

**APPENDIX B**

**PROPOSED AMENDMENTS TO THE CALIFORNIA EXHAUST EMISSION  
STANDARDS AND TEST PROCEDURES FOR 1985 AND SUBSEQUENT MODEL  
HEAVY-DUTY DIESEL ENGINES AND VEHICLES**

State of California  
AIR RESOURCES BOARD

CALIFORNIA EXHAUST EMISSION STANDARDS  
AND TEST PROCEDURES FOR 1985 AND SUBSEQUENT MODEL  
HEAVY-DUTY DIESEL-ENGINES AND VEHICLES

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Amended: (insert date of finalized amendment)

NOTES: This document incorporates by reference various sections of the Code of Federal Regulations (CFR), some with modifications. Modifications to portions of paragraphs in the Federal language are indicated by underline for additions and ~~strikeout~~ for deletions. Larger portions of Federal language for a specific section which is not to be included in these procedures are denoted by the "DELETE" and larger portions of new California language are indicated by "REPLACE WITH" or "INSERT". The symbols "\*\*\*\*\*" and "....." mean that the remainder of the federal text for a specific section, which is not shown in these procedures, has been included by reference, with only the printed text changed. The symbol "#####" means that the remainder of the text of these procedures, which is not shown in this amendment document, has not been changed.

## CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1985 AND SUBSEQUENT MODEL HEAVY-DUTY DIESEL ENGINES AND VEHICLES

The following provisions of Subparts A, I, and N, Title 40, Code of Federal Regulations, as adopted or amended by the U. S. Environmental Protection Agency on the date listed, 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 1985 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles, except as altered or replaced by the provisions set forth below.

The federal regulations contained in the Subparts identified above which pertain to oxides of nitrogen emission averaging shall not be applicable to these procedures except for diesel engines and vehicles produced in the 1998 and subsequent model years. The federal regulations contained in the Subparts identified above which pertain to particulate emission averaging shall not be applicable to these procedures for 1996 and subsequent model years. The smoke exhaust test procedures shall be applicable to California petroleum-fueled, liquefied-petroleum gas-fueled, and compressed-natural gas fueled heavy-duty diesel engines and vehicles for 1988 and later model years.

The federal regulations contained in the subparts identified above which pertain to nonconformance penalty shall not be applicable.

The federal regulations contained in the subparts identified above which pertain to evaporative emission shall not be applicable to these procedures. Applicable regulations pertaining to evaporative emissions are contained in "California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles," as incorporated in Title 13, California Code of Regulations, Section 1976.

Starting with the 1990 model year, these regulations shall be applicable to all heavy-duty Diesel natural-gas-fueled and liquefied-petroleum gas-fueled engines (and vehicles) including those engines derived from existing Diesel engines. For any engine which is not a distinctly Diesel engine nor derived from such, the Executive Officer shall determine whether the engine shall be subject to these regulations or alternatively to the heavy-duty Otto-cycle engine regulations, in consideration of the relative similarity of the engine's torque-speed characteristics and vehicle applications with those of Diesel and Otto-cycle engines.

The regulations concerning the certification of methanol-fueled urban bus engines are not applicable in California until 1991 and subsequent model years. The regulations concerning the certification of all other methanol-fueled diesel engines and vehicles are not applicable in California until 1993 and subsequent model years. Regulations concerning the certification of incomplete medium-duty diesel low-emission vehicles and engines and ultra-low-emission vehicles and engines operating on any fuel are applicable for the 1992 and subsequent model years.

Subpart A, General Provisions for Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles, Light-Duty Trucks, and Heavy-Duty Engines, and for 1985 and later Model Year New Gasoline-Fuel and Methanol Fueled Heavy-Duty Vehicles.

Adopt and amend § 86.007-11, Title 40, Code of Federal Regulations, to read:

§ 86.007-11 Emission standards and supplemental requirements for ~~2005~~ 2007 and later model year ~~diesel~~ heavy-duty diesel engines and vehicles [date of Federal Register publication to be inserted].

This section applies to new ~~2005~~ 2007 and later model year heavy-duty diesel engines ~~HDEs~~. Section 86.007-11 includes text that specifies requirements that differ from § 86.004-11. Where a paragraph in § 86.004-11 is identical and applicable to § 86.007-11, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.004-11.”.

(a) through (a)(2) [Reserved]. For guidance see § 86.004-11.

(3)(i) For 2005 and subsequent model year heavy-duty diesel engines, tThe weighted average exhaust emissions, as determined under § 86.1360(e)(5) pertaining to the supplemental steady-state test cycle, for each regulated pollutant shall not exceed 1.0 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section.

(ii) Gaseous exhaust emissions shall not exceed the steady-state interpolated values determined by the Maximum Allowable Emission Limits (for the corresponding speed and load), as determined under § 86.1360(f), when the engine is operated in the steady-state control area defined under § 86.1360(d), during steady-state engine operation.

(4)(i) For 2005 and subsequent model year heavy-duty diesel engines, tThe brake-specific exhaust emissions in grams/bhp-hr, as determined under § 86.1370 pertaining to the not-to-exceed test procedures, for each regulated pollutant shall not exceed 1.25 times the applicable emission standards or FELs specified in paragraph (a)(1) of this section during engine and vehicle operation specified in paragraph (a)(4)(ii) of this section, except as noted in paragraph (a)(4)(iii) of this section.

(ii) For each engine family, the not-to-exceed emission limits must apply during one of the following two ambient operating regions;

(A) The not-to-exceed emission limits apply for all altitudes less than or equal to 5,500 feet above sea-level, during all ambient conditions (temperature and humidity). Temperature and humidity ranges for which correction factors are allowed are specified in § 86.1370-2007(e); or

(B) The not-to-exceed emission limits apply at all altitudes less than or equal to 5,500 feet above sea-level, for temperatures less than or equal to the temperature determined by the following equation at the specified altitude;

$$T = -0.00254 \times A + 100$$

Where;

T = ambient air temperature in degrees Fahrenheit

A = altitude in feet above sea-level (A is negative for altitudes below sea-level)

Temperature and humidity ranges for which correction factors are allowed are specified in § 86.1370-2007(e);

(iii) For engines equipped with exhaust gas recirculation, the not-to-exceed emission limits specified in paragraph (a)(4)(i) of this section do not apply to engine or vehicle operation during cold operating conditions as specified in § 86.1370(f).

~~(iv) Deficiencies for NTE emission standards. (A) For model years 2007 through 2009, upon application by the manufacturer, the Administrator may accept a HDDE as compliant with the NTE standards even though specific requirements are not fully met. Such compliances without meeting specific requirements, or deficiencies, will be granted only if compliance would be infeasible or unreasonable considering such factors as, but not limited to: technical feasibility of the given hardware and lead time and production cycles including phase in or phase out of engines or vehicle designs and programmed upgrades of computers. Deficiencies will be approved on a engine model and/or horsepower rating basis within an engine family, and each approval is applicable for a single model year. A manufacturer's application must include a description of the auxiliary emission control device(s) which will be used to maintain emissions to the lowest practical level, considering the deficiency being requested, if applicable. An application for a deficiency must be made during the certification process; no deficiency will be granted to retroactively cover engines already certified.~~

~~(B) Unmet requirements should not be carried over from the previous model year except where unreasonable hardware or software modifications would be necessary to correct the deficiency, and the manufacturer has demonstrated an acceptable level of effort toward compliance as determined by the Administrator. The NTE deficiency should only be seen as an allowance for minor deviations from the NTE requirements. The NTE deficiency provisions allow a manufacturer to apply for relief from the NTE emission requirements under limited conditions. EPA expects that manufacturers should have the necessary functioning emission control hardware in place to comply with the NTE.~~

~~(b) through (b)(1)(iii) [Reserved]. For guidance see § 86.004-11.~~

~~(iv) For 2005 and subsequent model year heavy-duty diesel engines, oOperation within the NTE zone (defined in § 86.1370) must comply with a filter smoke number of 1.0 under steady-state operation, or the following alternate opacity limits:~~

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Adopt and amend § 86.007-21, Title 40, Code of Federal Regulations, to read:

§ 86.007-21 Application for certification [date of Federal Register publication to be inserted].

Section 86.007-21 includes text that specifies requirements that differ from § 86.004-21. Where a paragraph in § 86.004-21 is identical and applicable to § 86.007-21, this may be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.004-21.”.

(a) through (n) [Reserved]. For guidance see § 86.004-21.

(o) For 2005 and subsequent model year diesel heavy-duty diesel engines, the manufacturer must provide the following additional information pertaining to the supplemental steady-state test conducted under § 86.1360:

(1) Weighted brake-specific emissions data (i.e., in units of g/bhp-hr), calculated according to § 86.1360(e)(5), for all pollutants for which an emission standard is established in § 86.004-11(a);

(2) Brake specific gaseous emission data for each of the 13 test points (identified under § 86.1360(b)(1)) and the 3 EPA-selected test points (identified under § 86.1360(b)(2));

(3) Concentrations and mass flow rates of all regulated gaseous emissions plus carbon dioxide;

(4) Values of all emission-related engine control variables at each test point;

(5) Weighted brake-specific particulate matter (i.e., in units of g/bhp-hr);

(6) A statement that the test results correspond to the maximum NOx producing condition specified in § 86.1360-2007(e)(4). The manufacturer also must maintain records at the manufacturer’s facility which contain all test data, engineering analyses, and other information which provides the basis for this statement, where such information exists. The manufacturer must provide such information to the Administrator upon request;

(7) A statement that the engines will comply with the weighted average emissions standard and interpolated values comply with the Maximum Allowable Emission Limits specified in § 86.007-11(a)(3) for the useful life of the engine. The manufacturer also must maintain records at the manufacturers facility which contain a detailed description of all test data, engineering analyses, and other information which provides the basis for this statement, where such information exists. The manufacturer must provide such information to the Administrator upon request.

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



Adopt § 86.1360-2007, Title 40, Code of Federal Regulations, to read:

§ 86.1360-2007 Supplemental steady-state test; test cycle and procedures  
[date of Federal Register publication to be inserted]

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Adopt § 86.1370-2007, Title 40, Code of Federal Regulations, to read:

§ 86.1370-2007 Not-To-Exceed test procedures [date of Federal Register publication to  
be inserted]

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Adopt § 86.1372-2007, Title 40, Code of Federal Regulations, to read:

§ 86.1372-2007 Measuring smoke emissions within the NTE zone [date of Federal  
Register publication to be inserted]

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