APPENDIX K

State of California
AIR RESOURCES BOARD

PROPOSED

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 2004 AND SUBSEQUENT MODEL HEAVY-DUTY DIESEL ENGINES AND VEHICLES

Adopted: December 12, 2002
Amended: July 24, 2003
Amended: September 1, 2006
Amended: July 26, 2007
Amended: October 17, 2007
Amended: October 14, 2008
Amended: September 27, 2010
Amended: October 12, 2011
Amended: [INSERT DATE OF AMENDMENT]

Note: The proposed amendments to this document are shown in underline to indicate additions and strikeout to indicate deletions compared to the test procedures as last amended September 27, 2010. [No change] indicates proposed federal provisions that are also proposed for incorporation herein without change. Existing intervening text that is not amended in this rulemaking is indicated by “* * * *”.

Date of Release: December 7, 2011; 45-Day Notice Version
Date of Hearing: January 26, 2012
CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES  
FOR 2004 AND SUBSEQUENT MODEL  
HEAVY-DUTY DIESEL - ENGINES AND VEHICLES

The following provisions of Subparts A, I, N, S, and T, Part 86, and of Subparts A through K, Part 1065, Title 40, Code of Federal Regulations, as adopted or amended by the U.S. Environmental Protection Agency on the date set forth next to the applicable section listed below, and only to the extent they pertain to the testing and compliance of exhaust emissions from heavy-duty diesel engines and vehicles, are adopted and incorporated herein by this reference as the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles,” except as altered or replaced by the provisions set forth below.

PART 86 – CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES

I. GENERAL PROVISIONS FOR CERTIFICATION AND IN-USE VERIFICATION OF EMISSIONS.

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2. Definitions.  [§86.xxx-2]

   1. §86.004-2 January 18, 2001.  [All federal definitions apply, except as otherwise noted below.  Definitions specific to other requirements are contained in separate documents.]
   2. §86.010-2 April 30, 2010.  [All federal definitions apply, except as otherwise noted below.  Definitions specific to other requirements are contained in separate documents.]

* * * *
11. Emission standards for diesel heavy-duty engines and vehicles. [§86.xxx-11]

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B. California provisions.

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5. Standards for Medium-Duty Engines.

5.1 Requirements Specific to Heavy-Duty Engines Used in Medium-Duty Vehicles 8,501 to 10,000 pounds GVW. For the 2004 through 2019 model years, a manufacturer of heavy-duty engines used in medium-duty vehicles 8,501 to 10,000 pounds GVW may choose to comply with the following standards as an alternative to the primary emission standards and test procedures specified in title 13, CCR, §1961 or §1961.2, as applicable. A manufacturer that chooses to comply with these optional heavy-duty standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in title 13, CCR, §2139(c). For the 2020 and subsequent model years, a manufacturer of heavy-duty engines used in medium-duty vehicles 8,501 to 10,000 pounds GVW must comply with the primary emission standards and test procedures specified in title 13, CCR, §1961.2.

5.2 Requirements Specific to Heavy-Duty Engines Used in Medium-Duty Vehicles 10,001 to 14,000 pounds GVW. For the 2004 and subsequent model years, a manufacturer of heavy-duty engines used in medium-duty vehicles 10,001 to 14,000 pounds GVW may choose to comply with the following standards as an alternative to the primary emission standards and test procedures specified in title 13, CCR, §1961 or §1961.2, as applicable. A manufacturer that chooses to comply with these optional heavy-duty standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in title 13, CCR, §2139(c).

5.3 Exhaust Emission Standards for Medium-Duty Engines. The exhaust emissions from new 2004 through 2019 model heavy-duty diesel engines used in ultra-low emission and super-ultra-low emission medium-duty diesel vehicles 8,501 to 10,000 pounds GVW and 2004 and subsequent model heavy-duty diesel engines used in ultra-low emission and super-ultra-low emission medium-duty diesel vehicles 10,001 to 14,000 pounds GVW shall not exceed:
Exhaust Emission Standards for 2004 – through 2006 Model Medium-Duty ULEVs and SULEVs

<table>
<thead>
<tr>
<th>Vehicle Emission Category</th>
<th>NOx + NMHC</th>
<th>CO</th>
<th>PM</th>
<th>HCHO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULEV' Option A</td>
<td>2.5 (with a 0.5 cap on NMHC)</td>
<td>14.4</td>
<td>0.10</td>
<td>0.05</td>
</tr>
<tr>
<td>ULEV' Option B</td>
<td>2.4</td>
<td>14.4</td>
<td>0.10</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Exhaust Emission Standards for 2007 through 2019 Model Medium-Duty ULEVs and SULEVs 8,501-10,000 lbs. GVW and 2007 and Subsequent Model Medium-Duty ULEVs and SULEVs 10,001-14,000 lbs. GVW

<table>
<thead>
<tr>
<th>Vehicle Emission Category</th>
<th>NOx</th>
<th>NMHC or NMHCE</th>
<th>CO</th>
<th>PM</th>
<th>HCHO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULEV'</td>
<td>0.20</td>
<td>0.14</td>
<td>15.5</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>SULEV'</td>
<td>0.10</td>
<td>0.07</td>
<td>7.7</td>
<td>0.005</td>
<td>0.025</td>
</tr>
</tbody>
</table>

Emissions averaging may be used to meet these standards using the requirements for participation averaging, banking and trading programs, as set forth in Section I.15 of these test procedures.

5.4 Optional Standards for Complete Heavy-Duty Vehicles. Manufacturers may request to group complete heavy-duty vehicles into the same test group as vehicles certifying to the LEV III exhaust emission standards and test procedures specified in title 13, CCR, §1961.2, so long as those complete heavy-duty diesel vehicles meet the most stringent LEV III standards to which any vehicle within that test group certifies.

21. Application for certification. [§86.xxx-21]
A. Federal provisions.

2. §86.007-21 July 13, 2005 August 30, 2006. Amend as follows:

2.6 Subparagraph (q). [No change.]
23. Required data. [§86.xxx-23]  
A. Federal provisions.  
   * * * *  
2. §86.001-23. October 21, 1997. [No change, except that the amendments indicated for §86.098-23 above still apply.]  
3. §86.007-23. January 18, 2001 October 30, 2009. [No change, except that the amendments indicated for §86.098-23 above still apply.]  
   * * * *  

26. Mileage and service accumulation; emission measurements. [§86.004-26]  
October 6, 2000 July 13, 2005.  
   * * * *  

A. Federal provisions.  
1. §86.004-28. January 18, 2001 August 30, 2006. Amend as follows:  
   * * * *  

30. Certification. [§86.xxx-30]  
A. Federal provisions  
1. §86.004-30. October 21, 1997 October 6, 2000. Amend as follows:  
   * * * *  
2. §86.007-30. February 24, 2009. Amend as follows:  
   1.1 Subparagraphs (a) through (a)(2). [No change.]  
   1.2 Add the following sentence to subparagraph (a)(3)(i). For heavy-duty engines certified under the provisions of section I.11.B.4 of these test procedures two certificates will be issued, one for each fueling mode. [No change to remainder of paragraph.]  
   1.3 Subparagraphs (a)(3)(ii) through (b)(2). [No change.]  
   1.4 Subparagraph (b)(3). Add the following sentence: If, after a review of the request and supporting data, the Executive Officer finds that the request raises a substantial factual issue, he shall provide the manufacturer a hearing in accordance with title 17, CCR, §60040, et seq., with respect to such issue.
1.5__Subparagraph (b)(4).  [No change.]

1.6__Subparagraph (b)(4)(i).  Add the following phrase at the beginning of the paragraph: Request a hearing under title 17, CCR, §60040, et seq.; or…

1.7__Subparagraph (b)(4)(ii) through (b)(5).  [No change.]

1.8__Subparagraph (b)(5)(i).  Add the following phrase at the beginning of the paragraph: Request a hearing under title 17, CCR, §60040, et seq.; or…

1.9__Subparagraph (b)(5)(ii) through (c)(5).  [No change.]

1.10__Subparagraph (c)(5)(i).  Add the following phrase at the beginning of the paragraph: Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with title 17, CCR, §60040, et seq. hereof; and …

1.11__Subparagraph (c)(5)(ii).  [No change.]

1.12__Subparagraph (c)(6).  Add the following sentence: The manufacturer may request in the form and manner specified in paragraph (b)(3) of this section that any determination made by the Executive Officer under paragraph (c)(1) of this section to withhold or deny certification be reviewed in a hearing conducted in accordance with title 17, CCR, §60040, et seq. If the Executive Officer finds, after a review of the request and supporting data, that the request raises a substantial factual issue, he will grant the request with respect to such issue.

1.13__Subparagraphs (d) through (e).  [No change.]

1.14__Delete subparagraph (f) and replace with the following: All medium-duty diesel cycle engines used in vehicles up to 14,000 pounds GVW must have an on-board diagnostic system as required in title 13, CCR §1968 et seq. as applicable.

38. Maintenance instructions. [§86.xxx-38]

A. Federal provisions


1.1__Subparagraphs (a) through (f).  [No change.]

1.2__Amend subparagraph (g)(1) as follows: (g) Emission control diagnostic service information:

   (1) Manufacturers shall furnish or cause to be furnished to any person engaged in the repairing or servicing of motor vehicles or motor vehicle engines, or the Administrator upon request, any and all information needed to make use of the on-board diagnostic system and such other information, including instructions for making emission-related diagnosis and repairs, including, but not limited to, service manuals, technical service bulletins, recall service information, data stream information, bi-directional control information, and training information, unless such information is protected by section 208(c) of the Act or California
Government Code Section 6250, as a trade secret. No such information may be withheld under section 208(c) of the Act or California Government Code Section 6250 if that information is provided (directly or indirectly) by the manufacturer to franchised dealers or other persons engaged in the repair, diagnosing, or servicing of motor vehicles or motor vehicle engines.

1.3 Subparagraphs (g)(2) through (h). [No change.]

   2.1 Subparagraphs (a) through (h). [No change, except as amended in §86.004-38, above.]
   2.2 Amend subparagraph (i) as follows: For each new diesel-fueled engine subject to the standards prescribed in title 13, CCR §1956.8(a), §1956.8(h), and Sec. 86.007-11, as applicable, the manufacturer shall furnish or cause to be furnished to the ultimate purchaser a statement that “This engine must be operated only with low sulfur diesel fuel (that is, diesel fuel meeting ARB specifications for highway diesel fuel, including a 15 ppm sulfur cap).”

3. §86.010-38 April 30, 2010.
   3.1 Subparagraphs (a) through (f). [No change.]
   3.2 Subparagraph (g). Delete; replace with: Manufacturers of heavy-duty diesel engines used in vehicles weighing 14,000 pounds GVW and less must comply with the motor vehicle service information requirements set forth in title 13, CCR §1969.
   3.3 Subparagraph (h). [No change.]
   3.4 Amend subparagraph (i) as follows: For each new diesel-fueled engine subject to the standards prescribed in title 13, CCR §1956.8(a), §1956.8(h), and Sec. 86.007-11, as applicable, the manufacturer shall furnish or cause to be furnished to the ultimate purchaser a statement that “This engine must be operated only with low sulfur diesel fuel (that is, diesel fuel meeting ARB specifications for highway diesel fuel, including a 15 ppm sulfur cap).”
   3.5 Subparagraph (j). Delete; replace with: Manufacturers of heavy-duty diesel engines used in vehicles over 14,000 pounds GVW must comply with the motor vehicle service information requirements set forth in title 13, CCR §1969.

   *   *   *   *

40. Heavy-duty engine rebuilding practices. [§86.xxx-40]
1.1 Add the following sentence to the introductory paragraph: Any deviation from the provisions contained in this section is also a prohibited act under California Vehicle Code section 27156, et seq.

1.2 Subparagraphs (a) through (e). [No change.]
II. TEST PROCEDURES

Subpart I - Emission Regulations for New Diesel-Fueled Heavy-Duty Engines; Smoke Exhaust Test Procedure


Subpart N - Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures


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Date of Hearing: January 26, 2012
A. Federal provisions.

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4. Subparagraph (c). [Reserve No change.]

5. Subparagraph (d). Determining the control area. [No change.]

6. Subparagraph (e). [Reserve.]

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Subpart S – General Compliance Provisions for Control of Air Pollution From New and In-Use Light-Duty Vehicles, Light-Duty Trucks, and Complete Otto-Cycle Heavy-Duty Vehicles.


1. Amend subparagraph (a) as follows: For the 2004 through 2014 model years, a manufacturer may optionally certify heavy-duty diesel vehicles weighing 14,000 pounds GVWR or less to the emission standards specified in title 13, CCR, §1961. Such vehicles must meet all applicable requirements of the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and for 2009 through 2016 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in title 13, CCR, §1961(d). For the 2015 through 2019 model years, a manufacturer may optionally certify heavy-duty diesel vehicles weighing 8,500 to 10,000 pounds GVWR or less to the emission standards specified in title 13, CCR, §1961 or §1961.2, as applicable. Such vehicles must meet all applicable requirements of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” incorporated by reference in section 1961.2, title 13, CCR. For the 2015 and subsequent model years, a manufacturer may optionally certify heavy-duty diesel vehicles weighing 10,001 to 14,000 pounds GVWR or less to the emission standards specified in title 13, CCR, §1961.2. Such vehicles must meet all applicable requirements of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” incorporated by reference in section 1961.2, title 13, CCR. For the 2020 and subsequent model years, heavy-duty diesel vehicles 8,501 to 10,000 pounds GVW must certify to the primary emission standards and test procedures for complete vehicles specified in section 1961.2, title 13, CCR.

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4. Subparagraphs (h) and (i). [n/a]
PART 1065 – ENGINE-TESTING PROCEDURES.

Subpart A – Applicability and General Provisions

   1. Amend subparagraph (a) as follows:
      1.1. Introductory paragraph. [No change.]
      1.2. Subparagraphs (a)(1). [n/a]
      1.23. Amend subparagraph (a)(12) as follows: Model year 2010 and later heavy-duty highway engines we regulate under title 13, CCR, §1956.8. For earlier model years, manufacturers may use the test procedures in this part or those specified in 40 CFR part 86, subpart N, according to §1065.10, as modified by these test procedures.
      1.34. Subparagraphs (a)(23) through (a)(48). [n/a]
   2. Subparagraph (b). [n/a]
   3. Subparagraph (c) through (g). [No change.]

   1. Subparagraphs (a) through (d). [No change.]
   2. Amend subparagraph (e) as follows: See title 13, CCR, section 91011 for provisions related to confidential information. Note that according to this section, emission data shall not be identified as confidential.
   3. Subparagraph (f). [No change.]


1065.15 Overview of procedures for laboratory and field testing. July 13, 2005 September 15, 2011.


Subpart B – Equipment Specifications


Subpart C – Measurement Instruments


Measurement of Engine Parameters and Ambient Conditions


Flow-Related Measurements


CO and CO₂ Measurements

Hydrocarbon Measurements


NOx Measurements

1065.275 N₂O measurement devices. September 15, 2011.

O₂ Measurements


Air-to Fuel Ratio Measurements


PM Measurements


Subpart D – Calibrations and Verifications

Measurement of Engine Parameters and Ambient Conditions


Flow-Related Measurements


CO and CO₂ Measurements


Hydrocarbon Measurements


NOx Measurements

PM Measurements

1065.390 PM balance verifications and weighing process verification. **July 13, 2005 November 8, 2010.**

Subpart E – Engine Selection, Preparation, and Maintenance

1065.405 Test engine preparation and maintenance. **July 13, 2005 June 30, 2008.**
1065.410 Maintenance limits for stabilized test engines. **July 13, 2005 June 30, 2008.**
1065.415 Durability demonstration. **July 13, 2005 June 30, 2008.**

Subpart F – Performing an Emission Test in the Laboratory

1065.501 Overview. **July 13, 2005 April 30, 2010.**
1065.510 Engine mapping. **July 13, 2005 September 15, 2011.**
1065.512 Duty cycle generation. **July 13, 2005 October 8, 2008.**
1065.514 Cycle-validation criteria. **July 13, 2005 September 15, 2011.**
1065.520 Pre-test verification procedures and pre-test data collection. **July 13, 2005 September 15, 2011.**
1065.526 Repeating void modes or test intervals. **November 8, 2010.**
1065.530 Emission test sequence. **July 13, 2005 September 15, 2011.**
1065.545 Validation of proportional flow control for batch sampling. **July 13, 2005 April 30, 2010.**
1065.546 Validation of minimum dilution ratio for PM batch sampling and drift correction. **September 15, 2011.**
1065.550 Gas analyzer range validation, drift validation, and drift correction. **July 13, 2005 November 8, 2010 September 15, 2011.**
1065.590 PM sample preconditioning and tare weighing. **July 13, 2005 June 30, 2008.**
1065.595 PM sample post-conditioning and total weighing. **July 13, 2005 June 30, 2008.**

Subpart G – Calculations and Data Requirements

1065.601 Overview. **July 13, 2005 April 30, 2010.**
1065.602 Statistics. **July 13, 2005 September 15, 2011.**
1065.610 Duty cycle generation. **July 13, 2005 September 15, 2011.**

Subpart H – Engine Fluids, Test Fuels, Analytical Gases and Other Calibration Standards


A. Federal provisions.
   1. Subparagraph (a). [No change.]
   2. Amend subparagraph (b) as follows: Fuels meeting alternative specifications. We may allow you to use a different test fuel if you show us and we find that using it does not affect your ability to comply with all applicable emission standards using commercially available fuels.
   3. Subparagraph (c). [No change.]
   4. Amend subparagraph (d) as follows: Fuel specifications. The fuel parameters specified in this subpart depend on measurement procedures that are incorporated by reference.
   5. Subparagraph (e). [No change.]

B. California provisions.

* * * *

3. Identification of New Clean Fuels to be Used in Certification Testing.
Any person may petition the state board to establish by regulation certification testing specifications for a new clean fuel for which specifications for the new clean fuel are not specifically set forth in paragraph §86.1313-98 as amended herein. Prior to adopting such specifications, the state board shall consider the relative cost-effectiveness of use of the fuel in reducing emissions compared to the use of other fuels. Whenever the state board adopts specifications for a new clean fuel for certification testing, it shall also establish by regulation specifications for the fuel as it is sold commercially to the public.

(a) If the proposed new clean fuel may be used to fuel existing motor vehicles, the state board shall not establish certification specifications for the fuel unless the petitioner has demonstrated that:

(1) Use of the new clean fuel in such existing motor vehicles would not increase emissions of NMHC, NOx, and CO, and the potential risk associated with toxic air contaminants, as determined pursuant to the procedures set forth in the “California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels through 2014,” as adopted September 17, 1993 amended [INSERT DATE OF AMENDMENT] or the “California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels in 2015 and Subsequent Years,” as adopted [INSERT DATE OF ADOPTION], as applicable. In the case of fuel-flexible vehicles or dual-fuel vehicles that were not certified on the new clean fuel but are capable of being operated on it, exhaust and evaporative emissions from the use of the new clean fuel shall not increase compared to exhaust and evaporative emissions from the use of gasoline that complies with Title 13, Division 3, Chapter 5, Article 1, California Code of Regulations.

(2) Use of the new clean fuel in such existing motor vehicles would not result in increased deterioration of the vehicle and would not void the warranties of any such vehicles.

(b) Whenever the state board designates a new clean fuel pursuant to this section, the state board shall also establish by regulation required specifications for the new clean fuel sold commercially in California.


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2. Subparagraphs (b) through (d). [No change.]

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2. Subparagraphs (b) through (d). [No change.]


Subpart I – Testing with Oxygenated Fuels


Subpart J – Field Testing and Portable Emission Measurement Systems


Subpart K – Definitions and Other Reference Information


1. Amend the definition of “Designated Compliance Officer” as follows: 

* * * *

Designated Compliance Officer means the Executive Officer of the Air Resources Board or a designee of the Executive Officer.
1065.1005 Symbols, abbreviations, acronyms, and units of measure. 
July 13, 2005 September 15, 2011.