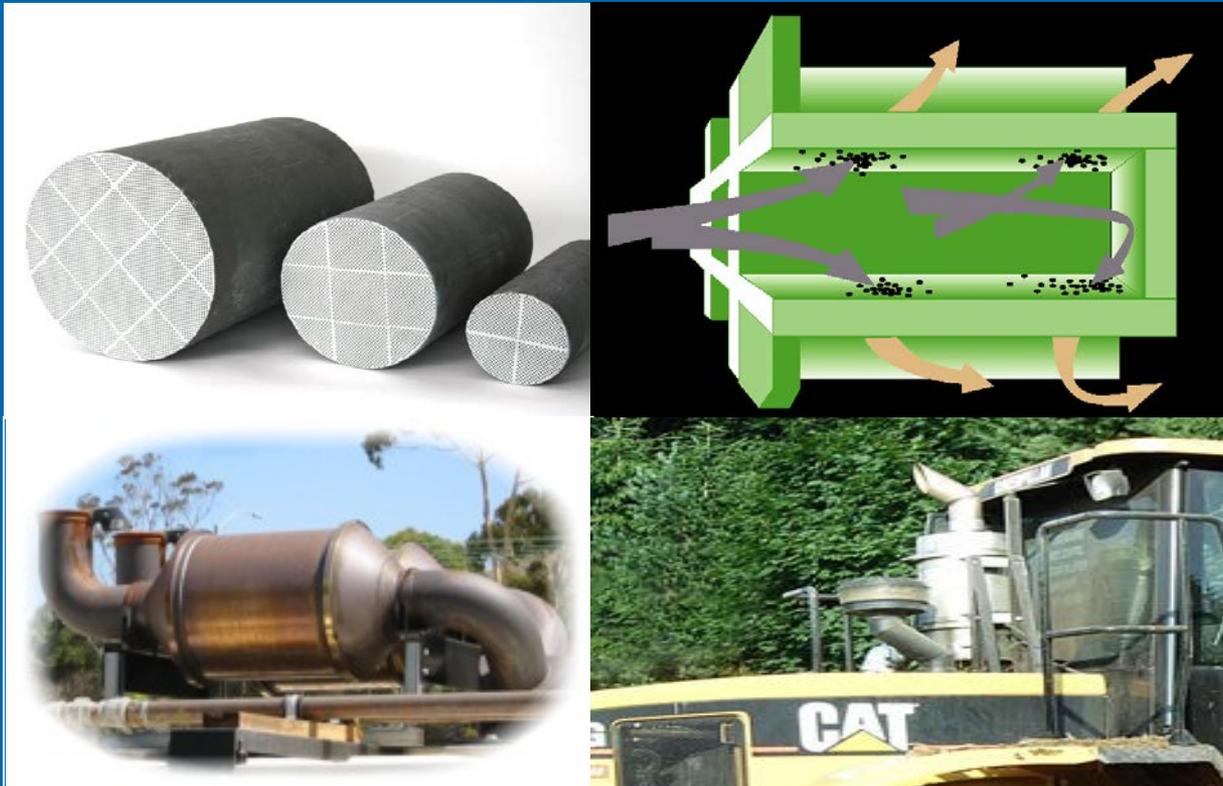
In-Use Compliance Requirements

Recall provisions (continued)

- Recall triggers: failing in-use compliance testing, warrantable condition, failure of an operational feature
- Requires applicant to submit a recall plan within 60 days of notification
- Plan must specify inspection, repair, adjustment, replacement, or modification program to address the failure
- Recall plan must address all DECS in the recalled DECS family name and includes quarterly reporting of progress

Proposed Application Process Amendments

Goal is to add defined process



Application Process:

Preliminary Application

- Applicants to submit a complete, market-ready DECS
 - Requirement can be waived for cause
- ARB will review for completeness within 30 days
 - If incomplete notice sent requesting missing information
 - Applicant has 2 additional opportunities to complete the preliminary application
 - All exchanges on a 30 day time limit basis
- If incomplete after the second request for missing information, application terminated
- If complete, notice sent to applicant

Application Process: Preliminary Application

Engineering and compliance review

- ARB performs technical review of completed preliminary application to determine if satisfactory to support development of a Test Plan Approval letter
 - If not satisfactory, notice sent requesting additional information
 - Applicant has 2 additional opportunities to provide the requested information
 - All exchanges on a 45 day time limit basis
- If still not satisfactory after the second request for additional information, application terminated
- If satisfactory, notice sent and test plan letter issued within 45 days

Application Process:

Final Application

Final Application Review

- No review without the following: pre-app complete, pre-app satisfactory, test plan approval letter
- ARB will review for completeness within 30 days
 - If incomplete notice sent requesting missing information
 - Applicant has 2 additional opportunities to complete the final application
 - All exchanges on a 30 day time limit basis
- If incomplete after the second request for missing information, application terminated
- If complete, notice sent to applicant

Application Process:

Final Application

Test results and compliance review

- Test results reviewed within 60 days of completed final application notification
- Executive Officer will determine whether DECS merits verification based on final results
- Executive Officer classifies DECS based on percent reductions
- **For all reviews:** if application is terminated, applicant must wait at least 30 days before re-applying

Application Process

Design Modifications

- If DECS modified during the review process – application terminated
- Design modifications include changes to:
 - Materials, specifications, major parts, canning components
 - Wash coat, catalyst formula/composition, catalyst loading
 - Sensors, control logic, algorithms, notification systems

Emission Testing Requirements

Statement of Compliance

- Applicants must submit signed statement of compliance
- Must indicate that all testing meets requirements of the Procedure and Test Plan Approval letter
- Affirm all data submitted and QA/QC verified
- Statement does not guarantee information will be approved

Durability Testing Requirements

Extend conditional verification timeframe

- Extends off-road conditional verification to 2 years (currently 1 year)
- Additional year does not apply to stationary, marine, RTG crane, or TRU applications – requirements for full verification must still be completed within 1 year

Other Requirements

High backpressure (BP) notification changes

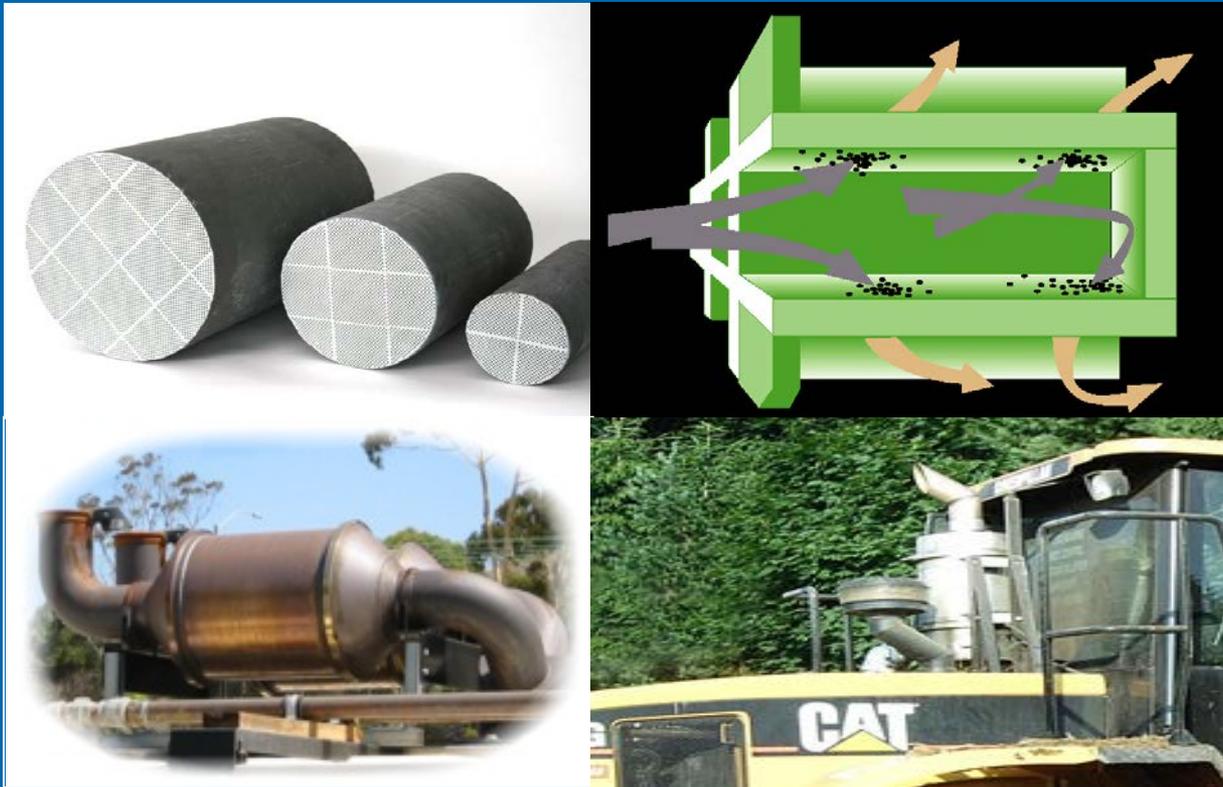
- Proposed amendments require filter-based strategies to employ a three-stage notification system:
 - First notification: BP > 60 “H₂O for 10 consecutive seconds
 - Second notification: BP > 80 “H₂O for 10 consecutive seconds
 - Third notification: BP > 100 “H₂O for 10 consecutive seconds
- Requires third stage to “latch”
- Requires the ability to record high backpressure codes

Other Requirements

DECS pre-installation requirements

- Applicants required to establish a smoke opacity limit or an alternative criterion
 - Opacity limit / alternative criteria used to prevent retrofit of target engines in a poor state of maintenance
 - Currently verified DECS: must establish opacity limit within 6 months of effective date of regulation
 - Assessment must include opacity test (SAE J1667)
- Installers must perform assessment of engine no more than 30 days prior to installation
- Installers must be authorized and trained by the applicant

Proposed Miscellaneous Amendments



Warranty Requirements

Warranty coverage

- Added clarifying language defining warranty coverage for parts replacements, sizing changes, or adjustments required to match the DECS to the engine

Warranty report

- Must include all claims – including issues reported by installers, distributors, and service providers
- No prescreening allowed
- Must submit report if claims for the same part or component exceed 4% per calendar year
- Must provide sales/lease data on a calendar year basis
- Applicant responsible for collecting and reporting warranty information

Verification of Emission Reductions for Alternative Diesel Fuels and Fuel Additives

Fuel additive/alternative fuel registration

- Registration of fuel additives with U.S. EPA must be completed before submitting a preliminary verification application
- Alternative diesel fuels that require U.S. EPA registration must do so before submitting a preliminary verification application
- Other miscellaneous changes

Next Steps

Actively seeking stakeholder comments and input

Scheduled for Board for consideration in October, 2011

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<http://www.arb.ca.gov/diesel/verdev/verdev.htm>

<http://www.arb.ca.gov/diesel/verdev/in-use/in-use.htm>