

Public Workshop

Proposed Amendments to the Verification Procedure



California Environmental Protection Agency

Air Resources Board



January 19, 2012

El Monte, CA

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

Overview

- Proposed amendments to the Verification Procedure
 - In-use compliance
 - Application process
 - Emissions and durability testing
 - Warranty reporting
 - Pre-installation compatibility assessment
 - Miscellaneous
- Next Steps
- Contact Information

Proposed In-Use Compliance Amendments



In-Use Compliance Requirements

When to begin in-use testing:

- Currently: when 50 units sold or leased
 - Requires 2 phases of emissions testing
- Proposal:
 - Field tests required after selling or leasing 100 units, all categories
 - Emission tests required after selling or leasing 300 units, all categories
 - Special provisions for entirely fuel-based strategies

In-Use Compliance Requirements

Field Tests* – requires functional tests and inspections of in-use systems

- Identify 10 systems and test minimum of 8
- Age – 25% of warranty period or 1 year
- Propose and perform inspections and functional tests showing systems continue to reduce emissions and remain functional and durable
- Compliance – first 8 pass or 9 of 10 tested pass

* Replaces Phase 1 emissions testing

In-Use Compliance Requirements

Emission Tests – requires functional tests and inspections of in-use systems followed by emissions tests

- Identify 10 systems and test minimum of 4
- Age – 60% of warranty period or 3 years
- Propose and perform inspections and functional tests followed by full emissions testing
- Compliance – first 4 pass or 70% of all units tested must pass

In-Use Compliance Requirements

Alternative Test Schedule

- Applicants may elect to skip field testing and move directly to emissions testing after selling or leasing 100 units
- Follows the proposed emissions testing path and compliance requirements
- Applicants that fail to submit their field test proposals on time will be required to follow the alternative test schedule

In-Use Compliance Requirements

In-use compliance test proposals

- Required for each DECS family name
- Must be submitted within 90 days after hitting each sales trigger
- Requires approval before testing may begin
- Proposed amendments include detailed outlines of the information required by applicants in their test proposals (for both field and emissions testing)

In-Use Compliance Requirements

Selection of test units

- Applicants must propose representative test units for Executive Officer review and approval
- Selection methodology must be explained
- Emissions Testing – if selection methodology requires multiple test engines, applicants may propose alternative strategy provided they can show selection represents “worst-case” for emissions compliance

In-Use Compliance Requirements

Field Testing Opacity Requirements

- Where technically feasible, applicants may propose opacity testing to validate functionality of filter module
- Applicants must specify and ARB approve opacity limit in their in-use compliance test proposals
- Applicants may elect to opacity test at the time of installation to develop a “baseline” for their system
- ARB continuing to collect data on opacity tests of retrofitted vehicles and equipment – seeking additional data

In-Use Compliance Requirements

In-use compliance reports

- Field Testing – due 18 months after 100th unit sold
- Emissions Testing – due 18 months after 300th unit sold
- Proposed amendments include detailed outline of the information required by applicants in their final reports

In-Use Compliance Requirements

Conditions for passing in-use testing

Modified to accommodate new proposal:

- Field Testing – must meet approved opacity level or alternative criteria and pass functional/visual tests
 - First 8 must pass or 9 of 10 units tested must pass
- Emissions Testing – must meet emissions limits and pass functional/visual tests
 - First 4 must pass or 70% of all units tested must pass
- Emissions Limits:
 - 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 NO₂ requirements of the Procedure

In-Use Compliance Requirements

Recall provisions

- Recall determination may be based on in-use compliance reports, remedial reports, warranty reports, enforcement testing, or other relevant information
- Allows implementation of the field testing option and an increase in the sales triggers while maintaining needed end-user protections

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

In-Use Compliance Requirements

Recall provisions (continued)

- New amendment: Recalls may include all DECS sold as California verified per Section 2711
- Definition of “recall” amended
- (35) “Recall” means Recalls must address all diesel emission control strategies sold or leased in the California market within a specific diesel emission control strategy family and may include all diesel emission control strategies sold as California verified.

Proposed Application Process Amendments



Application Process:

Preliminary Application

- Applicants to submit a complete, market-ready DECS
 - Requirement may be waived based on DECS size or previous system submission
- Applicant has 3 opportunities to complete the preliminary application, otherwise application terminated
- Once complete – ARB performs engineering and compliance review
- Applicant again has 3 opportunities to provide any additional information requested, otherwise application terminated
- Successful engineering and compliance review results in a test plan approval letter issued to the applicant

Application Process:

Final Application

Final Application Review

- No review without test plan approval letter
- If incomplete notice sent requesting missing information
- Applicant has 3 opportunities to complete the final application, otherwise application terminated
- For all reviews: If an 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
- If DECS modified to comply with recall applicant must submit revised verification application
- Design modifications include changes to:
 - Materials, specifications, major parts, canning components
 - Wash coat, catalyst formulation/composition, catalyst loading
 - Sensors, control logic, algorithms, notification systems

Proposed Emissions and Durability Testing Amendments



Emission Testing Requirements

Emission Testing Clarifications

- Amendments clarify emissions testing must be based on the applicants proposed emission control group(s)
- Provides additional guidance regarding the selection of test engines
- Addresses DECS sizing and multiple configurations

Durability Testing Requirements

Durability Testing Clarifications

- Amendments clarify that durability demonstrations must be based on the applicants proposed emission control group(s)
- Provides additional guidance regarding the selection of durability applications and engines
- Clarifies the suitability of laboratory-based testing
- Specifies reporting requirements for error, fault, and high backpressure codes – also applies to field testing
- Extends off-road conditional verifications from one to two years

Proposed Warranty Reporting Amendments



DECS Warranty Reporting Requirements

DECS Warranty Reporting Clarifications

- Added definitions for “warranty claims” and “valid warranty claims”
- Proposed amendments clarify warranty reporting requirements
- Applicants also required to annually submit list of authorized installers
- Warranty coverage extended to include parts/changes/adjustments required to match DECS to target engine

Installers Warranty Reporting Requirements

Installation Warranty Report

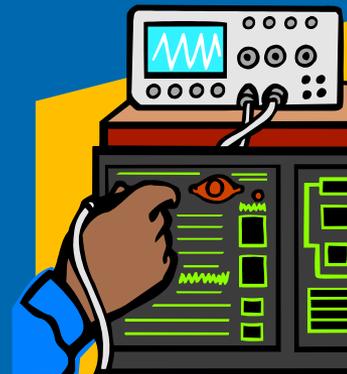
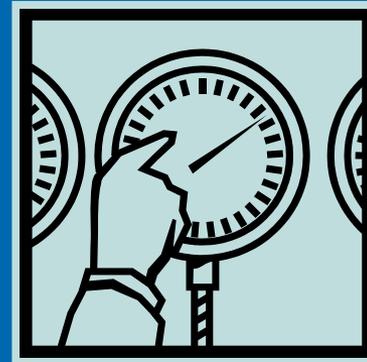
- Proposed amendments require authorized installers to submit annual warranty reports
- Due March 1 annually, installers may group all DECS families into one report
- Reports must include all installation warranty claims but should specify those claims that resulted in warranty service

Installers Warranty Reporting Requirements

Installation Warranty Report (continued)

- New Amendment: Installers must share annual installation warranty report information with the DECS manufacturer they have received authorization from
- Draft language amended as follows:
- (d) Installation Warranty Report. ...The required information may be included in one annual report to the Executive Officer. An authorized installer must also provide each applicant a copy of the information in the warranty report that pertains to the applicant's products at least annually by March 1. The installation warranty report must include ...

Pre-Installation Compatibility Assessment Amendments



Pre-installation Compatibility Assessment Requirements

New Requirements for Applicants

- All applicants must develop criteria to assess target engines prior to DECS installation
- Must include a smoke opacity limit that can be used to assess the condition of the target engine
- Currently verified systems must define and implement new assessment criteria within 6 months
 - Designed to identify target engines with oil control or over fueling problems – these must be fixed before DECS installation

Pre-installation Compatibility Assessment Requirements

New Requirements for Installers

- Installers must now be authorized and trained by party that holds the verification
- Installers must follow the pre-installation compatibility assessment criteria developed by the applicants
- Installers must submit an annual installation warranty report to ARB

Pre-installation Compatibility Assessment Requirements

End-User Training Requirements

- Applicants and Installers must ensure that end-users know how to properly operate their DECS
- Applicants and Installers must also ensure that the end-user is properly trained on DECS system maintenance

Proposed Miscellaneous Amendments



Other Requirements

High backpressure (BP) notification changes

- Proposed amendments require all strategies to employ a minimum two-stage notification system:
 - First notification when high BP limit is approached
 - Second notification when high BP is reached or exceeded
- Final high BP notification must be non-resettable by the operator
- Requires the ability to record high backpressure codes

Other Requirements

New software/hardware requirement

- Applicants must submit hardware and/or software required to interface with DECS to allow staff to download and view recorded data
- Currently verified systems must adhere to the new requirements within 6 months

Other Requirements

System Labeling

- Labeling language clarified to ensure system labels are durable, legible, and remain permanently attached
- Applicants are responsible to make sure systems are properly labeled
- End-users must notify applicants of missing or damaged labels - applicants must supply replacement labels within 45 days of notification

Other Requirements

Installation Manuals

- Applicants must ensure installation manual's include sufficient detail to allow installers to properly install their systems
- Applicants must include the criteria that they will use to authorize installers in their installation manuals
- Criteria that may lead to an installer having their authorization revoked must also be included

Other Requirements

Miscellaneous Changes

- Several new definitions added
- Limits on Other Pollutants – allowance for NMHC increases
- Fuel additives or alternative diesel fuels require EPA registration prior to preliminary application submission
- 24-hour logging requirement for restricted use emergency standby engines reduced
- Clarifications for the calculations of emissions reductions
- Test procedure changes for fuel-based strategies

Other Requirements

Section 2711 Compliance

- New Amendment: Added provision stating that any ARB verified DECS shall be properly installed and maintained
- New Amendment: Added provision stating that no person shall alter, physically disable, disconnect, bypass, or tamper with an installed ARB verified DECS

Next Steps

Actively seeking stakeholder comments and input

Scheduled for Board for consideration in May, 2012

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

