FINAL REGULATION ORDER

Add the following sections to Title 13, California Code of Regulations, to read as set forth on the following pages:

Section 1956.1	Exhaust Emission Standards and Test Procedures – 1985 and Subsequent Model Heavy Duty Urban Bus Engines and Vehicles
Section 1956.2	Fleet Rule for Transit Agencies
Section 1956.3	Zero-emission Bus Requirements
Section 1956.4	Reporting Requirements for all Urban Bus Transit Agencies

Note: The entire text of these sections is new language to be added to the California Code of Regulations.

Amend the following sections of Title 13, California Code of Regulations, to read as set forth on the following pages:

Section 1956.8	Exhaust Emission Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles
Section 1965	Emission Control and Smog Index Labels – 1979 and Subsequent Model-Year Motor Vehicles

Note: The regulatory amendments in these sections are shown in <u>underline</u> to indicate additions to the regulatory text and ~~strikeout~~ to indicate deletions.

SECTION 1956.1, TITLE 13, CCR

Add to Title 13, California Code of Regulations, new section 1956.1, to read:

1956.1 Exhaust Emission Standards and Test Procedures - 1985 and Subsequent Model Heavy Duty Urban Bus Engines and Vehicles

(a) The exhaust emissions from new 1985 and subsequent model heavy-duty diesel cycle urban bus engines and vehicles fueled by methanol, natural gas, liquefied petroleum gas, and petroleum shall not exceed the following, by model year:

(1) 1985-1986 - 1.3 grams per brake horsepower-hour (g/bhp-hr) total hydrocarbons (or Organic Material Hydrocarbon Equivalent [OMHCE] for methanol-fueled buses), 15.5 g/bhp-hr carbon monoxide (CO), and 5.1 g/bhp-hr oxides of nitrogen (NOx).

(2) 1987- (a manufacturer may certify to the 1988 emission standards one year early as an option) - 1.3 g/bhp-hr total hydrocarbons (or OMHCE for methanol-fueled buses), 15.5 g/bhp-hr CO, and 5.1 g/bhp-hr NOx.

(3) 1988-1990 - 1.3 g/bhp-hr HC (or OMHCE for methanol-fueled buses), 15.5 g/bhp-hr CO, 6.0 g/bhp-hr NOx, 0.60 g/bhp-hr particulate matter (PM), and for 1990 only, 1.2 g/bhp-hr optional non-methane hydrocarbons (NMHC).

(4) 1991-1993 - 1.3 g/bhp-hr HC (or OMHCE for methanol-fueled buses), 1.2 g/bhp-hr optional NMHC, 15.5 g/bhp-hr CO, 5.0 g/bhp-hr NOx, and 0.10 g/bhp-hr PM. Emissions from methanol-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled urban bus engines may be included in the averaging program for petroleum-fueled engines other than urban bus engines.

(5) 1994-1995 - 1.3 g/bhp-hr HC (or OMHCE for methanol-fueled buses), 1.2 g/bhp-hr optional NMHC, 15.5 g/bhp-hr CO, 5.0 g/bhp-hr NOx (or optional 3.5 g/bhp-hr to 0.5 g/bhp-hr NOx), and 0.07 g/bhp-hr PM. Emissions from methanol-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled urban bus engines, may be included in the averaging program for petroleum-fueled engines other than urban bus engines.

(6) 1996-2003 - 1.3 g/bhp-hr HC or OMHCE, 1.2 g/bhp-hr optional NMHC, 15.5 g/bhp-hr CO, 4.0 g/bhp-hr NOx, and 0.05 g/bhp-hr PM (0.07 PM g/bhp-hr in-use), except as provided in paragraph (7) below.

(A) For 1996 and 1997 only, a manufacturer may apply to the Executive Officer for an exemption from the 4.0 g/bhp-hr NOx standard, not to exceed 10% of the average of the manufacturer's total urban bus sales in California for the three preceding model years, upon providing technical justification and sales data for each exemption applied for.

(B) 1998 through 2003 model year engines may generate averaging, banking, and trading credits in accordance with the requirements for averaging, banking and trading programs set forth in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy Duty Diesel Engines and Vehicles" incorporated by reference in subdivision (b) of this section.

(C) Manufacturers may choose to certify 1998 through 2002 model year bus engines produced before October 1, 2002, to an optional NOx emissions standard between 0.5 g/bhp-hr and 2.5 g/bhp-hr. A manufacturer may certify to any standard between the values of 2.5 g/bhp-hr and 0.5 g/bhp-hr, by 0.5 g/bhp-hr increments. Manufacturers may not use engines certified to this optional NOx standard for any averaging, banking, or trading program set forth in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy Duty Diesel Engines and Vehicles" incorporated by reference in subdivision (b) of this section.

(7) October 1, 2002, PM standard - For diesel-fueled, dual-fuel, and bi-fuel bus engines, the PM standard shall be 0.01 g/bhp-hr (0.01 PM g/bhp-hr in-use) for 2002 and subsequent model year engines produced beginning October 1, 2002. Manufacturers may choose to meet this standard with an aftertreatment system that reduces PM to 0.01 g/bhp-hr.

(8) October 2002-2006 optional standards – Except for diesel-fueled, dual-fuel, and bi-fuel engines, manufacturers may choose to certify 2002 – 2006 model year bus engines produced beginning October 1, 2002, to an optional 1.8 g/bhp-hr to 0.3 g/bhp-hr NOx plus NMHC standard, measured as the arithmetic sum of the NOx and NMHC exhaust component certification values, without restriction on individual component certification values; provided that engines certified to this optional reduced-emission NOx plus NMHC standard may not participate in any averaging, banking, or trading program set forth in the test procedures document incorporated by reference in subdivision (b) of this section. A manufacturer may certify to any standard between the values of

1.8 g/bhp-hr to 0.3 g/bhp-hr, by 0.3 g/bhp-hr NOx + NMHC increments. Manufacturers certifying to this optional standard must also certify to a PM standard of 0.03, 0.02, or 0.01 g/bhp-hr.

(9) October 2002-2003 optional standards for diesel-fueled, dual-fuel, and bi-fuel engines -- Manufacturers may choose to certify 2002 – 2003 model year diesel-fueled, dual-fuel, and bi-fuel bus engines produced beginning October 1, 2002, to an optional 1.8 g/bhp-hr to 0.3 g/bhp-hr NOx plus NMHC standard, measured as the arithmetic sum of the NOx and NMHC exhaust component certification values, without restriction on individual component certification values; provided that engines certified to this optional reduced-emission NOx plus NMHC standard may not participate in any averaging, banking, or trading program set forth in the test procedures document incorporated by reference in subdivision (b) of this section. A manufacturer may certify to any standard between the values of 1.8 g/bhp-hr to 0.3 g/bhp-hr, by 0.3 g/bhp-hr NOx + NMHC increments. Manufacturers certifying to this optional standard must also certify to a PM standard of 0.01 g/bhp-hr.

(10) 2004 – 2006: Except as provided in paragraph (11), below, the required standard shall be 2.4 g/bhp-hr NOx + NMHC measured as the arithmetic sum of exhaust component certification values for these pollutants, without restriction on individual component values, 15.5 g/bhp-hr CO, and 0.05 g/bhp-hr PM (0.07 g/bhp-hr PM in-use).

(A) Manufacturers may choose to certify to a 2.5 g/bhp-hr optional combined NOx + NMHC standard, provided that the NMHC exhaust component certification value shall not exceed 0.5 g/bhp-hr.

(B) Emissions averaging may be used to meet the combined NOx + NMHC standard, the optional combined NOx + NMHC standard set forth in paragraph (A), and the PM standard.

(C) The combined NOx + NMHC standard and the optional combined NOx + NMHC standard described in paragraph (A) may serve as the certification standard for the higher emitting fueling mode of an engine certified under the dual fueling mode certification process set forth in section 1956.8(a)(4), Title 13, CCR.

(11) 2004-2006 – For diesel-fueled, or dual-fuel, and bi-fuel urban bus engines, the standards are 0.5 g/bhp-hr NOx, 0.01 g/bhp-hr PM, 0.05 g/bhp-hr NMHC, 5.0 g/bhp-hr CO, and 0.01 g/bhp-hr formaldehyde. As an option, manufacturers may choose to meet the NOx and PM standards with a base engine that is certified to

the standards in paragraph (10) above, equipped with an aftertreatment system that reduces NOx to 0.5 g/bhp-hr and PM to 0.01 g/bhp-hr standards. The NMHC, CO, and formaldehyde standards in this paragraph (11) shall still apply. Manufacturers shall be responsible for full certification, durability, testing, and warranty and other requirements for the base engine. For the aftertreatment system, manufacturers shall not be subject to the certification durability requirements, or in-use recall and enforcement provisions, but are subject to warranty provisions for functionality.

In addition, engine manufacturers may sell diesel-fueled, dual-fuel, or bi-fuel engines to any transit fleet exempted by the Executive Officer under paragraph (d)(7) of section 1956.2, Title 13, CCR, from the requirements of paragraph (d)(4) of section 1956.2, certified to the standards in either paragraphs (9) or (10) above, provided that engines certified to the standards in paragraph (10) must be certified to a 0.01 g/bhp-hr PM standard.

(12) 2007 and subsequent – 0.2 g/bhp-hr NOx, 0.01 g/bhp-hr PM, 0.05 g/bhp-hr NMHC, 5.0 g/bhp-hr CO, and 0.01 g/bhp-hr formaldehyde.

(b) The test procedures for determining compliance with standards applicable to 1985 and subsequent heavy-duty diesel cycle urban bus engines and vehicles and the requirements for participation in the averaging, banking and trading programs, are set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," adopted April 8, 1985, as last amended November 22, 2000, which is incorporated by reference herein.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43100, 43101, 43104, and 43806 Health and Safety Code and section 28114 Vehicle Code
Reference: Sections 39002, 39003, 39017, 39033, 39500, 39650, 39657, 39667, 39701, 40000, 43000, 43000.5, 43009, 43013, 43018, 43102, 43806, Health and Safety Code, and section 28114 Vehicle Code.

SECTION 1956.2, TITLE 13, CCR

Add to Title 13, California Code of Regulations, new section 1956.2, to read:

1956.2 Fleet Rule for Transit Agencies

(a) To encourage transit agencies that operate urban bus fleets to purchase or lease lower emission alternative-fuel buses, while also providing flexibility to such fleet operators to determine their optimal fleet mix in consideration of such factors as air quality benefits, service availability, cost, efficiency, safety, and convenience, two paths to compliance with this fleet rule are available: the alternative-fuel path and the diesel path. Transit agencies must choose their compliance path, and shall notify ARB of their intent to follow either the diesel or the alternative-fuel path, by January 31, 2001. Reporting requirements for that notification are set forth in subdivisions (a) and (b) of section 1956.4, Title 13, CCR.

(b) For the purpose of the fleet rule specified in this section, the following definitions apply:

(1) “Alternative fuel” means natural gas, propane, ethanol, methanol, electricity, fuel cells, or advanced technologies that do not rely on diesel fuel. Alternative fuel also means any of these fuels used in combination with each other or in combination with other non-diesel fuels.

(2) “Active fleet” means a transit agency’s total active fleet of urban buses, including spare buses, but not contingency vehicles (e.g., for emergencies) or non-revenue producing vehicles.

(3) “Transit agency” means a public entity responsible for administering and managing transit services. Public transit agencies can directly operate transit service or contract out for all or part of the total transit service provided.

(4) “Urban bus” means a passenger-carrying vehicle powered by a heavy heavy-duty diesel engine, or of a type normally powered by a heavy heavy-duty diesel engine, with a load capacity of fifteen (15) or more passengers and intended primarily for intra-city operation, i.e., within the confines of a city or greater metropolitan area. Urban bus operation is characterized by short rides and frequent stops. To facilitate this type of operation, more than one set of quick-operating entrance and exit doors would normally be installed. Since fares are usually paid in cash or token, rather than purchased in advance in the form of tickets, urban buses would normally have equipment installed for the collection of fares. Urban buses are also typically characterized by the absence of equipment

and facilities for long distance travel, e.g., restrooms, large luggage compartments, and facilities for stowing carry-on luggage.

(c) Transit agencies on the alternative-fuel path shall meet the following requirements:

(1) Upon approval of the regulation, and through Model Year 2015, at least 85 percent of all urban buses purchased or leased each year must be alternative-fuel buses.
(2) NOx fleet average requirements as set forth in subdivision (e), below.
(3) Beginning October 1, 2002, only engines certified to an optional PM standard of 0.03 g/bhp-hr or lower shall be purchased when making new bus purchases.
(4) PM retrofit requirements and use of low-sulfur fuel as set forth in subdivision (f), below.
(5) Transit agencies on the alternative-fuel path shall not purchase any diesel-fueled, dual-fuel, or bi-fuel buses with 2004 – 2006 model year engines certified to emissions levels in excess of those specified in paragraph (a)(11) of section 1956.1, Title 13, CCR.
(6) Zero-emission bus purchase requirements beginning in model year 2010, in accordance with the requirements set forth in subdivision (c) of section 1956.3, Title 13, CCR.
(7) Reporting requirements as set forth in section 1956.4, Title 13, CCR.

(d) Transit agencies on the diesel path shall meet the following requirements:

(1) NOx fleet average requirements as set forth in subdivision (e), below.
(2) PM retrofit requirements and use of low-sulfur fuel as set forth in subdivision (f), below.
(3) Zero-emission bus demonstration in 2003-2004, as required in subdivision (b) of section 1956.3, Title 13, CCR.
(4) Transit agencies on the diesel path shall not purchase any diesel-fueled, dual-fuel, bi-fuel, or alternative-fuel buses with 2004 – 2006 model year engines certified to emissions levels in excess of those specified in paragraph (a)(11) of section 1956.1, Title 13, CCR, except as provided in paragraph (d)(7) of this section.
(5) Zero-emission bus purchase requirements beginning in model year 2008, in accordance with the requirements set forth in subdivision (c) of section 1956.3, Title 13, CCR.
(6) Reporting requirements as set forth in section 1956.4, Title 13, CCR.
(7) The Executive Officer may exempt transit agencies on the diesel path from the requirements of paragraph (d)(4) of section 1956.2, Title 13, CCR, provided that:

(A) A transit agency applies to the Executive Officer for such exemption by June 30, 2001;

(B) A transit agency demonstrates to the Executive Officer that it will achieve NOx emissions benefits through 2015 greater than what would have been achieved through compliance with paragraph (d)(4); and

(C) The Executive Officer finds that transit agencies, after consulting with the Engine Manufacturers Association, have demonstrated, or are contractually committed to demonstrate, advanced NOx aftertreatment technology.

(e) Beginning October 1, 2002, no transit agency shall own, operate, or lease an active fleet of urban buses with average NOx emissions in excess of 4.8 g/bhp-hr, based on the engine certification standards of the engines in the active fleet.

(1) This active fleet average requirement shall be based on urban buses owned, operated, or leased by the transit agency, including diesel buses, alternative-fuel buses, all heavy-duty zero-emission buses, electric trolley buses, and articulated buses, in each transit agency's active fleet. The Executive Officer may allow zero-emission buses that do not meet the definition of an urban bus to be included in the calculation of the fleet average standard upon written request to the ARB by January 31, 2002, and upon approval by the Executive Officer. The request shall include a description of the zero-emission buses, the zero-emission technology utilized, and the number of zero-emission buses to be used in calculating the NOx fleet average standard. Zero-emission buses not meeting the definition of an urban bus may not be used to satisfy the requirements of the Zero-emission Bus Demonstration Project set forth in subdivision (b) of section 1956.3, Title 13, CCR.

(2) Transit agencies may use ARB-certified NOx retrofit systems to comply with the fleet average requirement (in addition to bus purchases, repowerings, and retirements).

(3) Transit agencies have the option of retiring all 1987 and earlier model year diesel urban buses by October 1, 2002, to comply with the fleet average standard requirement.

(f) To reduce public exposure to diesel particulate matter, transit agencies and companies that lease buses to transit agencies shall retrofit diesel buses in their active fleets according to the schedule below, and shall operate their diesel buses on diesel fuel with a maximum sulfur content of 15 parts per million by weight. Documentation of compliance with these

requirements must be provided in accordance with the provisions of subdivision (d) of section 1956.4, Title13, CCR.

(1) Tier 1 – Except as provided in (B) below, by January 1, 2003, transit agencies shall not own, operate or lease diesel-fueled, dual-fuel, bi-fuel, or diesel hybrid buses in their active fleets with 1990 and earlier model year engines, unless those engines have been retrofitted as provided in paragraph (A), below. Transit agencies with fewer than 20 buses in their active fleets, and that operate in federal one-hour ozone attainment areas, are not required to comply with this requirement until January 1, 2007; provided that in areas redesignated as one-hour ozone non-attainment areas prior to January 1, 2007, transit agencies initially eligible for delayed compliance shall submit a plan to the Executive Officer within 30 days of redesignation for achieving compliance with this retrofit requirement.

(A) The retrofit device must be certified by the Executive Officer of the ARB in accordance with the procedures set forth in the "California Certification Procedures for PM Retrofit Devices for On-Road Heavy-Duty Diesel Engines" incorporated by reference in paragraph (f)(7) below.

(B) 1990 and earlier engines were originally certified to a PM standard of 0.60 grams per brake horsepower-hour. Only those 1990 and earlier engines that have been retrofitted to 0.10 grams per brake horsepower-hour PM with an ARB-certified retrofit device (to meet the requirements of the U.S. EPA urban transit bus rebuild and retrofit program, 40 CFR 85.1401 - 1415) are exempt from further retrofit requirements under this section.

(2) Tier 2 -- Transit agencies shall not own, operate or lease diesel-fueled, dual-fuel, bi-fuel, or diesel hybrid transit buses in their active fleets with 1991 through 1995 model year engines, unless the engines have been retrofitted with a device that has been certified by the Executive Officer in accordance with the procedures set forth in the "California Certification Procedures for PM Retrofit Devices for On-Road Heavy-Duty Diesel Engines" incorporated by reference in paragraph (f)(7) below, and in accordance with the following schedule. Transit agencies with fewer than 20 buses in their active fleets, and that operate in federal one-hour ozone attainment areas shall comply with the 100 percent retrofit requirement by January 1, 2007, and are exempt from the interim requirements described in (A) and (B) below that apply before that date. In areas redesignated as one-hour ozone non-attainment areas prior to January 1, 2007, transit agencies initially exempt from the interim requirements shall submit a plan to the Executive Officer within 30

days of redesignation for achieving compliance with this retrofit requirement.

(A) Alternative-fuel path: 20 percent of these buses shall be retrofitted by January 1, 2003; 75 percent of these buses shall be retrofitted by January 1, 2004; and 100 percent of these buses shall be retrofitted by January 1, 2005, except for those buses eligible for the retirement exemption set forth in paragraph (f)(4), below.

(B) Diesel path: 50 percent of these buses shall be retrofitted by January 1, 2003; and 100 percent of these buses shall be retrofitted by January 1, 2004, except for those buses eligible for the retirement exemption set forth in paragraph (f)(4), below.

(3) Tier 3 -- Transit agencies shall not own or operate diesel-fueled, dual-fuel, bi-fuel, or diesel hybrid buses in their active fleets with 1996 through 2002 model year engines produced before October 1, 2002, unless the engines have been retrofitted with a device that has been certified by the Executive Officer in accordance with the procedures set forth in the "California Certification Procedures for PM Retrofit Devices for On-Road Heavy-Duty Diesel Engines" incorporated by reference in paragraph (f)(7) below, and in accordance with the following schedule.

(A) Alternative-fuel path: 20 percent of these buses shall be retrofitted by January 1, 2007; 75 percent of these buses shall be retrofitted by January 1, 2008; and 100 percent of these buses shall be retrofitted by January 1, 2009, except for those buses eligible for the retirement exemption set forth in paragraph (f)(4), below.

(B) Diesel path: 20 percent of these buses shall be retrofitted by January 1, 2005; 75 percent of these buses shall be retrofitted by January 1, 2006; and 100 percent of these buses shall be retrofitted by January 1, 2007.

(4) For transit agencies on the alternative-fuel path, those buses that are within two years of retirement are exempt from the 100 percent retrofit requirement set forth in paragraphs (2)(A) and (3)(A), above, provided documentation of retirement is supplied to the Executive Officer in accordance with the requirements set forth in paragraph (d)(2) of section 1956.4, Title 13, CCR.

For transit agencies on the diesel path, those buses that are within one year of retirement are exempt from the 100 percent retrofit

requirement set forth in paragraph (2)(B), above, provided documentation of retirement is supplied to the Executive Officer in accordance with the requirements set forth in paragraph (d)(2) of section 1956.4, Title 13, CCR.

(5) Beginning July 1, 2002, transit agencies shall not operate diesel buses on diesel fuel with a sulfur content in excess of 15 parts per million by weight. Transit agencies with fewer than 20 buses in their active fleets, and that operate in federal one-hour ozone attainment areas, are not subject to this low-sulfur fuel requirement until July 1, 2006. In areas redesignated as one-hour ozone non-attainment areas prior to July 1, 2006, transit agencies initially exempt from the low-sulfur fuel requirement shall submit a plan to the Executive Officer within 30 days of redesignation for achieving compliance with this requirement.

(6) Transit agencies that own, operate, or lease a diesel-fueled, dual-fuel, bi-fuel, or diesel hybrid bus with an engine for which a retrofit device is not, or will not be, available to meet the retrofit requirements within 6 months of the dates specified in paragraphs (f)(1) through (f)(3) shall be eligible for a one-year delay in complying with the retrofit requirements, upon submittal of documentation of device unavailability to the ARB in writing at least 30 days before the retrofit requirement becomes applicable and upon approval of the delay by the Executive Officer of the ARB.

(7) The retrofit certification procedures for use in complying with the PM retrofit requirements for 2002 model year diesel-fueled, dual-fuel and bi-fuel urban bus engines produced before October 1, 2002, and earlier model year urban bus engines

(including engines used in diesel hybrid buses) are set forth in the "California Certification Procedures for PM Retrofit Devices for On-Road Heavy-Duty Diesel Engines" adopted November 22, 2000, which are incorporated herein by reference.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43701(b) Health and Safety Code. Reference: Sections 39002, 39003, 39017, 39500, 39650, 40000, 43000, 43000.5, 43013, 43018, 43701(b), 43801, 43806 Health and Safety Code, and sections 233, 28114, Vehicle Code.

SECTION 1956.3, TITLE 13, CCR

Add to Title 13, California Code of Regulations, new section 1956.3, to read:

1956.3 Zero-emission Bus Requirements

(a) "Zero-emission bus" means an Executive Officer certified urban bus that produces zero exhaust emissions of any criteria pollutant (or precursor pollutant) under any and all possible operational modes and conditions.

(1) A hydrogen-fuel cell bus shall qualify as a zero-emission bus.

(2) An electric trolley bus with overhead twin-wire power supply shall qualify as a zero-emission bus.

(3) A battery electric bus shall qualify as a zero-emission bus.

(4) Incorporation of a fuel-fired heater shall not preclude an urban bus from being certified as a zero-emission bus, provided the fuel-fired heater cannot be operated at ambient temperatures above 40°F and the heater is demonstrated to have zero evaporative emissions under any and all possible operational modes and conditions.

(b) Zero-emission Bus Demonstration Project – except as provided in (3) below, the owner or operator of an urban bus fleet on the diesel path in accordance with the provisions of section 1956.2, with more than 200 urban transit buses in its active fleet on January 31, 2001, shall implement a demonstration project. The owner or operator shall evaluate the operation of zero-emission buses in revenue service, and prepare and submit a report on the demonstration project to the Executive Officer for inclusion in a future review of zero-emission technology.

(1) This demonstration project shall meet all of the following specifications and requirements:

(A) utilize a minimum of three zero-emission buses,
(B) include any necessary site improvements,
(C) locate fueling infrastructure onsite,
(D) provide appropriate maintenance and storage facilities,
(E) train bus operators and maintenance personnel,
(F) place the buses in revenue service for a minimum duration of 12 calendar months,
(G) retain operation and maintenance records, and
(H) report on the demonstration program as set forth in subdivision (e) of section 1956.4, Title 13, CCR.

(2) When planning and implementing the demonstration project, the operator or owner shall meet the following milestones:

(A) no later than January 1, 2002, prepare and solicit bid proposals for materials and services necessary to implement the demonstration project, including but not limited to the zero-emission buses and the associated infrastructure
(B) no later than July 1, 2003, place at least three zero-emission buses in revenue service, and
(C) no later than January 31, 2005, submit a report on the demonstration project to the Executive Officer, in accordance with paragraph (e)(3) of section 1956.4, Title 13, CCR.

(3) Multiple transit agencies within the same air basin may, on a case-by-case basis, petition the Executive Officer to implement a joint zero-emission bus demonstration project. Electric trolley buses shall not qualify as zero-emission buses for purposes of this joint demonstration project. No more than three transit agencies can participate in any one joint project. Transit agencies that are participating in a joint demonstration project shall:

(A) designate the agency hosting the onsite demonstration,
(B) jointly fund the demonstration project, and
(C) place a minimum of three zero-emission buses per participating transit agency in revenue service.

(c) Purchase Requirement for Zero-emission Buses - The owner or operator of a transit agency with more than 200 urban buses in active service on January 1, 2007, for transit agencies on the diesel path, and January 1, 2009, for transit agencies on the alternative-fuel path, shall purchase and/or lease zero-emission buses, in accordance with the following:

(1) For transit agencies on the diesel path, in accordance with the requirements in section 1956.2, a minimum 15 percent of purchase and lease agreements, when aggregated annually, for model year 2008 through model year 2015 urban buses shall be zero-emission buses.

(2) For transit agencies on the alternative-fuel path, in accordance with the requirements in section 1956.2, a minimum 15 percent of purchase and lease agreements, when aggregated annually, for model year 2010 through model year 2015 urban buses shall be zero-emission buses.

(3) The provisions of paragraphs (1) and (2) shall not apply if the operator's urban bus fleet is composed of 15 percent or more zero-emission buses on January 1, 2008, for transit agencies on the

diesel path, and on January 1, 2010, for transit agencies on the alternative-fuel path, or at any time thereafter.

(4)(A) Transit agencies on either the diesel path or alternative-fuel path may earn credits for use in meeting the purchase requirements for zero-emission buses specified in paragraphs (c)(1) and (c)(2) by placing zero-emission buses in service prior to the dates specified in paragraphs (c)(1) and (c)(2). For each zero-emission bus placed into early service, credits shall be accrued according to the following table. Each earned credit is equivalent to one zero-emission bus.

Path	Credits per Year Placed					
	2000-2003	2004-2005	2006	2007	2008	2009
Diesel	3	2.5	2	1.5	-	-
Alternative-fuel	3	2.5	2	1.5	1.5	1

(B) Zero-emission buses placed in service to meet the zero-emission bus demonstration projects as specified in subdivision (b) are not permitted to accrue credits towards the zero-emission bus purchase requirements.

(d) The Air Resources Board shall review zero-emission bus technology and the feasibility of implementing the requirements of subdivision (c) above no later than January 2006. Based on that assessment, the Board shall decide whether to proceed with the implementation of subdivision (c) requirements.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43100, 43101, 43104, 43806 Health and Safety Code. Reference: Sections 39002, 39003, 39017, 39018, 39500, 39701, 40000, 43000, 43000.5, 43009, 43013, 43018, 43102, 43801, 43806 Health and Safety Code, and section 28114 Vehicle Code.

SECTION 1956.4, TITLE 13, CCR

Add to Title 13, California Code of Regulations, new section 1956.4, to read:

1956.4 Reporting Requirements for all Urban Bus Transit Agencies

(a) The following reports on new bus purchases and/or leases by transit operators on the alternative-fuel path shall be submitted as described below:

(1) The initial report shall be submitted by January 31, 2001, and shall state the transit agency's intent to follow the alternative-fuel path.

(2) Any requests for deviation from the requirement that 85 percent of buses purchased per year must be alternative-fuel buses must be submitted in writing and approved by the Executive Officer of the Air Resources Board 90 days prior to purchase. The written request must include the reason for requesting the deviation from the 85 percent annual purchase requirement and the transit agency's future planned alternative-fuel bus purchases.

(3) Transit agencies shall submit annual reports containing: the number, model year, and fuel used for engines in transit buses they currently own or operate, bus purchases and/or leases beginning January 1, 2000, and annual average percentage of total bus purchases and/or leases that were alternative-fuel buses. The first report shall be submitted by January 31, 2001. Subsequent reports shall be submitted annually by January 31 through the year 2016.

(b) The following reports on new bus purchases and/or leases by transit operators on the diesel path shall be submitted as described below:

(1) The initial report shall be submitted by January 31, 2001, and shall state the transit agency's intent to follow the diesel path.

(2) Transit agencies shall submit annual reports containing the number, model year, and fuel used for engines in transit buses they currently own or operate, and bus purchases and/or leases beginning January 1, 2000. The first report shall be submitted by January 31, 2001. Subsequent reports shall be submitted annually by January 31 through the year 2016.

(c) The following reports on the NOx fleet average requirement shall be submitted as described below:

(1) Initial documentation shall be submitted by January 31, 2001, and contain, at a minimum, the active urban bus fleet NOx emission

average, and if that number exceeds the average required in subdivision (e), section 1956.2, Title 13, CCR, a schedule of actions planned to achieve that average by October 1, 2002, including numbers and model years of bus purchases, retirements, retrofits, and/or repowerings, or shall indicate the intent of the transit agency to retire all model year 1987 and earlier buses in its active fleet by October 1, 2002.

(2) A final report shall be submitted by January 31, 2003, detailing the active urban bus fleet NOx emission average as of October 1, 2002, and actions, if any were needed, taken to achieve that standard, including numbers and model years of bus purchases, retirements, retrofits, and/or repowerings, or documenting the retirement of all model year 1987 and earlier buses.

(d) The following reports on the PM bus retrofit requirements shall be submitted as described below:

(1) Initial reports shall be submitted by the dates shown below and shall contain, at a minimum, the following information:

(A) number and model year of diesel-fueled, dual-fuel, bi-fuel, and diesel hybrid buses in the active fleet, projected number and model year of buses to be retrofitted annually, projected number and model year of exempt buses, if any, and basis for exemption.

(B) for transit agencies on the alternative-fuel path, a report for Tier 1 and Tier 2 requirements shall be submitted by January 31, 2002; a report for Tier 3 requirements shall be submitted by January 31, 2005.

(C) for transit agencies on the diesel path, a report for Tier 1 and Tier 2 requirements shall be submitted by January 31, 2002; a report for Tier 3 requirements shall be submitted by January 31, 2003.

(2) Transit agencies shall submit annual reports, in accordance with the schedules in paragraphs (A) and (B) below, containing records of number and model year of diesel-fueled, dual-fuel, bi-fuel, and diesel hybrid buses in the active fleet, number and model year of buses retrofitted per year, retrofit devices used, number and model year of exempt buses, if any, and basis for exemption, and number and model year of buses retired, if any.

(A) for transit agencies on the alternative-fuel path, a report on compliance with Tier 1 requirements shall be submitted by

January 31, 2003. For Tier 2, annual compliance reports shall be submitted by January 31, beginning in 2003 and ending in 2005. For Tier 3, annual compliance reports shall be submitted by January 31, beginning in 2007 and ending in 2009.

(B) for transit agencies on the diesel path, a report on compliance with Tier 1 requirements shall be submitted by January 31, 2003. For Tier 2, annual compliance reports shall be submitted by January 31, beginning in 2003 and ending in 2004. For Tier 3, annual compliance reports shall be submitted by January 31, beginning in 2005 and ending in 2007.

(e) The following reports on the zero-emission bus demonstration program shall be submitted by those transit agencies required to conduct such demonstrations, as described below:

(1) Initial documentation shall be submitted by January 31, 2003, and contain, at a minimum, the bus order and delivery schedule, fuel type, type of refueling station, any planned facility modifications, and a revenue service demonstration plan;

(2) A financial plan shall be submitted by January 31, 2003, and contain, at a minimum, projected expenditures for capital costs for purchasing and/or leasing buses, refueling stations, any facility modifications, and projected annual operating costs;

(3) A final report shall be submitted by January 31, 2005, and contain, at a minimum, the following information:

(A) a brief description of the zero-emission technology utilized, identification of bus manufacturer and product specifications,

(B) miles driven per bus in revenue service, safety incidents, driver and mechanic training conducted, and maintenance (both scheduled and unscheduled),

(C) qualitative transit personnel and passenger experience, and

(D) a financial summary of capital costs of demonstration program, including bus purchases and/or leases, fueling infrastructure, any new facilities or modifications, and annual operating costs.

(f) The following reports on new zero-emission bus purchases and/or leases shall be submitted by transit agencies required to purchase zero-emission buses as described below:

(1) Initial report shall be submitted by January 1, 2007 for transit agencies on the diesel path, and by January 1, 2009, for transit agencies on the alternative-fuel path. The initial report shall contain, at a minimum, the following information:

(A) a brief description of the zero-emission technology to be utilized and a plan for the implementation of the requirement,

(B) for an exemption from the purchase requirement, documentation that 15 percent or more of the transit agency's active urban bus fleet is composed of zero-emission buses.

(2) Any requests for deviation from the requirement that 15 percent of buses purchased per year must be zero-emission buses must be submitted in writing and approved by the Executive Officer of the Air Resources Board 90 days prior to a transit agency submitting a purchase order(s) reflecting the purchase deviation. The written request shall include the reason for requesting the deviation and the transit agency's future planned zero-emission bus purchases.

(3) Transit agencies on the diesel path shall include in the annual reports required in paragraph (b)(2): zero-emission bus purchases and/or leases beginning with model year 2008 and through model year 2015, and the annual average percentage of total bus purchases and/or leases that were zero-emission buses.

(4) Transit agencies on the alternative-fuel path shall include in the annual reports required in paragraph (a)(3): zero-emission bus purchases and/or leases beginning with model year 2010 and through model year 2015, and the annual average percentage of total bus purchases and/or leases that were zero-emission buses.

(g) Transit agencies exempted from the requirements of paragraph (d)(4), section 1956.2, Title 13, CCR, shall submit annual reports demonstrating that they are achieving NOx emission benefits required in paragraph (d)(7)(B), section 1956.2, Title 13, CCR. The first report shall be submitted by January 31, 2005. Subsequent reports shall be submitted annually by January 31 through the year 2016.

NOTE: Authority cited: Sections 39600, 39601, 39659, 39701, 43018, 41511 Health and Safety Code. Reference: Sections 39700, 39701, 41510, 41511, 43000, 43000.5, 43013, 43018, 43801, 43806 Health and Safety Code.

SECTION 1956.8, TITLE 13, CCR

Amend Title 13, California Code of Regulations, section 1956.8, to read:

1956.8 Exhaust Emission Standards and Test Procedures - 1985 and Subsequent Model Heavy-Duty Engines and Vehicles

(a)(1) The exhaust emissions (~~A~~i) from new 1985 through 2003 ~~and subsequent~~ model heavy-duty diesel engines (except methanol-fueled engines), and heavy-duty natural-gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, and (~~B~~ii) ~~from new 1991 and subsequent model heavy-duty methanol-fueled diesel transit bus engines, and (C)~~ from all new 1993 through 2003 ~~and subsequent~~ model heavy-duty methanol-fueled, diesel engines, except in all cases engines used in medium-duty vehicles, shall not exceed:

Exhaust Emission Standards
For 1985 – 2003 Model Heavy-Duty Engines Other than Urban Bus Engines
(grams per brake horsepower-hour [g/bhp-hr])

Model Year	Total Hydrocarbons or OMHCE[A]	Optional Non-methane Hydrocarbons[A]	Carbon Monoxide	Oxides of Nitrogen	Particulates
1985-1986	1.3		15.5	5.1	---
1987[B]	1.3		15.5	5.1	---
1988-1989	1.3		15.5	6.0	0.60
1990	1.3	1.2	15.5	6.0	0.60
~~1991-1993[C]~~	~~1.3~~	~~1.2~~	~~15.5~~	~~5.0~~	~~0.10~~
1991-1993[~~D~~ C]	1.3	1.2	15.5	5.0	0.25 [~~E~~ D]
1994 -1997	1.3	1.2	15.5	5.0	0.10 [~~E~~ D]
~~1994-1995[F]~~	~~1.3~~	~~1.2~~	~~15.5~~	~~5.0~~	~~0.07~~
~~1994-1995[G]~~	~~1.3~~	~~1.2~~	~~15.5~~	~~3.5 to 0.5~~	~~0.07~~
1995-1997 [~~J~~ E]	1.3	1.2	15.5	3.5 to 0.5	0.10
~~1996-2003 [F]~~	~~1.3~~	~~1.2~~	~~15.5~~	~~4.0[I, O]~~	~~0.05[H, O]~~

~~1996-2003 G~~	~~1.3~~	~~1.2~~	~~15.5~~	~~2.5 to 0.5~~	~~0.05 H~~
1998-2003 ~~K~~ F	1.3	1.2	15.5	4.0 ~~O,S~~ G,H	0.10 ~~O~~ G
1998-2003 ~~J~~ E	1.3	1.2	15.5	2.5 to 0.5 ~~T~~ I	0.10

A The total or optional non-methane hydrocarbon standards apply to petroleum-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled engines. The Organic Material Hydrocarbon Equivalent, or OMHCE, standards apply to methanol-fueled engines.

B As an option a manufacturer may elect to certify to the 1988 model-year emission standards one year early, for the 1987 model year.

C For methanol-fueled engines, these standards shall be applicable beginning with the 1993 model year.

D Emissions averaging may be used to meet this standard. Averaging is restricted to within each useful life subclass and is applicable only through the 1995 model year. Emissions from engines used in urban buses shall not be included in the averaging program.

E These are optional standards. A manufacturer may elect to certify to an optional NOx standard between the values, inclusive, by 0.5 grams per brake horsepower-hour increments. Engines certified to any of these optional NOx standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated by reference in (b), below.

F These are mandatory standards.

G Engines of 1998 through 2003 model years may be eligible to generate banking credits based on these standards according to the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated by reference in (b), below.

H May be used as the certification standard for the higher emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)~~(3)~~(4), below.

I May be used as the certification standard for the lower emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)~~(3)~~(4), below.

(2) The exhaust emissions from new 2004 and subsequent model heavy-duty diesel engines, heavy-duty natural gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, and heavy-duty methanol-fueled diesel engines, and the optional, reduced-emission standards for 2002 and subsequent model engines

produced beginning October 1, 2002, except in all cases engines used in medium-duty vehicles, shall not exceed:

Exhaust Emission Standards for 2004 and Subsequent Model Heavy-Duty Engines, and Optional, Reduced Emission Standards for 2002 and Subsequent Model Heavy-Duty Engines Produced Beginning October 1, 2002, Other than Urban Bus Engines (grams per brake horsepower-hour [g/bhp-hr])

Model Year	Oxides of Nitrogen Plus Non-methane Hydrocarbons	Optional Oxides of Nitrogen Plus Non-methane Hydrocarbons	Carbon Monoxide	Particulates Matter
~~2004 and C subsequent~~	~~2.4 L,P,S~~	~~2.5 M,P,S~~	~~15.5~~	~~0.05 H,P~~
2004 and N subsequent H	2.4 L,P,S A,C,E	2.5 M,P,S B,C,E	15.5	0.10 PC
~~2004 and C subsequent~~	~~n/a~~	~~1.8 to 0.3 L,R,T~~	~~15.5~~	~~0.05 H~~
~~2004~~ October 1, 2002 and N subsequent,	n/a	1.8 to 0.3 L,R,T A,D,F	15.5	~~0.10~~ 0.03 to 0.01 G

~~A The total or optional non-methane hydrocarbon standards apply to petroleum-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled engines. The Organic Material Hydrocarbon Equivalent, or OMHCE, standards apply to methanol-fueled engines.~~

~~B As an option a manufacturer may elect to certify to the 1988 model-year emission standards one year early, for the 1987 model year.~~

~~C These standards apply to urban bus engines only.~~

~~D For engines other than urban bus engines. For methanol-fueled engines, these standards shall be applicable beginning with the 1993 model year.~~

~~E Emissions averaging may be used to meet this standard. Averaging is restricted to within each useful life subclass and is applicable only through the 1995 model year. Emissions from engines used in urban buses shall not be included in the averaging program. However, emissions from methanol-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled urban bus engines certified to a 0.10 grams per brake horsepower-hour standard for particulates for the 1991-1993 model years, and certified to a 0.07 grams per brake horsepower-hour standard for particulates for the 1994-1995 model years, may be included in the averaging program for petroleum-fueled engines other than urban bus engines.~~

~~F These mandatory standards apply to urban bus engines only.~~

~~G These optional standards apply to urban bus engines only. A manufacturer may elect to certify to an optional NOx standard by 0.5 grams per brake horsepower-hour~~

~~increments. Engines certified to any of these optional NOx standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.~~

~~H For in-use testing, a 0.07 gram per brake horsepower-hour standard for particulates shall apply.~~

~~I A manufacturer may apply to the Executive Officer for an exemption from the 4.0 gram per brake horsepower-hour standard for oxides of nitrogen for 1996 and 1997 model year urban bus engines for which the manufacturer can demonstrate a technological need for the exemption. The exemption or exemptions shall not exceed 10 percent of the average of the manufacturer's total urban bus engine sales in California for the three model years prior to the model year for which an exemption is requested. The manufacturer shall submit technical justification for each engine model and shall provide the number of urban bus engine sales in California for the engine model for which the exemption is requested (if any) and for all urban bus engine models for the three preceding model years, to the Executive Officer when the manufacturer applies for the exemption.~~

~~J These are optional standards and apply to all heavy-duty engines excluding urban bus engines. A manufacturer may elect to certify to an optional NOx standard between the values, inclusive, by 0.5 grams per brake horsepower-hour increments. Engines certified to any of these optional NOx standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.~~

~~K These mandatory standards apply to all heavy-duty engines except urban bus engines.~~

~~L~~A This is the standard for the arithmetic sum of the oxides of nitrogen exhaust component certification value and the non-methane hydrocarbon exhaust component certification value, without individual restriction on the individual component values.

~~M~~B This is the standard for the arithmetic sum of the oxides of nitrogen exhaust component certification value and the non-methane hydrocarbon exhaust component certification value, with the non-methane hydrocarbon individual component value not to exceed 0.5 g/bhp-hr.

~~N These standards apply to all heavy-duty engines except urban bus engines.~~

~~O Engines of 1998 through 2003 model years may be eligible to generate banking credits based on these standards according to the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated in (b), below.~~

~~P~~ C Emissions averaging may be used to meet this standard. Averaging must be based on the requirements of the averaging, banking and trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated by reference in (b), below.

~~R~~ D A manufacturer may elect to certify to an optional reduced-emission NOx+NMHC standard between the values, inclusive, by 0.3 grams per brake horsepower-hour increments. Engines certified to any of these optional reduced-emission NOx standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated by reference in (b), below.

~~S~~ E May be used as the certification standard for the higher emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)~~(3)~~(4), below.

~~T~~ F May be used as the certification standard for the lower emitting fueling mode of an engine certified under the dual fueling mode certification process of (a)~~(3)~~(4),below.

G A manufacturer may elect to certify to an optional reduced-emission PM standard between the specified values, inclusive, by 0.01 grams per brake horsepower-hour increments. Engines certified to any of these optional reduced-emission PM standards are not eligible for participation in any averaging, banking or trading programs described in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" incorporated by reference in section 1956.8(b), below.

H Engine manufacturers subject to the Heavy-Duty Diesel Engine Settlement Agreements (Settlement Agreements)[1] must produce engines in compliance with the requirements contained in their respective Settlement Agreement. Most engine manufacturers subject to the Settlement Agreements are required to manufacture engines meeting the exhaust emission standards for 2004 and subsequent model years engines beginning October 1, 2002.

[1] Seven of the largest heavy-duty diesel engine manufacturers will be implementing measures to reduce emissions beginning October 1, 2002, to meet the requirements of the Heavy-Duty Diesel Engine Settlement Agreements reached with the ARB. The Heavy-Duty Diesel Engine Settlements were agreements reached in response to lawsuits brought by the United States Environmental Protection Agency and violations alleged by the ARB pertaining to excess in-use emissions caused by the use of defeat devices and unacceptable algorithms. Navistar signed its Settlement Agreement on October 22, 1998. Cummins, Detroit Diesel Corporation, Caterpillar, Volvo, Mack and Renault signed their Settlement Agreements on December 15, 1998.

~~(2)~~(3) Formaldehyde exhaust emissions from new 1993 and subsequent model methanol-fueled diesel engines, shall not exceed:

Model Year	Formaldehyde (g/bhp-hr)
1993-1995	0.10
1996 and ~~S~~subsequent	0.05

~~(3)~~(4) An engine family whose design allows engine operation in either of two distinct alternative fueling modes, where each fueling mode is characterized by use of one fuel or a combination of two fuels and by significantly different emission levels under each mode, may certify to a different NOx or NOx plus NMHC (as applicable depending on model year) standard for each fueling mode, provided it meets the following requirements:

(A) The NOx or NOx plus NMHC certification standard used for operation under the higher emitting fueling mode must be one of the standards denoted by footnote ~~S in (a)(1)~~ H in paragraph (a)(1) and footnote E in paragraph (a)(2).

(B) The NOx or NOx plus NMHC certification standard used for operation under the lower emitting fueling mode must be one of the reduced-emission standards denoted by footnote ~~T in (a)(1)~~ I in paragraph (a)(1) and footnote F in paragraph (a)(2).

(C) The engine family is not used to participate in any manufacturer's averaging, banking or trading program.

(D) The engine family meets all other emission requirements contained in this section.

(E) The higher emitting fueling mode must be intended only for fail-safe vehicle operation when a malfunction or inadvertent fuel depletion precludes operation in the lower emitting fueling mode, as evidenced by a significantly reduced horsepower versus engine speed curve when operating in the higher emitting fueling mode when compared to the similar curve for the lower emitting fueling mode.

(b) The test procedures for determining compliance with standards applicable to 1985 and subsequent heavy-duty diesel engines and vehicles and the requirements for participation in the averaging, banking and trading programs, are set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended ~~April 15, 1999~~ November 22, 2000, which is incorporated herein by reference.

(c), (d), (e), (f), (g) [No Change]

(h) The exhaust emissions from new 1992 and subsequent model-year engines used in incomplete medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles, and for diesel engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles and super-ultra-low-emission vehicles shall not exceed:

Exhaust Emission Standards for Engines Used in Incomplete Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super Ultra-Low-Emission Vehicles, and for Diesel Engines Used in Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super Ultra-Low-Emission Vehicles[A,F]
(grams per brake horsepower-hour)

Model Year	Vehicle Emissions Category[B]	Carbon Monoxide	Non-Methane Hydrocarbons and Oxides of Nitrogen[C]	Formaldehyde	Particulates~~-~~ Matter[D]
1992[E] - 2001	LEV	14.4	3.5[K]	0.050	0.10[K]
2002-2003[E]	LEV	14.4	3.0[K]	0.050	0.10[K]
1992-2003[E,H]	ULEV	14.4	2.5[K]	0.050	0.10[K]
2004 and subsequent	ULEV - Opt A.	14.4	2.5[G,I,J,K]	0.050	0.10~~J~~[J,K]
2004 and subsequent	ULEV - Opt. B	14.4	2.4[G,I,J,K]	0.050	0.10~~J~~[J,K]
1992 and subsequent	SULEV	7.2	2.0[K]	0.025	0.05[K]

[A] This set of standards is optional. Manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 8501-14,000 pounds gross vehicle weight rating may choose to comply with these standards as an alternative to the primary emission standards and test procedures specified in section 1960.1, or section 1961, Title 13, California Code of Regulations. Manufacturers that choose 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 section 2139(c), Title 13, California Code of Regulations.

[B] "LEV" means low-emission vehicle.
"ULEV" means ultra-low-emission vehicle.

"SULEV" means super ultra-low-emission vehicle.

[C] This standard is the sum of the individual non-methane hydrocarbon emissions and oxides of nitrogen emissions. For methanol-fueled engines, non-methane hydrocarbons shall mean organic material hydrocarbon equivalent ("OMHCE").

[D] This standard shall only apply to diesel engines and vehicles.

[E] Manufacturers may certify engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles to these standards to meet the requirements of section 1956.8(g), Title 13, California Code of Regulations.

[F] In-use compliance testing shall be limited to vehicles or engines with fewer than 90,000 miles.

[G] [The U.S. EPA is considering the adoption of amendments to the federal emission standards for engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles as they existed June 24, 1996. If the U.S. EPA promulgates amendments to the emission standards for this category, the ARB will hold a noticed public hearing within one year of such promulgation to consider the adoption of similar or identical standards in California.]

[H] For engines certified to the 3.5 grams per brake horsepower-hour (g/bhp-hr) LEV standards, the in-use compliance standard shall be 3.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 2002 and 2003 model year LEV standards, the in-use compliance standard shall be 3.2 g/bhp-hr. For engines certified to the 1992 through 2003 model year ULEV standards, the in-use compliance standard shall be 2.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 1992 and subsequent SULEV standards, the in-use compliance standard shall be 2.2 g/bhp-hr for the first two model years of introduction.

[I] Manufacturers have the option of certifying to either option A or B. Manufacturers electing to certify to Option A must demonstrate that the NMHC emissions do not exceed 0.5 g/bhp-hr.

[J] Emissions averaging may be used to meet these standards for diesel engines, using the requirements for participation in averaging, banking and trading programs, as set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles", adopted April 8, 1985, as last amended ~~April 15, 1999~~ November 22, 2000, incorporated by reference in paragraph (b), above.

[K] Engines of 1998 and subsequent model years may be eligible to generate averaging, banking and trading credits based on these standards according to the requirements of the averaging, banking and trading programs described in “California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles”, adopted April 8, 1985,

as last amended ~~April 15, 1999~~ November 22, 2000, incorporated by reference in paragraph b, above.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43103, 43104, and 43806, Health and Safety Code, and section 28114, Vehicle Code.
Reference: Sections 39002, 39003, 43000, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43106, 43204, and 43806, Health and Safety Code.

Amend Title 13, California Code of Regulations, section 1965, to read:

1965. Emission Control and Smog Index Labels – 1979 and Subsequent Model-Year Motor Vehicles

In addition to all other requirements, emission control labels required by California certification procedures and smog index labels shall conform to the "California Motor Vehicle Emission Control and Smog Index Label Specifications", adopted March 1, 1978, as last amended ~~October 22, 1999~~ November 22, 2000], which is incorporated herein by reference.

NOTE: Authority cited: Sections 39600, 39601, and 43200, Health and Safety Code. Reference: Sections 39002, 39003, 43000, 43013, 43100, 43101, 43102, 43103, 43104, 43107, and 43200, Health and Safety Code

State of California
AIR RESOURCES BOARD

CALIFORNIA CERTIFICATION PROCEDURES FOR PM RETROFIT DEVICES FOR ON-ROAD HEAVY-DUTY DIESEL ENGINES

Adopted: November 22, 2000

Note: The entire text of this document, which is incorporated by reference in section 1956.2, Title 13, CCR, is new language.

(a) Applicability: These procedures apply to applicants for certification of retrofit devices to reduce particulate matter (PM) emissions from on-road heavy-duty diesel engines, when PM retrofit is required or permitted for an affected engine family. Certification compliance shall be demonstrated as set forth in subdivisions (b) through (h), below.

(b) Test procedure: The applicant shall use the heavy-duty engine Federal Test Procedures as set forth in "California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-duty Diesel Engines and Vehicles" adopted April 8, 1985, as last amended November 22, 2000. Alternatively, the applicant, with written approval of the Executive Officer, may use a chassis test cycle for certification compliance. The Executive Officer shall approve the chassis test cycle if he determines that it represents normal driving conditions of the vehicle application(s) for which the device is warranted for use by the applicant. For each engine selected for testing, the applicant shall complete at least two emission tests using the same retrofit device.

(c) Emission results: In order for the retrofit device to be certified by the Executive Officer, the test results must demonstrate that the retrofit device reduces engine-out PM emissions by at least 85 percent, or, alternatively, reduces PM emissions to 0.01 g/bhp-hr or less. For retrofit devices tested with an Executive Officer-approved chassis test cycle, certification compliance shall be demonstrated by compliance with the 85 percent emission reduction requirement. The retrofit device shall not cause the engine to fail to meet any California emission standard or other requirement for the heavy-duty application for which the retrofit device is certified.

Pursuant to subdivision (h) of section 27156 of the Vehicle Code, an original equipment pollution control device may be removed from the test engine provided that the certification emission test results demonstrate an 85 percent conversion efficiency, or, alternatively, that PM emissions have been reduced to 0.01 g/bhp-hr or less, and that the engine does not fail to meet any California emission standard or other requirement applicable to that engine. No deterioration factors shall be applied to the measured results.

(d) Emissions test engine selection: The applicant shall select separate test engines to represent four-stroke engine families and two-stroke engine families. In each case, the test engine used must represent the "worst case" with respect to particulate emission control for each engine family for which the retrofit device is being certified. Engine families may be aggregated if the applicant can demonstrate to the Executive Officer that emissions and retrofit device performance do not vary significantly between aggregated engine families. For retrofit devices being certified to reduce PM emissions by 85 percent, the worst case test engine shall represent the engine family with the lowest PM emissions when originally certified by the ARB. For retrofit devices being certified to reduce PM emissions to a level of 0.01 g/bhp-hr or less, the worst case test engine shall represent the engine family with the highest PM emissions when originally certified by the ARB.

(e) Diesel test fuels: The test fuel required for the baseline test and the test with the retrofit device in place shall meet the specifications contained in 40 CFR 86.1313-94(b)(2)(Federal Register, Vol.62, No. 172, September 5, 1997, page 47125), with the exception that the sulfur content must not exceed 15 parts per million by weight, and shall be representative of fuel used in-use.

(f) Emissions warranty: As a condition of certification, the applicant shall warrant that the certified retrofit device, when properly installed and maintained as stated in the applicant's written instructions for proper maintenance and use, will not cause the heavy-duty diesel engine for which the retrofit device is certified to exceed the applicable emission standards set forth in Title 13, CCR, for a period of at least 150,000 miles from the date when the retrofit device is installed. The applicant shall also warrant that the certified retrofit device will not cause damage to the engine, when properly installed and maintained, for this same mileage interval.

The applicant shall provide an emissions defect warranty stating that if the certified retrofit device is properly installed and maintained as stated in the applicant's written instructions for proper maintenance and use, the applicant will replace all defective parts, free of charge, for a period of at least 100,000 miles from the date when the retrofit device is installed.

The applicant shall provide a written statement to the purchaser that the certified retrofit device will not result in any unsafe condition endangering the motor vehicle or its occupants in any operational mode, including malfunction.

(g) Durability requirements: The applicant shall demonstrate device durability through field testing representing a mileage interval of at least 150,000 miles. Mileage accumulation shall be performed on a vehicle application representative of the vehicle application for which the applicant warrants the use of the retrofit device. The applicant may propose to shorten the durability testing requirements, with prior approval by the Executive Officer, if sufficient data, such as durability bench testing data, are available to determine durability to at least 150,000 miles. Any durability testing shall use diesel fuel meeting the specifications in subdivision (e), above.

(h) Labeling requirements: The applicant shall label each retrofit device with a permanent, non-destructible label or stamp identifying the manufacturer, the model number, the month and year of manufacture, and the Executive Order number issued by the ARB. The label or stamp shall be easily visible after installation of the retrofit device according to the applicant's written instructions for proper maintenance and use. Each applicant shall submit a sample of its label or stamp to the ARB for review and approval, prior to selling the retrofit device.

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

Adopted: April 8, 1985
Amended: July 29, 1986
Amended: January 22, 1990
Amended: May 15, 1990
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Amended: June 29, 1995
Amended: June 4, 1997
Amended: February 26, 1999
Amended: November 22, 2000

NOTE: This document is printed in a style to indicate amendments to the existing California standards and test procedures. The amendments made in the present rulemaking to the existing California standards and test procedures are shown in underline to indicate additions to the text and ~~strikeout~~ to indicate deletions.

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 also 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 reminder 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 TEXT 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

86.098-11 Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles. October 21, 1997

(a) Exhaust emissions from new 1998 and later model year diesel heavy-duty engines shall not exceed the following:

(1) DELETE

(2) DELETE

(3) Oxides of Nitrogen.

(i) 4.0 grams per brake horsepower-hour (1.49 grams per megajoule), as measured under transient operating conditions.

(ii) A manufacturer may elect to include any or all of its diesel HDE families in the banking portion of the NOx plus NMHC ABT programs for HDEs, within the restrictions described in this section and § 86.098-15 as applicable.

(4) Particulate.

(i) DELETE.

(ii) DELETE

(iii) A manufacturer may elect to include any or all of its diesel HDE families the banking portion of the particulate ABT programs for HDEs, within the restrictions described in this section and § 86.098-15 as applicable.

(iv) For 2002 and subsequent model year diesel-fueled, dual-fuel, and bi-fuel engines produced beginning October 1, 2002, for use in urban buses, the PM standard shall be 0.01 grams per brake horsepower-hour (0.004 grams per megajoule) for certification testing and selective enforcement audit testing, and 0.01 grams per brake horsepower-hour (0.004 grams per megajoule) for in-use testing, as measured under transient operating conditions. Manufacturers may choose to meet this standard with an aftertreatment system that reduces PM to 0.01 grams per brake horsepower-hour.

(A) DELETE

(B) DELETE

(C) DELETE

(b) DELETE

(c) DELETE

(d) DELETE

(e) (1) Reduced-emission exhaust emission standards for certain 1995 and later model year heavy-duty diesel engines may be optionally selected as follows:
(i) A manufacturer may elect to certify 1996 through ~~2003 model year~~ 2002 model year diesel engines produced before October 1, 2002, for use in urban buses, to an optional reduced-emission oxides of nitrogen standard between 0.5 grams per brake horsepower-hour and 2.5 grams per brake horsepower-hour, inclusive, at 0.5 grams per brake horsepower-hour increments, as measured under transient operating conditions. Engines certified to the standard contained in this paragraph are not eligible to participate in NOx, NOx plus NMHC, or particulate ABT programs.

(ii) A manufacturer may elect to certify 1995 through 1997 model year diesel engines for use in vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds except urban bus engines, and 1994 through 1995 model year urban bus engines, to an optional reduced-emission oxides of nitrogen standard between 0.5 grams per brake horsepower-hour and 3.5 grams per brake horsepower-hour, inclusive, at 0.5 grams per brake horsepower-hour increments, as measured under transient operating conditions. Engines certified to a standard contained in this paragraph are not eligible to participate in NOx, NOx plus NMHC, or particulate ABT programs.

(iii) A manufacturer may elect to certify 1998 through ~~2003 model year~~ 2002 model year diesel engines produced before October 1, 2002, for use in vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds, other than urban transit buses, to an optional reduced-emission oxides of nitrogen standard between 0.5 grams per brake horsepower-hour and 2.5 grams per brake horsepower-hour, inclusive, at 0.5 grams per brake horsepower-hour increments, as measured under transient operating conditions. Engines certified to the standard contained in this paragraph are not eligible to participate in NOx, NOx plus NMHC, or particulate ABT programs.

(iv) A manufacturer may elect to certify 2002 - 2003 model year diesel-fueled, dual-fuel, and bi-fuel engines for urban buses produced beginning October 1, 2002, to an optional reduced-emission oxides of nitrogen plus non-methane hydrocarbon standard between 0.3 grams per brake horsepower-hour and 1.8 grams per brake horsepower-hour, inclusive, at 0.3 grams per brake horsepower-hour increments, and a particulate matter standard of 0.01 grams per brake horsepower-hour, as measured under transient operating conditions. Engines certified to the standards contained in this paragraph are not eligible to participate in NOx, NOx plus NMHC, or particulate ABT programs.

(v) A manufacturer may elect to certify 2002 model year diesel-cycle engines produced beginning October 1, 2002, through model year 2006 diesel-cycle engines, other than diesel-fueled, dual-fuel, and bi-fuel engines, for urban buses to an optional reduced-emission oxides of nitrogen plus non-methane hydrocarbon standard between 0.3 grams per brake horsepower-hour and 1.8 grams per brake horsepower-hour, inclusive,

at 0.3 grams per brake horsepower-hour increments, and a particulate matter standard of 0.01 grams per brake horsepower-hour, 0.02 grams per brake horsepower-hour, or 0.03 grams per brake horsepower-hour, as measured under transient operating conditions. Engines certified to the standards contained in this paragraph are not eligible to participate in NOx, NOx plus NMHC, or particulate ABT programs.

(vi) A manufacturer may elect to certify 2002 model year diesel engines produced beginning October 1, 2002, and later model year diesel engines, for use in vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds, other than urban transit buses, to an optional reduced-emission oxides of nitrogen plus non-methane hydrocarbon standard between 0.3 grams per brake horsepower-hour and 1.8 grams per brake horsepower-hour, inclusive, at 0.3 grams per brake horsepower-hour increments, and a particulate matter standard of 0.01 grams per brake horsepower-hour, 0.02 grams per brake horsepower-hour, or 0.03 grams per brake horsepower-hour, as measured under transient operating conditions. Engines certified to the standards contained in this paragraph are not eligible to participate in NOx, NOx plus NMHC, or particulate ABT programs.

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§ 86.004-11 Emission standards for 2004 and later model year diesel heavy-duty engines and vehicles October 21, 1997

(a)(1) Exhaust emissions from new 2004 and later model year diesel HDEs, other than urban buses, shall not exceed the following:

(i)(A) Oxides of Nitrogen plus Non-methane Hydrocarbons (NOx + NMHC) for engines fueled with either petroleum fuel, natural gas, or liquefied petroleum gas, 2.4 grams per brake horsepower-hour (0.89 gram per megajoule), as measured under transient operating conditions.

(B) Oxides of Nitrogen plus Non-methane Hydrocarbon Equivalent (NOx + NMHCE) for engines fueled with methanol, 2.4 grams per brake horsepower-hour (0.89 gram per megajoule), as measured under transient operating conditions.

(C) Optional Standard. Manufacturers may elect to certify to an Oxides of Nitrogen plus Non-methane Hydrocarbons (or equivalent for methanol-fueled engines) standard of 2.5 grams per brake horsepower-hour (0.93 gram per megajoule), as measured under transient operating conditions, provided that Non-methane Hydrocarbons (or equivalent for methanol-fueled engines) do not exceed 0.5 grams per brake horsepower-hour (0.19 gram per megajoule) NMHC (or NMHCE for methanol-fueled engines), as measured under transient operating conditions.

(D) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the emissions ABT programs for HDEs, within the restrictions described in § 86.004-15 or superseding applicable sections. If the manufacturer elects to include engine families in any of these programs, the NOx plus NMHC (or NOx plus NMHCE for methanol-fueled engines) FELs may not exceed 4.5 grams per brake horsepower-hour (1.7 grams per megajoule). This ceiling value applies whether credits for the family are derived from averaging, banking, or trading programs. Additionally, families certified to the optional standard contained in paragraph (a)(1)(i)(C) of this section shall not exceed 0.50 grams per brake horsepower-hour (0.19 gram per megajoule) NMHC (or NMHCE for methanol-fueled engines) through the use of credits.

(E) DELETE

(ii) DELETE

(iii) Particulate.

(A) DELETE

(B) DELETE

(C) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the particulate ABT programs for HDEs, within the restrictions described in this section and in § 86.004-15 or superseding applicable sections. If the manufacturer elects to include engine families in any of these programs, the particulate FEL may not exceed 0.25 gram per brake horsepower-hour (0.093 gram per megajoule).

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over the operating schedule set forth in paragraph (f)(2) of appendix I to this part, and measured and calculated in accordance with the procedures set forth in subpart N or P of this part, except as noted in § 86.098-23(c)(2) or superseding sections.

(b) DELETE

(c) DELETE

(d) DELETE

(e) A manufacturer may elect to certify ~~2003~~ 2004 and later model year diesel engines, for use in vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds, other than urban buses, to an optional reduced-emission oxides of nitrogen plus non-methane hydrocarbons (NOx + NMHC) standard between 0.3 grams per brake horsepower-hour and 1.8 grams per brake horsepower-hour, inclusive, at 0.3 grams per brake horsepower-hour increments, and a particulate matter standard of 0.01 grams per brake horsepower-hour, 0.02 grams per brake horsepower-hour, or 0.03 grams per brake horsepower-hour, as measured under transient operating conditions. Engines certified to the standard contained in this paragraph are not eligible to participate in NOx, NOx plus NMHC, or particulate ABT programs.

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(g)(1) Exhaust emissions from new 2004 through 2006 model year diesel-cycle heavy-duty engines for use in urban buses, other than diesel-fueled, dual-fuel, and bi-fuel engines, shall not exceed the following:

(i)(A) Oxides of Nitrogen plus Non-methane Hydrocarbons (NOx + NMHC) for engines fueled with either natural gas, or liquefied petroleum gas, 2.4 grams per brake horsepower-hour (0.89 gram per megajoule), as measured under transient operating conditions.

(B) Oxides of Nitrogen plus Non-methane Hydrocarbon Equivalent (NOx + NMHCE) for engines fueled with methanol, 2.4 grams per brake horsepower-hour (0.89 gram per megajoule), as measured under transient operating conditions.

(C) Optional Standard. Manufacturers may elect to certify to an Oxides of Nitrogen plus Non-methane Hydrocarbons (or equivalent for methanol-fueled engines) standard of 2.5 grams per brake horsepower-hour (0.93 gram per megajoule), as measured under transient operating conditions, provided that Non-methane Hydrocarbons (or equivalent

for methanol-fueled engines) do not exceed 0.5 grams per brake horsepower-hour (0.19 gram per megajoule) NMHC (or NMHCE for methanol-fueled engines), as measured under transient operating conditions.

(D) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the emissions ABT programs for HDEs, within the restrictions described in § 86.004-15 or superseding applicable sections. If the manufacturer elects to include engine families in any of these programs, the NOx plus NMHC (or NOx plus NMHCE for methanol-fueled engines) FELs may not exceed 4.5 grams per brake horsepower-hour (1.7 grams per megajoule). This ceiling value applies whether credits for the family are derived from averaging, banking, or trading programs. Additionally, families certified to the optional standard contained in paragraph (g)(1)(i)(C) of this section shall not exceed 0.50 grams per brake horsepower-hour (0.19 gram per megajoule) NMHC (or NMHCE for methanol-fueled engines) through the use of credits.

~~(B)~~(E) A manufacturer may elect to include any or all of its diesel HDE families in any or all of the particulate ABT programs for HDEs, within the restrictions described in this section and in § 86.004-15 or superseding applicable sections. If the manufacturer elects to include engine families in any of these programs, the particulate FEL may not exceed 0.25 gram per brake horsepower-hour (0.093 gram per megajoule).

(2) Optional Standards. As described in superseding applicable § 86.098-11, (October 21, 1997,) (e)(1)(v) for urban buses.

(h) Exhaust emissions from new 2004 through 2006 model year diesel-fueled, dual-fuel, and bi-fuel heavy-duty engines for use in urban buses shall not exceed the following:

(1) Oxides of Nitrogen, 0.5 grams per brake horsepower-hour (0.2 grams per megajoule) for certification testing and selective enforcement audit testing, as measured under transient operating conditions. As an option, manufacturers may choose to meet the NOx standard with a base engine that is certified to the standards in § 86.004-11, (October 21, 1997,) (a)(1), equipped with an aftertreatment system that reduces NOx to 0.5 grams per brake horsepower-hour. The non-methane hydrocarbons, carbon monoxide, and formaldehyde standards in paragraphs (2),(4), and (5) below shall still apply. Manufacturers shall be responsible for full certification, durability, testing, and warranty and other requirements for the base engine. For the aftertreatment system, manufacturers shall not be subject to the certification durability requirements, or in-use recall and enforcement provisions, but are subject to warranty provisions for functionality.

(2) Non-methane Hydrocarbons, 0.05 grams per brake horsepower-hour (0.02 grams per megajoule), as measured under transient operating conditions.

(3) Particulates, 0.01 grams per brake horsepower-hour (0.004 grams per megajoule) for certification testing and selective enforcement audit testing, and 0.01 grams per brake horsepower-hour (0.004 grams per megajoule) for in-use testing, as measured under transient operating conditions. As an option, manufacturers may choose to meet the PM standard with an aftertreatment system that reduces PM to 0.01 grams per

brake horsepower-hour. Manufacturers shall be responsible for full certification, durability, testing, and warranty and other requirements for the base engine. For the aftertreatment system, manufacturers shall not be subject to the certification durability requirements, or in-use recall and enforcement provisions, but are subject to warranty provisions for functionality.

(4) Carbon monoxide, 5.0 grams per grams per brake horsepower-hour (1.9 grams per megajoule) for certification testing and selective enforcement audit testing, and 7.0 grams per brake horsepower-hour (2.6 grams per megajoule) for in-use testing, as measured under transient operating conditions.

(5) Formaldehyde, 0.01 grams per brake horsepower-hour (0.004 grams per megajoule) for certification testing and selective enforcement audit testing, and 0.01 grams per brake horsepower-hour (0.004 grams per megajoule) for in-use testing, as measured under transient operating conditions.

§ 86.098-15 NOx and particulate averaging, trading, and banking for heavy-duty engines, and NOx plus NMHC and particulate averaging, trading, and banking for medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating. October 21, 1997

(a) Except as otherwise noted, references in this subsection to engines, heavy-duty engines, or HDEs shall include medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for sale in California for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating. Except as otherwise noted, references to NOx averaging, banking and trading programs shall mean NOx plus NMHC averaging, trading and banking programs when applied to such medium-duty diesel-cycle engines.

(a)(1) Heavy-duty engines eligible for NOx and particulate averaging, trading and banking programs are described in the applicable emission standards sections in this subpart or in Title 13 California Code of Regulations §1956.8(h). Manufacturers of heavy-duty engines certified for use in vehicles sold in California must utilize the requirements of paragraph (j) of this section for the inclusion of such engines in averaging, trading and banking programs. All heavy-duty engine families which include any engines labeled for use in clean-fuel vehicles as specified in 40 CFR part 88 are not eligible for these programs. Participation in these programs is voluntary.

*****

(b) (6) If ARB or the manufacturer determines that a reporting error occurred on an end-of-year report previously submitted to ARB under this section, the manufacturer's credits and credit calculations will be recalculated. Erroneous positive credits will be void. Erroneous negative balances may be adjusted by ARB for retroactive use.

(i) If ARB review of a manufacturer's end-of-year report indicates a credit shortfall, the manufacturer will be permitted to purchase the necessary credits to bring the credit balance for that engine family to zero, at the ratio of 1.2 credits purchased for every credit needed to bring the balance to zero. If sufficient credits are not available to bring the credit balance for the engine family in question to zero, ARB may void the certificate for that engine family *ab initio*.

(ii) If within 180 days of receipt of the manufacturer's end-of-year report, ARB review determines a reporting error in the manufacturer's favor (i.e. resulting in a positive credit balance) or if the manufacturer discovers such an error within 180 days of ARB receipt of the end-of-year report, the credits will be restored for use by the manufacturer.

*****

(c)(1) For each participating engine family, NOx and particulate emission credits (positive or negative) are to be calculated according to one of the following equations

and rounded, in accordance with ASTM E29-93a, to the nearest one-tenth of a Megagram (MG). Consistent units are to be used throughout the equation.

(i) For determining credit need for all engine families and credit availability for engine families generating credits for averaging programs only:

Emission credits = (Std-FEL) x (CF) x (UL) x (Production) x (10^{-6})

(ii) For determining credit availability for engine families generating credits for trading or banking programs:

Emission credits = (Std-FEL) x (CF) x (UL) x (Production) x (10^{-6}) x (Discount)

(c)(1) (iii) For purposes of the equations in paragraphs (c)(1)(i) and (ii) of this section:

Std = the current and applicable heavy-duty engine NOx or particulate emission standard in grams per brake horsepower hour or grams per Megajoule. In the case of medium-duty engines, Std= the Tier 1 standard for the 1998 through 2001 model years, the LEV standard for the 2002 through 2003 model years, and the ULEV standard for the 2004 and subsequent model years.

FEL = the NOx or particulate family emission limit for the engine family in grams per brake horsepower hour or grams per Megajoule.

CF = a transient cycle conversion factor in BHP-hr/mi or MJ/mi, as given in paragraph (c)(2) of this section.

UL = the useful life, or alternative life as described in paragraph (f) of § 86.094-21, for the given engine family in miles.

Production = the number of engines produced for U.S. sales within the given engine family during the model year. In the case of medium-duty engines and light heavy-duty engines, Production= the number of engines produced for California sales within the given engine family during the model year. Quarterly production projections are used for initial certification. Actual production is used for end-of-year compliance determination.

Discount = a one-time discount applied to all credits to be banked or traded within the model year generated. The discount applied here is 0.8. Banked credits traded in a subsequent model year will not be subject to an additional discount. Banked credits used in a subsequent model year's averaging program will not have the discount restored.

*****

(d) Averaging sets for NOx emission credits: The averaging and trading of NOx emission credits will only be allowed between heavy-duty engine families in the same averaging set. Engines sold in California may only be used to generate credits to be

banked for use in the year 2004 and later, according to paragraph (j) of this section. The averaging sets for the averaging and trading of NOx emission credits for heavy-duty engines are defined as follows:

*****

(d)(2) For diesel cycle heavy-duty engines:

(i) Heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.090-2, each constitute an averaging set. Light heavy-duty engines, as defined in § 86.090-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating, and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading among all diesel-cycle engine families within the same averaging set is allowed.

(ii) Urban buses are treated as members of the primary intended service class where they otherwise would fall.

*****

(e) Averaging sets for particulate emission credits. The averaging and trading of particulate emission credits will only be allowed between diesel cycle heavy-duty engine families in the same averaging set. Engines sold in California may only be used to generate credits to be banked for use in the year 2004 and later, according to paragraph (j) of this section. The averaging sets for the averaging and trading of particulate emission credits for diesel cycle heavy-duty engines are defined as follows:

(1) Engines intended for use in urban buses constitute a separate averaging set from all other heavy-duty engines. Averaging and trading between diesel cycle bus engine families is allowed.

(2) For heavy-duty engines, exclusive of urban bus engines, heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.090-2, each constitute an averaging set. Light heavy-duty engines, as defined in § 86.090-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading between diesel-cycle engine families within the same averaging set is allowed.

(3) Otto cycle engines may not participate in particulate averaging, trading, or banking.
*****

(f)(1)(ii) Manufacturers may bank credits only after the end of the model year and after actual credits have been reported to ARB in the end-of-year report. During the model year and before submittal of the end-of-year report, credits originally designated in the

certification process for banking will be considered reserved and may be redesignated for trading or averaging.

*****

(f)(3)(i) Banked credits may be used in averaging, or in trading, or in any combination thereof, during the certification period. Credits declared for banking from the previous model year but not reported to ARB may also be used. However, if ARB finds that the reported credits can not be proven, they will be revoked and unavailable for use.

*****

(i) DELETE

(j) Program for early banking. Provisions set forth in paragraphs (a) through (h) of this section apply only as allowed in paragraph (j) of this section. The procedures of paragraph (j) must be utilized for engines certified for sale in California to participate in ABT programs.

(1) To be eligible for the program described in paragraph (j) of this section, the following must apply:

(i) Credits are generated from diesel cycle heavy-duty engines certified and labeled for use in California vehicles.

(ii) During certification, the manufacturer shall declare its intent to include specific engine families in the program described in this paragraph (j). Separate declarations are required for each program and no engine families may be included in both programs in the same model year.

(2) Credit generation and use.

(i) For engine manufacturers not subject to the Settlement Agreements[1], ~~C~~credits shall only be generated by 1998 and later model year engine families. Manufacturers subject to the Settlement Agreements shall generate credits according to the specific requirements contained therein.

(ii) Credits may only be used for 2004 and later model year heavy-duty diesel engines, except that manufacturers subject to the Settlement Agreements shall generate credits according to the specific requirements contained therein. When used with 2004 and later model year engines, NOx credits may be used to meet the NOx plus NMHC

[1]. Seven of the largest heavy-duty diesel engine manufacturers will be implementing measures to reduce emissions beginning October 1, 2002, to meet the requirements of the Heavy-Duty Diesel Engine Settlement Agreements reached with the ARB. The Heavy-Duty Diesel Engine Settlements were agreements reached in response to lawsuits brought by the United States Environmental Protection Agency and violations alleged by the ARB pertaining to excess in-use emissions caused by the use of defeat devices and unacceptable algorithms. Navistar signed its Settlement Agreement on October 22, 1998. Cummins, Detroit Diesel Corporation, Caterpillar, Volvo, Mack and Renault signed their Settlement Agreements on December 15, 1998.

standard, except as otherwise provided in § 86.004-11(a)(1)(i)(D), and under the requirements of 86.004-15.

(iii) DELETE

(3) Program flexibilities.

(i) NOx and PM credits that are banked until model year 2004 under this paragraph (j) may be used in 2004 or any model year thereafter without being forfeited due to credit age, except that engine manufacturers subject to the Settlement Agreements shall be subject to the requirements contained in their respective Settlement Agreements. This supersedes the requirement in paragraph (f)(2)(i) of this section.

(ii) There are no regional category restraints for averaging, trading, and banking of credits generated under the program described in paragraph (j) of this section, except as noted in paragraphs (d), (e), and (j)(1)(i) of this section.

(iii) Credit discounting.

(A) For NOx and PM credits generated under this paragraph (j) from heavy-duty engine families with NOx certification levels greater than 3.5 grams per brake horsepower-hour for oxides of nitrogen, a Discount value of 0.9 shall be used in place of 0.8 in the credit availability equation in paragraph (c)(1) of this section. For credits generated from medium duty engine families, a Discount value of 0.9 shall be used if the NOx plus NMHC value is greater than the applicable standard required in subparagraph (c)(1)(iii) less 0.5 g/BHP-hr. For manufacturers subject to the provisions in the Settlement Agreements for the advanced implementation date for the 2004 heavy-duty engine emission standards, the provisions contained in this paragraph shall apply to engines produced before October 1, 2002.

(B) For NOx and PM credits generated under this paragraph (j) from heavy-duty engine families with NOx certification levels less than or equal to 3.5 grams per brake horsepower-hour for oxides of nitrogen, a Discount value of 1.0 shall be used in place of 0.8 in the credit availability equation in paragraph (c)(1) of this section. For credits generated from medium duty engine families, a Discount value of 1.0 shall be used if the NOx plus NMHC value is less than the applicable standard required in subparagraph (c)(1)(iii) less 0.5 g/BHP-hr. For manufacturers subject to the provisions in the Settlement Agreements for the advanced implementation date for the 2004 heavy-duty engine emission standards, the provisions contained in this paragraph shall apply to engines produced before October 1, 2002.

(iv) Credit apportionment. At the manufacturer's option, marketable emission reduction credits for NOx, for use in emission reduction credit programs other than ABT, may be generated based upon engine certification to the optional reduced-emission NOx certification standards of § 86.098-11(e), except that medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating may not be used as the basis for generating marketable emission reduction credits. Use of any

marketable emission reduction credits generated must meet the requirements of the individual emission reduction credit program where the credits will be applied.

(A) For those engine sales used to generate ABT credits, the manufacturer shall report engine sales in the category "ABT-only credits". For those engine sales certified to generate marketable emission reduction credits for NOx, the manufacturer shall report engine sales in the category "nonmanufacturer-owned credits".

(1) For engine sales reported as "ABT-only credits", the credits generated must be used solely in the ABT program described in this section or §86.004-15.

(2) The engine manufacturer may declare a portion of engine sales "nonmanufacturer-owned credits" and any marketable NOx credits generated based upon such sales would belong to another party. For ABT, the manufacturer may not generate any credits for the engine sales reported as "nonmanufacturer-owned credits".

(B) Only manufacturer-owned credits resulting from engine sales reported as "ABT-only credits" shall be used in the averaging, trading, and banking provisions described in this section.

(C) Credits shall not be double-counted. Credits used in the ABT program may not be provided to an engine purchaser for use in another program.

(D) Manufacturers shall determine and state the number of engines sold as "ABT-only credits" and "nonmanufacturer-owned credits" in the end-of-model year reports required under § 86.098-23.

(v) For medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations 1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating:

(A) From the 1998 model year through the 2005 model year, credits may be generated by an alternative mechanism proposed by the engine manufacturer and approved by the Executive Officer of the ARB. The alternative credit-generating mechanism shall not include any attribute expressly prohibited under the federal ABT program, such as cross-class or cross-fuel trading.

(B) Manufacturers must annually submit a proposed plan for generating credits to the Executive Officer of the ARB and have it approved prior to sale of engines of that model year in California.
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§ 86.004-15 NOx and particulate averaging, trading, and banking for heavy-duty engines, and NOx plus NMHC and particulate averaging, trading, and banking for medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating. October 21, 1997

New introductory paragraph (a) INSERT:

(a) Except as otherwise noted, references in this subsection to engines, heavy-duty engines or HDEs shall include medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations §1956.8(h) for sale in California for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating. Except as otherwise noted, references to NOx averaging, banking and trading programs shall mean NOx plus NMHC averaging, trading and banking programs when applied to such medium-duty diesel-cycle engines.

(a)(1) Heavy-duty engines eligible for NOx, NOx plus NMHC, and particulate averaging, trading and banking programs are described in the applicable emission standards sections in this subpart or in Title 13 California Code of Regulations §1956.8(h). All heavy-duty engine families which include any engines labeled for use in clean-fuel vehicles as specified in 40 CFR part 88 are not eligible for these programs. Participation in these programs is voluntary.

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(b) Participation in the NOx, NOx plus NMHC, and/or particulate averaging, trading, and banking programs shall be done as follows.

(1) During certification, the manufacturer shall:

(i) Declare its intent to included specific engine families in the averaging, trading and/or banking programs. Separate declarations are required for each program and for each pollutant (i.e., NOx, NOx plus NMHC, and particulate).

(ii) Declare an FEL for each engine family participating in one or more of these three programs.

(A) The FEL must be to the same level of significant digits as the emission standard (one-tenth of a gram per brake horsepower-hour for NOx, NOx plus NMHC, emissions and one-hundredth of a gram per brake horsepower-hour for particulate emissions).

(B) In no case may the FEL exceed the upper limit prescribed in the section concerning the applicable heavy-duty engine NOx, NOx plus NMHC, and particulate emission standards. In the case of medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through

14,000 pounds gross vehicle weight rating, the FEL is subject to the same upper limit as required for heavy-duty engines.

(iii) Calculate the projected emission credits (positive or negative) based on quarterly production projections for each participating family and for each pollutant, using the applicable equation in paragraph (c) of this section and the applicable factors for the specific engine family.

(iv)(A) Determine and state the source of the needed credits according to quarterly projected production for engine families requiring credits for certification.

(B) State where the quarterly projected credits will be applied for engine families generating credits.

(C) Credits may be obtained from or applied to only engine families within the same averaging set as described in paragraphs (d) or (e) of this section. Credits available for averaging, trading, or banking as defined in § 86.090-2, may be applied exclusively to a given engine family, or reserved as defined in § 86.091-2.

(D) Credits generated before the year 2004 to be used to certify engines in the combined light heavy-duty and medium-duty averaging set, as described in paragraphs (d)(2)(i) and (e)(2), in the year 2004 and later, must have been generated through the sale of engines in California.

(2) Based on this information each manufacturer's certification application must demonstrate:

(i) That at the end of model year production, each engine family has a net emissions credit balance of zero or more using the methodology in paragraph (c) of this section with any credits obtained from averaging, trading or banking.

(ii) The source of the credits to be used to comply with the emission standard if the FEL exceeds the standard, or where credits will be applied if the FEL is less than the emission standard. In cases where credits are being obtained, each engine family involved must state specifically the source (manufacturer/engine family) of the credits being used, including the year of generation of the credits being used and whether the credits were generated from engines sold in California or from 49-state engines. In cases where credits are being generated/supplied, each engine family involved must state specifically the designated use (manufacturer/engine family or reserved) of the credits involved. All such reports shall include all credits involved in averaging, trading or banking.

(3) During the model year manufacturers must:

(i) Monitor projected versus actual production to be certain that compliance with the emission standards is achieved at the end of the model year.

(ii) Provide the end-of-model year reports required under § 86.001-23.

(iii) For manufacturers participating in emission credit trading, maintain the quarterly records required under § 86.091-7(c)(8).

(4) Projected credits based on information supplied in the certification application may be used to obtain a certificate of conformity. However, any such credits may be revoked based on review of end-of-model year reports, follow-up audits, and any other compliance measures deemed appropriate by the Administrator.

(5) Compliance under averaging, banking, and trading will be determined at the end of the model year. Engine families without an adequate amount of NOx, NOx plus NMHC, and/or particulate emission credits will violate the conditions of the certificate of conformity. The certificates of conformity may be voided *ab initio* for engine families exceeding the emission standard.

(6) If ARB or the manufacturer determines that a reporting error occurred on an end-of-year report previously submitted to ARB under this section, the manufacturer's credits and credit calculations will be recalculated. Erroneous positive credits will be void. Erroneous negative balances may be adjusted by ARB for retroactive use.

(i) If ARB review of a manufacturer's end-of-year report indicates a credit shortfall, the manufacturer will be permitted to purchase the necessary credits to bring the credit balance for that engine family to zero, using the discount specified in paragraph (c)(1) of this section on the ratio of credits purchased for every credit needed to bring the balance to zero. If sufficient credits are not available to bring the credit balance for the family in question to zero, ARB may void the certificate for that engine family *ab initio*.

(ii) If within 180 days of receipt of the manufacturer's end-of-year report, ARB review determines a reporting error in the manufacturer's favor (i.e., resulting in a positive credit balance) or if the manufacturer discovers such an error within 180 days of ARB receipt of the end-of-year report, the credits will be restored for use by the manufacturer.

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(c)(1)(iv) For medium-duty diesel-cycle engines certified in the 2004 and 2005 model years under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, an additional adjustment to the Std value described in (c)(1)(iii) above, allowing for certification using Federal certification fuel may be made on an individual engine family basis as determined by the ARB Executive Officer upon application by the engine manufacturer.

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(c)(2)(ii) When more than one configuration is chosen by ARB to be tested in the certification of an engine family (as described in § 86.085-24), the conversion factor

used is to be based upon a production weighted average value of the configurations in an engine family to calculate the conversion factor.

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(d)(2) For NOx plus NMHC credits from diesel-cycle heavy-duty engines:

(i) Heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.004-2, each constitute an averaging set. Light heavy-duty engines, as defined in § 86.004-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading among all diesel-cycle engine families within the same averaging set is allowed.

(ii) ~~Urban buses are treated as members of the primary intended service class where they otherwise would fall.~~ Engines intended for use in urban buses constitute a separate averaging set from all other heavy-duty engines. Averaging and trading between diesel cycle bus engine families within the same averaging set is allowed.

(e) Averaging sets for particulate emission credits.

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(2) (i) For heavy-duty engines, exclusive of urban bus engines, heavy heavy-duty engines and medium heavy-duty engines, as defined in § 86.004-2, each constitute an averaging set. Light heavy-duty engines, as defined in § 86.004-2, for use in vehicles of more than 14,000 pounds gross vehicle weight rating and medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating, combined constitute an averaging set. Averaging and trading between diesel-cycle engine families within the same averaging set is allowed.

(ii) Engines intended for use in urban buses constitute a separate averaging set from all other heavy-duty engines. Averaging and trading between diesel cycle bus engine families within the same averaging set is allowed.

(3) Otto cycle engines may not participate in particulate averaging, trading, or banking.

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(f)(1)(ii) Manufacturers may bank credits only after the end of the model year and after actual credits have been reported to ARB in the end-of-year report. During the model year and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging.

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(f)(3) Use of banked emission credits. The use of banked credits shall be within the averaging set and other restrictions described in paragraphs (d) and (e) of this section, and only for the following purposes:

(i) Banked credits may be used in averaging, or in trading, or in any combination thereof, during the certification period. Credits declared for banking from the previous model year but not reported to ARB may also be used. However, if ARB finds that the reported credits can not be proven, they will be revoked and unavailable for use.

(ii) Banked credits may not be used for NOx, NOx plus NMHC, or particulate averaging and trading to offset emissions that exceed an FEL. Banked credits may not be used to remedy an in-use nonconformity determined by a Selective Enforcement Audit or by recall testing. However, banked credits may be used for subsequent production of the engine family if the manufacturer elects to recertify to a higher FEL.

(iii) Banked NOx credits from 2003 and prior may be used in place of NOx plus NMHC credits after 2003 provided that they are used in the correct averaging set and the NOx credits have not expired. Manufacturers subject to the Settlement Agreements shall bank and use credits as allowed in their respective Settlement Agreements[1].

(iv) Banked credits generated before the 2004 model year to be applied toward the certification of engines in the combined light heavy-duty and medium-duty averaging set, as described in paragraphs (d)(2)(i) and (e)(2) above, must have been generated through the sale of eligible engines within California. Credits generated before the 2004 model year from engines sold outside of California may not be used to certify light heavy-duty or medium-duty engines for sale in California.

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(i) DELETE

(j) Credit apportionment. At the manufacturer's option, marketable emission reduction credits for NOx plus NMHC, for use in emission reduction credit programs other than ABT, may be generated based upon engine certification to the optional reduced-emission NOx plus NMHC certification standards of § 86.004-11(e), except that medium-duty engines certified under Title 13 California Code of Regulations §1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating may not be used as the basis for generating marketable emission reduction credits. Use of any marketable emission reduction credits generated must meet the requirements of the individual emission reduction credit program where the credits will be applied.

[1] Seven of the largest heavy-duty diesel engine manufacturers will be implementing measures to reduce emissions beginning October 1, 2002, to meet the requirements of the Heavy-Duty Diesel Engine Settlement Agreements reached with the ARB. The Heavy-Duty Diesel Engine Settlements were agreements reached in response to lawsuits brought by the United States Environmental Protection Agency and violations alleged by the ARB pertaining to excess in-use emissions caused by the use of defeat devices and unacceptable algorithms. Navistar signed its Settlement Agreement on October 22, 1998. Cummins, Detroit Diesel Corporation, Caterpillar, Volvo, Mack and Renault signed their Settlement Agreements on December 15, 1998.

(1) For those engine sales used to generate ABT credits, the manufacturer shall report engine sales in the category "ABT-only credits". For those engine sales certified to generate marketable emission reduction credits for NOx, the manufacturer shall report engine sales in the category "nonmanufacturer-owned credits".

(i) For engine sales reported as "ABT-only credits", the credits generated must be used solely in the ABT program described in this section.

(ii) The engine manufacturer may declare a portion of engine sales "nonmanufacturer-owned credits" and any marketable NOx credits generated based upon such sales would belong to the engine purchaser. For ABT, the manufacturer may not generate any credits for the engine sales reported as "nonmanufacturer-owned credits".

(2) Only manufacturer-owned credits resulting from engine sales reported as "ABT-only credits" shall be used in the averaging, trading, and banking provisions described in this section.

(3) Credits shall not be double-counted. Credits used in the ABT program may not be provided to an engine purchaser for use in another program.

(4) Manufacturers shall determine and state the number of engines sold as "ABT-only credits" and "nonmanufacturer-owned credits" in the end-of-model year reports required under § 86.098-23.
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(l) For medium-duty diesel-cycle engines certified under Title 13 California Code of Regulations1956.8(h) for use in vehicles of more than 8,500 pounds through 14,000 pounds gross vehicle weight rating:

(1) Credits may be generated by an alternative mechanism proposed by the engine manufacturer and approved by the Executive Officer of the ARB. The alternative credit-generating mechanism shall not include any attribute expressly prohibited under the federal ABT program, such as cross-class or cross-fuel trading.

(2) Manufacturers must annually submit a proposed plan for generating credits to the Executive Officer of the ARB and have it approved prior to sale of engines of that model year in California.

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State of California
AIR RESOURCES BOARD

CALIFORNIA MOTOR VEHICLE EMISSION CONTROL AND SMOG INDEX LABEL SPECIFICATIONS

Adopted:	March 1, 1978
Amended:	June 16, 1982
Amended:	April 26, 1984
Amended:	April 8, 1985
Amended:	April 25, 1986
Amended:	June 2, 1988
Amended:	July 21, 1988
Amended:	January 22, 1990
Amended:	May 15, 1990
Amended:	July 12, 1991
Amended	March 24, 1994
Amended:	June 29, 1995
Amended:	June 24, 1996, (as corrected September 20, 1996)
Amended:	February 26, 1999
Amended:	August 5, 1999
Amended:	October 22, 1999
Amended:	November 22. 2000

Note: The regulatory amendments in this document are shown in underline to indicate additions to the regulatory text and ~~strikeout~~ to indicate deletions. The symbol "#####" means that the remainder of the text of these procedures, which is not shown in this amendment document, has not been changed.

State of California
AIR RESOURCES BOARD

California Motor Vehicle Emission Control and Smog Index Label Specifications

1. **Purpose**. The Air Resources Board recognizes that certain emissions-critical or emissions-related parts must be properly identified and maintained in order for vehicles and engines to meet the applicable emission standards. The purpose of these specifications is: (1) to require motor vehicle or motor vehicle engine manufacturers to affix a label (or labels) on each production vehicle in order to provide the vehicle owner and service mechanic with information necessary for the proper maintenance of these parts in customer use and (2) to require that smog index labels be affixed to motor vehicle windows. These Emission Control and Smog Index Label Specifications are incorporated by reference in Section 1965, Title 13, California Code of Regulations.

2. **Applicability**.

(a) The specifications for tune-up labels, vehicle emission configuration bar-code labels, and vehicle identification number bar-code labels shall apply to all new 1979 and subsequent model-year passenger cars, light-duty trucks, medium-duty vehicles, heavy-duty engines, and to all new 1982 and subsequent model year motorcycles certified to the applicable emission standards pursuant to California Health and Safety Code Sections 43100 and 43107. The "unleaded gasoline only" labeling requirements in section 3.(d) do not apply to 1997 and subsequent model year vehicles.

(b) The specifications for smog index labels shall apply to all new passenger cars and light-duty trucks 0-8500 pounds gross vehicle weight. This labeling requirement shall be effective starting with the 1998 model year.

(c) Any vehicles or classes of vehicles exempt from exhaust emission standards pursuant to Title 13 of the California Code of Regulations shall also be exempt from the requirements of these specifications except Zero-Emission Vehicles (ZEVs) certified by the Air Resources Board for use in California.

(d) The responsibility for compliance with these specifications shall rest with the motorcycle, light-duty vehicle, medium-duty vehicle, or heavy-duty engine manufacturer who certified such vehicles or engines.

3. **Emission Control Labels**. A plastic or metal tune-up label, and in accordance with Section b, a machine-readable vehicle emission configuration (VEC) bar-code label made of paper, plastic, metal, or other permanent material, shall be welded, riveted or otherwise permanently attached to an area within the engine compartment (if any) or to the engine in such a way that it will be readily visible to the average person after installation of the engine in a vehicle. In accordance with Section

b, a machine-readable vehicle identification number (VIN) bar-code label made of paper, plastic, metal, or other permanent material shall be affixed in a readily visible location to either the door-latch post next to the driver's seating position, the door edge that meets this door-latch post, or above the instrument panel in a location clearly visible through the lower left corner of the windshield.

In selecting an acceptable location, the manufacturer shall consider the possibility of accidental damage (e.g., possibility of tools or sharp instruments coming in contact with the label) and accessibility for a bar-code scanner, as applicable. Each label shall be affixed in such a manner that it cannot be removed without destroying or defacing the label, and shall not be affixed to any part which is likely to be replaced during the vehicle's useful life. For motorcycles, passenger cars, light-duty trucks, and medium-duty vehicles, the label(s) shall not be affixed to any equipment which is easily detached from the vehicle.

(a) The tune-up label shall contain the following information lettered in the English language in block letters and numerals which shall be of a color that contrasts with the background of the label:

i. The label heading shall read: "Vehicle Emission Control Information" for passenger cars, light-duty trucks, medium-duty vehicles and motorcycles, and "Important Engine Information" for heavy-duty engines.

ii. Full corporate name and trademark of the manufacturer.

iii. For 1993 and subsequent model-year vehicles and engines designed to be capable of operating on fuels other than gasoline, the statement "This (specify vehicle or engine, as applicable) is certified to operate on (specify operating fuel[s])."

iv. Engine family or test group identification, model designation, engine displacement (in cubic centimeters or liters), and for all 1993 and subsequent model-year vehicles the statement, "_____ (specify OBD I or OBD II, as applicable) certified" or "OBD Exempt" for all 1990 and subsequent model-year vehicles which do not have an Air Resources Board approved on-board diagnostic system. Motorcycles and ZEVs are exempt from these requirements.

v. Identification of the Exhaust Emission Control System: Abbreviations used shall be in accordance with SAE J1930, JUN 1993, including the following nomenclature unless the Executive Officer approves a more current version of SAE J1930 (ZEVs are exempt from these requirements):

	OC -	Oxidation Catalyst Only;
	TWC -	Three-Way Catalyst;
	TWC+OC -	Three-Way Catalyst + Oxidation Catalyst;
*	EHOC -	Electrically Heated Oxidation Catalyst;

*	EHTWC -	Electrically Heated Three-Way Catalyst;
	WU-TWC -	Warm-Up Catalyst with Three-Way Catalyst;
	WU-OC -	Warm-Up Catalyst with Oxidation Catalyst;
	AIR -	Secondary Air Injection (Pump);
	PAIR -	Pulsed Secondary Air Injection;
	CAC -	Charge Air Cooler;
	SC -	Supercharger;
	TC -	Turbocharger;
	DFI -	Direct Fuel Injection;
	IFI -	Indirect Diesel Injection;
	CTOX -	Continuous Trap Oxidizer;
	PTOX -	Periodic Trap Oxidizer;
*	FFS -	Flexible Fuel Sensor;
	O2S -	Oxygen Sensor;
	HO2S -	Heated Oxygen Sensor;
	EGR -	Exhaust Gas Recirculation;
	EM -	Engine Modification;
	CFI -	Continuous Fuel Injection;
	MFI -	Multiport (Electronic) Fuel Injection, (Central) Multiport Fuel Injection;
	TBI -	Throttle Body (Electronic) Fuel Injection;
	SFI -	Sequential Multipoint (Electronic) Fuel Injection; and
	SPL -	Smoke Puff Limiter;

* Pending confirmation as SAE protocol

The Executive Officer shall recommend abbreviations for components not listed in SAE J1930, JUN 1993.

vi. For Otto-cycle engines the tune-up specifications and adjustments recommended by the manufacturer, including, if applicable: valve lash, ignition timing, idle air fuel mixture setting procedure and value (e.g., idle CO, idle speed drop), and high idle speed. For diesel engines the specifications and adjustments recommended by the manufacturer, including, if applicable: initial injection timing, and fuel rate (in mm^3/stroke) at advertised horsepower. For the specifications listed above, which are not recommended by the manufacturer for adjustment, the manufacturer shall include in lieu of the "specifications" the single statement "no other adjustments needed." These specifications shall indicate the proper transmission position during tune-up and what accessories, if any (e.g., air conditioner), should be in operation, and what systems, if any (e.g., vacuum advance, air pump), should be disconnected during the tune-up. For all vehicles except ZEVs, the instructions for tune-up adjustments shall be sufficiently clear on the label so as to preclude the need for a mechanic or vehicle owner to refer to another document in order to correctly perform the adjustments. For heavy-duty engines certified under the requirements of Title 13 California Code of Regulations, § 1956.8

(a)(3), the requirements of this subsection (3)(a)(vi) shall be repeated for each of the two fueling modes of operation.

vii. For motorcycles only, any specific fuel or engine lubricant requirements (e.g., lead content, research octane number, engine lubricant type).

viii. For heavy-duty engines, the date of engine manufacture (month and year). A manufacturer may, in lieu of printing the month of manufacture on the engine label, maintain a record of the month of engine manufacture. The manufacturer shall submit this record to the Executive Officer upon request.

ix. An unconditional statement of compliance with the appropriate model-year California regulations; for example, "This vehicle (or engine, as applicable) conforms to California regulations applicable to ____ model-year new (for 1992 and subsequent model years, specify TLEV, LEV, ULEV, SULEV, or ZEV, as applicable) (specify motorcycles, passenger cars, light-duty trucks, medium-duty vehicles, heavy-duty Otto-cycle engines, or heavy-duty diesel engines, as applicable)." For federally certified vehicles certified for sale in California the statement must include the phrase "conforms to U.S. EPA regulations and is certified for sale in California." For Class III motorcycles for sale in California, the statement must include the phrase "is certified to ___ HC engine family exhaust emission standard in California." For incomplete light-duty truck and incomplete medium-duty vehicles the label shall contain the following statement in lieu of the above:

> "This vehicle conforms to California regulations applicable to model-year new ___ (for 1992 and subsequent model years specify LEV, ULEV or SULEV, as applicable) vehicles when completed at a maximum curb weight of ____ pounds and a maximum frontal area of ____ square feet."

For 1994 through <u>2002</u> ~~2003~~ model year heavy heavy-duty diesel engines<u>, produced before October 1, 2002,</u> to be used in urban buses that are certified to the optional reduced-emission standards, the label shall contain the following statement in lieu of the above:

> "This engine conforms to California regulations applicable to model year new urban bus engines and is certified to a NOx emission standard of ___ g/bhp-hr (for optional reduced-emission standards specify between 0.5 and 3.5 at 0.5 g/bhp-hr increments for 1994 and 1995 model years<u>,</u> and between 0.5 and 2.5 at 0.5 g/bhp-hr increments for 1996 through <u>2002 model years produced before October 1, 2002</u> ~~2003 model years~~)."

For 2002 through 2003 model year heavy heavy-duty diesel-fueled, dual-fuel, and bi-fuel engines, produced beginning October 1, 2002, to be used in urban buses that are certified to the optional reduced-emission standards, the label shall contain the following statement in lieu of the above:

> "This engine conforms to California regulations applicable to ____ model year new urban bus engines and is certified to a NOx plus NMHC optional reduced-emission standard of ____ g/bhp-hr (for optional reduced-emission standards specify between 0.3 and 1.8, inclusive, at 0.3 g/bhp-hr increments, and a particulate matter standard of 0.01 g/bhp-hr)."

This statement shall also be used on 2004 through 2006 model year heavy heavy-duty diesel-fueled, dual-fuel, and bi-fuel engines to be used in urban buses that are certified to the optional reduced-emission standards and are sold to any transit agency exempted under paragraph (d)(7), section 1956.2,Title 13, CCR, from the requirements of paragraph (d)(4), section 1956.2, Title 13, CCR.

For 2002 through 2006 model year heavy heavy-duty diesel cycle engines produced beginning October 1, 2002, other than diesel-fueled, dual-fuel, and bi-fuel engines, to be used in urban buses that are certified to the optional reduced-emission standards, the label shall contain the following statement in lieu of the above:

> "This engine conforms to California regulations applicable to ____ model year new urban bus engines and is certified to a NOx plus NMHC optional reduced-emission standard of ____ g/bhp-hr (for optional reduced-emission standards specify between 0.3 and 1.8, inclusive, at 0.3 g/bhp-hr increments, and a particulate matter standard 0.03 g/bhp-hr, 0.02 g/bhp-hr, or 0.01 g/bhp-hr)."

For 1995 through 2002 ~~2003~~ model year heavy-duty engines produced before October 1, 2002, other than those for use in urban buses, that are certified to the optional reduced-emission standards, the label shall contain the following statement in lieu of the above:

> "This engine conforms to California regulations applicable to model-year new heavy-duty engines, other than those for use in urban buses, and is certified to a NOx emission standard of ____ g/bhp-hr (for optional reduced-emission standards specify between 0.5 and 3.5 at 0.5 g/bhp-hr increments for 1995 through 1997 model-year diesel engines, between 0.5 and 2.5 at 0.5 g/bhp-hr increments for 1998 through 2002 ~~2003~~ model-year diesel engines produced before October 1, 2002, between 0.5 and 2.5 at 0.5 g/bhp-hr increments for 1995 through 1997 model-year Otto-cycle

engines, and between 0.5 and 1.5 at 0.5 g/bhp-hr increments for 1998 and later model year Otto-cycle engines)."

For 2002 ~~2004~~ and later model year heavy-duty diesel engines produced beginning October 1, 2002, other than those for use in urban buses, that are certified to the optional reduced-emission standards, the label shall contain the following statement in lieu of the above:

"This engine conforms to California regulations applicable to model-year new heavy-duty engines and is certified to a NOx plus NMHC optional reduced-emission standard of g/bhp-hr (for optional reduced-emission standards specify between 0.3 and 1.8, inclusive, at 0.3 g/bhp-hr increments, and a particulate matter standard of 0.03 g/bhp-hr, 0.02 g/bhp-hr, or 0.01 g/bhp-hr ~~for 2004 and subsequent model-year diesel engines~~)."

For heavy-duty diesel engines certified under the requirements of Title 13 California Code of Regulations, § 1956.8 (a)(4), the statement of compliance requirements of this subsection (3)(a)(ix) shall be repeated for each of the two fueling modes of operation. Appended to the statement for the lower emitting fueling model of operation shall be the following sentence:

"This certification is valid only while operating on (indicate the fuel or fuel combination under which this mode of operation was certified) fuel. Operation using any other fueling mode will result in significant increases in exhaust emissions and significantly reduce engine performance."

Manufacturers may elect to use a supplemental label in addition to the original label if there is not sufficient space to include all the required information. The supplemental label must conform to all specifications as the original label. In the case that a supplemental label is used, the original label shall be number "1 of 2" and the supplemental label shall be numbered "2 of 2."

x. For 1985 and subsequent model year heavy-duty diesel engines and 1987 and subsequent model year heavy-duty Otto-cycle engines, if the manufacturer is provided an alternate useful life period under the provisions of 40 CFR 86.085-21(f), 86.087-21(f), 86.088-21(f), 86.090-21(f), or 86.091-21(f) the prominent statement: "This engine has been certified to meet California standards for a useful life period of years or ____ miles of operation, whichever occurs first. This engine's actual life may vary depending on its service application." The manufacturer may alter this statement only to express the assigned alternate useful life in terms other than years or miles (e.g., hours, or miles only).

xi. For 1985 and subsequent model year heavy-duty diesel engines, the prominent statement: "This engine has a primary intended service application as a heavy-duty engine." (The primary intended service applications are light, medium, and heavy, as defined in 40 CFR 86.085-2.)

xii. For 1987 and subsequent model year heavy-duty Otto-cycle engines, one of the following prominent statements as applicable:

(1) For engines certified to the emission standards under 40 CFR 86.087-10(a)(1)(I), 86.088-10(a)(1)(I), 86.090- 10(a)(1)(I), 86.090-10(a)(1)(iii), 86.091-10(a)(1)(I), and 86.091-10(a)(1)(iii) the statement: "This engine is certified for use in all heavy-duty vehicles."

(2) For engines certified under the provisions of 40 CFR 86.087-10(a)(3)(I), 86.088-10(a)(3)(I), 86.090- 10(a)(3)(I), 86.090-10(a)(3)(ii), 86.091-10(a)(3)(I), or 86.091-10(a)(3)(ii) the statement, "This engine is certified for use in all heavy-duty vehicles. It is certified to the emission standards applicable to heavy- duty vehicles with a gross vehicle weight rating above 14,000 lbs. and to U.S. EPA regulations applicable in California."

(3) For engines certified to the emission standards under 40 CFR 86.087-10(a)(1)(ii), 86.088-10(a)(1)(ii), 86.090- 10(a)(1)(ii), 86.090-10(a)(1)(iv), 86.091-10(a)(1)(ii), or 86.091-10(a)(1)(iv) the statement: "This engine is certified for use only in heavy-duty vehicles with a gross vehicle weight rating above 14,000 lbs."

xiii. For 1988 model heavy-duty Otto-cycle engines and vehicles for which nonconformance penalties are to be paid in accordance with 86.1113-87(b), the following prominent statement: "The manufacturer of this engine/vehicle will pay a nonconformance penalty to be allowed to introduce it into commerce at an emission level higher than the applicable emission standard. The compliance level (or new emission standard) for this engine/vehicle is _____." (The manufacturer shall insert the applicable pollutant and compliance level calculated in accordance with 86.1112-87(a).)

(1) The above statement shall be printed on the label required in these specifications or on a separate permanent legible label in the English language and located in proximity to the label required in these specifications. The manufacturer shall begin labeling production engines or vehicles within ten days after the completion of the Production Compliance Audit (PCA).

(2) If a manufacturer introduces an engine or vehicle into commerce prior to the compliance level determination of 86.1112-87(a), it shall provide the engine or vehicle owner with a label as described above to be affixed in a location in proximity to the label required in these specifications within 30 days of the completion of the PCA.

Such statements shall not be used on labels placed on vehicles or engines which, in fact, do not comply with all applicable California regulations, including assembly-line test requirements, if any.

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