

# Adoption by Reference of California Code of Regulations

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Code of California Regulations, Title 13. Motor Vehicles, Division 3. Air Resources Board

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# Code of California Regulations, Title 13. Motor Vehicles, Division 3. Air Resources Board

## Chapter 1. Motor Vehicle Pollution Control Devices

### Article 1. General Provisions

#### **Section 1900. Definitions**

(a) The definitions of this section supplement and are governed by the definitions set forth in chapter 2 (commencing with section 39010), part 1, division 26 of the Health and Safety Code, unless a specific definition set forth therein has been revised in section (b) below to conform to federal law pursuant to Health and Safety Code section 39601. The definitions set forth in the applicable model-year new vehicle certification and assembly-line test procedures adopted in this chapter are hereby incorporated by reference.

(b) In addition to the definitions incorporated under subdivision (a), the following definitions shall govern the provisions of this chapter;

(1) "Add-on part" means any aftermarket part which is not a modified part or a replacement part.

(2) "Consolidated part" means a part which is designed to replace a group of original equipment parts and which is functionally identical of those original equipment parts in all respects which in any way affect emissions (including durability).

(3) "Emissions-related part" means any automotive part, which affects any regulated emissions from a motor vehicle which is subject to California or federal emission standards. This includes, at a minimum, those parts specified in the "Emissions-Related Parts List," adopted by the State Board on November 4, 1977, as last amended June 1, 1990.

(4) "Gaseous fuels" means any liquefied petroleum gas, liquefied natural gas, or compressed natural gas fuels for use in motor vehicles.

(5) "Heavy-duty engine" means an engine which is used to propel a heavy-duty vehicle.

(6) "Heavy-duty vehicle" means any motor vehicle having a manufacturer's gross vehicle weight rating greater than 8,500 pounds, except passenger cars.

(7) "Identical device" means a crankcase emission control device identical in all respects, including design, materials, manufacture, installation and operation, with a device which has been certified by the Air Resources Board or the Motor Vehicle Pollution Control Board pursuant to the Health and Safety Code, but which is manufactured by a person other than original manufacturer of the device.

(8) "Independent low volume manufacturer" means a manufacturer with California annual sales of less than 10,000 new passenger cars, light-duty trucks and medium-duty vehicles following aggregation of sales pursuant to this section 1900(b)(8). Annual sales shall be determined as the average number of sales sold for the three previous consecutive model years for which a manufacturer seeks certification;

however, for a manufacturer certifying for the first time in California, annual sales shall be based on projected California sales for the model year. A manufacturer's California sales shall consist of all vehicles or engines produced by the manufacturer and delivered for sale in California, except that vehicles or engines produced by the manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as California sales of the marketing manufacturer. The annual sales from different firms shall be aggregated in the following situations: (1) vehicles produced by two or more firms, one of which is 10% or greater part owned by another, except in circumstances for which the Executive Officer determines that 10% or greater ownership by one of the firms does not result in responsibility for overall direction of both firms; or (2) vehicles produced by any two or more firms if a third party has equity ownership of 10% or more in each of the firms; or (3) vehicles produced by two or more firms having a common corporate officer(s) who is (are) responsible for the overall direction of the companies; or (4) vehicles imported or distributed by all firms where the vehicles are manufactured by the same entity and the importer or distributor is an authorized agent of the entity.

(9) "Intermediate volume manufacturer" means any pre-2001 model year manufacturer with California sales between 3,001 and 60,000 new light- and medium-duty vehicles per model year based on the average number of vehicles sold by the manufacturer each model year from 1989 to 1993; any 2001 through 2002 model year manufacturer with California sales between 4,501 and 60,000 new light- and medium-duty vehicles per model year based on the average number of vehicles sold by the manufacturer each model year from 1989 to 1993; any 2003 through 2017 model year manufacturer with California sales between 4,501 and 60,000 new light- and medium-duty vehicles based on the average number of vehicles sold for the three previous consecutive model years for which a manufacturer seeks certification; and any 2018 and subsequent model year manufacturer with California sales between 4,501 and 20,000 new light- and medium-duty vehicles based on the average number of vehicles sold for the three previous consecutive model years for which a manufacturer seeks certification. For a manufacturer certifying for the first time in California, model year sales shall be based on projected California sales. A manufacturer's California sales shall consist of all vehicles or engines produced by the manufacturer and delivered for sale in California, except that vehicles or engines produced by the manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as California sales of the marketing manufacturer.

For purposes of applying the 2005 through 2017 model year zero-emission vehicle requirements for intermediate-volume manufacturers under section 1962(b) or 1962.1(b), as applicable, the annual sales from different firms shall be aggregated in the case of (1) vehicles produced by two or more firms, each one of which either has a greater than 50% equity ownership in another or is more than 50% owned by another; or (2) vehicles produced by any two or more firms if a third party has equity ownership of greater than 50% in each firm.

For purposes of applying the 2009 through 2016 model year Greenhouse Gas requirements for intermediate volume manufacturers under section 1961.1, the annual sales from different firms shall be aggregated in the following situations: (1) vehicles produced by two or more firms, each one of which either has a greater than 10% equity ownership in another or is more than 10% owned by another; or

(2) vehicles produced by any two or more firms if a third party has equity ownership of greater than 10% in each firm.

For the 2018 and subsequent model years, the annual sales from different firms shall be aggregated in the following situations: (1) vehicles produced by two or more firms, one of which is 33.4% or greater part owned by another; or (2) vehicles produced by any two or more firms if a third party has equity ownership of 33.4% or more in each of the firms; or (3) vehicles produced by two or more firms having a common corporate officer(s) who is (are) responsible for the overall direction of the companies; or (4) vehicles imported or distributed by any firms where the vehicles are manufactured by the same entity and the importer or distributor is an authorized agent of the entity.

(10) "Large volume manufacturer" means any 2000 and subsequent model year manufacturer that is not a small volume manufacturer, or an independent low volume manufacturer, or an intermediate volume manufacturer.

(11) "Light-duty truck" means any 2000 and subsequent model motor vehicle certified to the standards in section 1961(a)(1) or 1961.2 rated at 8,500 pounds gross vehicle weight or less, and any other motor vehicle, rated at 6,000 pounds gross vehicle weight or less, which is designed primarily for purposes of transportation of property or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use.

(12) "Medium-duty passenger vehicle" means any medium-duty vehicle with a gross vehicle weight rating of less than 10,000 pounds that is designed primarily for the transportation of persons. The medium-duty passenger vehicle definition does not include any vehicle which: (1) is an "incomplete truck" i.e., is a truck that does not have the primary load carrying device or container attached; or (2) has a seating capacity of more than 12 persons; or (3) is designed for more than 9 persons in seating rearward of the driver's seat; or (4) is equipped with an open cargo area of 72.0 inches in interior length or more. A covered box not readily accessible from the passenger compartment will be considered an open cargo area, for purposes of this definition.

(13) "Medium-duty vehicle" means any pre-1995 model year heavy-duty vehicle having a manufacturer's gross vehicle weight rating of 8,500 pounds or less; any 1992 through 2006 model-year heavy-duty low-emission, ultra-low-emission, super-ultra-low-emission or zero-emission vehicle certified to the standards in section 1960.1(h)(2) having a manufacturer's gross vehicle weight rating of 14,000 pounds or less; any 1995 through 2003 model year heavy-duty vehicle certified to the standards in section 1960.1(h)(1) having a manufacturer's gross vehicle weight rating of 14,000 pounds or less; and any 2000 and subsequent model heavy-duty low-emission, ultra-low-emission, super-ultra-low-emission or zero-emission vehicle certified to the standards in Section 1961(a)(1), 1961.2, 1962, or 1962.1 having a manufacturer's gross vehicle weight rating between 8,501 and 14,000 pounds.

(14) "Modified part" means any aftermarket part intended to replace an original equipment emission-related part and which is not functionally identical to the original equipment part in all respects which in any way affect emissions, excluding a consolidated part.

(15) "Motorcycle Engine" means an engine which is used to propel a new, street-use motorcycle.

(16) [Reserved]

(17) "Passenger car" means any motor vehicle designed primarily for transportation of persons and having a design capacity of twelve persons or less.

(18) "Reactivity adjustment factor" means a fraction applied to the NMOG emissions from a vehicle powered by a fuel other than conventional gasoline for the purpose of determining a gasoline-equivalent NMOG level. The reactivity adjustment factor is defined as the ozone-forming potential of clean fuel vehicle exhaust divided by the ozone-forming potential of gasoline vehicle exhaust.

(19) "Recall" means:

(A) The issuing of notices directly to consumers that vehicles in their possession or control should be corrected, and/or

(B) Efforts to actively locate and correct vehicles in the possession or control of consumers.

(20) "Replacement part" means any aftermarket part intended to replace an original equipment emissions-related part and which is functionally identical to the original equipment part in all respects which in any way affect emissions (including durability), or a consolidated part.

(21) "Subgroup" means a set of vehicles within an engine family distinguishable by characteristics contained in the manufacturer's application for certification.

(22) "Small volume manufacturer" means, with respect to the 2001 and subsequent model-years, a manufacturer with California sales less than 4,500 new passenger cars, light-duty trucks, medium-duty vehicles, heavy-duty vehicles and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years for which a manufacturer seeks certification as a small volume manufacturer; however, for manufacturers certifying for the first time in California model-year sales shall be based on projected California sales. A manufacturer's California sales shall consist of all vehicles or engines produced by the manufacturer and delivered for sale in California, except that vehicles or engines produced by the manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as California sales of the marketing manufacturer. Except as provided in the next paragraph, for the 2009 through 2017 model years, the annual sales from different firms shall be aggregated in the following situations: (1) vehicles produced by two or more firms, one of which is 10% or greater part owned by another; or (2) vehicles produced by any two or more firms if a third party has equity ownership of 10% or more in each of the firms; or (3) vehicles produced by two or more firms having a common corporate officer(s) who is (are) responsible for the overall direction of the companies; or (4) vehicles imported or distributed by any firms where the vehicles are manufactured by the same entity and the importer or distributor is an authorized agent of the entity. Notwithstanding the provisions of this paragraph, upon application to

the Executive Officer, a manufacturer may be classified as a “small volume manufacturer” for the 2013 through 2017 model years if the Executive Officer determines that it is operationally independent of the firm that owns 10% or more of the applicant or has a greater than 10% equity ownership in the applicant based on the criteria provided in the last paragraph of this subsection (b)(22).

For purposes of compliance with the zero-emission vehicle requirements, heavy-duty vehicles and engines shall not be counted as part of a manufacturer's sales. For purposes of applying the 2005 through 2017 model year zero-emission vehicle requirements for small-volume manufacturers under sections 1962(b) and 1962.1(b), the annual sales from different firms shall be aggregated in the case of (1) vehicles produced by two or more firms, each one of which either has a greater than 50% equity ownership in another or is more than 50% owned by another; or (2) vehicles produced by any two or more firms if a third party has equity ownership of greater than 50% in each firm. Notwithstanding the provisions of this paragraph, upon application to the Executive Officer, a manufacturer may be classified as a “small volume manufacturer” for the 2013 through 2017 model years if the Executive Officer determines that it is operationally independent of the firm that owns 50% or more of the applicant or has a greater than 50% equity ownership in the applicant based on the criteria provided in the last paragraph of this subsection (b)(22).

Except as provided in the next paragraph, for the 2018 and subsequent model years, the annual sales from different firms shall be aggregated in the following situations: (1) vehicles produced by two or more firms, one of which is 33.4% or greater part owned by another; or (2) vehicles produced by any two or more firms if a third party has equity ownership of 33.4% or more in each of the firms; or (3) vehicles produced by two or more firms having a common corporate officer(s) who is (are) responsible for the overall direction of the companies; or (4) vehicles imported or distributed by any firms where the vehicles are manufactured by the same entity and the importer or distributor is an authorized agent of the entity. Notwithstanding the provisions of this paragraph, upon application to the Executive Officer, a manufacturer may be classified as a “small volume manufacturer” for the 2018 and subsequent model years if the Executive Officer determines that it is operationally independent of the firm that owns 33.4% or more of the applicant or has a greater than 33.4% equity ownership in the applicant based on the criteria provided in the last paragraph of this subsection (b)(22).

For the purposes of this paragraph, all manufacturers whose annual sales are aggregated together under the provisions of this subsection (b)(22) shall be defined as “related manufacturers.” Notwithstanding such aggregation, the Executive Officer may make a determination of operational independence if all of the following criteria are met for at least 24 months preceding the application submittal: (1) for the three years preceding the year in which the initial application is submitted, the average California sales for the applicant does not exceed 4,500 vehicles per year; (2) no financial or other support of economic value is provided by related manufacturers for purposes of design, parts procurement, R&D and production facilities and operation, and any other transactions between related manufacturers are conducted under normal commercial arrangements like those conducted with other parties, at competitive pricing rates to the manufacturer; (3) related manufacturers maintain separate and independent research and development, testing, and production facilities; (4) the applicant does not use any vehicle powertrains or platforms developed or produced by related manufacturers; (5) patents are not held jointly with related manufacturers; (6) related manufacturers maintain separate business



administration, legal, purchasing, sales, and marketing departments, as well as autonomous decision-making on commercial matters; (7) the overlap of the Board of Directors between related manufacturers is limited to 25% with no sharing of top operational management, including president, chief executive officer, chief financial officer, and chief operating officer, and provided that no individual overlapping director or combination of overlapping directors exercises exclusive management control over either or both companies; and (8) parts or components supply between related companies must be established through open market process, and to the extent that the manufacturer sells parts/components to non-related manufacturers, it does so through the open market a competitive pricing. Any manufacturer applying for operational independence must submit to ARB an Attestation Engagement from an independent certified public accountant or firm of such accountants verifying the accuracy of the information contained in the application, as defined by and in accordance with the procedures established in 40 C.F.R. §80.125, as last amended January 19, 2007, which is incorporated herein by reference. The applicant must submit information to update any of the above eight criteria as material changes to any of the criteria occur. If there are no material changes to any of the criteria, the applicant must certify that to the Executive Officer annually. With respect to any such changes, the Executive Officer may consider extraordinary conditions (e.g., changes to economic conditions, unanticipated market changes, etc.) and may continue to find the applicant to be operationally independent. In the event that a manufacturer loses eligibility as a “small volume manufacturer” after a material change occurs, the manufacturer must begin compliance with the primary emissions program in the third model year after the model year in which the manufacturer loses its eligibility. The Executive Officer may, in his or her discretion, re-establish lost “small volume manufacturer” status if the manufacturer shows that it has met the operational independence criteria for three consecutive years.

Note: Authority cited: Sections 39010, 39600, 39601, 43013, 43018, 43101 and 43104, Health and Safety Code. Reference: Sections 39002, 39003, 39010, 39500, 40000, 43000, 43013, 43018.5, 43100, 43101, 43101.5, 43102, 43103, 43104, 43106 and 43204, Health and Safety Code; and Section 27156, Vehicle Code.

## HISTORY

1. Amendment of NOTE section filed 3-16-77; effective thirtieth day thereafter (Register 77, No. 12).
2. Amendment filed 11-28-77; effective thirtieth day thereafter (Register 77, No. 49).
3. Amendment of subsection (b) filed 7-6-81; effective thirtieth day thereafter (Register 81, No. 28).
4. Repealer of article 1 (sections 1900-1905, not consecutive) and new article 1 (sections 1900-1904) filed 1-14-83; effective thirtieth day thereafter (Register 81, No. 3). for prior history, see Registers 81, No. 28; 77, Nos. 49 and 12; and 73, No. 45).
5. Amendment of subsection (b) filed 4-20-83; effective upon filing pursuant to Government Code section 11346.2(d) (Register 90, No. 55).
6. Amendment of subsection (b) filed 7-17-90; operative 8-16-90 (Register 90, No. 35).
7. Amendment of subsection (b) filed 8-2-91; effective 9-2-91 (Register 91, No. 49).
8. Amendment of subsection (b)(9) and new subsections (b)(15) and (b)(16) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
9. Amendment of subsections (b)(9) and (b)(15) filed 11-8-93; operative 12-8-93 (Register 93, No. 46).
10. Repealer of subsection (b)(15) filed 1-3-97; operative 1-3-97 pursuant to Government Code section 11343.4(d) (Register 97, No. 1).
11. Amendment of subsections (b)(8) and (b)(9), new subsections (b)(17)-(b)(19) and amendment of Note filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
12. New subsection (b)(11) and subsection renumbering filed 11-22-99; operative 12-22-99 (Register 99, No. 48).
13. Amendment of subsections (a)(19)-(a)(20) and new subsections (a)(21)-(a)(21)(D) filed 5-24-2002; operative 6-23-2002 (Register 2002, No. 21).
14. Amendment of subsections (b)(18) and (b)(19) filed 6-24-2002; operative 7-24-2002 (Register 2002, No. 26).
15. Amendment of subsections (b)(18)-(19) and (b)(21) filed 2-25-2004; operative 3-26-2004 (Register 2004, No. 9).
16. Amendment of section and Note filed 9-15-2005; operative 1-1-2006 (Register 2005, No. 37).
17. Amendment of subsections (b)(8), (b)(13) and (b)(22) filed 3-18-2009; operative 4-17-2009 (Register 2009, No. 12).

18. Amendment of subsections (b)(9) and (b)(22) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
19. Amendment of subsection (b)(22) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
20. Amendment of subsection (a), new subsections (b)(3)-(5), subsection renumbering and amendment of Note filed 12-5-2014; operative 12-5-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 49).
21. Editorial correction of History 20 (Register 2014, No. 50).
22. Amendment of subsections (b)(9), (b)(14) and (b)(16) filed 10-8-2015; operative 10-8-2015 pursuant to Government Code section 11343.4(b)(3) (Register 2015, No. 41).
23. Repealer of subsections (b)(3)-(5), subsection renumbering and amendment of newly designated subsection (b)(3) filed 7-25-2016; operative 7-25-2016 pursuant to Government Code section 11343.4(b)(3) (Register 2016, No. 31).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1900, 13 CA ADC § 1900

Article 2. Approval of Motor Vehicle Pollution Control Devices (New Vehicles)

**Section 1956.8. Exhaust Emissions Standards and Test Procedures -1985 and Subsequent Model Heavy-Duty Engines and Vehicles. (1956.8(h) only)**

(a)

(1) The exhaust emissions (i) from new 1985 through 2003 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 (ii) from all new 1993 through 2003 model heavy-duty methanol-fueled, diesel engines, except in all cases engines used in medium-duty vehicles, shall not exceed:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I934aedde718f11da9d50740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=8bbeda14-ddaa-4beb-a2f0-8b18641d62d7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I934aedde718f11da9d50740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=8bbeda14-ddaa-4beb-a2f0-8b18641d62d7&contextData=(sc.Default))

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 <sup>A</sup>	Optional Non-methane Hydrocarbons <sup>A</sup>	Carbon Monoxide	Oxides of Nitrogen	Particulates
1985-1986	1.3		15.5	5.1	—
1987 <sup>B</sup>	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 <sup>C</sup>	1.3	1.2	15.5	5.0	0.25 <sup>D</sup>
1994-1997	1.3	1.2	15.5	5.0	0.10 <sup>D</sup>
1995-1997 <sup>E</sup>	1.3	1.2	15.5	3.5 to 0.5	0.10
1998-2003 <sup>F</sup>	1.3	1.2	15.5	4.0 <sup>G,H</sup>	0.10 <sup>C</sup>
1998-2003 <sup>E</sup>	1.3	1.2	15.5	2.5 to 0.5 <sup>I</sup>	0.10

<sup>A</sup> 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.

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

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

<sup>D</sup> 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.

<sup>E</sup> 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.

<sup>F</sup> These are mandatory standards.

<sup>G</sup> 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.

<sup>H</sup> 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.

<sup>I</sup> 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)

(A) 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:

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<b>Model Year</b>	<b>Oxides of Nitrogen Plus Non-methane Hydrocarbons</b>	<b>Optional Oxides of Nitrogen Plus Non-methane Hydrocarbons</b>	<b>Oxides of Nitrogen</b>	<b>Optional Oxides of Nitrogen</b>	<b>Non-methane Hydrocarbons</b>	<b>Carbon Monoxide</b>	<b>Particulates</b>
2004-2006 <sup>H</sup>	2.4 <sup>A,C,E,J</sup>	2.5 <sup>B,C,E,J</sup>	n/a		n/a	15.5	0.10 <sup>C</sup>
October 1, 2002-2006	n/a	1.8 to 0.3 <sup>A,D,F</sup>	n/a		n/a	15.5	0.03 to 0.01 <sup>G</sup>
2007 and subsequent <sup>M</sup>	n/a	n/a	0.20 <sup>I</sup>		0.14	15.5	0.01 <sup>K</sup>
2015 and Subsequent (Optional) <sup>N,O</sup>	n/a	n/a	n/a	0.10, 0.05, or 0.02	0.14	15.5	0.01

<sup>A</sup> 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.

<sup>B</sup> 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.

<sup>C</sup> For 2004 through 2006 model years, 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 section 1956.8(b), below.

<sup>D</sup> 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 section 1956.8(b), below.

<sup>E</sup> 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 section 1956.8(a)(4), below.

<sup>F</sup> 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 section 1956.8(a)(4), below.

<sup>G</sup> 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.

<sup>H</sup> Engine manufacturers subject to the Heavy-Duty Diesel Engine Settlement Agreements (Settlement Agreements)<sup>1</sup> 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.

<sup>I</sup> A manufacturer may elect to include any or all of its heavy-duty diesel engine families in any or all of the NOx emissions averaging, banking, or trading programs for heavy-duty diesel engines, within the restrictions described in “California Exhaust

Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles” incorporated in section 1956.8 (b), below. If the manufacturer elects to include engine families in any of these programs, the NOx family emission limit (FEL) may not exceed the following FEL caps: 2.00 grams per brake horsepower-hour (0.75 grams per megajoule) for model years before 2010; 0.50 grams per brake horsepower-hour (0.19 grams per megajoule) for model years 2010 and later. The FEL cap applies whether credits for the engine family are derived from averaging, banking, or trading programs.

<sup>J</sup> For 2007 through 2009 model years, a manufacturer may use these emission standards in accordance with section 1956.8 (a)(2)(B). A manufacturer may elect to include any or all of its heavy-duty diesel engine families in any or all of the NOx plus NMHC emissions averaging, banking, or trading programs for heavy-duty diesel engines, within the restrictions described in “California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles” incorporated in section 1956.8 (b), below. If the manufacturer elects to include engine families in any of these programs, the NOx family emission limit (FEL) may not exceed the following FEL caps: 2.00 grams per brake horsepower-hour (0.75 grams per megajoule) for model years. The FEL cap applies whether credits for the engine family are derived from averaging, banking, or trading programs.

<sup>K</sup> A manufacturer may elect to include any or all of its heavy-duty diesel engine families in any or all of the particulate averaging, banking, or trading programs for heavy-duty diesel engines, within the restrictions 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. The particulate FEL for each engine family a manufacturer elects to include in any of these programs may not exceed an FEL cap of 0.02 grams per brake horsepower-hour (0.0075 grams per megajoule). The FEL cap applies whether credits for the engine family are derived from averaging, banking, or trading programs.

<sup>L</sup> For 2007 and subsequent model-year urban bus engines, this section applies. For urban bus model-year engines produced from October 1, 2002 through 2006, refer to section 1956.1.

<sup>M</sup> For model years between 2007 and 2009, transit agencies purchasing urban buses and/or urban bus engines shall meet the requirements set forth in section 2023.1.

<sup>N</sup> Optional Low NOx emission standards. A manufacturer may choose to offer an engine that is 50%, 75%, or 90% below the current 0.20 g/bhp-hr NOx emission standards for heavy duty engines. A manufacturer may not include an engine family certified to the optional NOx emission standards in the ABT programs for NOx but may include it for particulates.

<sup>O</sup> On-Board Diagnostic (OBD) requirements are to be followed per Title 13, CCR, section 1971.1 with the exception of the NOx emission threshold malfunction criteria for all applicable monitors, in which case a malfunction criterion of 0.4 g/bhp-hr NOx shall be used (i.e., the OBD system is required to detect a malfunction before NOx emissions exceed 0.4 g/bhp-hr).

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<sup>1</sup> 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.

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## (B) Phase-in Options.

1. Early NOx compliant engines. For model years 2007, 2008, and 2009, a manufacturer may, at their option, certify one or more of their engine families to the combined NOx plus NMHC standard or FEL applicable to model year 2006 engines under section 1956.8 (a)(2)(A), in lieu of the separate NOx and NMHC standards or FELs applicable to the 2007 and subsequent model years, specified in section 1956.8 (a)(2)(A). Each engine certified under this phase-in option must comply with all other

emission requirements applicable to model year 2007 engines. To qualify for this option, a manufacturer must satisfy the U.S.-directed production requirement of certifying no more than 50 percent of engines to the NOx plus NMHC standards or FELs applicable to 2006 engines, as specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(1), as adopted January 18, 2001. In addition, a manufacturer may reduce the quantity of engines that are required to be phased-in using the early certification credit program specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(2), as adopted January 18, 2001, and the “Blue Sky” engine program specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(4), as adopted January 18, 2001.

2. Early PM compliant engines. A manufacturer certifying engines to the 2007 and subsequent model year PM standard listed in section 1956.8(a)(2)(A) (without using credits, as determined in any averaging, banking, or trading program described in “California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles,” to comply with the standards) before model year 2007 may reduce the number of engines that are required to meet the 2007 and subsequent model year PM standard listed in section 1956.8(a)(2)(A) in model year 2007, 2008 and/or 2009. To qualify for this option, a manufacturer must satisfy the PM emission requirements pursuant to the methods detailed in 40 Code of Federal Regulations, part 86, section 86.007-11 (g)(2)(ii), as adopted January 18, 2001.

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

<i>Model Year</i>	<i>Formaldehyde</i> <i>(g/bhp-hr)</i>
1993-1995	0.10
1996 and subsequent	0.05

(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 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 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.

(5) No crankcase emissions shall be discharged directly into the ambient atmosphere from any new 2007 or later model year diesel heavy-duty diesel engine, with the following exception: heavy-duty diesel engines equipped with turbochargers, pumps, blowers, or superchargers for air induction may discharge crankcase emissions to the ambient atmosphere if the emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. Manufacturers using this exception must manufacture the engines so that all crankcase emissions can be routed into a dilution tunnel (or other sampling system approved in advance by the Executive Officer), and must account for deterioration in crankcase emissions when determining exhaust deterioration factors. For the purpose of section 1956.8(a)(2), crankcase emissions that are routed to the exhaust upstream of exhaust aftertreatment during all operation are not considered to be “discharged directly into the ambient atmosphere.”

(6) Heavy-Duty Diesel Engine Idling Requirements.

(A) *Engine Shutdown System.* The requirements in this subsection apply to engine manufacturers and original equipment manufacturers, as applicable, that are responsible for the design and control of engine and/or vehicle idle controls.

1. Requirements. Except as provided in subsections (a)(6)(B) and (a)(6)(C), all new 2008 and subsequent model-year heavy-duty diesel engines shall be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to “neutral” or “park”, and the parking brake is engaged. If the parking brake is not engaged, then the engine shutdown system shall shut down the engine after 900 seconds of continuous idling operation once the vehicle is stopped and the transmission is set to “neutral” or “park.” The engine shutdown system must be tamper-resistant and non-programmable. A warning signal, such as a light or sound indicator inside the vehicle cabin, may be used to alert the driver 30 seconds prior to engine shutdown. The engine shutdown system must be capable of allowing the driver to reset the engine shutdown system timer by momentarily changing the position of the accelerator, brake, or clutch pedal, or other mechanism within 30 seconds prior to engine shutdown. Once reset, the engine shutdown system shall restart the engine shutdown sequence described in this paragraph above, and shall continue to do so until the engine shuts down or the vehicle is driven.

2. *Engine Shutdown System Override*: The engine shutdown system may be overridden, to allow the engine to run continuously at idle, only under the following conditions:

a. If the engine is operating in power take-off (PTO) mode.

The PTO system shall have a switch or a setting that can be switched “on” to override the engine shutdown system and will reset to the “off” position when the vehicle's engine is turned off or when the PTO equipment is turned off. Subject to advance Executive Officer approval, other methods for detecting or activating PTO operation may be allowed; or,

b. If the vehicle's engine coolant temperature is below 60°F.

The engine shutdown system shall automatically be activated once the coolant temperature reaches 60°F or above. The engine coolant temperature shall be measured with the engine's existing engine coolant temperature sensor used for engine protection, if so equipped. Other methods of measuring engine coolant temperature may be allowed, subject to advance Executive Officer approval.

c. If an exhaust emission control device is regenerating, and keeping the engine running is necessary to prevent aftertreatment or engine damage, the engine shutdown system may be overridden for the duration necessary to complete the regeneration process up to a maximum of 30 minutes. Determination of what constitutes the need for regeneration will be based on data provided by the manufacturer at time of certification. Regeneration events that may require longer than 30 minutes of engine idling to complete shall require advance Executive Officer approval. At the end of the regeneration process, the engine shutdown system shall automatically be enabled to restart the engine shutdown sequence described in subparagraph (a)(6)(A)1. above. A vehicle that uses a regeneration strategy under engine idling operating conditions shall be equipped with a dashboard indicator light that, when illuminated, indicates that the exhaust emission control device is regenerating. Other methods of indicating that the exhaust emission control device is regenerating may be used with advance Executive Officer approval.

d. if servicing or maintenance of the engine requires extended idling operation. The engine's electronic control module may be set to temporarily deactivate the engine shutdown system for up to a maximum of 60 minutes. The deactivation of the engine shutdown system shall only be performed with the use of a diagnostic scan tool. At the end of the set deactivation period, the engine's electronic control module shall reset to restart the engine shutdown system sequence described in subparagraph (a)(6)(A)1. above.

(B) *Exempt Vehicles*. Heavy-duty diesel engines to be used in buses as defined in California Vehicle Code sections 233, 612 and 642, school buses as defined in California Vehicle Code section 545, recreational vehicles as defined in Health and Safety Code 18010, medium duty vehicles as defined in section 1900(b)(13) of title 13, California Code of Regulations, military tactical vehicles as defined in section 1905 of title 13, California Code of Regulations, authorized emergency vehicles as defined in California Vehicle Code section 165, armored cars, as defined in California Vehicle Code



sections 115, and workover rigs, as defined in section 2449 of title 13, California Code of Regulations are exempted from these requirements.

(C) *Optional NOx idling emission standard.* In lieu of the engine shutdown system requirements specified in subsection (a)(6)(A) above, an engine manufacturer may elect to certify its new 2008 and subsequent model-year heavy-duty diesel engines to an optional NOx idling emission standard of 30 grams per hour. Compliance with this optional standard will be determined based on testing conducted pursuant to the supplemental NOx idling test cycle and procedures specified in section 86.1360-2007.B.4 of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in subsection (b). The manufacturer may request an alternative test procedure if the technology used cannot be demonstrated using the procedures in section 86.1360-2007.B.4, subject to advance approval of the Executive Officer. A manufacturer certifying to the optional NOx idling standard must not increase emissions of CO, PM, or NMHC, determined by comparing results from the supplemental NOx idling test cycle and procedures specified in section 86.1360-2007.B.4 of the referenced “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles” to emission results from the idle mode of the supplemental steady state test cycle or emission results from idle portions of the transient test cycle for heavy duty diesel engines, respectively specified in sections 86-1360-2007 and 86.1327-98 of the referenced “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles.” With advance Executive Officer approval, a manufacturer may use other methods of ensuring that emissions of CO, PM, and NMHC are not adversely affected in meeting the optional NOx requirement. Also, manufacturers shall state in their application for certification that meeting the optional NOx idling requirement will not adversely affect the associated emissions of CO, PM and NMHC.

An engine manufacturer certifying its engine to the optional NOx idling emission standard must also produce a vehicle label, as defined in subsection 35.B.4 of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in subsection (b).

(D) *Optional Alternatives to Main Engine Idling.* All new 2008 and subsequent model year heavy duty diesel engines may also be equipped with idling emission reduction devices that comply with the compliance requirements specified in title 13, CCR, section 2485(c)(3).

(7) Greenhouse Gas Emission Standards for new 2014 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.

(A) The CO<sub>2</sub> emissions from new 2014 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, except in all cases engines used in medium-duty vehicles, shall not exceed:

*CO<sub>2</sub> Emission Standards for 2014 and Subsequent Model Heavy-Duty Diesel Engines<sup>A, B, C, D</sup> (in g/hp-hr)*

	<i>Light heavy-duty-vocational</i>	<i>Medium heavy-duty - vocational</i>	<i>Heavy heavy-duty - vocational</i>	<i>Medium heavy-duty - tractor</i>	<i>Heavy heavy-duty - tractor</i>
<i>Model Years</i>	<i>vocational</i>	<i>vocational</i>	<i>vocational</i>	<i>tractor</i>	<i>tractor</i>
2014-2016	600	600	567	502	475
2017-2020	576	576	555	487	460
2017-2027 (Optional) <sup>E</sup>	490	474	446	409	387
2021-2023	563	545	513	473	447
2024-2026	555	538	506	461	436
2027 and later	552	535	503	457	432

<sup>A</sup> *Family Certification Levels.* A Family Certification Level (FCL) must be specified for each engine family, which may not be less than the certified emission level for the engine family. The Family Emission Limit (FEL) for the engine family is equal to the FCL multiplied by 1.03. The FCL serves as the CO<sub>2</sub> emission standard for the engine family with respect to certification and confirmatory testing instead of the standards specified in this subsection (a)(7)(A). The FEL serves as the emission standard for the engine family with respect to all other testing.

<sup>B</sup> *Averaging, Banking, and Trading Program and Credits.* The requirements for the optional averaging, banking, and trading program and for generating credits are described in the applicable test procedures incorporated by reference in subsection (b).

<sup>C</sup> *Alternate Phase-in Emission Standards.* Alternate phase-in emission standards may be used in lieu of the required CO<sub>2</sub> emission standards in the table above. To qualify for these alternate phase-in emission standards, the manufacturer must begin certifying all of its model year 2013 diesel engines within a given primary intended service class to the applicable alternate emission standards of this footnote (c) and continue through model year 2016. This means that once a manufacturer chooses to certify a primary intended service class to the alternate emission standards of this footnote (c), it is not allowed to opt out of these standards. Engines certified to these alternate emission standards are not eligible for early credits. Note that these alternate emission standards for 2016 and later are the same as the otherwise applicable required emission standards for model year 2017 and later.

<sup>D</sup> *Alternate Emission Standards Based on 2011 Model Year Engines.* For model years 2014 through 2016, heavy-duty diesel engines may be certified to these alternate emission standards based on 2011 model year engines, if they are not part of an averaging set in which a balance of banked credits remain. These alternate standards are determined from the measured emission rate of the test engine of the applicable baseline 2011 engine family(ies) as described in the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles,” as incorporated by reference in section (b). The alternate CO<sub>2</sub> standard for light and medium heavy-duty vocational-certified engines is equal to the baseline 2011 emission rate multiplied by 0.975. The alternative CO<sub>2</sub> standard for tractor-certified engines and all other heavy heavy-duty engines is equal to the baseline 2011 emission rate multiplied by 0.970.

<sup>E</sup> *Optional Low-CO<sub>2</sub> Emission Standards.* Heavy-duty diesel engines certified to these Optional Low-CO<sub>2</sub> Emission Standards must also comply with the applicable methane and nitrous oxide emission standards set forth in subsections (a)(7)(B) and (a)(7)(C), respectively. In addition, engines certified to these Optional Low-CO<sub>2</sub> Emission Standards and participating in the Innovative Technology Regulation set forth in sections 2208 and 2208.1 are not eligible to participate in the averaging, banking, and trading program, or to generate credits for certification.

(B) The methane (CH<sub>4</sub>) emissions from new 2014 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, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr.

(C) The nitrous oxide (N<sub>2</sub>O) emissions from new 2014 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, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr.

(8) Zero-Emission Powertrain Certification Standards. Model Year (MY) 2021 and subsequent MY all-electric and hydrogen fuel-cell powertrains used in heavy-duty vehicles (over 14,000 pounds gross vehicle weight rating) and incomplete medium-duty vehicles (from 8,501 through 14,000 pounds gross vehicle weight rating) may be certified in accordance with the “California Standards and Test Procedures for New 2021 and Subsequent Model Heavy-Duty Zero-Emission Powertrains,” as adopted June 27, 2019, which is hereby incorporated by reference herein. Powertrains certified using these procedures shall be deemed to have exhaust emissions of zero for any criteria pollutant or greenhouse gas.

(b) *Test Procedures.* The test procedures for determining compliance with standards applicable to 1985 and subsequent model heavy-duty diesel engines and vehicles and the requirements for participating in the averaging, banking and trading programs, are set forth in the “California Exhaust Emission Standards and Test Procedures for 1985 through 2003 Model Heavy-Duty Diesel-Engines and Vehicles,” adopted April 8, 1985, as last amended December 12, 2002, the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles,” adopted December 12, 2002, as last amended April 18, 2019, and the “California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric and Other Hybrid Vehicles in the Urban Bus and Heavy-Duty Vehicle Classes,” adopted October 24, 2002, as last amended October 21, 2014, which are incorporated by reference herein.

(c)

(1)

(A) The exhaust emissions from (i) new 1987 through 2004 model heavy-duty Otto-cycle engines (except methanol-fueled engines and except heavy-duty Otto-cycle natural-gas-fueled and liquefied-petroleum-gas-fueled Otto-cycle engines derived from diesel-cycle engines) and (ii) from new 1993 through 2004 model heavy-duty methanol-fueled Otto-cycle engines (except in all cases engines used in medium-duty vehicles) shall not exceed:

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Exhaust Emission Standards for Heavy-Duty Otto-Cycle Engines (grams per brake horsepower-hour or g/bhp-hr)				
Model Year	Total Hydrocarbons or OMHCE <sup>A</sup>	Optional Non-Methane Hydrocarbons <sup>A</sup>	Carbon Monoxide <sup>B</sup>	Oxides of Nitrogen
1987 <sup>C</sup>	1.1 <sup>D</sup> 1.9 <sup>E</sup>		14.4 <sup>D</sup> 37.1 <sup>E</sup>	10.6 10.6
1988-1989	1.1 <sup>D</sup> 1.9 <sup>E</sup>		14.4 <sup>D</sup> 37.1 <sup>E</sup>	6.0 6.0
1990	1.1 1.9 <sup>E</sup>	0.9 <sup>D</sup> 1.7 <sup>E</sup>	14.4 <sup>D</sup> 37.1 <sup>E</sup>	6.0 6.0
1991-1994	1.1 <sup>D</sup> 1.9 <sup>E</sup>	0.9 <sup>D</sup> 1.7 <sup>E</sup>	14.4 <sup>D</sup> 37.1 <sup>E</sup>	5.0 5.0
1995-1997	1.9 <sup>E</sup> 1.9 <sup>E</sup>	1.7 <sup>E</sup> 1.7 <sup>E</sup>	37.1 <sup>E</sup> 37.1 <sup>E</sup>	5.0 2.5 to 5.0 <sup>F</sup>
1998-2003 <sup>G</sup>	1.9 <sup>E</sup> 1.9 <sup>E</sup>	1.7 <sup>E</sup> 1.7 <sup>E</sup>	37.1 <sup>E</sup> 37.1 <sup>E</sup>	4.0 1.5 to 0.5 <sup>F</sup>
2004 <sup>G</sup>	Non-Methane Hydrocarbons plus Oxides of Nitrogen (NMHC + NOx) 2.4 g/bhp-hr; or 2.5 with 0.5 g/bhp-hr cap on NMHC		Carbon Monoxide 37.1	

<sup>A</sup>The total or optional non-methane hydrocarbon standards apply to petroleum-fueled, natural-gas-fueled and liquefied-petroleum-gas-fueled engines and methanol-fueled engines beginning in 2004. The Organic Material Hydrocarbon Equivalent, or OMHCE, standards apply to 1987 through 2003 methanol-fueled engines.  
<sup>B</sup>Prior to the 2002 model year, carbon monoxide emissions from engines utilizing exhaust after treatment technology shall also not exceed 0.5 percent of the exhaust gas flow at curb idle.  
<sup>C</sup>Manufacturers with existing heavy-duty Otto-cycle engines certified to the California 1986 steady-state emission standards and test procedures may as an option certify those engines, for the 1987 model year only, in accordance with the standards and test procedures for 1986 heavy-duty Otto-cycle engines established in Section 1956.7.  
<sup>D</sup>These standards are applicable to Otto-cycle engines intended for use in all heavy-duty vehicles.  
<sup>E</sup>Applicable to heavy-duty Otto-cycle engines intended for use only in vehicles with a gross vehicle weight rating greater than 14,000 pounds. Also, as an option, a manufacturer may certify one or more 1988 through 1994 model Otto-cycle heavy-duty engine configurations intended for use in all heavy-duty vehicles to these emission standards, provided that the total model-year sales of such configuration(s) being certified to these emission standards represent no more than 5 percent of total model-year sales of all Otto-cycle heavy-duty engines intended for use in vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds by the manufacturer.  
<sup>F</sup>These are optional standards and apply to all heavy-duty engines intended for use only in vehicles with a gross vehicle weight rating greater than 14,000 pounds. A manufacturer may elect to certify to an optional standard between the values, inclusive, by 0.5 grams per brake horsepower-hour increments.  
<sup>G</sup>A manufacturer may request to certify to Option 1 or Option 2 federal NMHC + NOx standards as set forth in 40 CFR § 86.005-10(f), as adopted October 6, 2000.

(B) The exhaust emissions from new 2005 and subsequent model heavy-duty Otto-cycle engines, except for Otto-cycle medium- and heavy-duty engines subject to the alternative standards in 40 CFR §86,005-10(f), shall not exceed:

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**California Emission Standards for 2005 and Subsequent Model  
Heavy-Duty Otto-Cycle Engines<sup>A</sup>**  
(in g/bhp-hr)

<i>Model Year</i>	<i>Emission Category</i>	<i>NMHC + NOx</i>	<i>NMHC</i>	<i>NOx</i>	<i>CO<sup>G</sup></i>	<i>HCHO</i>	<i>PM</i>
<b>Standards for Heavy-Duty Otto-Cycle Engines Used In 2005 through 2019 Model Incomplete Medium-Duty Vehicles 8,501 to 10,000 pounds GVW<sup>B</sup> and 2005 and Subsequent Model Incomplete Medium-Duty Vehicles 10,001 to 14,000 pounds GVW<sup>C</sup></b>							
2005 through 2007	ULEV	1.0 <sup>D,F</sup>	n/a	n/a	14.4	0.05	n/a
	SULEV	0.5	n/a	n/a	7.2	0.025	n/a
2008 and subsequent	ULEV	n/a	0.14 <sup>F</sup>	0.20 <sup>F</sup>	14.4	0.01	0.01
	SULEV	n/a	0.07 <sup>F</sup>	0.10 <sup>F</sup>	7.2	0.005	0.005
<b>Standards for Heavy-Duty Otto-Cycle Engines Used In Heavy-Duty Vehicles Over 14,000 pounds GVW</b>							
2005 through 2007	n/a	1.0 <sup>D,F</sup>	n/a	n/a	37.1	0.05 <sup>E</sup>	n/a
2008 and subsequent	n/a	n/a	0.14 <sup>F</sup>	0.20 <sup>F</sup>	14.4	0.01	0.01
2015 and subsequent <sup>H,I</sup>	Optional	n/a	0.14	0.10, 0.05 or 0.02	14.4	0.01	0.01

<sup>A</sup> These standards apply to petroleum-fueled, alcohol-fueled, liquefied petroleum gas-fueled and natural gas-fueled Otto-cycle engines.

<sup>B</sup> For the 2020 and subsequent model years, medium-duty vehicles 8,501 to 10,000 pounds GVW must certify to the primary emission standards and test procedures for complete vehicles specified in section 1961.2, title 13, CCR.

<sup>C</sup> A manufacturer of engines used in incomplete medium-duty vehicles may choose to comply with these standards as an alternative to the primary emission standards and test procedures for complete vehicles specified in section 1961 or 1961.2, title 13, CCR. A manufacturer that chooses to comply with these optional heavy-duty engine standards and test procedures shall specify, in the Part I application for certification, an in-use compliance test procedure, as provided in section 2139(c), title 13 CCR.

<sup>D</sup> A manufacturer may request to certify to the Option 1 or Option 2 federal NMHC + NOx standards as set forth in 40 CFR § 86.005-10(f). However, for engines used in medium-duty vehicles, the formaldehyde level must meet the standard specified above.

<sup>E</sup> This standard only applies to methanol-fueled Otto-cycle engines.

<sup>F</sup> A manufacturer may elect to include any or all of its medium- and heavy-duty Otto-cycle engine families in any or all of the emissions ABT programs for HDEs, within the restrictions described in section I.15 of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines,” incorporated by reference in section 1956.8(d). For engine families certified to the Option 1 or 2 federal standards, the FEL must not exceed 1.5 g/bhp-hr. If a manufacturer elects to include engine families certified to the 2005 and subsequent model year standards, the NOx plus NMHC FEL must not exceed 1.0 g/bhp-hr. For engine families certified to the 2008 and subsequent model year standards, the FEL is the same as set forth in 40 CFR 86.008-10(a)(1).

<sup>G</sup> Idle carbon monoxide: For all Otto-cycle heavy-duty engines utilizing aftertreatment technology, and not certified to the on-board diagnostics requirements of section 1968, et seq, as applicable, the CO emissions shall not exceed 0.50 percent of exhaust gas flow at curb idle.

<sup>H</sup> Optional Low NOx emission standards. A manufacturer may choose to offer an engine that is 50%, 75%, or 90% below the current 0.20 g/bhp-hr NOx emission standards for heavy duty engines. A manufacturer may not include an engine family certified to the optional NOx emission standards in the ABT programs for NOx but may include it for NMHC.

<sup>1</sup> On Board Diagnostic (OBD) requirements are to be followed using Title 13, CCR, section 1971.1 with the exception of the NOx emission threshold malfunction criteria for all applicable monitors, in which case the malfunction criteria shall be as follows:

(A) for monitors that require detection of a malfunction before emissions exceed 1.5 times the applicable NOx standard, a malfunction criterion of 0.3 g/bhp-hr NOx shall be used (i.e., the OBD system is required to detect a malfunction before NOx emissions exceed 0.3 g/bhp-hr).

(B) for monitors that require detection of a malfunction before emissions exceed 1.75 times the applicable NOx standard, a malfunction criterion of 0.35 g/bhp-hr NOx shall be used (i.e., the OBD system is required to detect a malfunction before NOx emissions exceed 0.35 g/bhp-hr).

(C) for monitors that require detection of a malfunction before emissions exceed 3.0 times the applicable NOx standard, a malfunction criterion of 0.6 g/bhp-hr NOx shall be used (i.e., the OBD system is required to detect a malfunction before NOx emissions exceed 0.6 g/bhp-hr).

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(2) Formaldehyde exhaust emissions from new 1993 and subsequent model methanol-fueled otto cycle engines shall not exceed:

<i>Model Year</i>	<i>Formaldehyde (g/bhp-hr)</i>
1993-1995	0.10
1996 and subsequent	0.05

(3) *Optional Standards for Complete and Incomplete Heavy-Duty Vehicles that Use Heavy-Duty Otto-Cycle Engines.* Manufacturers may request to group complete and incomplete heavy-duty Otto-cycle vehicles into the same test group as Otto-cycle vehicles certifying to the LEV III exhaust emission standards and test procedures specified in title 13, CCR, §1961.2, so long as those complete and incomplete heavy-duty Otto-cycle vehicles meet the most stringent LEV III standards to which any vehicle within that test group certifies.

(4) Greenhouse Gas Emission Standards for New 2016 and Subsequent Model Heavy-Duty Otto-Cycle Engines.

(A) CO<sub>2</sub> Emission Standards.

1. The CO<sub>2</sub> emissions from new 2016 through 2020 model heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, shall not exceed 627 g/hp-hr. This standard continues to apply in 2021 and later model years for all Otto-cycle engines that are not heavy heavy-duty engines. An FCL must be specified for each engine family, which may not be less than the certified emission level for the engine family. The FEL for the engine family is equal to the FCL multiplied by 1.03. The FCL serves as the CO<sub>2</sub> emission standard for the engine family with respect to certification and confirmatory testing instead of the standard specified in this subsection (c)(4)(A). The FEL serves as the emission standard for the engine family with respect to all other testing. The requirements for the optional averaging, banking, and trading program and for generating credits are described in the applicable test procedures incorporated by reference in subsection (d).

2. As an option, 2017 through 2027 model year heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, may be certified to the Optional Low-CO<sub>2</sub> Emission Standard. The CO<sub>2</sub> emissions from engines certified to the Optional Low-CO<sub>2</sub> Emission Standard may not exceed 490 g/hp-hr. Engines certified to the Optional Low-CO<sub>2</sub> Emission Standard must also comply with the applicable CH<sub>4</sub> and N<sub>2</sub>O emission standards set forth in subsections (c)(4)(B) and (c)(4)(C), respectively. In addition, engines certified to the Optional Low CO<sub>2</sub> Emission Standard and participating in the Innovative Technology Regulation set forth in sections 2208 and 2208.1 are not eligible to participate in the averaging, banking, and trading program, or to generate credits for certification.

3. The CO<sub>2</sub> emissions from new 2021 and subsequent model heavy heavy-duty vocational Otto-cycle engines and new 2021 and subsequent model heavy heavy-duty tractor Otto-cycle engines shall not exceed:

	<i>Heavy</i>	<i>Heavy</i>
	Heavy-Duty -	Heavy-Duty -
<i>Model Years</i>	<i>Vocational</i>	<i>Tractor</i>
2021-2023	513	447
2024-2026	506	436
2027 and later	503	432

(B) The CH<sub>4</sub> emissions from new 2016 and subsequent model heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr.

(C) The N<sub>2</sub>O emissions from new 2016 and subsequent model heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr.

(d) *Test Procedures.* The test procedures for determining compliance with standards applicable to 1987 and subsequent model heavy-duty Otto-cycle engines and vehicles are set forth in the “California Exhaust Emission Standards and Test Procedures for 1987 through 2003 Model Heavy-Duty Otto-Cycle Engines and Vehicles,” adopted April 25, 1986, as last amended December 27, 2000, the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles,” adopted December 27, 2000, as last amended December 19, 2018, and the “California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric and Other Hybrid Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes,” adopted October 24, 2002, as last amended October 21, 2014, which are all incorporated by reference herein; and the “California Non-Methane Organic Gas Test Procedures for 1993 through 2016 Model Year Vehicles” and the “California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles,” which are incorporated by reference in section 1961.2.

(e) A manufacturer may elect to certify complete heavy-duty vehicles of 14,000 pounds or less maximum gross vehicle weight rating as medium-duty vehicles under section 1960.1 or section 1961 of this chapter, in which event the heavy-duty emission standards and test procedures in this section shall not apply.

(f)

(1) In 1985 and future years, the executive officer may authorize use of engines certified to meet federal emission standards, or which are demonstrated to meet appropriate federal emission standards, in up to a total of 100 heavy-duty vehicles, including otto-cycle and diesel heavy-duty vehicles, in any one calendar year when the executive officer has determined that no engine certified to meet California emission standards exists which is suitable for use in the vehicles.

(2) In order to qualify for an exemption, the vehicle manufacturer shall submit, in writing, to the executive officer the justification for such exemption. The exemption request shall show that, due to circumstances beyond the control of the vehicle manufacturer, California certified engines are unavailable for use in the vehicle. The request shall further show that redesign or discontinuation of the vehicle will result in extreme cost penalties and disruption of business. In evaluating a request for an exemption, the executive officer shall consider all relevant factors, including the number of individual vehicles covered by the request and the anti-competitive effect, if any, of granting the request. If a request is denied, the executive officer shall state in writing the reasons for the denial.

(3) In the event the executive officer determines that an applicant may meet the criteria for an exemption under this subsection, but that granting the exemption will, together with previous exemptions granted, result in over 100 vehicles being permitted under this subsection to use non-California engines in heavy-duty vehicles in any one calendar year, the exemption may be granted only by the state board, under the criteria set forth herein.

(g) The exhaust emissions from new 1995 through 2003 model-year engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles shall not exceed:

Exhaust Emission Standards <sup>A</sup>			
(grams per brake horsepower-hour, or g/bhp-hr)			
	<i>Carbon</i>		
<i>Model Year</i>	<i>Monoxide</i>	<i>NMHC + NO<sub>x</sub></i> <sup>B</sup>	<i>Particulates</i> <sup>C</sup>
1995 <sup>D</sup> through 2003	14.4	3.9	0.10

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<sup>A</sup> 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 may choose to comply with these standards as a alternative to the primary emission standards and test procedures specified in section 1960.1, 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.

<sup>B</sup> 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.

<sup>C</sup> This standard shall only apply to diesel engines and vehicles.



<sup>D</sup> In the 1995 model-year only, manufacturers may certify up to 50 percent of their medium-duty engines or vehicles to the applicable 1994 model-year standards and test procedures. For the 1995 through 1997 models, alternative in-use compliance is available for medium-duty manufacturers. A manufacturer may use alternative in-use compliance for up to 100 percent of its fleet in the 1995 and 1996 model years and up to 50 percent of its fleet in the 1997 model year. The percentages shall be determined from the manufacturers' projected California sales of medium-duty vehicles. For engines certified to the standards and test procedures of this subsection, "alternative in-use compliance" shall consist of an allowance of 25 percent over the HC + NO<sub>x</sub> standard. In-use compliance testing shall be limited to vehicles or engines with less than 90,000 miles.

**(h) The exhaust *emissions* from new:**

(1) 1992 through 2004 model-year Otto-cycle engines used in incomplete medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles; and

(2) 1992 and subsequent model diesel engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles shall not exceed:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I948c75f0718f11da97c0740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=8bbeda14-ddaa-4beb-a2f0-8b18641d62d7&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Link/Document/Blob/I948c75f0718f11da97c0740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=8bbeda14-ddaa-4beb-a2f0-8b18641d62d7&contextData=(sc.Default)&bhcp=1)

**Exhaust Emission Standards for Engines Used in 1992 through 2004 Model Incomplete Otto-Cycle Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super Ultra-Low-Emission Vehicles, and 1992 and Subsequent Model Diesel Engines Used in Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super Ultra-Low-Emission Vehicles<sup>A,F</sup>**  
(grams per brake horsepower-hour)

Model Year	Vehicle Emissions Category <sup>B</sup>	Carbon Monoxide	NMHC + NO <sub>x</sub> <sup>C</sup>	Non-Methane Hydrocarbons	Oxides of Nitrogen	Formaldehyde	Particulates <sup>D</sup>
1992E-2001	LEV	14.4	3.5 <sup>K</sup>	n/a	n/a	0.050	0.10 <sup>K</sup>
2002-2003E	LEV	14.4	3.0 <sup>K</sup>	n/a	n/a	0.050	0.10 <sup>K</sup>
1992-2003E,H	ULEV	14.4	2.5 <sup>K</sup>	n/a	n/a	0.050	0.10 <sup>K</sup>
2004 - 2006 <sup>L</sup>	ULEV - Opt. A	14.4	2.5 <sup>I,J,K</sup>	n/a	n/a	0.050	0.10 <sup>J,K</sup>
2004 - 2006 <sup>L</sup>	ULEV - Opt. B/n/a	14.4	2.4 <sup>I,J,K</sup>	n/a	n/a	0.050	0.10 <sup>J,K</sup>
2007 and subsequent <sup>D</sup> (diesel only)	ULEV	15.5	n/a	0.14	0.20	0.050	0.01
1992 - 2006 <sup>L</sup>	SULEV	7.2	2.0 <sup>K</sup>	n/a	n/a	0.025	0.05 <sup>K</sup>
2007 and subsequent <sup>D</sup> (diesel only)	SULEV	7.7	n/a	0.07	0.10	0.025	0.005

<sup>A</sup>This set of standards is optional. For the 1992 through 2019 model years, manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 8501-10,000 pounds gross vehicle weight rating may choose to comply with these standards as a alternative to the primary emission standards and test procedures specified in section 1960.1, section 1961, or section 1961.2, Title 13, California Code of Regulations. For the 1992 and subsequent model years, manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 10,001-14,000 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, section 1961, or section 1961.2, Title 13, California Code of Regulations. For the 2020 and subsequent model years, both incomplete medium-duty vehicles and medium-duty vehicles that use a diesel engine 8,501 to 10,000 pounds GVW must certify to the primary emission standards and test procedures for complete vehicles specified in section 1961.2, title 13, CCR. 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.

<sup>B</sup>"LEV" means low-emission vehicle.

"ULEV" means ultra-low-emission vehicle.

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

<sup>C</sup>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").

<sup>D</sup>These standards apply only to diesel engines and vehicles.

<sup>E</sup>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.

<sup>F</sup>In-use compliance testing shall be limited to vehicles or engines with fewer than 90,000 miles.

<sup>G</sup>(Reserved)

<sup>H</sup>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.

<sup>I</sup>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.

<sup>J</sup>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 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," incorporated by reference in section 1956.8(b), above.

<sup>K</sup>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 the "California Exhaust Emission Standards and Test Procedures for 1985 through 2003 Model Heavy-Duty Diesel Engines and Vehicles" and the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," incorporated by reference in section 1956.8(b), above.

<sup>L</sup>For the 2005 and 2006 model years, these emission standards only apply to diesel engines and vehicles.

(3) 2007 and later model year engines subject to (h)(2) have the following Phase-in Options.

(A) Early NO<sub>x</sub> compliant engines. For model years 2007, 2008, and 2009, a manufacturer may, at their option, certify one or more of their engine families to the combined NO<sub>x</sub> plus NMHC standard or FEL applicable to model year 2006 engines under section 1956.8(h)(2), in lieu of the separate NO<sub>x</sub> and NMHC standards or FELs applicable to the 2007 and subsequent model years, specified in section 1956.8(h)(2). Each engine certified under this phase-in option must comply with all other emission requirements applicable to model year 2007 engines. To qualify for this option, a manufacturer must satisfy the U.S.-directed production requirement of certifying no more than 50 percent of engines to the NO<sub>x</sub> plus NMHC standards or FELs applicable to 2006 engines, as specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(1), as adopted January 18, 2001. In addition, a manufacturer may reduce the quantity of engines that are required to be phased-in using the early certification credit program specified in 40 Code of Federal Regulations, part 86,

section 86.007-11(g)(2), as adopted January 18, 2001, and the “Blue Sky” engine program specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(4), as adopted January 18, 2001.

(B) Early PM compliant engines. A manufacturer certifying engines to the 2007 and subsequent model year PM standard listed in section 1956.8 (h)(2) (without using credits, as determined in any averaging, banking, or trading program described in “California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles,” to comply with the standards) before model year 2007 may reduce the number of engines that are required to meet the 2007 and subsequent model year PM standard listed in section 1956.8(h)(2) in model year 2007, 2008 and/or 2009. To qualify for this option, a manufacturer must satisfy the PM emission requirements pursuant to the methods detailed in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(2)(ii), as adopted January 18, 2001.

(4) No crankcase emissions shall be discharged directly into the ambient atmosphere from any new 2007 or later model year diesel heavy-duty diesel engine, with the following exception: heavy-duty diesel engines equipped with turbochargers, pumps, blowers, or superchargers for air induction may discharge crankcase emissions to the ambient atmosphere if the emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. Manufacturers taking advantage of this exception must manufacture the engines so that all crankcase emission can be routed into a dilution tunnel (or other sampling system approved in advance by the Executive Officer), and must account for deterioration in crankcase emissions when determining exhaust deterioration factors. For the purpose of section 1956.8(h)(2), crankcase emissions that are routed to the exhaust upstream of exhaust aftertreatment during all operation are not considered to be “discharged directly into the ambient atmosphere.”

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

(6) Greenhouse Gas Emission Standards for New 2014 and Subsequent Model Heavy-Duty Diesel Engines and 2016 and Subsequent Heavy-Duty Otto-Cycle Engines Used in Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super-Ultra-Low-Emission Vehicles.

(A) The CO<sub>2</sub> emissions from new 2014 and subsequent model heavy-duty diesel engines and new 2016 and subsequent heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles shall not exceed:

*CO<sub>2</sub> Emission Standards for 2014 and Subsequent Model Heavy-Duty Diesel Engines and 2016 and Subsequent Model Heavy-Duty Otto-Cycle Engines Used in Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super-Ultra-Low Emission Vehicles<sup>A, B</sup> (in g/hp-hr)*

<i>Model Years</i>	<i>Diesel Engines<sup>C</sup></i>	<i>Otto-Cycle Engines</i>
2014	600	-
2015	600	-
2016	600	627
2017-2020	576	627
2021-2023	563	627
2024-2026	555	627
2027 and later	552	627

<sup>A</sup> *Family Certification Levels.* An FCL must be specified for each engine family, which may not be less than the certified emission level for the engine family. The FEL for the engine family is equal to the FCL multiplied by 1.03. The FCL serves as the CO<sub>2</sub> emission standard for the engine family with respect to certification and confirmatory testing instead of the standards specified in this subsection (h)(6)(A). The FEL serves as the emission standard for the engine family with respect to all other testing.

<sup>B</sup> *Averaging, Banking, and Trading Program and Credits.* The requirements for the optional averaging, banking, and trading program and for generating credits are described in the applicable test procedures incorporated by reference in subsection (b).

<sup>C</sup> *Alternate Emission Standards Based on 2011 Model Year Engines.* For model years 2014 through 2016, heavy-duty diesel engines may be certified to these alternate emission standards if they are not part of an averaging set in which a balance of banked credits remain. These alternate standards are determined from the measured emission rate of the test engine of the applicable baseline 2011 engine family(ies) as described in the California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles, as incorporated by reference in section (b). The alternate CO<sub>2</sub> standard for light heavy-duty vocational-certified engines is equal to the baseline 2011 emission rate multiplied by 0.975.

(B) The CH<sub>4</sub> emissions from new 2014 and subsequent model heavy-duty diesel engines and new 2016 and subsequent heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles shall not exceed 0.10 g/hp-hr.

(C) The N<sub>2</sub>O emissions from new 2014 and subsequent model heavy-duty diesel engines and new 2016 and subsequent heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles shall not exceed 0.10 g/hp-hr.

(i) Definitions Specific to this Section. The following definitions apply to this section 1956.8.

(1) “Certified emission level” means the highest deteriorated emission level in an engine family for a given pollutant from the applicable transient and/or steady-state testing, rounded to the same number of decimal places as the applicable standard. Note that there may be two certified emission levels for CO<sub>2</sub> if a family is certified for both vocational and tractor use.

(2) “Family certification level” (FCL) means a CO<sub>2</sub> emission level declared by the manufacturer that is at or above emission test results for all emission-data engines. The FCL serves as the emission standard for the engine family with respect to certification testing if it is different than the otherwise

applicable standard. The FCL must be expressed to the same number of decimal places as the emission standard it replaces.

(3) “Family emission limit” (FEL) means an emission level declared by the manufacturer to serve in place of an otherwise applicable emission standard (other than CO<sub>2</sub> standards) under the Average, Banking, and Trading Program. The FEL must be expressed to the same number of decimal places as the emission standard it replaces. The FEL serves as the emission standard for the engine family with respect to all required testing except certification testing for CO<sub>2</sub>. The CO<sub>2</sub> FEL is equal to the CO<sub>2</sub> FCL multiplied by 1.03 and rounded to the same number of decimal places as the standard (e.g., the nearest whole g/hp-hr for the 2016 CO<sub>2</sub> standards).

(4) “Heavy heavy-duty engine” means an engine used in a vehicle that normally exceeds 33,000 pounds GVWR. Heavy heavy-duty engines are designed for multiple rebuilds and have cylinder liners. Vehicles in this group are normally tractors, trucks, straight trucks with dual rear axles, and buses used in inter-city, long-haul applications.

(5) “Light heavy-duty engine” means an engine used in a vehicle that is normally at or below 19,500 pounds GVWR. Light heavy-duty engines usually are not designed for rebuild and do not have cylinder liners. Vehicle body types in this group might include any heavy-duty vehicle built for a light-duty truck chassis, van trucks, multi-stop vans, and some straight trucks with a single rear axle. Typical applications would include personal transportation, light-load commercial delivery, passenger service, agriculture, and construction.

(6) “Medium heavy-duty engine” mean an engine used in a vehicle that is normally between 19,501 to 33,000 pounds GVWR. Medium heavy-duty engines may be designed for rebuild and may have cylinder liners. Vehicle body types in this group would typically include school buses, straight trucks with single rear axles, city tractors, and a variety of special purpose vehicles such as small dump trucks, and refuse trucks. Typical applications would include commercial short haul and intra-city delivery and pickup.

(7) “Primary intended service class” means the class that best describes the vehicle for which the manufacturer designs and markets the engine. The three primary intended service classes are light heavy-duty, medium heavy-duty, and heavy heavy-duty.

(8) “Tractor” means a vehicle meeting the definition of “tractor” in 40 CFR §1037.801, as amended October 25, 2016, incorporated by reference herein, but not classified as a “vocational tractor” under 40 CFR §1037.630, as amended October 25, 2016, incorporated by reference herein or relating to such a vehicle.

(9) “Tractor engine” means an engine certified for use in tractors. Where an engine family is certified for use in both tractors and vocational vehicles, “tractor engine” means an engine that the engine manufacturer reasonably believes will be (or has been) installed in a tractor. Note that the Executive Officer may require a manufacturer to document how it determines that an engine is a tractor engine.

(10) “Vocational engine” means an engine certified for use in vocational vehicles. Where an engine family is certified for use in both tractors and vocational vehicles, “vocational engine” means an engine that the engine manufacturer reasonably believes will be (or has been) installed in a vocational vehicle. Note that the provisions of this part may require a manufacturer to document how it determines that an engine is a vocational engine.

(11) “Vocational vehicle” means a vehicle meeting the definition of “vocational” vehicle in 40 CFR §1037.801, as amended October 25, 2016.

(12) “Zero-emission powertrain” means an all-electric or hydrogen fuel-cell powertrain assembly, which includes (if applicable) the electric traction motor, system controller, generator, on-board charger, battery management system, thermal management systems, energy storage system (batteries, capacitors, and flywheels), inverter, fuel-cell stack, and the interface at which electrical power is converted to tractive mechanical power or vice-versa (in the case of a regenerative braking system), certified pursuant to the requirements in subsection (a)(8).

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 38580, 39500, 39600, 39601, 40000, 43013, 43018, 43100, 43101, 43102, 43104, 43105, 43106 and 43806, Health and Safety Code; and Section 28114, Vehicle Code. Reference: Sections 38501, 38505, 38510, 38560, 38580, 39002, 39003, 39010, 39017, 39033, 39500, 39600, 39601, 39610, 39650, 39657, 39667, 39701, 40000, 43000, 43000.5, 43009, 43009.5, 43013, 43017, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43202, 43204, 43205, 43205.5, 43206, 43210, 43211, 43212, 43213 and 43806, Health and Safety Code; and Section 28114, Vehicle Code.

## HISTORY

1. New section filed 5-15-85; effective thirtieth day thereafter (Register 85, No. 20).
2. Amendment of subsections (a) and (b) filed 9-15-86; effective thirtieth day thereafter (Register 86, No. 38).
3. Relettering and amendment of former subsection (c) to (e), relettering of former subsection (d) to (f) and new subsections (c) and (d) filed 9-15-86; effective thirtieth day thereafter (Register 86, No. 38).
4. Editorial correction of subsection (a) printing error (Register 87, No. 50).
5. Amendment of subsection (d) filed 6-6-88; operative 6-6-88 pursuant to Government Code section 11346.2(d) (Register 88, No. 25).
6. Amendment filed 2-21-90; operative 3-23-90 (Register 90, No. 8).
7. Amendment filed 6-14-90; effective 7-14-90 (Register 90, No. 33).
8. Amendment of subsections (b), (c), (d) and (g) filed 8-2-91; operative 9-2-91 (Register 91, No. 49).
9. Amendment of subsections (a), (b), (d) and (g) and new subsection (h) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
10. Amendment of subsections (b) and (d) filed 12-9-92; operative 1-1-93 (Register 92, No. 50).
11. Amendment of subsection (d) filed 7-20-93; operative 8-19-93 (Register 93, No. 30).
12. Amendment of subsection (b) filed 12-1-93; operative 1-1-95 (Register 93, No. 49).
13. Amendment of (a)(1) table and notes, subsection (b) and Note filed 5-12-94; operative 6-13-94 (Register 94, No. 19).
14. Amendment of subsections (b) and (d) filed 4-13-95; operative 4-13-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 15).
15. Amendment of subsections (a)(1), (b), (c)(1) and (d) filed 12-14-95; operative 1-13-96 (Register 95, No. 50).
16. Amendment filed 9-23-96; operative 10-23-96 (Register 96, No. 39).
17. Amendment of subsection (b) filed 7-25-97; operative 8-24-97 (Register 97, No. 30).
18. Amendment filed 4-15-99; operative 5-15-99 (Register 99, No. 16).
19. Amendment filed 1-23-2001; operative 1-23-2001 pursuant to Government Code section 11343.4(c) (Register 2001, No. 4).
20. Amendment of section and Note filed 4-30-2001; operative 5-30-2001 (Register 2001, No. 18).
21. Amendment of subsection (b) filed 7-25-2001; operative 7-25-2001 pursuant to Government Code section 11343.4 (Register 2001, No. 30).
22. Redesignation and amendment of subsection (a)(2) as subsection (a)(2)(A), new subsections (a)(2)(B) and (a)(5), amendment of subsections (b) and (h), new subsections (h)(3)-(4) and amendment of Note filed 10-18-2002; operative 11-17-2002 (Register 2002, No. 42).
23. Change without regulatory effect amending subsections (a)(2)(B)(i)-(ii) and (h)(3) filed 4-16-2003 pursuant to section 100, title 1, California Code of Regulations (Register 2003, No. 16).
24. Amendment of section and Note filed 10-16-2003; operative 11-15-2003 (Register 2003, No. 42).

25. Amendment of subsections (b), (c)(1)(B), (d) and (h)(2) footnotes J-K filed 11-4-2003; operative 12-4-2003 (Register 2003, No. 45).
26. Amendment of subsection (a)(2)(A) table heading and table, new table footnotes L and M and redesignation of former subsections (a)(2)(B)(i)-(ii) as subsections (a)(2)(B)1.-2. filed 9-7-2006; operative 10-7-2006 (Register 2006, No. 36).
27. New subsections (a)(6)-(a)(6)(D), amendment of subsection (b) and amendment of Note filed 10-16-2006; operative 11-15-2006 (Register 2006, No. 42).
28. Amendment of subsections (a)(2)(A), (b), (d) and (h)(2) filed 9-11-2007; operative 10-11-2007 (Register 2007, No. 37).
29. Amendment of subsections (b) and (d) and amendment of Note filed 12-5-2007; operative 1-4-2008 (Register 2007, No. 49).
30. Amendment of subsection (b) filed 12-1-2008; operative 12-31-2008 (Register 2008, No. 49).
31. Amendment of subsection (a)(6)(B) filed 12-3-2009; operative 12-3-2009 pursuant to Government Code section 11343.4(c) (Register 2009, No. 49).
32. Amendment of subsections (b) and (d) and amendment of Note filed 11-8-2010; operative 12-8-2010 (Register 2010, No. 46).
33. Amendment of subsection (b) filed 11-22-2011; operative 12-22-2011 (Register 2011, No. 47).
34. Amendment of subsections (b) and (c)(1)(B), new subsection (c)(3), amendment of subsections (d) and (h)(2), new subsection (h)(5) and amendment of Note filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
35. Amendment of subsections (b), (c)(3), (d) and (h)(5) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
36. Change without regulatory effect amending the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles” and the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines” (incorporated by reference) and amending subsections (b) and (d) filed 4-18-2013 pursuant to section 100, title 1, California Code of Regulations (Register 2013, No. 16).
37. Amendment of subsection (a)(2)(A), new subsections (a)(7)-(a)(7)(C), amendment of subsections (b) and (c)(1)(B), new subsections (c)(4)-(c)(4)(C), amendment of subsection (d), new subsections (h)(6)-(i)(14) and amendment of Note filed 12-5-2014; operative 12-5-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 49).
38. Editorial correction of History 37 (Register 2014, No. 50).
39. Amendment of subsections (b) and (d) and amendment of Note filed 10-8-2015; operative 10-8-2015 pursuant to Government Code section 11343.4(b)(3) (Register 2015, No. 41).
40. Repealer of subsections (i)(2)-(4), subsection renumbering and amendment of Note filed 7-25-2016; operative 7-25-2016 pursuant to Government Code section 11343.4(b)(3) (Register 2016, No. 31).
41. Amendment of subsections (a)(7)(A) and (b), new subsection (c)(4)(A)1. and amendment of subsection (d) filed 10-16-2017; operative 10-16-2017 pursuant to Government Code section 11343.4(b)(3) (Register 2017, No. 42).
42. Amendment of subsections (a)(7)(A), (b) and (c)(4)(A), new subsection (c)(4)(A)1., subsection renumbering, new subsection (c)(4)(A)3., amendment of subsections (d), (h)(6)(A), (i)(4)-(6), (i)(8) and (i)(11) and amendment of Note filed 2-7-2019; operative 4-1-2019 (Register 2019, No. 6).
43. Amendment of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles” (incorporated by reference) and amendment of subsection (b) filed 6-12-2019; operative 10-1-2019 (Register 2019, No. 24).
44. Amendment of section heading and new subsections (a)(8) and (i)(12) filed 1-21-2020; operative 4-1-2020 (Register 2020, No. 4).

This database is current through 2/7/20 Register 2020, No. 6  
 13 CCR § 1956.8, 13 CA ADC § 1956.8

**Section 1960.1. Exhaust Emissions Standards and Test Procedures -1981 through 2006 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

(a) The exhaust emissions from new 1981 model passenger cars, light-duty trucks, and medium-duty vehicles, subject to registration and sold and registered in this state, shall not exceed [FN1]:

1981 EXHAUST EMISSION STANDARDS						
(grams per mile)						
Vehicle	Equivalent Inertia Weight	Durability Basis Vehicle	Non-Methane Hydrocarbons [FN4]		Carbon Monoxide	Oxides of Nitrogen [FN5]
Type [FN2]	(lbs.) [FN3]	(mi.)				
PC	All	50,000		(0.41)	3.4	1.0
PC [FN6]	All	50,000	0.39	(0.41)	7.0	0.7
PC (Option 1)	All	100,000	0.39	[FN7]	3.4	1.5
PC (Option 2)	All	100,000	0.46	[FN7]	4.0	1.5
LDT, MDV	0-3999	50,000	0.39	(0.41)	9.0	1.0
LDT, MDV (Option 1)	0-3999	100,000	0.39	(0.41) [FN7]	9.0	1.5
LDT, MDV (Option 2)	0-3999	100,000	0.46	[FN7]	10.6	1.5
LDT, MDV	4000-5999	50,000	0.50	(0.50)	9.0	1.5
LDT, MDV (Option 1)	4000-5999	100,000	0.50	(0.50) [FN7]	9.0	2.0
MDV	6000 and larger	50,000	0.60	(0.60)	9.0	2.0
MDV (Option 1)	6000 and larger	100,000	0.60	(0.60) [FN7]	9.0	2.3

[FN1] Subsection (a) shall remain in effect until December 31, 1991, and as of that date is repealed unless a later regulation deletes or extends that date. Notwithstanding the repeal or expiration of this regulation on December 31, 1991, the provisions of the regulation as they existed prior to such repeal or expiration shall continue to be operative and effective for those events occurring prior to the repeal of expiration.

[FN2] "PC" means passenger cars.

[FN3] Equivalent inertia weights are determined under subparagraph 40 CFR 86.129-79(a).

[FN4] Hydrocarbon standards in parentheses apply to total hydrocarbons.

[FN5] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR part 600, Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty truck and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded to the nearest 0.1 gm/mi before being compared.

[FN6] The second set of 50,000 mile passenger car standards is optional. A manufacturer must select either the primary or optional sets of 50,000 mile standards for its full product line for both 1981 and 1982 model years.

[FN7] For vehicles from evaporative emission families with projected 50,000 mile evaporative emissions values below 1.0 gm/test, an adjustment to the hydrocarbon exhaust emission standards may be granted by the Executive Officer. The adjusted standard will be calculated using the following formula:  $HC_{ex} = .75 (.185 - [(Di + 3.3 Hs) (29.4)]) + HC_o$  Where:  $HC_{ex}$  = adjusted exhaust hydrocarbon standard  $HC_o$  = unadjusted exhaust hydrocarbon standard  $Di$  = diurnal evaporative emissions  $Hs$  = hot soak evaporative emissions.



(b) The exhaust emissions from new 1982 model passenger cars, light-duty trucks, and medium-duty vehicles, subject to registration and sold and registered in this state, shall not exceed [FN1]:

1982 EXHAUST EMISSION STANDARDS						
(grams per mile)						
	Equivalent	Durability				
	Inertia	Vehicle				
Vehicle	Weight	Basis	Non-Methane		Carbon	Oxides of
Type [FN2]	(lbs.) [FN3]	(mi.)	Hydrocarbons [FN4]		Monoxide	Nitrogen [FN5]
PC	All	50,000	0.39	(0.41)	7.0	0.4
PC [FN6]	All	50,000	0.39	(0.41)	7.0	0.7
PC (Option 1)	All	100,000	0.39	(0.41)	7.0	1.5
PC (Option 2)	All	100,000	0.46		8.3	1.5
LDT, MDV	0-3999	50,000	0.39	(0.41)	9.0	1.0
LDT, MDV (Option 1)	0-3999	100,000	0.39	(0.41)	9.0	1.5
LDT, MDV (Option 2)	0-3999	100,000	0.46		10.6	1.5
LDT, MDV	4000-5999	50,000	0.50	(0.50)	9.0	1.5
LDT, MDV (Option 1)	4000-5999	100,000	0.50	(0.50)	9.0	2.0
MDV	6000 and larger	50,000	0.60	(0.60)	9.0	2.0
MDV (Option 1)	6000 and larger	100,000	0.60	(0.60)	9.0	2.3

[FN1] Subsection (b) shall remain in effect until December 31, 1992, and as of that date is repealed unless a later regulation deletes or extends that date. Notwithstanding the repeal or expiration of this regulation on December 31, 1992, the provisions of the regulation as they existed prior to such repeal or expiration shall continue to be operative and effective for those events occurring prior to the repeal or expiration.

[FN2] "PC" means passenger cars. "LDT" means light-duty trucks. "MDV" means medium-duty vehicles.

[FN3] Equivalent inertia weights are determined under subparagraph 40 CFR 86.129-79(a).

[FN4] Hydrocarbon standards in parentheses apply to total hydrocarbons.

[FN5] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600, Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty truck and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded to the nearest 0.1 gm/mi before being compared.

[FN6] The second set of 50,000 mile passenger car standards is optional. A manufacturer must select either the primary or optional sets of 50,000 mile standards for its full product line for both 1981 and 1982 model years.

(c) The exhaust emissions from new 1983 model passenger cars, light-duty trucks, and medium-duty vehicles, subject to registration and sold and registered in this state, shall not exceed [FN1]:

1983 EXHAUST EMISSION STANDARDS						
(grams per mile)						
	Equivalent	Durability				
	Inertia	Vehicle				
Vehicle	Weight	Basis	Non-Methane		Carbon	Oxides of
Type [FN2]	(lbs.) [FN3]	(mi)	Hydrocarbons [FN4]		Monoxide	Nitrogen

PC	All	50,000	0.39	(0.41)	7.0	0.4
PC [FN6]	All	50,000	0.39	(0.41)	7.0	0.7
PC (Option 1)	All	100,000	0.39	(0.41)	7.0	1.5
PC (Option 2)	All	100,000	0.46		8.3	1.5
LDT, MDV	0-3999	50,000	0.39	(0.41)	9.0	0.4
LDT, MDV [FN6]	0-3999	50,000	0.39	(0.41)	9.0	1.0
LDT, MDV (Option 1)	0-3999	100,000	0.39	(0.41)	9.0	1.5
LDT, MDV (Option 2)	0-3999	100,000	0.46		10.6	1.5
LDT, MDV	4000-5999	50,000	0.50	(0.50)	9.0	1.0
LDT, MDV (Option 1)	4000-5999	100,000	0.50	(0.50)	9.0	2.0
MDV	6000 and larger	50,000	0.60	(0.60)	9.0	1.5
MDV (Option 1)	6000 and larger	100,000	0.60	(0.60)	9.0	2.0

[FN1] Subsection (C) shall remain in effect until December 31, 1993, and as of that date is repealed unless a later regulation deletes or extends that date. Notwithstanding the repeal or expiration of this regulation on December 31, 1993, the provisions of the regulation as they existed prior to such repeal or expiration shall continue to be operative and effective for those events occurring prior to the repeal or expiration.

[FN2] "PC" means passenger cars. "LDT" means light-duty trucks. "MDV" means medium-duty vehicles.

[FN3] Equivalent inertia weights are determined under subparagraph 40 CFR 86.129-79(a).

[FN4] Hydrocarbon standards in parentheses apply to total hydrocarbons.

[FN5] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600, Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty truck and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded to the nearest 0.1 gm/mi before being compared.

[FN6] This set of standards for 1983 model vehicles is optional. A manufacturer may choose to certify these optional standards pursuant to the conditions set forth in Section 1960.15.

(d)

(1) The exhaust emissions from new 1984 through 1987 model passenger cars, light-duty trucks, and medium-duty vehicles subject to registration and sold and registered in this state, shall not exceed:

1984 THROUGH 1987 EXHAUST EMISSION STANDARDS [FN6]						
(grams per mile)						
	Equivalent	Durability				
	Inertia	Vehicle				
Vehicle	Weight	Basis	Non-Methane		Carbon	Oxides of
Type [FN1]	(lbs.) [FN2]	(mi)	Hydrocarbons [FN3]		Monoxide	Nitrogen
PC	All	50,000	0.39	(0.41)	7.0	0.4
PC [FN5]	All	50,000	0.39	(0.41)	7.0	0.7
PC (Option 1)	All	100,000	0.39	(0.41)	7.0	1.0
PC (Option 2)	All	100,000	0.46		8.3	1.0
LDT, MDV	0-3999	50,000	0.39	(0.41)	9.0	0.4
LDT, MDV [FN5]	0-3999	50,000	0.39	(0.41)	9.0	1.0
LDT, MDV (Option 1)	0-3999	100,000	0.39	(0.41)	9.0	1.0

LDT, MDV (Option 2)	0-3999	100,000	0.46		10.6	1.0
LDT, MDV	4000-5999	50,000	0.50	(0.50)	9.0	1.0
LDT, MDV (Option 1)	4000-5999	100,000	0.50	(0.50)	9.0	1.5
MDV	6000 and larger	50,000	0.60	(0.60)	9.0	1.5
MDV (Option 1)	6000 and larger	100,000	0.60	(0.60)	9.0	2.0

[FN1] “PC” means passenger cars. “LDT” means light-duty trucks. “MDV” means medium-duty vehicles.

[FN2] Equivalent inertia weights are determined under subparagraph 40 CFR 86.129-9(a).

[FN3] Hydrocarbon standards in parentheses apply to total hydrocarbons.

[FN4] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600, Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty truck and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded to the nearest 0.1 gm/mi before being compared.

[FN5] This set of standards for 1984 through 1987 model vehicles is optional. A manufacturer may choose to certify these optional standards pursuant to the conditions set forth in Section 1960.15.

[FN6] Diesel-powered passenger cars, light-duty trucks, and medium-duty vehicles are subject to the following particulate exhaust emission standards: 0.4/g.mi for the 1985 model year and 0.2 g/mi for the 1986 and 1987 model years. The particulate compliance shall be determined on a 50,000 mile durability vehicle basis.

(2) The exhaust emissions from new 1988 model passenger cars, light-duty trucks, and medium-duty vehicles and new 1988 through 1990 model passenger cars, light-duty trucks and medium-duty vehicles produced by a small volume manufacturer, subject to registration and sold and registered in this state, shall not exceed:

1988 EXHAUST EMISSION STANDARDS [FN5]						
(grams per mile)						
	Equivalent	Durability				
	Inertia	Vehicle				
Vehicle	Weight	Basis	Non-Methane		Carbon	Oxides of
Type [FN1]	(lbs.)	(mi)	Hydrocarbons [FN2]		Monoxide	Nitrogen [FN3]
PC	All	50,000	0.39	(0.41)	7.0	0.4
PC [FN4]	All	50,000	0.39	(0.41)	7.0	0.7
PC (Option 1)	All	100,000	0.39	(0.41)	7.0	1.0
PC (Option 2)	All	100,000	0.46		8.3	1.0
LDT, MDV	0-3750	50,000	0.39	(0.41)	9.0	0.4
LDT, MDV [FN4]	0-3750	50,000	0.39	(0.41)	9.0	1.0
LDT, MDV (Option 1)	0-3750	100,000	0.39	(0.41)	9.0	1.0
LDT, MDV (Option 2)	0-3750	100,000	0.46		10.6	1.0
LDT, MDV	3751-5750	50,000	0.50	(0.50)	9.0	1.0
LDT, MDV (Option 1)	3751-5750	100,000	0.50	(0.50)	9.0	1.5
MDV	5751 and larger	50,000	0.60	(0.60)	9.0	1.5
MDV (Option 1)	5751 and larger	100,000	0.60	(0.60)	9.0	2.0

[FN1] “PC” means passenger cars. “LDT” means light-duty trucks. “MDV” means medium-duty vehicles.

[FN2] Hydrocarbon standards in parentheses apply to total hydrocarbons.

[FN3] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600, Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty trucks and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

[FN4] This set of standards is optional. A manufacturer may choose to certify to these optional standards pursuant to the conditions set forth in Section 1950.1.5.

[FN5] Diesel-powered passenger cars, light-duty trucks, and medium-duty vehicles are subject to a particulate exhaust emission standard of 0.2 g/mi for the 1988 model year. The particulate compliance shall be determined on a 50,000 mile durability vehicle basis.

(e)

(1) The exhaust emissions from (A) new 1989 through 1992 model passenger cars and light-duty trucks, except those produced by a small volume manufacturer, (B) new 1991 through 1994 model passenger cars and light-duty trucks produced by a small volume manufacturer, (C) new 1989 through 1994 model medium-duty vehicles, except those produced by a small volume manufacturer, and (D) new 1991 through 1994 model medium-duty vehicles produced by a small volume manufacturer, shall not exceed:

1989 THROUGH 1994 MODEL-YEAR EXHAUST EMISSION STANDARDS [FN5]						
(grams per mile)						
	Loaded	Durability				
	Vehicle	Vehicle				
Vehicle	Weight	Basis	Non-Methane		Carbon	Oxides of
Type [FN1]	(lbs.)	(mi)	Hydrocarbons		Monoxide	Nitrogen
			[FN2]			[FN3,4]
PC	All	50,000	0.39	(0.41)	7.0	0.4
PC [FN6]	All	50,000	0.39	(0.41)	7.0	0.7
Diesel PC (Option 2)	All	100,000 [FN8]	0.46		8.3	1.0
LDT, MDV	0-3750	50,000	0.39	(0.41)	9.0	0.4
LDT, MDV [FN6]	0-3750	50,000	0.39	(0.41)	9.0	0.7 [FN7]
Diesel LDT, MDV (Option 2)	0-3750	100,000 [FN8]	0.46		10.6	1.0
LDT, MDV	3751-5750	50,000	0.50	(0.50)	9.0	1.0
LDT, MDV (Option 1)	3751-5750	100,000 [FN8]	0.50	(0.50)	9.0	1.5
MDV	5751 and larger	50,000	0.60	(0.60)	9.0	1.5
MDV (Option 1)	5751 and larger	100,000 [FN8]	0.60	(0.60)	9.0	2.0

[FN1] "PC" means passenger cars. "LDT" means light-duty trucks. "MDV" means medium-duty vehicles.

[FN2] Hydrocarbon standards in parentheses apply to total hydrocarbons. For 1993 through 1994 model methanol-fueled vehicles certifying to these standards, including flexible-fueled vehicles, "Non-Methane Hydrocarbons" shall mean "Organic Material Hydrocarbon Equivalent" (or "OMHCE").

[FN3] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600, Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty truck and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

[FN4] The standard for in-use compliance for passenger cars, light-duty trucks and medium-duty vehicles certifying to the 0.4 g/mi NO<sub>x</sub> standard shall be 0.55 g/mi NO<sub>x</sub> for 50,000 miles. If the in-use compliance level is above 0.4 g/mi NO<sub>x</sub> but does not exceed 0.55 g/mi NO<sub>x</sub>, and based on a review of information derived from a statistically valid and representative sample of vehicles, the Executive Officer determines that a substantial percentage of any class or category of such vehicles exhibits, prior to 50,000 miles or 5 years, whichever occurs first, an identifiable, systematic defect in a component listed in section 1960.1.5(c)(2) which causes a significant increase in emissions above those exhibited by vehicles free of such defects and of the same class or category and having the same period of use and mileage, then the Executive Officer may invoke the enforcement authority under subchapter 2.5, Title 13, California Code of Regulations, commencing with section 2111, to require remedial action by the vehicle manufacturer. Such remedial action shall be limited to owner notification and repair or replacement of the defective component. As used in this section, the term "defect" shall not include failures which are the result of abuse, neglect, or improper maintenance. This provision is applicable for the 1989 through 1992 model years only. For small volume manufacturers, this provision is applicable for the 1991 through 1994 model years only.

[FN5] Diesel passenger cars, light-duty trucks, and medium-duty vehicles certifying to these standards are subject to a particulate exhaust emission standard of 0.08 g/mi for the 1989 and subsequent model years. The particulate compliance shall be determined on a 50,000 mile durability vehicle basis.

[FN6] This set of standards is optional. A manufacturer may choose to certify to these standards pursuant to the conditions set forth in section 1960.1.5.

[FN7] Pursuant to section 1960.1.5(a)(1)(B), the optional standard for 1989 model-year light-duty trucks and medium-duty vehicles only is 1.0 g/mi NO<sub>x</sub>.

[FN8] The optional 100,000 mile certification standards and provisions are not applicable to methanol vehicles.

(2) The exhaust emissions from new 1993 through 2003 model methanol-fueled vehicles, including fuel-flexible vehicles, shall meet all the applicable requirements in (e)(1), (f)(1) and (f)(2) with the following modifications and additions:

1993 through 2003 METHANOL-SPECIFIC EXHAUST EMISSION STANDARDS				
	Loaded	Durability		
	Vehicle	Vehicle		
Vehicle	Weight	Basis	Formaldehyde (mg/mi)	
Type [FN1]	(lbs.) [FN3]	(mi)	Certification	In-Use Compliance [FN2]
PC	All	50,000	15	23 (1993-1995)
				15 (1996-2003)
LDT, MDV	0-3750	50,000	15	23 (1993-1995)
				15 (1996-2003)
LDT, MDV	3751-5750	50,000	18	27 (1993-1995)
				18 (1996-2003)
MDV	5751-8500	50,000	22	33 (1993-1995)
				22 (1996-2003)
MDV	8501-10,000	50,000	28	36 (1995)
				28 (1996-2003)
MDV	10,001-14,000	50,000	36	45 (1995)
				36 (1996-2003)

[FN1] "PC" means passenger cars. "LDT" means light-duty trucks. "MDV" means medium-duty vehicles.

[FN2] If the formaldehyde in-use compliance level is above the respective certification level but does not exceed the in-use compliance level, and based on a review of information derived from statistically valid and representative sample of vehicles, the Executive Officer determines that a substantial percentage of any class or category of such vehicle exhibits, prior to 50,000 miles or 5 years, whichever occurs first, an identifiable, systematic defect in a component listed in section 1960.1.5(c)(2), Title 13, California Code of Regulations, which causes a significant increase in emissions above those exhibited by vehicles free of such defects and of the same class or category and having the same period of use and mileage, the Executive Officer may invoke the enforcement authority under subchapter 2.5, Title 13, California Code of Regulations, commencing with section 2111, to require remedial action by the vehicle manufacturer. Such remedial action shall be limited to owner notification and repair or replacement of the defective component. As used in this section, the term "defect" shall not include failures which are the result of abuse, neglect, or improper maintenance.

[FN3] For 1995-2003 model-year medium-duty vehicles certifying to the standards specified in section 1960.1 (h)(1), "Loaded Vehicle Weight" shall mean "Test Weight," which is the average of the vehicle's curb weight and gross vehicle weight.

(3) The exhaust emissions from new 1992 through 2006 model-year "LEV I" transitional low-emission vehicles, low-emission vehicles, ultra-low emission vehicles, and super ultra-low-emission vehicles, including fuel-flexible and dual-fuel vehicles, shall meet all the requirements of (g)(1) and (h)(2) with the following additions:

FORMALDEHYDE EXHAUST EMISSION STANDARDS				
IN THE LIGHT-DUTY AND MEDIUM-DUTY VEHICLE WEIGHT CLASSES [FN5,6,7]				
[“milligrams per mile” (or “mg/mi”)]				
Vehicle	Vehicle	Durability	Vehicle	
Type [FN1]	Weight	Vehicle Basis	Emission	Formaldehyde
PC and	(lbs.) [FN2]	(mi)	Category [FN3]	(mg/mi) [FN4,5]
LDT	All	50,000	TLEV	15(23)
	0-3750		LEV	15(15)
			ULEV	8(12)
		100,000	TLEV	18
			LEV	18
			ULEV	11
LDT	3751-5750	50,000	TLEV	18(27)
			LEV	18(18)
			ULEV	9(14)
		100,000	TLEV	23
			LEV	23
			ULEV	13
MDV	0-3750	50,000	LEV	15(15)
			ULEV	8(12)
		120,000	LEV	22
			ULEV	12
MDV	3751-5750	50,000	LEV	18(18)
			ULEV	9(14)
			SULEV	4(7)
		120,000	LEV	27
			ULEV	13
			SULEV	6
MDV	5751-8500	50,000	LEV	22(22)
			ULEV	11(17)
			SULEV	6(8)
		120,000	LEV	32
			ULEV	16
			SULEV	8
MDV	8501-10,000	50,000	LEV	28(28)
			ULEV	14(21)
			SULEV	7(10)
		120,000	LEV	40
			ULEV	21
			SULEV	10
MDV	10,001-14,000	50,000	LEV	36(36)
			ULEV	18(27)
			SULEV	9(14)
		120,000	LEV	52
			ULEV	26
			SULEV	13

[FN1] "PC" means passenger cars. "LDT" means light-duty trucks. "MDV" means medium-duty vehicles.

[FN2] For light-duty or medium-duty vehicles, Vehicle Weight shall mean "Loaded Vehicle Weight" (or "LVW") or "Test Weight" (or "TW"), respectively.

[FN3] "TLEV" means transitional low-emission vehicle. "LEV" means low-emission vehicle. "ULEV" means ultra-low-emissions vehicle. "SULEV" means super ultra-low-emission vehicle.

[FN4] Formaldehyde exhaust emission standards apply to vehicles certified to operate on any available fuel, including fuel-flexible and dual-fuel vehicles.

[FN5] The standards in parentheses are intermediate in-use compliance standards for 50,000 miles.

a. For PCs and LDTs from 0-5750 lbs. LVW, including fuel-flexible and dual-fuel vehicles, intermediate in-use compliance standards shall apply to TLEVs through the 1995 model year, and LEVs and ULEVs through the 1998 model year. In-use compliance with standards beyond 50,000 miles shall be waived through the 1995 model year for TLEVs, and through the 1998 model year for LEVs and ULEVs.

b. For MDVs from 0-14,000 lbs. TW, including fuel-flexible and dual-fuel vehicles, intermediate in-use compliance standards shall apply to LEVs, ULEVs and SULEVs through the 1999 model year. In-use compliance with standards beyond 50,000 miles shall be waived through the 1999 model year for LEVs, ULEVs, and SULEVs.

[FN6] Manufacturers shall demonstrate compliance with the above standards for formaldehyde at 505F according to the procedures specified in section 11k of the "California Exhaust Emission Standards and Test Procedures for 1988 through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k) or section E.1.4 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as incorporated by reference in section 1961(d). Hybrid electric, natural gas, and diesel-fueled vehicles shall be exempt from 505F test requirements.

[FN7] In-use compliance testing shall be limited to PCs and LDTs with fewer than 75,000 miles and MDVs with fewer than 90,000 miles.

(f)

(1) The exhaust emissions from new 1993 and 1994 model passenger cars and light-duty trucks, except those produced by a small volume manufacturer, shall not exceed:



1993 AND 1994 MODEL YEAR PASSENGER CAR AND LIGHT-DUTY TRUCK EXHAUST EMISSIONS STANDARDS [FN5,8,9]					
(grams per mile)					
	Loaded Vehicle	Durability Vehicle			
Vehicle Type [FN1]	Weight (lbs.)	Basis (mi)	Non-Methane Hydrocarbons [FN2,7]	Carbon Monoxide [FN7]	Oxides of Nitrogen [FN1,3,4]
PC	All	50,000	0.39 (0.25)	7.0 (3.4)	0.4
PC [FN6]	All	50,000	0.39 (0.25)	7.0 (3.4)	0.7
PC	All	100,000	(0.31)	(4.2)	n/a
Diesel PC (Option 2)	All	100,000	0.46 (0.31)	8.3 (4.2)	1.0
LDT	0-3750	50,000	0.39 (0.25)	9.0 (3.4)	0.4
LDT [FN6]	0-3750	50,000	0.39 (0.25)	9.0 (3.4)	0.7
LDT	0-3750	100,000	(0.31)	(4.2)	n/a
Diesel LDT (Option 2)	0-3750	100,000	0.46 (0.31)	10.6 (4.2)	1.0
LDT	3751-5750	50,000	0.50 (0.32)	9.0 (4.4)	1.0
LDT	3751-5750	100,000	(0.40)	(5.5)	n/a
Diesel LDT (Option 1)	3751-5750	100,000	0.50 (0.40)	9.0 (5.5)	1.5

[FN1] "PC" means passenger cars. "LDT" means light-duty trucks. "n/a" means not applicable.

[FN2] For methanol-fueled vehicles certifying to these standards, including fuel-flexible vehicles, when certifying on methanol, "Non-Methane Hydrocarbons" shall mean "Organic Material Hydrocarbon Equivalent" (or "OMHCE"). For methanol- or ethanol-fueled vehicles certifying to the phase-in standards in parenthesis, including fuel-flexible vehicles when certifying on methanol or ethanol, "Non-Methane Hydrocarbons" shall mean "Organic Material Non-Methane Hydrocarbon Equivalent" (or "OMNMHCE").

[FN3] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600 Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty truck and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

[FN4] The standard for in-use compliance for passenger cars and light-duty trucks certifying to the 0.4 g/mi NO<sub>x</sub> standard shall be 0.55 g/mi NO<sub>x</sub> for 50,000 miles. If the in-use compliance level is above 0.4 g/mi NO<sub>x</sub> but does not exceed 0.55 g/mi NO<sub>x</sub>, and based on a review of information derived from a statistically valid and representative sample of vehicles, the Executive Officer determines that a substantial percentage of any class or category of such vehicles exhibits, prior to 50,000 miles or 5 years, whichever occurs first, an identifiable, systematic defect in a component listed in section 1960.1.5(c)(2), Title 13, California Code of Regulations, which causes a significant increase in emissions above those exhibited by vehicles free of such defects and of the same class or category and having the same period of use and mileage, then the Executive Officer may invoke the enforcement authority under subchapter 2.5, Title 13, California Code of Regulations commencing with section 2111, to require remedial action by the vehicle manufacturer. Such remedial action shall be limited to owner notification and repair or replacement of the defective component. As used in this section, the term "defect" shall not include failures which are the result of abuse, neglect, or improper maintenance. This provision is applicable for the 1993 model year only.

[FN5] Diesel passenger cars and light-duty trucks certifying to these standards are subject to a particulate exhaust emission standard of 0.08 g/mi, determined on a 50,000 mile durability vehicle basis.

[FN6] This set of standards is optional. A manufacturer may choose to certify to these standards pursuant to the conditions set forth in section 1960.1.5.

[FN7] The emission standards in parenthesis are phase-in standards. For the 1993 model-year, each manufacturer must certify a minimum of 40% of their vehicles to the phase-in standards or the more stringent standards in section 1960.1 (g)(1). The percentage shall be applied to the manufacturer's total projected sales of California-certified passenger cars and light-duty trucks for the 1993 model year. For 1994 and subsequent model years, each manufacturer shall comply with the fleet average requirements specified in section 1960.1(g)(2).

[FN8] The following conditions shall apply to the in-use compliance standards for 1993 and 1994 model-year passenger cars and light-duty trucks only.

- a. The in-use compliance standards for those passenger cars and light-duty trucks certifying to the 0.25 g/mi non-methane hydrocarbon and 3.4 g/mi carbon monoxide standards shall be 0.32 g/mi non-methane hydrocarbon and 5.2 g/mi carbon monoxide for 50,000 miles.
- b. The in-use compliance standards for those light-duty trucks certifying to the 0.32 g/mi non-methane hydrocarbon and 4.4 g/mi carbon monoxide standards shall be 0.41 g/mi non-methane hydrocarbon and 6.7 g/mi carbon monoxide for 50,000 miles.
- c. In-use compliance standards shall be waived beyond 50,000 miles.

[FN9] All passenger cars and light-duty trucks, except those diesel vehicles certifying to optional 100,000 mile standards, are subject to non-methane hydrocarbon, carbon monoxide, and oxides of nitrogen standards determined on a 50,000 mile durability basis and non-methane hydrocarbon and carbon monoxide standards determined on a 100,000 mile basis.

(2) "Tier 1" Exhaust Emission Standards for PCs and LDTs. The exhaust emissions from new 1995 through 2003 model Tier 1 passenger cars and light-duty trucks shall not exceed:

1995-2003 MODEL-YEAR TIER 1 PASSENGER CAR AND LIGHT-DUTY TRUCK EXHAUST EMISSIONS STANDARDS [FN5,6,8,10]					
(grams per mile)					
	Loaded Vehicle	Durability Vehicle			
Vehicle Type [FN1]	Weight (lbs.)	Basis (mi)	Non-Methane Hydrocarbons [FN2,7]	Carbon Monoxide [FN7]	Oxides of Nitrogen [FN1,3]
PC	All	50,000	0.25	3.4	0.4 [FN4]
PC	All	100,000	0.31	4.2	0.6 [FN9]
Diesel PC (Option 2)	All	100,000	0.31	4.2	1.0
LDT	0-3750	50,000	0.25	3.4	0.4 [FN4]
LDT	0-3750	100,000	0.31	4.2	0.6 [FN9]
Diesel LDT (Option 2)	0-3750	100,000	0.31	4.2	1.0
LDT	3751-5750	50,000	0.32	4.4	0.7
LDT	3751-5750	100,000	0.40	5.5	0.97 [FN9]
Diesel LDT (Option 1)	3751-5750	100,000	0.40	5.5	1.5

[FN1] “PC” means passenger cars. “LDT” means light-duty trucks.

[FN2] For methanol- or ethanol-fueled vehicles certifying to these standards, including fuel-flexible vehicles when certifying on methanol or ethanol, “Non-Methane Hydrocarbons” shall mean “Organic Material Non-Methane Hydrocarbon Equivalent” (or “OMNMHCE”).

[FN3] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600 Subpart B) shall be not greater than 1.33 times the applicable passenger car standards and 2.00 times the applicable light-duty truck standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

[FN4] Small volume manufacturers may choose to certify to an optional 0.7 g/mi NO<sub>x</sub> standard for the 1995 model-year only, pursuant to the conditions set forth in sections 1960.1 (f)(1) and 1960.1.5.

[FN5] Diesel passenger cars and light-duty trucks certifying to these standards, are subject to a particulate exhaust emission standard of 0.08 g/mi, determined on a 50,000 mile durability vehicle basis.

[FN6] For all vehicles, except those certifying to optional diesel standards, in-use compliance with the exhaust emission standards shall be limited to vehicles with less than 75,000 miles.

[FN7] For the 1995 and 1996 model years, all manufacturers, except those certifying to optional diesel standards, are permitted alternative in-use compliance. Alternative in-use compliance is permitted for 60% of a manufacturer's vehicles in the 1995 model year and 20% of a manufacturer's vehicles in the 1996 model year. For the 1995 and 1996 model years, small volume manufacturers only are permitted alternative in-use compliance for 100% of the fleet. The percentages shall be applied to the manufacturer's total projected sales of California-certified passenger cars and light-duty trucks for the model year. “Alternative in-use compliance” shall consist of the following:

- a. For all passenger cars and those light-duty trucks from 0-3750 lbs. loaded vehicle weight, except those diesel vehicles certifying to optional 100,000 mile standards, in-use compliance standards shall be 0.32 g/mi non-methane hydrocarbon and 5.2 g/mi carbon monoxide for 50,000 miles.
- b. For light-duty trucks from 3751-5750 lbs., loaded vehicle weight, except those diesel light-duty trucks certifying to optional 100,000 mile standards, in-use compliance standards shall be 0.41 g/mi non-methane hydrocarbon and 6.7 g/mi carbon monoxide for 50,000 miles.
- c. In-use compliance standards shall be waived beyond 50,000 miles.

[FN8] All passenger cars and light-duty trucks, except those diesel vehicles certifying to optional standards, are subject to non-methane hydrocarbon, carbon monoxide, and oxides of nitrogen standards determined on a 50,000 mile durability basis and non-methane hydrocarbon and carbon monoxide standards determined on a 100,000 mile durability basis.

[FN9] 100,000 mile NO<sub>x</sub> standards are applicable for 1996 and subsequent model-year vehicles.

[FN10] Each manufacturer shall also comply with the requirements specified in section 1960.1(g)(2).

(g)

(1) “LEV I” Exhaust Emission Standards for PCs and LDTs. The exhaust emissions from new 1992 through 2003 model-year “LEV I” transitional low-emission vehicles, and new 1992 through 2006 model-year “LEV I” low-emission vehicles and ultra-low-emission vehicles, in the passenger car and light-duty truck classes shall not exceed:

LEV I EXHAUST EMISSION STANDARDS FOR TRANSITIONAL LOW-EMISSION VEHICLES, LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES AND ZERO-EMISSION VEHICLES IN PASSENGER CAR AND LIGHT-DUTY TRUCK VEHICLE CLASSES [FN6,7,8,9,10] [grams per mile (or “g/mi”)]						
Vehicle	Loaded Vehicle	Durability Vehicle	Emission	Non-Methane	Carbon	Oxides of
Vehicle Type [FN1]	Weight (lbs.)	Basis (mi)	Category [FN2]	Organic Gases [FN3,4]	Monoxide	Nitrogen [FN5]
PC and LDT	All	50,000	TLEV	0.125	3.4	0.4
	0-3750		LEV	0.075	3.4	0.2
			ULEV	0.040	1.7	0.2
		100,000	TLEV	0.156	4.2	0.6
			LEV	0.090	4.2	0.3
			ULEV	0.055	2.1	0.3
LDT	3751-5750	50,000	TLEV	0.160	4.4	0.7
			LEV	0.100	4.4	0.4
			ULEV	0.050	2.2	0.4
		100,000	TLEV	0.200	5.5	0.9
			LEV	0.130	5.5	0.5
			ULEV	0.070	2.8	0.5

[FN1] “PC” means passenger cars. “LDT” means light-duty trucks. “LVW” means loaded vehicle weight. “Non-Methane Organic Gases” or “NMOG” means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

[FN2] “TLEV” means transitional low-emission vehicle. “LEV” means low-emission vehicle. “ULEV” means ultra-low-emissions vehicle.

[FN3] Compliance with NMOG Standard. To demonstrate compliance with an NMOG standard, NMOG emissions shall be measured in accordance with the “California Non-Methane Organic Gas Test Procedures” as adopted July 12, 1991 and last amended August 5, 1999, which is incorporated herein by reference.

a. Reactivity Adjustment. For TLEVs, LEVs, and ULEVs certified to operate exclusively on any fuel other than conventional gasoline, and for fuel-flexible and dual-fuel TLEVs, LEVs, and ULEVs when certifying on a fuel other than gasoline, manufacturers shall multiply NMOG exhaust certification levels by the applicable reactivity adjustment factor set forth in section 13 of the “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1960.1(k), or in sections I.E.5. of the “California Exhaust Emission Standards and Text Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1961(d), or established by the Executive Officer pursuant to Appendix VIII or section II.D. respectively of the foregoing test procedures. In addition, natural gas vehicles certifying to TLEV, LEV, or ULEV standards shall calculate a reactivity-adjusted methane exhaust emission value by multiplying the methane exhaust certification level by the applicable methane reactivity adjustment factor set forth in section 13 or in section I.E.5. of the above referenced test procedures as applicable. The product of the NMOG exhaust certification levels and the reactivity adjustment factor shall be compared to the exhaust NMOG mass emission standards established for the particular vehicle emission category to determine compliance. For natural gas vehicles, the reactivity-adjusted NMOG value shall be added to the reactivity-adjusted methane value and then compared to the exhaust NMOG mass emission standards established for the particular vehicle emission category to determine compliance.

b. Fleet Average Requirement. Each manufacturer shall certify PCs or LDTs to meet the exhaust mass emission standards for TLEVs, LEVs, ULEVs, or the exhaust emission standards of sections 1960.1 (e)(1), 1960.1 (f)(1), or 1960.1 (f)(2), Title 13,

California Code of Regulations, or as Zero-Emission Vehicles such that the manufacturer's fleet average NMOG values for California-certified PCs and LDTs from 0-3750 lbs. LVW, and LDTs from 3751-5750 lbs. LVW produced and delivered for sale in California are less than or equal to the requirement for the corresponding Model Year, Vehicle Type, and LVW Class in section 1960.1 (g)(2), Title 13, California Code of Regulations.

[FN4] NMOG Standards for Fuel-Flexible and Dual-Fuel Vehicles. Fuel-flexible and dual-fuel PCs and LDTs from 0-5750 lbs. LVW shall be certified to exhaust mass emission standards for NMOG established for the operation of the vehicle on any available fuel other than gasoline, and gasoline.

a.Reactivity Adjustment. For TLEVs, LEVs, and ULEVs, when certifying for operation on a fuel other than gasoline, manufacturers shall multiply exhaust NMOG certification levels by the applicable reactivity adjustment factor. In addition to multiplying the exhaust NMOG certification levels by the applicable reactivity adjustment factor, exhaust methane certification levels for natural gas vehicles shall be multiplied by the applicable methane reactivity adjustment factor and the resulting value shall be added to the reactivity-adjusted NMOG value. The exhaust NMOG certification levels for fuel-flexible or dual-fuel vehicles when certifying on gasoline shall not be multiplied by a reactivity adjustment factor.

b.Standards for Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline.For PCs and LDTs from 0-5750 lbs. LVW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I9aa243c0718f11daba48740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2505e9ab-88e2-4225-a833-a55b98bc8c3c&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Link/Document/Blob/I9aa243c0718f11daba48740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2505e9ab-88e2-4225-a833-a55b98bc8c3c&contextData=(sc.Default)&bhcp=1)

Vehicle Type	Loaded Vehicle Weight (LVW)	Emission Category	Durability Vehicle Basis (g/mi)	
			50,000 Mile	100,000 Mile
PCS, LDT	All, 0-3750	TLEV	0.25	0.31
		LEV	0.125	0.156
		ULEV	0.075	0.090
LDT	3751-5750	TLEV	0.32	0.40
		LEV	0.160	0.200
		ULEV	0.100	0.130

<sup>5</sup> Highway NO<sub>x</sub>. The maximum projected emissions of "Oxides of Nitrogen" (or "NO<sub>x</sub>") measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B) shall be not greater than 1.33 times the applicable light-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

<sup>6</sup> Intermediate In-Use Compliance Standards. The following standards are intermediate in-use compliance standards for 50,000 and 100,000 miles for PCs and LDTs from 0-5750 lbs. LVW, including fuel-flexible and dual-fuel vehicles when operating on any available fuel other than gasoline. Intermediate in-use compliance standards shall apply to TLEVs through the 1995 model year as follows:

	NMOG (g/mi)
PCS and LDTs 0-3750 lbs. LVW	0.188
LDTs 3751-5750 lbs. LVW	0.238

In-use compliance with standards beyond 50,000 miles shall be waived through the 1995 model year for TLEVs, and through the 1998 model year for LEVs and ULEVs. For LEVs and ULEVs, the following intermediate in-use standards shall apply:

Vehicle Type	Durability Vehicle Basis	LEV (g/mi)			ULEV (g/mi)			
		Model Year	NMOG	NO <sub>x</sub>	Model Year	NMOG	CO	NO <sub>x</sub>
PCS, 0-3750 lb. LVW LDTs	50,000	through 1998	0.100	0.3	through 1998	0.058	2.6	0.3
	50,000	1999	0.100	0.3	1999-2002	0.055	2.1	0.3
	100,000	1999	0.125	0.4	1999-2002	0.075	3.4	0.4
3751-5750 lb. LVW LDTs	50,000	through 1998	0.128	0.5	through 1998	0.075	3.3	0.5
	50,000	1999	0.130	0.5	1999-2002	0.070	2.8	0.5
	100,000	1999	0.160	0.7	1999-2002	0.100	4.4	0.7

a. **Reactivity Adjustment.** For TLEVs, LEVs, and ULEVs designed to operate on any fuel other than conventional gasoline, including fuel-flexible and dual-fuel vehicles when operating on any fuel other than gasoline, exhaust NMOG mass emission results shall be multiplied by the applicable reactivity adjustment factor to determine compliance with intermediate in-use compliance standards for NMOG. In addition to multiplying the exhaust NMOG emission results by the applicable reactivity adjustment factor, the exhaust methane emission results for natural gas vehicles shall be multiplied by the applicable methane reactivity adjustment factor and the resulting value shall be added to the reactivity-adjusted NMOG value. Exhaust NMOG mass emissions from fuel-flexible or dual-fuel vehicles when operating on gasoline shall not be multiplied by a reactivity adjustment factor.

b. **Intermediate In-Use Standards for Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline.** For fuel-flexible and dual-fuel PCs and LDTs from 0-5750 lbs. LVW intermediate in-use compliance standards for NMOG emissions at 50,000 miles, when the vehicle is operated on gasoline, shall be:

Vehicle Type	Loaded Vehicle Weight (LVW)	Emission Category	Durability Vehicle Basis (g/mi) 50,000 mi
PCS, LDT	All, 0-3750	TLEV	0.32
		LEV	0.188
		ULEV	0.100
LDT	3751-5750	TLEV	0.41
		LEV	0.238
		ULEV	0.128

Intermediate in-use compliance standards shall apply to TLEVs through the 1995 model year, and to LEVs and ULEVs through the 1998 model year. In-use compliance with standards beyond 50,000 miles shall be waived through the 1995 model year for TLEVs and through the 1998 model year for LEVs and ULEVs.

<sup>7</sup> Diesel Standards. Manufacturers of diesel vehicles shall also certify to particulate standards at 100,000 miles. For all PCs and LDTs from 0-3750 lbs. LVW, the particulate standard is 0.08 g/mi, 0.08 g/mi, and 0.04 g/mi for TLEVs, LEVs, and ULEVs, respectively. For LDTs from 3751-5750 lbs. LVW, the particulate standard is 0.10 g/mi, 0.10g/mi, and 0.05 g/mi for TLEVs, LEVs and ULEVs, respectively. For diesel vehicles certifying to the standards set forth in Title 13, section 1960.1(g)(1), "NMOG" shall mean non-methane hydrocarbons.

<sup>8</sup> 50°F Requirement. Manufacturers shall demonstrate compliance with the above standards for NMOG, CO, and NO<sub>x</sub> at 50 degrees F according to the procedure specified in section 11k of the "California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or according to the procedure specified in section 11.C. of the "California Exhaust Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1961(d), as applicable. Hybrid electric, natural gas, and diesel-fueled vehicles shall be exempt from 50 degrees F test requirements.

<sup>9</sup> Limit on In-Use Testing. In-use compliance testing shall be limited to vehicles with fewer than 75,000 miles.

<sup>10</sup> HEV Requirements. Deterioration factors for hybrid electric vehicles shall be based on the emissions and mileage accumulation of the auxiliary power unit. For certification purposes only, Type A hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors), and demonstrating compliance with 100,000 mile emission standards shall not be required. For certification purposes only, Type B hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors) and 100,000 mile emission standards (using 75,000 mile deterioration factors). For certification purposes only, Type C hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors) and 100,000 mile emission standards (using 100,000 mile deterioration factors).

<sup>11</sup> NMOG Credit for Direct Ozone Reduction Technology. A manufacturer that certifies vehicles equipped with direct ozone reduction technologies shall be eligible to receive NMOG credits that can be applied to the NMOG exhaust emissions of the vehicle when determining compliance with the standard. In order to receive credit, the manufacturer must submit the following information for each vehicle model, including, but not limited to:

- (a) a demonstration of the airflow rate through the direct ozone reduction device and the ozone-reducing efficiency of the device over the range of speeds encountered in the SFTP test cycle;
- (b) an evaluation of the durability of the device for the full useful life of the vehicle; and
- (c) a description of the on-board diagnostic strategy for monitoring the performance of the device in-use.

Using the above information, the Executive Officer shall determine the value of the NMOG credit based on the calculated change in the one-hour peak ozone level using an approved airshed model.

(2) The fleet average non-methane organic gas exhaust emission values from passenger cars and light-duty trucks produced and delivered for sale in California by a manufacturer each model year from 1994 through 2000 shall not exceed:

FLEET AVERAGE NON-METHANE ORGANIC GAS EXHAUST EMISSION REQUIREMENTS FOR LIGHT-DUTY VEHICLE WEIGHT CLASSES [FN7,8,9] [grams per mile (or "g/mi")]				
	Loaded Vehicle	Durability Vehicle		Fleet Average
Vehicle Type [FN1]	Weight (lbs.)	Basis (mi) [FN7]	Model Year	Non-Methane Organic Gases [FN2,3,4,5,6]
PC and LDT	All	50,000	1994	0.250
	0-3750		1995	0.231
			1996	0.225
			1997	0.202
			1998	0.157
			1999	0.113
			2000	0.073
LDT	3751-5750	50,000	1994	0.320
			1995	0.295
			1996	0.287
			1997	0.260
			1998	0.205
			1999	0.150
			2000	0.099

[FN1] “PC” means passenger cars. “LDT” means light-duty trucks. “TLEV” means transitional low-emission vehicle. “LEV” means low-emission vehicle. “ULEV” means ultra-low-emission vehicle. “LVW” means loaded vehicle weight.

[FN2] “Non-Methane Organic Gases” (or “NMOG”) means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

[FN3] HEV Categories. For the purpose of calculating fleet average NMOG values, a manufacturer may adjust the certification levels of hybrid electric vehicles (or “HEVs”) based on the range of the HEV without the use of the engine. For the purpose of calculating the adjusted NMOG emissions, the following definitions shall apply:

“Type A HEV” shall mean an HEV which achieves a minimum range of 60 miles over the All-Electric Range Test as defined in “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles” as incorporated by reference in section 1960.1(k), or in “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1961(d), as applicable.

“Type B HEV” shall mean an HEV which achieves a range of 40-59 miles over the All-Electric Range Test as defined in “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles” as incorporated by reference in section 1960.1(k), or in “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1961(d), as applicable.

“Type C HEV” shall mean an HEV which achieves a range of 0-39 miles over the All-Electric Range Test as defined in “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1960.1(k), or in “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1961(d), as applicable, and all other HEVs excluding “Type A” and “Type B” HEVs.

- a. For the purpose of calculating fleet average NMOG values, vehicles which have no tailpipe emissions but use fuel-fired heaters and which are not certified as ZEVs shall be treated as “Type A HEV ULEVs.”

[FN4] Calculation of Fleet Average NMOG Value (PCS and LDTs 0-3750 lbs. LVW). Each manufacturer's fleet average NMOG value for the total number of PCs and LDTs from 0-3750 lbs. LVW produced and delivered for sale in California shall be calculated in units of g/mi NMOG according to the following equation, where the term “Produced” means produced and delivered for sale in California:

$$\begin{aligned} & \text{[(No. of Vehicles Certified to the Exhaust Emission Standards in section 1960.1(e)(1) and Produced) x (0.39)] +} \\ & \text{[No. of Vehicles Certified to the Phase-In Exhaust Emission Standards in section 1960.1(f)(1) and Produced x (0.25)] +} \\ & \text{[No. of Vehicles Certified to the Phase-Out Exhaust Emission Standards in section 1960.1(f)(1) and Produced x (0.39)] +} \\ & \text{[(No. of Vehicles Certified to the Exhaust Emission Standards in section 1960.1(f)(2) and Produced) x (0.25)] +} \\ & \text{[(No. of TLEVs excluding HEVs and Produced) x (0.125)] +} \\ & \text{[(No. of LEVs excluding HEVs and Produced) x (0.075)] +} \\ & \text{[(No. of ULEVs excluding HEVs and Produced) x (0.040)] +} \\ & \text{(HEV contribution factor) ÷} \\ & \text{(Total No. of Vehicles Produced, Including Zero-Emission Vehicles and HEVs):} \end{aligned}$$

- a. “HEV contribution factor” shall mean the NMOG emission contribution of HEVs to the fleet average NMOG value. The HEV contribution factor shall be calculated in units of g/mi as follows, where the term “Produced” means produced and delivered for sale in California:

$$\begin{aligned} \text{HEV contribution factor} = & \text{[(No. of “Type A HEV” TLEVs Produced) x (0.100)] +} \\ & \text{[No. of “Type B HEV” TLEVs Produced] x (0.113) +} \\ & \text{[No. of “Type C HEV” TLEVs Produced] x (0.125) +} \end{aligned}$$



$$\begin{aligned}
& \text{[(No. of "Type A HEV" LEVs Produced] x (0.057) +} \\
& \text{[No. of "Type B HEV" LEVs Produced] x (0.066) +} \\
& \text{[No. of "Type C HEV" LEVs Produced] x (0.075)) +} \\
& \text{[(No. of "Type A HEV" ULEVs Produced] x (0.020) +} \\
& \text{[No. of "Type B HEV" ULEVs Produced] x (0.030) +} \\
& \text{[No. of "Type C HEV" ULEVs Produced] x (0.040)}
\end{aligned}$$

b. "Zero-Emission Vehicles" (or "ZEVs") classified as LDTs 3751-5750 lbs. LVW which have been counted toward the ZEV requirements for PCs and LDTs 0-3750 lbs. LVW as specified in note (9) shall be included in the equation of note (4).

c. Beginning with the 1996 model year, manufacturers that produce and deliver for sale in California PCs and LDTs 0-3750 lbs. LVW that are certified to federal Tier I exhaust emission standards in 40 CFR 86.094-8 and 86.094-9 shall add the following term to the numerator of the fleet average NMOG equation in note (4) and calculate their fleet average NMOG values accordingly:

$$\text{[(No. of Vehicles Certified to federal Tier I exhaust emission standards and Produced) x (0.25)]}$$

[FN5] Calculation of Fleet Average NMOG Value (LDTs 3751-5750 lbs. LVW). Manufacturers that certify LDTs from 3751-5750 lbs. LVW, shall calculate a fleet average NMOG value in units of g/mi NMOG according to the following equation, where the term "Produced" means produced and delivered for sale in California:

$$\begin{aligned}
& \text{[(No. of Vehicles Certified to the Exhaust Emission Standards in section 1960.1(e)(1), and Produced x (0.50)] +} \\
& \text{[(No. of Vehicles Certified to the Phase-In Exhaust Emission Standards in section 1960.1(f)(1), and Produced x (0.32)] +} \\
& \text{[No. of Vehicles Certified to the Phase-Out Exhaust Standards in section 1960.1(f)(1), and Produced x (0.50)] +} \\
& \text{[(No. of Vehicles Certified to the Exhaust Emission Standards in section 1960.1(f)(2), and Produced x (0.32)] +} \\
& \text{[(No. of TLEVs Produced excluding HEVs) x (0.160)] +} \\
& \text{[(No. of LEVs Produced excluding HEVs) x (0.100)] +} \\
& \text{[(No. of ULEVs Produced excluding HEVs) x (0.050)] + (HEV contribution factor)} \div \\
& \text{(Total No. of Vehicles Produced, Including ZEVs and HEVs).}
\end{aligned}$$

a. "HEV contribution factor" shall mean the NMOG emission contribution of HEVs to the fleet average NMOG. The HEV contribution factor shall be calculated in units of g/mi as follows, where the term "Produced" means produced and delivered for sale in California:

$$\begin{aligned}
& \text{HEV contribution factor =} \\
& \text{[(No. of "Type A HEV" TLEVs Produced] x (0.130) +} \\
& \text{[No. of "Type B HEV" TLEVs Produced] x (0.145) +} \\
& \text{[No. of "Type C HEV" TLEVs Produced] x (0.160)) +} \\
& \text{[(No. of "Type A HEV" LEVs Produced] x (0.075) +} \\
& \text{[No. of "Type B HEV" LEVs Produced] x (0.087) +} \\
& \text{[No. of "Type C HEV" LEVs Produced] x (0.100)) +} \\
& \text{[(No. of "Type A HEV" ULEVs Produced] x (0.025) +} \\
& \text{[No. of "Type B HEV" ULEVs Produced] x (0.037) +} \\
& \text{[No. of "Type C HEV" ULEVs Produced] x (0.050)}
\end{aligned}$$

b. Only ZEVs which have been certified as LDTs 3751-5750 lbs. LVW and which have not been counted toward the ZEV requirements for PCs and LDTs 0-3750 lbs. LVW as specified in note (9) shall be included in the equation of note (5).

c. Beginning with the 1996 model year, manufacturers that produce and deliver for sale in California LDTs 3751-5750 lbs. LVW that are certified to the Tier I exhaust emission standards in 40 CFR 86.094-9 shall add the following term to the numerator of the fleet average NMOG equation in note (5) and calculate their fleet average NMOG values accordingly: [(No. of Vehicles Certified to federal Tier I exhaust emission standards and Produced and Delivered for Sale in California) x (0.32)]

[FN6] Requirements for Small Volume Manufacturers. As used in this subsection, the term “small volume manufacturer” shall mean any vehicle manufacturer with California sales less than or equal to 3000 new PCs, LDTs and MDVs per model year based on the average number of vehicles sold by the manufacturer each model year from 1989 to 1991, except as noted below. For manufacturers certifying for the first time in California, model-year sales shall be based on projected California sales. In 2000 and subsequent model years, small volume manufacturers shall comply with the fleet average NMOG requirements set forth below.

- a. Prior to the model year 2000, compliance with the specified fleet average NMOG requirements shall be waived.
- b. In the 2000 model year, small volume manufacturers shall not exceed a fleet average NMOG value of 0.075 g/mi for PCs and LDTs from 0-3750 lbs. LVW calculated in accordance with note (4).
- c. In the 2000 model year, small volume manufacturers shall not exceed a fleet average NMOG value of 0.100 g/mi for LDTs from 3751-5750 lbs. LVW calculated in accordance with note (5).
- d. If a manufacturer's average California sales exceeds 3000 units of new PCs, LDTs, and MDVs based on the average number of vehicles sold for any three consecutive model years, the manufacturer shall no longer be treated as a small volume manufacturer and shall comply with the fleet average requirements applicable for larger manufacturers as specified in section 1960.1(g)(2) beginning with the fourth model year after the last of the three consecutive model years.
- e. If a manufacturer's average California sales falls below 3000 units of new PCs, LDTs, and MDVs based on the average number of vehicles sold for any three consecutive model years, the manufacturer shall be treated as a small volume manufacturer and shall be subject to requirements for small volume manufacturers as specified in section 1960.1(g)(2) beginning with the next model year.

[FN7] Calculation of NMOG Credits/Debits and Procedures for Offsetting Debits.

- a. In 1992 through 2000 model years, manufacturers that achieve fleet average NMOG values lower than the fleet average NMOG requirement for the corresponding model year shall receive credits in units of g/mi NMOG determined as: 
$$[(\text{Fleet Average NMOG Requirement}) - (\text{Manufacturer's Fleet Average NMOG Value})] \times (\text{Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs})$$
 Manufacturers with fleet average NMOG values greater than the fleet average requirement for the corresponding model year shall receive debits in units of g/mi NMOG equal to the amount of negative credits determined by the aforementioned equation. For any given model year, the total g/mi NMOG credits or debits earned for PCs and LDTs 0-3750 lbs. LVW and for LDTs 3751-5750 lbs. LVW shall be summed together. The resulting amount shall constitute the g/mi NMOG credits or debits accrued by the manufacturer for the model year.
- b. For the 1994 through 1997 model years, manufacturers shall equalize emission debits within three model years and prior to the end of the 1998 model year by earning g/mi NMOG emission credits in an amount equal to their g/mi NMOG debits, or by submitting a commensurate amount of g/mi NMOG credits to the Executive Officer that were earned previously or acquired from another manufacturer. For 1998 through 2000 model years, manufacturers shall equalize emission debits by the end of the following model year. If emission debits are not equalized within the specified time period, the manufacturer shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi NMOG emission debits for the model year by the g/mi NMOG fleet average requirement for PCs and LDTs 0-3750 lbs. LVW applicable for the model year in which the debits were first incurred.
- c. The g/mi NMOG emission credits earned in any given model year shall retain full value through the subsequent model year. The g/mi NMOG value of any credits not used to equalize the previous model-year's debit, shall be discounted by 50% at the beginning of the second model year after being earned, discounted to 25% of its original value if not used by the

beginning of the third model year after being earned, and will have no value if not used by the beginning of the fourth model year after being earned.

d. In order to verify the status of a manufacturer's compliance with the fleet average requirements for a given model year, and in order to confirm the accrual of NMOG credits or debits, each manufacturer shall submit an annual report to the Executive Office which sets forth the production data used to establish compliance, by no later than March 1 of the calendar year following the close of the completed model year.

[FN8] Credits for Pre-1994 Model Year Vehicles. Manufacturers that produce and deliver for sale in California vehicles certified to the phase-in exhaust emission standards in section 1960.1(f)(1), or vehicles certified to the exhaust emission standards in sections 1960.1(f)(2) or 1960.1(g)(1) and/or ZEVs, in the 1992 and 1993 model years, shall receive emission credits as determined by the equations in footnotes (4), (5), and (7).

a. For PCs and LDTs from 0-3750 lbs. LVW, the fleet average NMOG requirement for calculating a manufacturer's emission credits shall be 0.390 and 0.334 g/mi NMOG for vehicles certified for the 1992 and 1993 model years, respectively.

b. For LDTs from 3751-5750 lbs. LVW, the fleet average NMOG requirement for calculating a manufacturer's emission credits shall be 0.500 and 0.428 g/mi NMOG for vehicles certified for the 1992 and 1993 model years, respectively.

c. Emission credits earned prior to the 1994 model year shall be considered as earned in the 1994 model year and discounted in accordance with the schedule specified in footnote (7).

(h)

(1) "Tier 1" Exhaust Emission Standards for MDVs. The exhaust emissions from new 1995 through 2003 model Tier 1 medium-duty vehicles shall not exceed:

1995-2003 MODEL-YEAR TIER 1					
MEDIUM-DUTY VEHICLE EXHAUST EMISSIONS STANDARDS [FN1,2,3,7,8]					
(grams per mile)					
	<i>Durability</i>				
<i>Test</i>	<i>Vehicle</i>	<i>Non-Methane</i>	<i>Carbon</i>	<i>Oxides of</i>	
<i>Weight(lbs.)</i>	<i>Basis(mi)</i>	<i>Hydrocarbons [FN4]</i>	<i>Monoxide</i>	<i>Nitrogen [FN5]</i>	<i>Particulates [FN6]</i>
0-3,750	50,000	0.25	3.4	0.4	n/a
0-3,750	120,000	0.36	5.0	0.55	0.08
3,751-5,750	50,000	0.32	4.4	0.7	n/a
3,751-5,750	120,000	0.46	6.4	0.98	0.10
5,751-8,500	50,000	0.39	5.0	1.1	n/a
5,751-8,500	120,000	0.56	7.3	1.53	0.12
8,501-10,000	50,000	0.46	5.5	1.3	n/a
8,501-10,000	120,000	0.66	8.1	1.81	0.12
10,001-14,000	50,000	0.60	7.0	2.0	n/a
10,001-14,000	120,000	0.86	10.3	2.77	0.12

[FN1] "n/a" means not applicable. "Test Weight" shall mean the average of the vehicle's curb weight and gross vehicle weight.

[FN2] Manufacturers have the option of certifying engines used in incomplete and diesel medium-duty vehicles from 8501-14,000 pounds, gross vehicle weight to the heavy-duty engine standards and test procedures set forth in section 1956.8(e), Title 13, California Code of Regulations. Manufacturers certifying incomplete or diesel medium-duty vehicles to the heavy-duty engine 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.

[FN3] For the 1995 model-year only, manufacturers of medium-duty vehicles may certify a maximum of 50 percent of their vehicles to the applicable 1994 model-year standards and test procedures. For the 1995 model year only, small volume manufacturers may certify 100 percent of their vehicles to the applicable 1994 model-year standards and test procedures. The percentage shall be based upon each manufacturer's projected sales of California-certified medium-duty vehicles.

[FN4] For methanol- and ethanol-fueled vehicles certifying to these standards, including flexible-fueled vehicles when certifying on methanol or ethanol, "Non-Methane Hydrocarbons" shall mean "Organic Material Non-Methane Hydrocarbon Equivalent" (or "OMNMHCE").

[FN5] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600 Subpart B) shall be not greater than 2.00 times the applicable medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standards shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

[FN6] Particulate standards are only applicable for diesel vehicles and shall be determined on a 120,000 mile basis.

[FN7] In-use compliance testing shall be limited to vehicles with less than 90,000 miles. For the 1995 through 1997 models, alternative in-use compliance is available for medium-duty vehicle manufacturers. A manufacturer may use alternative in-use compliance for up to 100 percent of its fleet in the 1995 and 1996 model years and up to 50 percent of its fleet in the 1997 model year. Small volume manufacturers may use alternative in-use compliance for up to 100 percent of their fleets in the 1995 through 1997 model years. The percentages shall be determined from the manufacturers' projected California sales of medium-duty vehicles. For vehicles certified to the standards and test procedures of this subsection, "alternative in-use compliance" shall consist of an in-use allowance of 25 percent over the applicable 1995 model-year non-methane hydrocarbon, carbon monoxide, and oxides of nitrogen 50,000 mile emission standards and a waiver of the emission standards beyond 50,000 miles.

[FN8] All medium-duty vehicles, except diesel-fueled vehicles and those incomplete and diesel vehicles certifying to heavy-duty engine test procedures, are subject to 50,000 mile and 120,000 mile non-methane hydrocarbon, carbon monoxide, and oxides of nitrogen standards. Diesel-fueled vehicles shall be subject to 120,000 mile non-methane hydrocarbon, carbon monoxide, oxides of nitrogen, and particulate standards only.

(2) "LEV I" Exhaust Emission Standards for MDVs. The exhaust emissions from new 1992 through 2006 model-year medium-duty LEV I low-emission vehicles, ultra-low-emission vehicles and super-ultra-low-emission vehicles shall not exceed:

LEV I EXHAUST EMISSION STANDARDS FOR LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES AND SUPER-ULTRA-LOW-EMISSION VEHICLES IN THE MEDIUM-DUTY VEHICLE WEIGHT CLASS <a href="#">8.9.10.11.12.13.14.15.16</a> [grams per mile (or “g/mi”)]						
	<i>Durability</i>					
	<i>Vehicle</i>	<i>Vehicle</i>				
<i>Test</i>	<i>Basis</i>	<i>Emission</i>	<i>Non - Methane</i>	<i>Carbon</i>	<i>Oxides of</i>	
<i>Weight</i>	<i>(mi)</i>	<i>Category [FN2]</i>	<i>Organic</i>	<i>Monoxide</i>	<i>Nitrogen [FN5]</i>	<i>Particulates [FN6,7]</i>
<i>(lbs.) [FN1]</i>			<i>Gases [FN3,4]</i>			
0-3750	50,000	LEV	0.125	3.4	0.4	n/a
		ULEV	0.075	1.7	0.2	n/a
	120,000	LEV	0.180	5.0	0.6	0.08
		ULEV	0.107	2.5	0.3	0.04
3751-5750	50,000	LEV	0.160	4.4	0.4	n/a
		ULEV	0.100	4.4	0.4	n/a
		SULEV	0.050	2.2	0.2	n/a
	120,000	LEV	0.230	6.4	0.6	0.10
		ULEV	0.143	6.4	0.6	0.05
		SULEV	0.072	3.2	0.3	0.05
5751-8500	50,000	LEV	0.195	5.0	0.6	n/a
		ULEV	0.117	5.0	0.6	n/a
		SULEV	0.059	2.5	0.3	n/a
	120,000	LEV	0.280	7.3	0.9	0.12
		ULEV	0.167	7.3	0.9	0.06
		SULEV	0.084	3.7	0.45	0.06
8501-10,000	50,000	LEV	0.230	5.5	0.7	n/a
		ULEV	0.138	5.5	0.7	n/a
		SULEV	0.069	2.8	0.35	n/a
	120,000	LEV	0.330	8.1	1.0	0.12
		ULEV	0.197	8.1	1.0	0.06
		SULEV	0.100	4.1	0.5	0.06
10,001-14,000	50,000	LEV	0.300	7.0	1.0	n/a
		ULEV	0.180	7.0	1.0	n/a
		SULEV	0.09	3.5	0.5	n/a
	120,000	LEV	0.430	10.3	1.5	0.12
		ULEV	0.257	10.3	1.5	0.06
		SULEV	0.130	5.2	0.7	0.06

[https://govt.westlaw.com/calregs/Link/Document/Blob/I9beda300718f11dab116740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2505e9ab-88e2-4225-a833-a55b98bc8c3c&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I9beda300718f11dab116740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2505e9ab-88e2-4225-a833-a55b98bc8c3c&contextData=(sc.Default))

- <sup>1</sup> "Test Weight" (or "TW") shall mean the average of the vehicle's curb weight and gross vehicle weight.  
 "Non-Methane Organic Gases" (or "NMOG") means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.
- <sup>2</sup> "LEV" means low-emission vehicle.  
 "ULEV" means ultra-low-emission vehicle.  
 "SULEV" means super-ultra-low-emission vehicle.
- <sup>3</sup> **Compliance with NMOG Standards.** To determine compliance with an NMOG standard, NMOG emissions shall be measured in accordance with the "California Non-Methane Organic Gas Test Procedures" adopted July 12, 1991 and last amended July 30, 2002, which is incorporated herein by reference.
- a. **Reactivity Adjustment.** For LEVs and ULEVs certified to operate on an available fuel other than conventional gasoline, including fuel-flexible or dual-fuel vehicles when certifying on a fuel other than gasoline, manufacturers shall multiply the exhaust NMOG certification levels by the applicable reactivity adjustment factor set forth in section 13 of the "California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or in section I.E.5. of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1961(d), or established by the Executive Officer pursuant to Appendix VII or section II.D. respectively of the foregoing test procedures. In addition, natural gas vehicles certifying to LEV or ULEV standards shall calculate a reactivity-adjusted methane exhaust emission value by multiplying the methane exhaust certification level by the applicable methane reactivity adjustment factor set forth in section 13 or in section I.E.5. of the above-referenced test procedures as applicable. The product of the exhaust NMOG certification levels and the reactivity adjustment factor shall be compared to the exhaust NMOG mass emission standard established for the particular vehicle emission category to determine compliance. For natural gas vehicles, the reactivity-adjusted NMOG value shall be added to the reactivity-adjusted methane value and then compared to the exhaust NMOG mass emission standards established for the particular vehicle emission category to determine compliance.
- b. **Pre-1998 NOx standards.** Prior to the 1998 model year, the 50,000 mile and 120,000 mile LEV exhaust mass emission standards for NOx shall be: 0.7 and 1.0 g/mi for MDVs from 3751-5750 lbs. TW, 1.1 and 1.5 g/mi MDVs from 5751-8500 lbs. TW, 1.3 and 1.8 g/mi for MDVs from 8501-10,000 lbs. TW, and 2.0 and 2.8 g/mi for MDVs from 10,001-14,000 lbs. TW, respectively.
- <sup>4</sup> **NMOG Standards for Fuel-Flexible and Dual-Fuel Vehicles.** Fuel-flexible and dual-fuel medium-duty vehicles (or "MDVs") from 0-14,000 lbs. TW shall be certified to exhaust mass emission standards for NMOG established for the operation of the vehicle on a fuel other than gasoline, and gasoline.
- a. **Reactivity Adjustment.** For LEVs and ULEVs when certifying on the fuel other than gasoline, manufacturers shall multiply the exhaust NMOG certification levels by the applicable reactivity adjustment factor. In addition to multiplying the exhaust NMOG certification levels by the applicable reactivity adjustment factor, the exhaust methane certification level for natural gas vehicles shall be multiplied by the applicable methane reactivity adjustment factor and the resulting value shall be added to the reactivity-adjusted NMOG value. When certifying on gasoline, the exhaust NMOG certification levels of fuel-flexible and dual-fuel vehicles shall not be multiplied by a reactivity adjustment factor.
- b. **Standards for Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline.** For MDVs from 14,000 lbs. TW, the applicable exhaust mass emission standard for NMOG when certifying the vehicle for operation on gasoline shall be:

Test Weight (lbs.)	Vehicle Emission Category	50,000 (g/mi)	120,000 (g/mi)
0-3750	LEV	0.25	0.36
	ULEV	0.125	0.180
3751-5750	LEV	0.32	0.46
	ULEV	0.160	0.230
	SULEV	0.100	0.143
5751-8500	LEV	0.39	0.56
	ULEV	0.195	0.280
	SULEV	0.117	0.167
8501-10,000	LEV	0.46	0.66
	ULEV	0.230	0.330
	SULEV	0.138	0.197
10,001-14,000	LEV	0.60	0.86
	ULEV	0.300	0.430
	SULEV	0.180	0.257

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<sup>5</sup> Highway NOx. The maximum projected emissions of "Oxides of Nitrogen" (or "NOx") measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600 Subpart B) shall be not greater than 2.00 times the applicable MDV standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

<sup>6</sup> Particulate standards are only applicable for diesel vehicles and shall be determined on a 120,000 mile basis.

<sup>7</sup> "n/a" means not applicable.

<sup>8</sup> Certification of Incomplete and Diesel Vehicles. Manufacturers have the option of certifying engines used in incomplete and diesel MDVs to the heavy-duty engine standards and test procedures set forth in section 1956.8(g) or (h), Title 13, California Code of Regulations. Manufacturers certifying incomplete or diesel MDVs to the heavy-duty engine standards and test procedures shall specify in the application for certification an in-use compliance procedure as provided in section 2139(c), Title 13, California Code of Regulations. For diesel vehicles certifying to the standards set forth in Title 13, section 1960.1(h)(2), "NMOG" shall mean non-methane hydrocarbons.

<sup>9</sup> Intermediate In-Use Compliance Standards. The following intermediate in-use compliance standards for 50,000 miles and 120,000 miles for MDVs from 3751-14,000 lbs. TW, including fuel-flexible and dual-fuel vehicles when operating on an available fuel other than gasoline, shall apply for the specified model years only:

Intermediate In-Use Compliance Standards* (in grams per mile)										
Emission Category	Model Year	Durability Vehicle Basis (mi)	3751-5750 lbs.		5751-8500 lbs.		8501-10,000 lbs.		10,001-14,000 lbs.	
			NMOG	NOx	NMOG	NOx	NMOG	NOx	NMOG	NOx
LEV	through 1997	50,000	0.238	0.7	0.293	1.1	0.345	1.3	0.450	2.0
	1998-1999	50,000	0.238	0.6	0.293	0.9	0.345	1.0	0.450	1.5
	2000	50,000	—	0.6	—	0.9	—	1.0	—	1.5
	2000	120,000	—	0.8	—	1.2	—	1.3	—	2.0
ULEV	through 1999	50,000	0.128	0.6	0.156	0.9	0.184	1.0	0.240	1.5
	2000	50,000	0.128	0.6	0.156	0.9	0.184	1.0	0.240	1.5
	2000	120,000	0.160	0.8	0.195	1.2	0.230	1.3	0.300	2.0
	2001-2002	50,000	0.128	—	0.156	—	0.184	—	0.240	—
	2001-2002	120,000	0.160	—	0.195	—	0.230	—	0.300	—
SULEV	through 2002	50,000	0.072	0.3	0.084	0.45	0.100	0.5	0.130	0.7
	2002	120,000	0.100	0.4	0.117	0.6	0.138	0.65	0.180	1.0

In-use compliance with standards beyond 50,000 miles shall be waived through the 1999 model year for LEVs and ULEVs and through the 2001 model year for SULEVs. Dashes mean that the standard in the section (h)(2) table applies.

\*Dashes mean that the standard in the section (h)(2) table applies.

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- a. **Reactivity Adjustment.** For LEVs and ULEVs designed to operate on any available fuel other than conventional gasoline, including fuel-flexible and dual-fuel vehicles when operating on any available fuel other than gasoline, NMOG exhaust mass emission results shall be multiplied by the applicable reactivity adjustment factor to determine compliance with intermediate in-use compliance standards for NMOG. In addition to multiplying the exhaust NMOG mass emission results by the applicable reactivity adjustment factor, natural gas vehicles shall multiply the exhaust methane mass emission results by the applicable methane reactivity adjustment factor and add that value to the reactivity-adjusted NMOG value. For fuel-flexible and dual-fuel vehicles when operating on gasoline, NMOG emission results shall not be multiplied by a reactivity adjustment factor.
- b. **Gasoline Standards for Fuel-Flexible and Dual-Fuel Vehicles.** For fuel-flexible and dual-fuel MDVs from 0-14,000 lbs. TW, intermediate in-use compliance standards for NMOG emissions at 50,000 miles when the vehicle is operated on gasoline, shall be:

Fuel-Flexible and Dual-Fuel MDVs Intermediate In-Use Compliance Standards		
Test Weight (lbs.)	Vehicle Emission Category	50,000 (g/mi)
0-3750	LEV	0.32
	ULEV	0.188
3751-5750	LEV	0.41
	ULEV	0.238
5751-8500	SULEV	0.128
	LEV	0.49
	ULEV	0.293
8501-10,000	SULEV	0.156
	LEV	0.58
	ULEV	0.345
10,000-14,000	SULEV	0.184
	LEV	0.75
	ULEV	0.450
	SULEV	0.240

Intermediate in-use compliance standards shall apply to LEVs and ULEVs through the 1999 model year and to SULEVs through the 2001 model year. Compliance with the standards beyond 50,000 miles shall be waived through the 1999 model year for LEVs and ULEVs and through the 2001 model year for SULEVs.

- <sup>10</sup> **Medium-Duty Vehicle Phase-In Requirements.** Each manufacturer's MDV fleet shall be defined as the total number of MDVs from 0-14,000 lbs. TW certified and produced and delivered for sale in California.

a. Manufacturers of MDVs shall certify an equivalent percentage of their MDV fleet according to the following phase-in schedule:

Model Year	Vehicles Certified to Title 13 CCR Section 1960.1(h)(1) or (h)(2) (%)			Vehicles Certified to Title 13 CCR Section 1956.8(g) or (h) (%)		
	Tier 1	LEV	ULEV	Tier 1	LEV	ULEV
1998	73	25	2	100	0	0
1999	48	50	2	100	0	0
2000	23	75	2	100	0	0

c. The percentages shall be applied to the manufacturer's total production of California-certified medium-duty vehicles delivered for sale in California.

d. These requirements shall not apply to small volume manufacturers. Small volume manufacturers shall comply with the requirements of note (16) below.

- <sup>11</sup> **Definition of HEV.** For the purpose of calculating "Vehicle Equivalent Credits" (or "VECs"), the contribution of hybrid electric vehicles (or "HEVs") will be calculated based on the range of the HEV without the use of the engine. For the purpose of calculating the contribution of HEVs to the VECs, the following definitions shall apply:

"Type A HEV" shall mean an HEV which achieves a minimum range of 60 miles over the All-Electric Range Test as defined in the "California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or in "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1961(d), as applicable.

"Type B HEV" shall mean an HEV which achieves a range of 40-59 miles over the All-Electric Range Test as defined in the "California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or in "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1961(d), as applicable.

"Type C HEV" shall mean an HEV which achieves a range of 0-39 miles over the All-Electric Range Test as defined in the "California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or in "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1961(d), as applicable, and all other HEVs excluding "Type A" and "Type B" HEVs.

a. For the purpose of calculating VECs, electric vehicles which utilize fuel fired heaters and which are not otherwise certified as ZEVs shall be treated as "Type A HEV ULEVs."

- <sup>12</sup> **Calculation of Vehicle Equivalent Credits.** In 1992 through 2000 model years, manufacturers that produce and deliver for sale in California MDVs in excess of the equivalent requirements for LEVs and/or ULEVs certified to the exhaust emission standards set forth in this section (h)(2) or Title 13, CCR Section 1956.8(h), shall receive VECs calculated in accordance with the following equation, where the term "Produced" means produced and delivered for sale in California:

$$\begin{aligned} & \{[(\text{No. of LEVs Produced excluding HEVs}) + (\text{No. of "Type C HEV" LEVs Produced})] + \\ & [(\text{No. of "Type A HEV" LEVs Produced}) \times (1.2)] + \\ & [(\text{No. of "Type B HEV" LEVs Produced}) \times (1.1)] - \\ & (\text{Equivalent No. of LEVs Required to be Produced})\} + \\ & \{(1.4) \times [(\text{No. of ULEVs Produced excluding HEVs}) + (\text{No. of "Type C HEV" ULEVs Produced})] + \\ & [(1.7) \times (\text{No. of "Type A HEV" ULEVs Produced})] + \\ & [(1.5) \times (\text{No. of "Type B HEV" ULEVs Produced})] - \\ & (1.4) \times (\text{Equivalent No. of ULEVs Required to be Produced})\} + \\ & \{(1.7) \times [(\text{No. of SULEVs Produced excluding HEVs}) + (\text{No. of "Type C HEV" SULEVs Produced})] + \\ & [(\text{No. of "Type A HEV" SULEVs Produced}) \times (1.7)] + \\ & [(\text{No. of "Type B HEV" SULEVs Produced}) \times (1.5)] - \\ & [(1.7) \times (\text{Equivalent No. of SULEVs Required to be Produced})]\} + \\ & (2.0) \times (\text{No. of ZEVs Certified and Produced as MDVs}). \end{aligned}$$

a. Manufacturers that fail to produce and deliver for sale in California the equivalent quantity of MDVs certified to LEV and/or ULEV exhaust emission standards, shall receive "Vehicle-Equivalent Debits" (or "VEDs") equal to the amount of negative VECs determined by the aforementioned equation.

b. Manufacturers shall equalize emission debits within one model year by earning VECs in an amount equal to their previous model-year's total of VEDs, or by submitting a commensurate amount of VECs to the Executive Officer that were



earned previously or acquired from another manufacturer. Any manufacturer which fails to equalize emission debits within the specified time period shall be subject to the Health and Safety Code civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period, for the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's emission standards shall be equal to the amount of VEDs incurred.

c. The VECs earned in any given model year shall retain full value through the subsequent model year.

d. The value of any VECs not used to equalize the previous model-year's debit, shall be discounted by 50% at the beginning of second model year after being earned, discounted to 25% of its original value if not depleted by the beginning of the third model year after being earned, and will have no value if not used by the beginning of the fourth model year after being earned.

e. Any VECs earned prior to the 1998 model year shall be treated as earned in the 1998 model year and discounted in accordance with the schedule specified in note (12)d.

f. Only ZEVs certified as MDVs shall be included in the calculation of VECs.

g. In order to verify the status of a manufacturer's compliance with the phase-in requirements of this section and in order to confirm the accrual of VECs or VEDs, each manufacturer shall submit an annual report to the Executive Officer which sets forth the production data used to establish compliance by no later than March 1 of the calendar year following the close of the model year.

<sup>13</sup> 50°F Requirement. Manufacturers shall demonstrate compliance with the above standards for NMOG, carbon monoxide, and oxides of nitrogen at 50 degrees F according to the procedures specified in section 11k of the "California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1960.1(k), or according to the procedure specified in section II.C. of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference in section 1961(d), as applicable. Hybrid electric, natural gas, and diesel-fuel vehicles shall be exempt from 50 degrees F test requirements.

<sup>14</sup> In-use compliance testing shall be limited to vehicles with fewer than 90,000 miles.

<sup>15</sup> HEV Requirements. Deterioration factors for hybrid electric vehicles shall be based on the emissions and mileage accumulation of the auxiliary power unit. For certification purposes only, Type A hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors), and demonstrating compliance with 120,000 mile emission standards shall not be required. For certification purposes only, Type B hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors). For certification purposes only, Type C hybrid electric vehicles shall demonstrate compliance with 50,000 mile emission standards (using 50,000 mile deterioration factors) and 120,000 mile emission standards (using 120,000 mile deterioration factors).

<sup>16</sup> Requirements for Small Volume Manufacturers. As used in Section 1960.1(h)(2), the term "small volume manufacturer" shall mean any vehicle manufacturer with California sales less than or equal to 3000 new PCs, LDTs, and MDVs per model year based on the average number of vehicles sold by the manufacturer each model year from 1992 to 1994, except as otherwise noted below. For manufacturers certifying for the first time in California, model-year sales shall be based on projected California sales.

a. Prior to the model year 2001, small volume manufacturers shall not be required to certify, produce, or deliver LEVs and ULEVs for sale in California.

b. If a manufacturer's average California sales exceeds 3000 units of new PCs, LDTs, and MDVs based on the average number of vehicles sold for any three consecutive model years, the manufacturer shall no longer be treated as a small volume manufacturer and shall comply with the LEV and ULEV requirements applicable for larger manufacturers as specified in 1960.1(h)(2) beginning with the fourth model year after the last of the three consecutive model years.

c. If a manufacturer's average California sales falls below 3000 units of new PCs, LDTs, and MDVs based on the average number of vehicles sold for any three consecutive model years, the manufacturer shall be treated as a small volume manufacturer and shall be subject to requirements for small volume manufacturers as specified in 1960.1(h)(2) beginning with the next model year.

(i) The exhaust emissions from new 1981 and subsequent model passenger cars, light-duty trucks, and medium-duty vehicles certified to special standards authorized by sections 1960.2, 1960.3, and 1960.4, subchapter 1, Chapter 3, Title 13, California Code of Regulations, shall not exceed [FN1]:

SPECIAL EXHAUST [FN10] EMISSION STANDARDS							
(grams per mile)							
		<i>Equivalent</i>	<i>Durability</i>				
		<i>Inertia</i>	<i>Vehicle</i>				
	<i>Vehicle</i>	<i>Weight</i>	<i>Basis</i>	<i>Non- Methane</i>	<i>Carbon</i>	<i>Oxides of</i>	
<i>Year</i>	<i>Type [FN2]</i>	<i>(lbs.) [FN3]</i>	<i>(mi)</i>	<i>Hydrocarbons</i>	<i>Monoxide</i>	<i>Nitrogen [FN5]</i>	
1981	PC [FN6]	All	50,000	0.39	(0.41)	7.0	1.5
	LDT, MDV [FN7]	0-3999	50,000	0.39	(0.41)	9.0	1.5
1982 [FN8]	PC	All	50,000	0.39	(0.41)	7.0	1.0
1983 [FN8]	PC	All	50,000	0.39	(0.41)	7.0	0.7 9
	LDT, MDV	0-3999	50,000	0.39	(0.41)	9.0	1.0
1984 [FN8]	PC	All	50,000	0.39	(0.41)	7.0	0.7
	LDT, MDV	0-3999	50,000	0.39	(0.41)	9.0	0.7 9
1985 [FN8]	LDT, MDV	0-3999	50,000	0.39	(0.41)	9.0	0.7

[FN1] Subsection (i) shall remain in effect until December 31, 1990, and as of that date is repealed unless a later regulation deletes or extends that date. Notwithstanding the repeal or expiration of this regulation on December 31, 1990, the provisions of the regulation as they existed prior to such repeal or expiration shall continue to be operative and effective for those events occurring prior to the repeal or expiration.

[FN2] "PC" means passenger cars. "LDT" means light-duty trucks. "MDV" means medium-duty vehicles.

[FN3] Equivalent inertia weights are determined under subparagraph 40 CFR 86.129-79(a).

[FN4] Hydrocarbon standards in parentheses apply to total hydrocarbons.

[FN5] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600, Subpart B) shall be no greater than 1.33 times the applicable passenger car standards and 2.0 times the applicable light-duty truck and medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standard shall be rounded to the nearest 0.1 gm/mi before being compared.

[FN6] For vehicles certified to special standards authorized by section 1960.2, Article 2, Subchapter 1, Chapter 3, Title 13, California Administrative Code.

[FN7] For vehicles certified to special standards authorized by section 1960.3, Article 2, Subchapter 1, Chapter 3, Title 13, California Administrative Code.

[FN8] For vehicles certified to special standards authorized by section 1960.4, Article 2, Subchapter 1, Chapter 3, Title 13, California Administrative Code. Special standards revert to "1983 and subsequent" standards for 1985 and subsequent passenger cars and 1986 and subsequent LDTs and MDVs.

[FN9] The Executive Officer may grant limited relief from the 1983 passenger car and 1984 LDT and MDV special NO<sub>x</sub> standard to a manufacturer who exceeds the standard because of unforeseen technical problems.

[FN10] Diesel passenger cars, light-duty trucks, and medium-duty vehicles are subject to the following particulate exhaust emission standards: 0.4 g/mi for the 1985 model year, 0.2 g/mi for the 1986 through 1988 model years, and 0.08 g/mi for the 1989 and subsequent model years. The particulate compliance shall be determined on a 50,000 mile durability vehicle basis.

(j) For Option 1 in the tables in sections (f)(1) and (f)(2), the hydrocarbon and carbon monoxide compliance shall be determined on a 50,000-mile durability vehicle basis. For Option 2 in the table in section (f)(2), the hydrocarbon and carbon monoxide compliance shall be determined on a 100,000-mile durability basis.

(k) The test procedures for determining compliance with these standards are set forth in "California Exhaust Emission Standards and Test Procedures for 1981 through 1987 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," adopted by the state board on November 23, 1976, as last amended May 20, 1987, and in "California Exhaust Emission Standards and Test Procedures for 1988 through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," adopted by the state board on May 20, 1987, as last amended August 5, 1999, both of which are incorporated herein by reference, and in "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as incorporated by reference in section 1961(d). The test procedures for determining the compliance of 2001 through 2006 model-year hybrid electric vehicles with the standards set forth in this section are set forth in "California Exhaust Emission Standards and Test Procedures for 2005 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck, and Medium-Duty Vehicle Classes, as incorporated by reference in section 1962(h).

(l) With respect to any new vehicle required to comply with the standards set forth in paragraphs (a) through (h), the manufacturer's written maintenance instructions for in-use vehicles shall not require scheduled maintenance more frequently than or beyond the scope of maintenance permitted under the test procedures referenced in paragraph (k) above. Any failure to perform scheduled maintenance shall not excuse an emissions violation unless the failure is related to or causative of the violation.

(m) Any 1982, 1983, and 1984 model year vehicle required to comply with the standards set forth in paragraphs (b), (c), (d), and (f) which is subject to a standard set by federal law or regulation controlling emissions of particulate matter must conform to such standard.

(n) For purposes of section 1960.1(a) through (f), section 1960.1(h)(1), and section 1960.1.5, “small volume manufacturer” for the 2000 and earlier model years is any vehicle manufacturer which was subject to “in lieu” standards pursuant to section 202(b)(1)(B) of the Federal Clean Air Act (42 U.S.C. section 7521(b)(1)(B), as amended November 16, 1977) or a vehicle manufacturer with California sales not exceeding 3,000 new motor vehicles per model year based on previous model-year sales; however, for manufacturers certifying for the first time in California model year sales shall be based on projected California sales.

(o) [Reserved]

(p) The cold temperature exhaust carbon monoxide emission levels from new 1996 through 2000 and subsequent model-year passenger cars, light-duty trucks, and medium-duty vehicles shall not exceed:

1996 AND SUBSEQUENT MODEL-YEAR COLD TEMPERATURE CARBON MONOXIDE  
EXHAUST EMISSIONS STANDARDS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND  
MEDIUM-DUTY VEHICLES [FN1,2] (grams per mile)

	<i>Loaded Vehicle</i>	<i>Durability Vehicle</i>	
<i>Vehicle Type</i>	<i>Weight (lbs.)</i>	<i>Basis (mi)</i>	<i>Carbon Monoxide</i>
Passenger Car	All	50,000	10.0
Light-Duty Truck	0-3750	50,000	10.0
Light-Duty Truck	3751-5750	50,000	12.5
Medium-Duty Vehicle	0-3750	50,000	10.0
Medium-Duty Vehicle	3750-8500 [FN3]	50,000	12.5

(1) These standards are applicable to vehicles tested in accordance with 40 CFR Part 86 Subpart C, at a nominal temperature of 20°F (-7°C).

(2) Natural gas vehicles, diesel-fueled vehicles, hybrid electric vehicles, and zero-emission vehicles are exempt from these standards.

(3) Medium-duty vehicles with a gross vehicle weight rating greater than 8,500 lbs. are exempt from this standard.

(q) The Supplemental Federal Test Procedure (SFTP) exhaust emission levels from new 2001 and subsequent model passenger cars and light-duty trucks, other than low-emission vehicles, ultra-low-emission vehicles, and zero-emission vehicles, shall not exceed:

SFTP EXHAUST EMISSION STANDARDS FOR 2001 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS AND LIGHT-DUTY TRUCKS OTHER THAN LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES, AND ZERO-EMISSION VEHICLES (grams per mile) <sup>4,5,6,7,8,9,10</sup>							
						CO <sup>1</sup>	
	Loaded	Durability		NMHC <sup>2</sup> +			
Vehicle	Vehicle	Vehicle	Fuel	NOx <sup>1</sup>	A/C <sup>1</sup>	US06 <sup>1</sup>	Composite
Type <sup>1</sup>	Weight (lbs.)	Basis(mi)	Type	Composite <sup>3</sup>	Test	Test	Option <sup>3</sup>
PC	All	50,000	Gasoline	0.65	3.0	9.0	3.4
			Diesel	1.48	NA	9.0	3.4
		100,000	Gasoline	0.91	3.7	11.1	4.2
			Diesel	2.07	NA	11.1	4.2
LDT	0-3750	50,000	Gasoline	0.65	3.0	9.0	3.4
			Diesel	1.48	NA	9.0	3.4
		100,000	Gasoline	0.91	3.7	11.1	4.2
			Diesel	2.07	NA	11.1	4.2
LDT	3751-5750	50,000	Gasoline	1.02	3.9	11.6	4.4
			Diesel	NA	NA	NA	NA
		100,000	Gasoline	1.37	4.9	14.6	5.5
			Diesel	NA	NA	NA	NA

<sup>1</sup> Abbreviations.

“PC” means passenger car.

“LDT” means light-duty truck.

“NMHC+NOx” means non-methane hydrocarbon plus oxides of nitrogen emissions.

“CO” means carbon monoxide emissions.

“A/C” means air-conditioning.

“US06” means the test cycle designed to evaluate emissions during aggressive and microtransient driving.

<sup>2</sup> Non-Methane Hydrocarbon Emissions. For PCs and LDTs certified to the FTP exhaust standards in section 1960.1(f)(2), hydrocarbon emissions shall be measured in accordance with the “California Non-Methane Hydrocarbon Test Procedures” as last amended May 15, 1990, which is incorporated herein by reference. For PCs and LDTs certified as transitional low-emission vehicles, hydrocarbon emissions shall be measured in accordance with Part B (Determination of Non-Methane Hydrocarbon Mass Emissions by Flame Ionization Detection) of the “California Non-Methane Organic Gas Test Procedures” as incorporated by reference in section 1960.1(g)(1), note (3). For alcohol-fueled vehicles certifying to these standards, including flexible-fuel vehicles when certifying on methanol or ethanol, “Non-Methane Hydrocarbons” shall mean “Organic Material Non-Methane Hydrocarbon Equivalent.”

<sup>3</sup> Composite Standards. Compliance with the composite standards shall be demonstrated using the calculations set forth in the section 86.164-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, which is incorporated herein by reference.

<sup>4</sup> SFTP. SFTP means the additional test procedure designed to measure emissions during aggressive and microtransient driving, as described in section 86.159-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the US06 cycle, and also the test procedure designed to measure urban driving emissions while the vehicle's air conditioning system is operating, as described in section 86.160-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the SC03 cycle. These sections of the Code of Federal Regulations are incorporated herein by reference.

<sup>5</sup> Applicability to Alternative Fuel Vehicles. These SFTP standards do not apply to vehicles certified on fuels other than gasoline and diesel fuel, but the standards do apply to the gasoline and diesel fuel operation of flexible-fuel vehicles and dual-fuel vehicles.

<sup>6</sup> Air to Fuel Ratio Requirement. With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions (“tip-in” or “tip-out” conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of six percent of the fuel consumption. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

<sup>7</sup> A/C-on Specific Calibrations. A/C-on specific calibrations (e.g. air to fuel ratio, spark timing, and exhaust gas recirculation), may be used which differ from A/C-off calibrations for given engine operating conditions (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters). Such calibrations must not unnecessarily reduce the NMHC+NO<sub>x</sub> emission control effectiveness during A/C-on operation when the vehicle is operated under conditions which may reasonably be expected to be encountered during normal operation and use. If reductions in control system NMHC+NO<sub>x</sub> effectiveness do occur as a result of such calibrations, the manufacturer shall, in the Application for Certification, specify the circumstances under which such reductions do occur, and the reason for the use of such calibrations resulting in such reductions in control system effectiveness.

A/C-on specific “open-loop” or “commanded enrichment” air-fuel enrichment strategies (as defined below), which differ from A/C-off “open-loop” or “commanded enrichment” air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. Other than these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off.

“Open-loop” or “commanded” air-fuel enrichment strategy is defined as enrichment of the air to fuel ratio beyond stoichiometry for the purposes of increasing engine power output and the protection of engine or emissions control hardware. However, “closed-loop biasing,” defined as small changes in the air-fuel ratio for the purposes of optimizing vehicle emissions or driveability, shall not be considered an “open-loop” or “commanded” air-fuel enrichment strategy. In addition, “transient” air-fuel enrichment strategy (or “tip-in” and “tip-out” enrichment), defined as the temporary use of an air-fuel ratio rich of stoichiometry at the beginning or duration of rapid throttle motion, shall not be considered an “open-loop” or “commanded” air-fuel enrichment strategy.

<sup>8</sup> “Lean-On-Cruise” Calibration Strategies. In the Application for Certification, the manufacturer shall state whether any “lean-on-cruise” strategies are incorporated into the vehicle design. A “lean-on-cruise” air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph. “Lean-on-cruise” air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:

1. Such strategies are substantially employed during the FTP or SFTP, or
2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NO<sub>x</sub> emission control effectiveness over the operating conditions in which they are employed, or
3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emission control hardware. If the manufacturer proposes to use a “lean-on-cruise” calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration. The above provisions shall not apply to vehicles powered by “lean-burn” engines or Diesel-cycle engines. A “lean-burn” engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.

<sup>9</sup> Phase-In Requirements. For the purposes of this section 1960.1(q) only, each manufacturer's PC and LDT fleet shall be defined as the total projected number of PCs and LDTs from 0-5750 pounds loaded vehicle weight certified to the FTP exhaust standards of section 1960.1(f)(2) and certified as transitional low-emission vehicles sold in California. As an option, a manufacturer may elect to have its total PC and LDT fleet defined, for the purposes of this section 1960.1(q) only, as the total projected number of the manufacturer's PCs and LDTs, other than zero-emission vehicles, certified and sold in California.

a. Manufacturers of PCs and of LDTs, except small volume manufacturers, shall certify a minimum percentage of their PC and LDT fleet according to the following phase-in schedule.

<i>Model Year</i>	<i>Percentage of PC and LDT Fleet</i>
2001	25
2002	50
2003	85
2004 and subsequent	100

b. Small volume manufacturers of PCs and LDTs shall certify 100% of their PC and LDT fleet in the 2004 and subsequent model years.

<sup>10</sup> Single-Roll Electric Dynamometer Requirement. For all vehicles certified to the SFTP standards, a single-roll electric dynamometer or a dynamometer which produces equivalent results, as set forth in the “California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1960.1(k), must be used for all types of emission testing to determine compliance with the associated emission standards.

(r) *4000-Mile Supplemental FTP Emission Standards.* The Supplemental Federal Test Procedure (SFTP) standards in this section are the maximum SFTP exhaust emissions at 4,000 miles + 250 miles or at the mileage determined by the manufacturer for emission-data vehicles in accordance with the “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in section 1960.1(k), and with the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in section 1961(d). The SFTP exhaust emission levels from new 2001 through 2021 model low-emission vehicles, ultra-low-emission vehicles and super-ultra-low-emission vehicles in the passenger car and light-duty truck class certifying to the LEV II exhaust emission standards in section 1961, and new 2003 through 2021 model low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles in the medium-duty class certifying to the LEV II exhaust emission standards in section 1961, shall not exceed:

SFTP EXHAUST EMISSION STANDARDS						
FOR LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES, AND						
SUPER-ULTRA-LOW-EMISSION VEHICLES IN THE PASSENGER CAR,						
LIGHT-DUTY TRUCK, AND MEDIUM-DUTY VEHICLE CLASSES						
(grams per mile) <sup>5,6,7,8,9,10</sup>						
Vehicle Type <sup>1</sup>	Gross Vehicle Weight Rating (lbs)	Test Weight (lbs.)	US06 Test <sup>1</sup>		A/C Test <sup>1,4</sup>	
			NMHC <sub>3+</sub>	CO <sup>1</sup>	NMHC <sub>3+</sub>	CO <sup>1</sup>
PC	All	All	0.14	8.0	0.20	2.7
		Vehicles in this category are tested at their loaded vehicle weight (curb weight plus 300 lbs.)				
LDT	< 6,000 lbs.	0-3750	0.14	8.0	0.20	2.7
		Vehicles in this category are tested at their loaded vehicle weight (curb weight plus 300 lbs.)				
		3751-5750	0.25	10.5	0.27	3.5
		Vehicles in this category are tested at their loaded vehicle weight (curb weight plus 300 lbs.)				
MDV	6,001-8,500 lbs. <sub>2</sub>	3751-5750	0.40	10.5	0.31	3.5
		Vehicles in this category are tested at their adjusted loaded vehicle weight (average of curb weight and GVWR)				
		5751-8500 <sub>3</sub>	0.60	11.8	0.44	4.0
		Vehicles in this category are tested at their adjusted loaded vehicle weight (average of curb weight and GVWR)				

<sup>1</sup> Abbreviations and Definitions. For the purposes of this SFTP standards table only, the following abbreviations and definitions apply:

“PC” means passenger car.

“LDT” means light-duty truck, defined as any motor vehicle rated at 6,000 pounds gross vehicle weight or less, which is designed primarily for purposes of transportation of property or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use.



“MDV” means medium-duty truck, defined as any motor vehicle having a manufacturer's gross vehicle weight rating of greater than 6,000 pounds and less than 14,001 pounds, except passenger cars.

“NMHC+NO<sub>x</sub>” means non-methane hydrocarbon plus oxides of nitrogen emissions.

“CO” means carbon monoxide emissions.

“US06” means the test cycle designed to evaluate emissions during aggressive and microtransient driving.

“A/C” means air-conditioning.

<sup>2</sup> Vehicles with a gross vehicle weight rating over 8,500 pounds are exempted from the requirements of this subsection.

<sup>3</sup> Non-Methane Hydrocarbon Emissions. Hydrocarbon emissions shall be measured in accordance with Part B (Determination of Non-Methane Hydrocarbon Mass Emissions by Flame Ionization Detection) of the “California Non-Methane Organic Gas Test Procedures” as incorporated by reference in section 1960.1(g)(1), note (3). For alcohol-fueled vehicles certifying to these standards, including flexible-fuel vehicles when certifying on methanol or ethanol, “Non-Methane Hydrocarbons” shall mean “Organic Material Non-Methane Hydrocarbon Equivalent.”

<sup>4</sup> A/C-on Specific Calibrations. A/C-on specific calibrations (e.g. air to fuel ratio, spark timing, and exhaust gas recirculation), may be used which differ from A/C-off calibrations for given engine operating conditions (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters). Such calibrations must not unnecessarily reduce the NMHC+NO<sub>x</sub> emission control effectiveness during A/C-on operation when the vehicle is operated under conditions which may reasonably be expected to be encountered during normal operation and use. If reductions in control system NMHC+NO<sub>x</sub> effectiveness do occur as a result of such calibrations, the manufacturer shall, in the Application for Certification, specify the circumstances under which such reductions do occur, and the reason for the use of such calibrations resulting in such reductions in control system effectiveness.

A/C-on specific “open-loop” or “commanded enrichment” air-fuel enrichment strategies (as defined below), which differ from A/C-off “open-loop” or “commanded enrichment” air-fuel enrichment strategies, may not be used, with the following exceptions: cold-start and warm-up conditions, or, subject to Executive Officer approval, conditions requiring the protection of the vehicle, occupants, engine, or emission control hardware. Other than these exceptions, such strategies which are invoked based on manifold pressure, engine speed, throttle position, or other engine parameters shall use the same engine parameter criteria for the invoking of this air-fuel enrichment strategy and the same degree of enrichment regardless of whether the A/C is on or off.

“Open-loop” or “commanded” air-fuel enrichment strategy is defined as enrichment of the air to fuel ratio beyond stoichiometry for the purposes of increasing engine power output and the protection of engine or emissions control hardware. However, “closed-loop biasing,” defined as small changes in the air-fuel ratio for the purposes of optimizing vehicle emissions or driveability, shall not be considered an “open-loop” or “commanded” air-fuel enrichment strategy. In addition, “transient” air-fuel enrichment strategy (or “tip-in” and “tip-out” enrichment), defined as the temporary use of an air-fuel ratio rich of stoichiometry at the beginning or duration of rapid throttle motion, shall not be considered an “open-loop” or “commanded” air-fuel enrichment strategy.

<sup>5</sup> SFTP. SFTP means the additional test procedure designed to measure emissions during aggressive and microtransient driving, as described in section 86.159-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the US06 cycle, and also the test procedure designed to measure urban driving emissions while the vehicle's air conditioning system is operating, as described in section 86.160-00, Title 40, Code of Federal Regulations, as adopted October 22, 1996, over the SC03 cycle, except the test weight shall be that specified in this subsection 1960.1(r), regardless of what may be specified in the Code of Federal Regulations. These sections of the Code of Federal Regulations are incorporated herein by reference.

<sup>6</sup> Applicability to Alternative Fuel Vehicles. These SFTP standards do not apply to vehicles certified on fuels other than gasoline and diesel fuel, but the standards do apply to the gasoline and diesel fuel operation of flexible-fuel vehicles and dual-fuel vehicles.

<sup>7</sup> Air to Fuel Ratio Requirement. With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions (“tip-in” or “tip-out” conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of six percent of the fuel

consumption. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

<sup>8</sup> “Lean-On-Cruise” Calibration Strategies. In the Application for Certification, the manufacturer shall state whether any “lean-on-cruise” strategies are incorporated into the vehicle design. A “lean-on-cruise” air-fuel calibration strategy is defined as the use of an air-fuel ratio significantly greater than stoichiometry, during non-deceleration conditions at speeds above 40 mph. “Lean-on-cruise” air-fuel calibration strategies shall not be employed during vehicle operation in normal driving conditions, including A/C-usage, unless at least one of the following conditions is met:

1. Such strategies are substantially employed during the FTP or SFTP, or
2. Such strategies are demonstrated not to significantly reduce vehicle NMHC+NOx emission control effectiveness over the operating conditions in which they are employed, or
3. Such strategies are demonstrated to be necessary to protect the vehicle, occupants, engine, or emission control hardware. If the manufacturer proposes to use a “lean-on-cruise” calibration strategy, the manufacturer shall specify the circumstances under which such a calibration would be used, and the reason or reasons for the proposed use of such a calibration. The above provisions shall not apply to vehicles powered by “lean-burn” engines or Diesel-cycle engines. A “lean-burn” engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.

<sup>9</sup> Phase-In Requirements. For the purposes of this 1960.1(r) section only, each manufacturer's PC and LDT fleet shall be defined as the total projected number of low-emission and ultra-low-emission PCs and LDTs from 0-5750 pounds loaded vehicle weight sold in California. Each manufacturer's MDV fleet shall be defined as the total projected number of low-emission, ultra-low-emission, and super-ultra-low-emission MDVs less than 8501 pounds gross vehicle weight rating sold in California.

- a. For the 2001 through 2014 model years, manufacturers of PCs, LDTs, and MDVs, except small volume manufacturers, shall certify a minimum percentage of their PC and LDT fleet, and a minimum percentage of their MDV fleet, according to the following phase-in schedule.

<i>Model Year</i>	<i>Percentage</i>	
	<i>PC, LDT</i>	<i>MDV</i>
2001	25	NA
2002	50	NA
2003	85	25
2004	100	50
2005 through 2014	100	100

- b. Manufacturers may use an “Alternative or Equivalent Phase-in Schedule” to comply with the phase-in requirements. An “Alternative Phase-in” is one that achieves at least equivalent emission reductions by the end of the last model year of the scheduled phase-in. Model-year emission reductions shall be calculated by multiplying the percent of vehicles (based on the manufacturer's projected California sales volume of the applicable vehicle fleet) meeting the new requirements per model year by the number of model years implemented prior to and including the last model year of the scheduled phase-in. The “cumulative total” is the summation of the model-year emission reductions (e.g., a four model-year 25/50/85/100 percent phase-in schedule would be calculated as: (25%\*4 years) + (50%\*3 years) + (85%\*2 years) + (100%\*1 year) = 520). Any alternative phase-in that results in an equal or larger cumulative total than the required cumulative total by the end of the last model year of the scheduled phase-in shall be considered acceptable by the Executive Officer under the following conditions: 1) all vehicles subject to the phase-in shall comply with the respective requirements in the last model year of the required phase-in schedule and 2) if a manufacturer uses the optional phase-in percentage determination in section 1960.1(q) note (9), the cumulative total of model-year emission reductions as determined only for PCs and LDTs certified to this section 1960.1(r) must also be equal to or larger than the required cumulative total by end of the 2004 model year.

Manufacturers shall be allowed to include vehicles introduced before the first model year of the scheduled phase-in (e.g., in the previous example, 10 percent introduced one year before the scheduled phase-in begins would be calculated as: (10%\*5 years) and added to the cumulative total).

c. Small volume manufacturers of PCs, LDTs, and MDVs shall certify 100% of their PC and LDT fleet in the 2004 through 2014 model years, and 100% of their MDV fleet in the 2005 through 2014 model years.

<sup>10</sup> Single-Roll Electric Dynamometer Requirement. For all vehicles certified to the SFTP standards, a single-roll electric dynamometer or a dynamometer which produces equivalent results, as set forth in the “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as incorporated by reference in section 1960.1(k) or the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in section 1961(d), as applicable, must be used for all types of emission testing to determine compliance with the associated emission standards.

Note: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

## HISTORY

1. Amendment filed 1-14-83; effective thirtieth day thereafter (Register 83, No. 3).
2. Amendment of subsection (h) filed 4-20-83; effective upon filing pursuant to Government Code section 11346.2(d) (Register 83, No. 17).
3. Amendment of subsection (h) filed 2-17-84; effective thirtieth day thereafter (Register 84, No. 7).
4. Editorial correction of subsection (i) filed 5-8-84; effective thirtieth day thereafter (Register 84, No. 19).
5. Amendment of subsection (h) filed 11-15-85; effective thirtieth day thereafter (Register 85, No. 46).
6. Amendment of subsections (d)-(k) filed 4-21-87; operative 5-21-87 (Register 87, No. 17).
7. Amendment of subsections (d), (e) and (h) filed 7-1-87; operative 7-31-87 (Register 87, No. 28).
8. Amendment filed 2-21-90; operative 3-23-90 (Register 90, No. 8).
9. Amendment of subsections (e) and (i), new subsections (f)(1) and (f)(2) and renumbering of subsections (f)-(k) to subsections (g)-(l) filed 5-22-90; operative 6-21-90 (Register 90, No. 28).
10. Amendment of subsections (e), (f), (g), (h), (i), (j), (k), (l) and (m) filed 8-2-91; operative 9-2-91 (Register 91, No. 49).
11. New subsection (g) and subsection renumbering filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
12. New subsections (e)(3), (h)(2) and (o) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
13. New subsections (e)(1), (e)(2), (f)(1), (f)(2) and (h)(1) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
14. Editorial correction of printing error restoring inadvertently omitted subsections (g)(2) and (h)(1)(4) (Register 92, No. 25).
15. Amendment of footnotes 4 and 6 in subsection (e)(3)'s Table, footnotes 3, 4 and 8 in subsection (g)(1)'s Table, footnotes 3, 4a, 9a, and 13 in subsection (h)(2)'s Table, and subsection (k) filed 11-9-92; operative 12-9-92 (Register 92, No. 46).
16. Amendment of subsection (k) filed 12-9-92; operative 1-1-93 (Register 92, No. 50).
17. Amendment of subsection (k) and Note filed 7-20-93; operative 8-19-93 (Register 93, No. 30).
18. Amendment of subsection (k) filed 11-2-93; operative 12-2-93 (Register 93, No. 45).
19. Amendment of subsection (e)(3) table (6), (f)(1) table (2) and (7), (f)(2) table, (g)(1) table, (g)(2) and table, (h)(1) table and (h)(2) table filed 11-8-93; operative 12-8-93 (Register 93, No. 46).
20. Editorial correction of printing errors in subsections (e)(3), (f)(2) table (3), (g)(1) table (1), (3) and (6), (g)(2) table (4), (5) and (9), (h)(1) table (2), (3) and (5), and (h)(2) table (2)-(5), (8)-(10) and (12)-(13) (Register 93, No. 46).
21. Editorial correction of printing errors in subsection (g)(1), table 1 and subsection (h)(1), table 2 (Register 94, No. 2).
22. Change without regulatory effect amending subsection (h)(2) filed 3-30-94 pursuant to title 1, section 100, California Code of Regulations (Register 94, No. 13).
23. Amendment of subsection (k) filed 4-13-95; operative 4-13-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 15).
24. Editorial correction of subsection (l) (Register 95, No. 38).
25. Change without regulatory effect amending subsection (l) filed 9-20-95 pursuant to section 100, title 1, California Code of Regulations (Register 95, No. 38).
26. Amendment of section and Note filed 9-23-96; operative 10-23-96 (Register 96, No. 39).
27. Amendment of subsections (g)(1), (g)(2), (h)(2) and (k) filed 1-3-97; operative 1-3-97 pursuant to Government Code section 11343.4(d) (Register 97, No. 1).
28. Amendment of subsection (k) filed 7-25-97; operative 8-24-97 (Register 97, No. 30).
29. Amendment of subsection (k) and new subsections (q)-(r)(11) filed 7-17-98; operative 8-16-98 (Register 98, No. 29).

30. Editorial correction of subsections (d)(2), (e)(1), (g)(1), (g)(2), (h)(2) and reformatting of subsections (q) and (r) (Register 99, No. 26).
  31. Amendment of section heading and subsections (e)(2), (e)(3), (f)(2), (g)(1), (g)(2), (h)(1), (h)(2), (j), (k), (n), (p) and (r) and repealer of subsection (o) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
  32. Amendment of subsection (k) filed 5-24-2002; operative 6-23-2002 (Register 2002, No. 21).
  33. Amendment of subsections (e)(3) and (h)(2) filed 9-16-2002; operative 10-16-2002 (Register 2002, No. 38).
  34. Amendment of subsection (k) filed 2-25-2004; operative 3-26-2004 (Register 2004, No. 9).
  35. Amendment of subsection (r) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
  36. Amendment of section heading and subsection (r) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
- This database is current through 5/22/20 Register 2020, No. 21  
13 CCR § 1960.1, 13 CA ADC § 1960.1

## **Section 1961. Exhaust Emission Standards and Test Procedures - 2004 through 2019 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

Introduction. This section 1961 contains the California “LEV II” exhaust emission standards for 2004 through 2019 model passenger cars, light-duty trucks and medium-duty vehicles. A manufacturer must demonstrate compliance with the exhaust standards in section 1961(a) applicable to specific test groups, and with the composite phase-in requirements in section 1961(b) applicable to the manufacturer's entire fleet. Section 1961(b) also includes the manufacturer's fleet-wide composite phase-in requirements for the 2001 - 2003 model years.

Prior to the 2004 model year, a manufacturer that produces vehicles that meet the standards in section 1961(a) has the option of certifying the vehicles to those standards, in which case the vehicles will be treated as LEV II vehicles for purposes of the fleet-wide phase-in requirements. Similarly, 2004 - 2006 model-year vehicles may be certified to the “LEV I” exhaust emission standards in section 1960.1(g)(1) and (h)(2), in which case the vehicles will be treated as LEV I vehicles for purposes of the fleet-wide phase-in requirements.

A manufacturer has the option of certifying engines used in incomplete and diesel medium-duty vehicles with a gross vehicle weight rating of greater than 8,500 lbs. to the heavy-duty engine standards and test procedures set forth in title 13, CCR, sections 1956.8(c), (g) and (h).

### (a) Exhaust Emission Standards.

(1) “*LEV II*” Exhaust Standards. The following standards are the maximum exhaust emissions for the intermediate and full useful life from new 2004 through 2019 model-year “LEV II” LEVs, ULEVs, and SULEVs, including fuel-flexible, bi-fuel and dual fuel vehicles when operating on the gaseous or alcohol fuel they are designed to use. 2015 - 2019 model-year LEV II LEV vehicles may be certified to the 150,000 mile NMOG+NO<sub>x</sub> emission standards for LEV160, LEV395, or LEV630, as applicable, in subsection 1961.2(a)(1) and the corresponding NMOG+NO<sub>x</sub> numerical values in subsection 1961.2(a)(4), in lieu of the separate NMOG and NO<sub>x</sub> exhaust emission standards in this subsection (a)(1) and subsection (a)(4) and LEV II ULEV vehicles may be certified to the 150,000 mile NMOG+NO<sub>x</sub> emission standards for ULEV125, ULEV340, or ULEV570, as applicable, in subsection 1961.2(a)(1) and the corresponding NMOG+NO<sub>x</sub> numerical values in subsection 1961.2(a)(4), in lieu of the separate NMOG and NO<sub>x</sub> exhaust emission standards in this subsection (a)(1) and the corresponding NMOG numerical values in subsection (a)(4). 2015 - 2019 model-year LEV II SULEV vehicles that receive a partial ZEV allowance in accordance with the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes” and 2015 - 2016 model year vehicles that are allowed to certify to LEV II SULEV standards using “carryover” of emission test data under the provisions in subsection 1961.2(b)(2) may be certified to the 150,000 mile NMOG+NO<sub>x</sub> emission standards for SULEV30, SULEV170, or SULEV230, as applicable, in subsection 1961.2(a)(1) and the corresponding NMOG+NO<sub>x</sub> numerical values in subsection 1961.2(a)(4), in lieu of the separate NMOG and NO<sub>x</sub> exhaust emission standards in this subsection (a)(1) and the corresponding NMOG numerical values in subsection (a)(4). LEV II

SULEV vehicles that do not either (1) receive a partial ZEV allowance or (2) certify to LEV II SULEV standards in the 2015 - 2016 model years using “carryover” of emission test data may not certify to combined NMOG+NOx standards.

LEV II Exhaust Mass Emission Standards for New 2004 through 2019 Model LEVs, ULEVs, and SULEVs in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes

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Vehicle Type	Durability Vehicle Basis (mi)	Vehicle Emission Category	NMOG (g/mi)	Carbon Monoxide (g/mi)	Oxides of Nitrogen (g/mi)	Formaldehyde (mg/mi)	Particulates (g/mi)
All PCs; LDTs 8500 lbs. GVW or less	50,000	LEV	0.075	3.4	0.05	15	n/a
		LEV, Option 1	0.075	3.4	0.07	15	n/a
Vehicles in this category are tested at their loaded vehicle weight	120,000	ULEV	0.040	1.7	0.05	8	n/a
		LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	0.090	4.2	0.10	18	0.01
		ULEV	0.055	2.1	0.07	11	0.01
	150,000 (Optional)	SULEV	0.010	1.0	0.02	4	0.01
		LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	0.090	4.2	0.10	18	0.01
		ULEV	0.055	2.1	0.07	11	0.01
SULEV	0.010	1.0	0.02	4	0.01		
MDVs 8501 – 10,000 lbs. GVW	120,000	LEV	0.195	6.4	0.2	32	0.12
		ULEV	0.143	6.4	0.2	16	0.06
Vehicles in this category are tested at their adjusted loaded vehicle weight	150,000 (Optional)	SULEV	0.100	3.2	0.1	8	0.06
		LEV	0.195	6.4	0.2	32	0.12
	150,000 (Optional)	ULEV	0.143	6.4	0.2	16	0.06
		SULEV	0.100	3.2	0.1	8	0.06
MDVs 10,001–14,000 lbs. GVW	120,000	LEV	0.230	7.3	0.4	40	0.12
		ULEV	0.167	7.3	0.4	21	0.06
Vehicles in this category are tested at their adjusted loaded vehicle weight	150,000 (Optional)	SULEV	0.117	3.7	0.2	10	0.06
		LEV	0.230	7.3	0.4	40	0.12
	150,000 (Optional)	ULEV	0.167	7.3	0.4	21	0.06
		SULEV	0.117	3.7	0.2	10	0.06

(2) Reactivity Adjustment in Determining Compliance with the NMOG Standard

(A) The NMOG emission results from all TLEVs, LEVs, ULEVs and SULEVs certifying on a fuel other than conventional gasoline shall be numerically adjusted to establish an NMOG exhaust mass emission value equivalent. The manufacturer shall multiply measured NMOG exhaust emission results by the appropriate reactivity adjustment factor set forth in section 1961(a)(2)(B) or established in accordance with the test procedures incorporated by reference in section 1961(d). The reactivity adjustment factor represents the ratio of the NMOG specific reactivity of a low-emission vehicle designed to operate on a fuel other than conventional gasoline compared to the NMOG

baseline specific reactivity of vehicles in the same vehicle emission category operated on conventional gasoline.

(B) The following reactivity adjustment factors apply:

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<i>Fuel</i>	<i>Light-Duty Vehicles 0-6000 lbs. GVW</i>			<i>Medium-Duty Vehicles 6001 lbs. - 14,000 lbs. GVW</i>	
	<i>TLEV</i>	<i>LEV</i>	<i>ULEV</i>	<i>LEV</i>	<i>ULEV</i>
<i>Conventional Gasoline</i>	3.42	3.13	3.13	3.13	3.13
	<i>Baseline Specific Reactivity (grams ozone / gram NMOG)</i>				
	<i>Reactivity Adjustment Factors</i>				
<i>RFG (through the 2003 model year)</i>	0.98	0.94	0.94	0.94	0.94
<i>M85</i>	0.41	0.41	0.41	0.41	0.41
<i>Natural Gas</i>	1.0	0.43	0.43	0.43	0.43
<i>LPG</i>	1.0	0.50	0.50	0.50	0.50
	<i>Methane Reactivity Adjustment Factors</i>				
<i>Natural Gas</i>	0.0043	0.0047	0.0047	0.0047	0.0047

(3) LEV II NMOG Standards for Bi-Fuel, Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline. For fuel-flexible, bi-fuel, and dual-fuel PCs, LDTs and MDVs, compliance with the NMOG exhaust mass emission standards shall be based on exhaust emission tests both when the vehicle is operated on the gaseous or alcohol fuel it is designed to use, and when the vehicle is operated on gasoline. A manufacturer must demonstrate compliance with the applicable exhaust mass emission standards for NMOG, CO, NOx, and formaldehyde set forth in the table in section 1961(a)(1) when certifying the vehicle for operation on the gaseous or alcohol fuel.

The following standards are the maximum NMOG emissions when the vehicle is operating on gasoline. A manufacturer shall not apply a reactivity adjustment factor to the exhaust NMOG mass emission result when operating on gasoline. A manufacturer may measure NMHC in lieu of NMOG when fuel-flexible, bi-fuel, and dual-fuel vehicles are operated on gasoline, in accordance with the test procedures incorporated by reference in section 1961(d). Testing at 50°F is not required for fuel-flexible, bi-fuel, and dual-fuel vehicles when operating on gasoline. The applicable CO, NOx, and formaldehyde standards are set forth in section 1961(a)(1).

*LEV II NMOG Standards for Bi-Fuel, Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline (g/mi)*

	<i>Vehicle Emission</i>	<i>Durability Vehicle Basis</i>	
	<i>Category</i>	<i>50,000 mi</i>	<i>120,000 mi</i>
<i>Vehicle Type</i>			
All PCs; LDTs, 0-8500 lbs. GVWR	LEV	0.125	0.156
	ULEV	0.075	0.090
	SULEV	0.010	0.040
MDVs, 8501-10,000 lbs. GVWR	LEV	n/a	0.230
	ULEV	n/a	0.167
	SULEV	n/a	0.117
MDVs, 10,001- 14,000 lbs. GVWR	LEV	n/a	0.280
	ULEV	n/a	0.195
	SULEV	n/a	0.143

(4) LEV II 50°F Exhaust Emission Standards. All LEV II light- and medium-duty LEVs, ULEVs, and SULEVs must demonstrate compliance with the following exhaust emission standards for NMOG and formaldehyde (HCHO) measured on the FTP (40 CFR, Part 86, Subpart B) conducted at a nominal test temperature of 50°F, as modified by Part II, Section C of the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” incorporated by reference in section 1961(d). The NMOG mass emission result shall be multiplied by the applicable reactivity adjustment factor, if any, prior to comparing to the applicable adjusted 50,000 mile certification standards set forth below. A manufacturer may demonstrate compliance with the NMOG and HCHO certification standards contained in this subparagraph by measuring NMHC exhaust emissions or issuing a statement of compliance for HCHO in accordance with Section D.1, subparagraph (p) and Section G.3.1.2, respectively, of the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” incorporated by reference in section 1961(d). Emissions of CO and NOx measured at 50°F shall not exceed the standards set forth in §1961(a)(1) applicable to vehicles of the same emission category and vehicle type subject to a cold soak and emission test at 68° to 86°F. Natural gas and diesel-fueled vehicles are exempt from the 50°F test requirements.

<i>Vehicle Weight Class</i>	<i>Vehicle Emission Category (g/mi)</i>					
	LEV		ULEV		SULEV	
	NMOG	HCHO	NMOG	HCHO	NMOG	HCHO
PCs; LDTs 0-8500 lbs. GVWR	0.150	0.030	0.080	0.016	0.020	0.008
MDVs 8501-10,000 lbs. GVWR	0.390	0.064	0.286	0.032	0.200	0.016
MDVs 10,001-14,000 lbs. GVWR	0.460	0.080	0.334	0.042	0.234	0.020



(5) LEV II Cold CO Standard. The following standards are the 50,000 mile cold temperature exhaust carbon monoxide emission levels from new 2001 through 2019 model-year LEV II passenger cars, light-duty trucks, and medium-duty vehicles:

*2001 THROUGH 2019 MODEL-YEAR COLD TEMPERATURE CARBON MONOXIDE EXHAUST EMISSIONS STANDARDS FOR LEV II PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES (grams per mile)*

<i>Vehicle Type</i>	<i>Carbon Monoxide</i>
All PCs, LDTs 0-3750 lbs. LVW;	10.0
LDTs, 3751 lbs. LVW - 8500 lbs. GVWR;	12.5
LEV I and Tier 1 MDVs 8500 lbs. GVWR and less	

These standards are applicable to vehicles tested at a nominal temperature of 20°F (-7°C) in accordance with 40 CFR Part 86 Subpart C, as amended by the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” incorporated by reference in section 1961(d). Natural gas, diesel-fueled, and zero-emission vehicles are exempt from these standards.

(6) Highway NOx Standard. The maximum emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B, which is incorporated herein by reference) shall not be greater than 1.33 times the applicable PC and LDT standards or 2.0 times the applicable MDV standards set forth in section 1961(a)(1). Both the projected emissions and the HWFET standard shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi (or 0.01 g/mi for vehicles certified to the 0.05 or 0.02 g/mi NOx standards) before being compared.

(7) Supplemental Federal Test Procedure (SFTP) Off-Cycle Emission Standards. The SFTP exhaust emission levels from new 2004 through 2019 model LEV II LEVs, ULEVs, and SULEVs shall not exceed the standards set forth in section 1960.1(r).

(8) Requirements for Vehicles Certified to the Optional 150,000 Mile Standards.

(A) Requirement to Generate Additional Fleet Average NMOG Credit. A vehicle that is certified to the 150,000 mile standards in section 1961(a) shall generate additional NMOG fleet average credit as set forth in 1961(b)(1) or additional vehicle equivalent credits as set forth in 1961(b)(2) provided that the manufacturer extends the warranty on high cost parts to 8 years or 100,000 miles, whichever occurs first, and agrees to extend the limit on high mileage in-use testing to 112,500 miles.

(B) Requirement to Generate a Partial ZEV Allowance. A vehicle that is certified to the 150,000 mile SULEV standards shall also generate a partial ZEV allocation according to the criteria set forth in section C.3 of the “California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 through 2008 Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck, and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962, the “California Exhaust Emission Standards and Test Procedures for 2009 through

2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck, and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1, or the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck, and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.2, as applicable.

(9) Optional LEV II NO<sub>x</sub> Standard. A manufacturer may certify up to 4% of its light-duty truck fleet from 3751 lbs. LVW - 8500 lbs. GVW with a maximum base payload of 2500 lbs. or more to the LEV, option 1, standard set forth in 1961(a)(1) based on projected sales of trucks in the LDT2 category. Passenger cars and light-duty trucks 0-3750 lbs. LVW are not eligible for this option.

(10) Intermediate In-Use Compliance Standards. For test groups certified prior to the 2007 model year, the following intermediate in-use compliance standards shall apply for the first two model years the test group is certified to the new standard. For SULEVs certified prior to the 2004 model year, the following intermediate in-use compliance SULEV standards shall apply through the 2006 model year.

<i>Emission Category</i>	<i>Durability</i>	<i>LEV II PCs</i>		<i>LEV II MDVs</i>
	<i>Vehicle Basis</i>	<i>and LDTs</i>		<i>8500 - 10,000 lbs.</i>
				<i>GVW</i>
		<i>NMOG</i>	<i>NOx</i>	<i>NOx</i>
LEV/ULEV	50,000	n/a	0.07	n/a
	120,000	n/a	0.10	0.3
	150,000	n/a	0.10	0.3
LEV, Option 1	50,000	n/a	0.10	n/a
	120,000	n/a	0.14	n/a
	150,000	n/a	0.14	n/a
SULEV	120,000	0.020	0.03	0.15
	150,000	0.020	0.03	0.15

(11) NMOG Credit for Vehicles with Zero-Evaporative Emissions. In determining compliance of a vehicle with the applicable exhaust NMOG standard, a gram per mile NMOG factor, to be determined by the Executive Officer based on available data, shall be subtracted from the reactivity-adjusted NMOG exhaust emission results for any vehicle that has been certified to the “zero” evaporative emission standard set forth in title 13, CCR, section 1976(b)(1)(E). This credit shall not apply to a SULEV that generates a partial ZEV allowance.

(12) NMOG Credit for Direct Ozone Reduction Technology. A manufacturer that certifies vehicles equipped with direct ozone reduction technologies shall be eligible to receive NMOG credits that can be applied to the NMOG exhaust emissions of the vehicle when determining compliance with the standard. In order to receive credit, the manufacturer must submit the following information for each vehicle model, including, but not limited to:

(A) a demonstration of the airflow rate through the direct ozone reduction device and the ozone-reducing efficiency of the device over the range of speeds encountered in the Unified Cycle Driving Schedule.

(B) an evaluation of the durability of the device for the full useful life of the vehicle; and

(C) a description of the on-board diagnostic strategy for monitoring the performance of the device in-use.

Using the above information, the Executive Officer shall determine the value of the NMOG credit based on the calculated change in the one-hour peak ozone level using an approved airshed model.

(13) NO<sub>x</sub> Credits for Pre-2004 MDVs Certified to the LEV I LEV or ULEV Standards. Prior to the 2004 model year, a manufacturer may earn a 0.02 g/mi per vehicle NO<sub>x</sub> credit for MDVs between 6,000-8500 lbs. GVW certified to the LEV I LEV or ULEV standards for PCs and LDTs set forth in section 1960.1(g)(1). The manufacturer may apply the credit on a per vehicle basis to the NO<sub>x</sub> emissions of LDTs between 6,000-8500 lbs. GVW certified to the PC/LDT LEV or ULEV standards in section 1961(a)(1) for the 2004 through 2008 model years.

(14) When a Federally-Certified Vehicle Model is Required in California.

(A) General Requirement. Whenever a manufacturer federally-certifies a 2004 through 2014 model-year passenger car, light-duty truck or medium-duty vehicle model to the standards for a particular emissions bin that are more stringent than the standards for an applicable California emission category, the equivalent California model may only be certified to (i) the California standards for a vehicle emissions category that are at least as stringent as the standards for the corresponding federal emissions bin, or (ii) the exhaust emission standards to which the federal model is certified. However, where the federal exhaust emission standards for the particular emissions bin and the California standards for a vehicle emissions category are equally stringent, the California model may only be certified to either the California standards for that vehicle emissions category or more stringent California standards. The federal emission bins are those contained in Tables S04-1 and S04-2 of 40 CFR § 86.1811-04(c) as adopted February 10, 2000. The criteria for applying this requirement are set forth in Part I. Section H.1 of the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in section 1961(d).

(B) Exception for clean fuel fleet vehicles. Section 1961(a)(14)(A) does not apply in the case of a federally-certified vehicle model that is only marketed to fleet operators for applications that are subject to clean fuel fleet requirements established pursuant to section 246 of the federal Clean Air Act (42 U.S.C. sec. 7586). In addition, the Executive Officer shall exclude from the requirement a federally-certified vehicle model where the manufacturer demonstrates to the Executive Officer's reasonable satisfaction that the model will primarily be sold or leased to clean fuel fleet operators for such applications, and that other sales or leases of the model will be incidental to marketing to those clean fuel fleet operators.

(C) Opt-in for 2003 or prior model year vehicles. A manufacturer may certify a passenger car, light-duty truck or medium-duty vehicle to federal exhaust emission standards pursuant to section 1961(a)(14)(A) prior to the 2004 model year.

(15) Emission Standard for a Fuel-Fired Heater. Whenever a manufacturer elects to utilize an on-board fuel-fired heater on any passenger car, light-duty truck or medium-duty vehicle, the fuel-fired heater must meet LEV II ULEV standards for passenger cars and light-duty trucks less than 8,500 pounds GVW as set forth in section 1961(a)(1). On-board fuel-fired heaters may not be operable at ambient temperatures above 40°F.

(b) Emission Standards Phase-In Requirements for Manufacturers.

(1) Fleet Average NMOG Requirements for Passenger Cars and Light-Duty Trucks.

(A) The fleet average non-methane organic gas exhaust mass emission values from the passenger cars and light-duty trucks certified to the Tier 1, LEV I, and LEV II standards that are produced and delivered for sale in California each model year from 2001 through 2014 by a manufacturer other than a small volume manufacturer or an independent low volume manufacturer shall not exceed:

*FLEET AVERAGE NON-METHANE ORGANIC GAS EXHAUST MASS EMISSION REQUIREMENTS FOR LIGHT-DUTY VEHICLE WEIGHT CLASSES (50,000 mile Durability Vehicle Basis)*

<i>Model Year</i>	<i>Fleet Average NMOG (grams per mile)</i>	
	<i>All PCs; LDTs 0-3750 lbs. LVW</i>	<i>LDTs 3751 lbs. LVW - 8500 lbs. GVW</i>
2001	0.070	0.098
2002	0.068	0.095
2003	0.062	0.093
2004	0.053	0.085
2005	0.049	0.076
2006	0.046	0.062
2007	0.043	0.055
2008	0.040	0.050
2009	0.038	0.047
2010 through 2014 <sup>1</sup>	0.035	0.043

<sup>1</sup> For the 2014 model year only, a manufacturer may comply with the fleet average NMOG+NOx values in subsection 1961.2(b)(1)(A) in lieu of complying with the NMOG fleet average values in this table. A manufacturer must either comply with the NMOG+NOx fleet average requirements for both its PC/LDT1 fleet and its LDT2 fleet or comply with the NMOG fleet average requirements for both its PC/LDT1 fleet and its LDT2 fleet. A manufacturer must calculate its fleet average NMOG+NOx values using the applicable full useful life standards.

(B) Calculation of Fleet Average NMOG Value.

1. Basic Calculation.

a. Each manufacturer's PC and LDT1 fleet average NMOG value for the total number of PCs and LDT1s produced and delivered for sale in California shall be calculated as follows:

$$(\Sigma [\text{Number of vehicles in a test group} \times \text{applicable emission standard}] + \Sigma [\text{Number of hybrid electric vehicles in a test group} \times \text{HEV NMOG factor}]) \div \text{Total Number of Vehicles Produced, Including ZEVs and HEVs}$$

b. Each manufacturer's LDT2 fleet average NMOG value for the total number of LDT2s produced and delivered for sale in California shall be calculated as follows:

$$(\Sigma [\text{Number of vehicles in a test group} \times \text{applicable emission standard}] + \Sigma [\text{Number of hybrid electric vehicles in a test group} \times \text{HEV NMOG factor}]) \div \text{Total Number of Vehicles Produced, Including ZEVs and HEVs}$$

c. The applicable emission standards to be used in the above equations are as follows:

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Model Year	Emission Category	Emission Standard Value	
		All PCs: LDTs 0-3750 lbs. LVW	LDTs 3751-5750 lbs. LVW
2001 and subsequent (§1960.5 "AB 965" vehicles only)	All	Federal Emission Standard to which Vehicle is Certified	Federal Emission Standard to which Vehicle is Certified
2001 - 2003 (§1960.1(f)(2))	Tier I	0.25	0.32
2001 - 2006 model year vehicles certified to the "LEV I" standards in §1960.1(g)(1) (For TLEVs, 2001 - 2003 model years only)	TLEVs	0.125	0.160
	LEVs	0.075	0.100
	ULEVs	0.040	0.050
Model Year	Emission Category	All PCs: LDTs 0-3750 lbs. LVW	LDTs 3751 lbs. LVW-8500 lbs. GVW
2004 and subsequent model year vehicles certified to the "LEV II" standards in §1961(a)(1)	LEVs	0.075	0.075
	ULEVs	0.040	0.040
	SULEVs	0.01	0.01
2004 and subsequent model year vehicles certified to the optional 150,000 mile "LEV II" standards for PCs and LDTs in 1961(a)(1)	LEVs	0.06	0.06
	ULEVs	0.03	0.03
	SULEVs	0.0085	0.0085

2. HEV NMOG Factor. The HEV NMOG factor for light-duty vehicles is calculated as follows:

$$\text{LEV HEV Contribution Factor} = 0.075 - [(\text{Zero-emission VMT Factor}) \times 0.035]$$

$$\text{ULEV HEV Contribution Factor} = 0.040 - [(\text{Zero-emission VMT Factor}) \times 0.030]$$

where Zero-emission VMT Factor for HEVs is determined in accordance with section 1962.

3. Federally-Certified Vehicles. A vehicle certified to the federal standards for a federal exhaust emissions bin in accordance with Section H.1 of the "California 2001 through 2014 Model Criteria

Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in section 1961(d), shall use the corresponding intermediate useful life NMOG standard to which the vehicle is deemed certified in the fleet average calculation.

(C) Requirements for Small Volume Manufacturers.

1. In 2001 through 2006 model years, a small volume manufacturer shall not exceed a fleet average NMOG value of 0.075 g/mi for PCs and LDTs from 0-3750 lbs. LVW or 0.100 g/mi for LDTs from 3751-5750 lbs. LVW calculated in accordance with section 1961(b)(1)(B). In 2007 through 2014 model years, a small volume manufacturer shall not exceed a fleet average NMOG value of 0.075 for PCs and LDTs from 0-3750 lbs. LVW or 0.075 for LDTs from 3751 lbs. LVW - 8500 lbs. GVW calculated in accordance with section 1961(b)(1)(B).

2. If a manufacturer's average California sales exceed 4500 units of new PCs, LDTs, MDVs and heavy duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall no longer be treated as a small volume manufacturer and shall comply with the fleet average requirements applicable to larger manufacturers as specified in section 1961(b)(1) beginning with the fourth model year after the last of the three consecutive model years.

3. If a manufacturer's average California sales fall below 4500 units of new PCs, LDTs, MDVs and heavy duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall be treated as a small volume manufacturer and shall be subject to the requirements for small volume manufacturers beginning with the next model year.

(D) Phase-in Requirements for Independent Low Volume Manufacturers. In 2001 through 2006 model years, an independent low volume manufacturer shall not exceed a fleet average NMOG value of 0.075 g/mi for PCs and LDTs from 0-3750 lbs. LVW or 0.100 g/mi for LDTs from 3751-5750 lbs. LVW calculated in accordance with section 1961(b)(1)(B). In 2007 through 2014 model years, an independent low volume manufacturer shall not exceed a fleet average NMOG value of 0.060 for PCs and LDTs from 0-3750 lbs. LVW or 0.065 g/mi for LDTs from 3751 lbs. LVW - 8500 lbs. GVW calculated in accordance with section 1961(b)(1)(B).

(E) Treatment of ZEVs. ZEVs classified as LDTs (>3750 lbs. LVW) that have been counted toward the ZEV requirement for PCs and LDTs (0-3750 lbs. LVW) as specified in sections 1962 and 1962.1 shall be included as LDT1s in the calculation of a fleet average NMOG value.

(2) LEV II Phase-In Requirement for PCs and LDTs. Beginning in the 2004 model year, a manufacturer, except a small volume manufacturer or an independent low volume manufacturer, shall certify a percentage of its PC and LDT fleet to the LEV II standards in section 1961(a) according to the following phase in schedule:

<i>Model Year</i>	<i>PC/LDT1 (%)</i>	<i>LDT2 (%)</i>
2004	25	25
2005	50	50
2006	75	75
2007	100	100

In determining compliance with the phase-in schedule, the fleet shall consist of LEV I and LEV II PCs and LDT1s for the PC/LDT1 calculation, and LEV I and LEV II LDT2s for the LDT2 calculation. LEV I MDVs are not counted in the calculation until they are certified as LEV II LDT2s.

A manufacturer may use an alternative phase-in schedule to comply with these phase-in requirements as long as equivalent NOx emission reductions are achieved by the 2007 model year from each of the two categories - PC/LDT1 and LDT2. Model year emission reductions shall be calculated by multiplying the percent of either PC/LDT1 or LDT2 vehicles meeting the LEV II standards in a given model year (based on a manufacturer's projected sales volume of vehicles in each category) by 4 for the 2004 model year, 3 for the 2005 model year, 2 for the 2006 model year and 1 for the 2007 model year. The yearly results for PCs/LDT1s shall be summed together to determine a separate cumulative total for PCs/LDT1s and the yearly results for LDT2s shall be summed together to determine a cumulative total for LDT2s. The cumulative total for each category must be equal to or exceed 500 to be considered equivalent. A manufacturer may add vehicles introduced before the 2004 model year (e.g., the percent of vehicles introduced in 2003 would be multiplied by 5) to the cumulative total.

### (3) Medium-Duty Vehicle Phase-In Requirements.

(A) A manufacturer of MDVs, other than a small volume manufacturer, shall certify an equivalent percentage of its MDV fleet according to the following phase-in schedule:

<i>Model Year</i>	<i>Vehicles Certified to §1960.1(h)(1), (h)(2), and §1961(a)(1) (%)</i>		<i>Vehicles Certified to §1956.8(g) or (h) (%)</i>		
	<i>LEV</i>	<i>ULEV</i>	<i>Tier 1</i>	<i>LEV</i>	<i>ULEV</i>
2001	80	20	100	0	0
2002	70	30	0	100	0
2003	60	40	0	100	0
2004 through 2014	40	60	0	0	100

(B) Phase-In Requirements for LEV II MDVs. For the 2004 through 2006 model years, a manufacturer, other than a small volume manufacturer must phase-in at least one test group per model year to the MDV LEV II standards. All 2007 through 2014 model year MDVs, including those produced by a small volume manufacturer, are subject to the LEV II MDV standards. Beginning in the 2005 model year, all medium-duty engines certified to the optional medium-duty engine standards in title 13, CCR §1956.8(c) or (h), including those produced by a small volume manufacturer, must meet the standards set forth in title 13, CCR §1956.8(c) or (h), as applicable. A manufacturer that elects to certify to the Option 1 or Option 2 federal standards as set forth in 40 CFR §86.005-10(f) is not subject to these phase-in requirements.

(C) Identifying a Manufacturer's MDV Fleet. For the 2001 through 2014 model years, each manufacturer's MDV fleet shall be defined as the total number of California-certified MDVs produced and delivered for sale in California. The percentages shall be applied to the manufacturers' total production of California-certified medium-duty vehicles delivered for sale in California. For the 2005 through 2014 model years, a manufacturer that elects to the optional medium-duty engine standards in title 13, CCR, §1956.8(c) or (h) shall not count those engines in the manufacturer's total production of California-certified medium-duty vehicles for purposes of this subsection.

(D) Requirements for Small Volume Manufacturers. In 2001 through 2003 model years, a small volume manufacturer shall certify, produce, and deliver for sale in California vehicles or engines certified to the MDV Tier 1 standards in a quantity equivalent to 100% of its MDV fleet. In 2004 through 2006 model years, a small volume manufacturer shall certify, produce, and deliver for sale in California vehicles or engines certified to the MDV LEV I standard in a quantity equivalent to 100% of its MDV fleet. Engines certified to these MDV LEV I standards are not be eligible for emissions averaging.

(E) For a manufacturer that elects to certify to the optional medium-duty engine standards in title 13, CCR §1956.8(c) or (h), all such 2005 through 2014 model year MDVs, including those produced by a small volume manufacturer, shall be subject to the emissions averaging provisions applicable to heavy-duty diesel or Otto-cycle engines as set forth in the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," or the "California Exhaust Emissions Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines, incorporated by reference in §1956.8(b) or (d), as applicable.

(c) Calculation of NMOG Credits/Debits

(1) Calculation of NMOG Credits for Passenger Cars and Light-Duty Trucks. In 2001 through 2014 model years, a manufacturer that achieves fleet average NMOG values lower than the fleet average NMOG requirement for the corresponding model year shall receive credits in units of g/mi NMOG determined as:

$$[(\text{Fleet Average NMOG Requirement}) - (\text{Manufacturer's Fleet Average NMOG Value})] \times (\text{Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs}).$$

A manufacturer with 2001 through 2014 model year fleet average NMOG values greater than the fleet average requirement for the corresponding model year shall receive debits in units of g/mi NMOG equal to the amount of negative credits determined by the aforementioned equation. For the 2001 through 2014 model years, the total g/mi NMOG credits or debits earned for PCs and LDTs 0-3750 lbs. LVW, for LDTs 3751-5750 lbs. LVW and for LDTs 3751 lbs. LVW - 8500 lbs. GVW shall be summed together. The resulting amount shall constitute the g/mi NMOG credits or debits accrued by the manufacturer for the model year.

(2) Calculation of Vehicle Equivalent NMOG Credits for Medium-Duty Vehicles.



(A) In 2001 through 2014 model years, a manufacturer that produces and delivers for sale in California MDVs in excess of the equivalent requirements for LEVs, ULEVs and/or SULEVs certified to the exhaust emission standards set forth in section 1961(a)(1) or to the exhaust emission standards set forth in Title 13, CCR, Section 1956.8(h) shall receive “Vehicle-Equivalent Credits” (or “VECs”) calculated in accordance with the following equation, where the term “produced” means produced and delivered for sale in California:

$$\begin{aligned}
 & ((\text{No. of LEVs Produced excluding HEVs}) + \\
 & (\text{No. of LEV HEVs} \times \text{HEV VEC factor for LEVs}) + \\
 & (1.20 \times \text{No. of LEVs certified to the 150,000 mile standards}) - \\
 & (\text{Equivalent No. of LEVs Required to be Produced})) + \\
 & ((1.4) \times (\text{No. of ULEVs Produced excluding HEVs}) + \\
 & (\text{No. of ULEV HEVs} \times \text{HEV VEC factor for ULEVs}) + \\
 & (1.50 \times \text{No. of ULEVs certified to the 150,000 mile standards}) - [(1.4) \times (\text{Equivalent No. of ULEVs} \\
 & \text{Required to be Produced})]) + \\
 & ((1.7) \times (\text{No. of SULEVs Produced excluding HEVs}) + \\
 & (\text{No. of SULEV HEVs} \times \text{HEV VEC factor for SULEVs}) + \\
 & (1.75 \times \text{No. of SULEVs certified to the 150,000 mile standards}) - [(1.7) \times ((\text{Equivalent No. of} \\
 & \text{SULEVs Required to be Produced}))]) + \\
 & [(2.0) \times (\text{No. of ZEVs Certified and Produced as MDVs})].
 \end{aligned}$$

MDVs certified prior to the 2004 model year to the LEV I LEV or ULEV standards for PCs and LDTs 0-3750 lbs. LVW set forth in section E.1 of these test procedures shall receive VECs calculated in accordance with the following equation, where the term “produced” means produced and delivered for sale in California:

$$\begin{aligned}
 & [(1.6) \times (\text{No. of MDVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW} \\
 & \text{excluding HEVs}) + \\
 & (\text{No. of HEVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW} \times \text{HEV VEC} \\
 & \text{factor for MDVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW})] + \\
 & [(1.65 \times \text{No. of MDVs certified to the 150,000 mile LEV I LEV standards for PCs and LDTs 0-3750} \\
 & \text{lbs. )}] + \\
 & [(1.8) \times (\text{No. of MDVs meeting the LEV I ULEV standards for PCs and LDTs 0-3750 lbs. LVW} \\
 & \text{excluding HEVs}) + \\
 & (\text{No. of HEVs meeting the LEV I ULEV standards for PCs and LDTs 0-3750 lbs. LVW} \times \text{HEV VEC} \\
 & \text{factor for MDVs meeting the LEV I ULEV standards for PCs and LDTs 0-3750 lbs. LVW})] + \\
 & [(1.85 \times \text{No. of MDVs certified to the 150,000 mile LEV I ULEV standards for PCs and LDTs 0-} \\
 & \text{3750 lbs.})].
 \end{aligned}$$

(B) MDV HEV VEC factor. The MDV HEV VEC factor is calculated as follows:  
 $1 + [(\text{LEV standard} - \text{ULEV standard}) \times (\text{Zero-emission VMT Factor}) \div \text{LEV standard}]$  for LEVs;  
 $1 + [(\text{ULEV standard} - \text{SULEV standard}) \times (\text{Zero-emission VMT Factor}) \div \text{ULEV standard}]$  for ULEVs;

$$1 + [(SULEV \text{ standard} - ZEV \text{ standard}) \times (\text{Zero-emission VMT Factor}) \div SULEV \text{ standard}] \text{ for SULEVs;}$$

where “Zero-emission VMT Factor” for an HEV is determined in accordance with section 1962.

The HEV VEC factor for MDVs prior to model year 2004 meeting the LEV I LEV and ULEV standards for PCs and LDTs 0-3750 lbs. LVW is calculated as follows:

$$1 + [(MDV \text{ SULEV standard} - PC \text{ LEV I LEV standard}) \times (\text{Zero-emission VMT Factor}) \div PC \text{ LEV I LEV standard}] \text{ for MDVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW;}$$

$$1 + [(MDV \text{ SULEV standard} - PC \text{ ULEV standard}) \times (\text{Zero-emission VMT Factor}) \div PC \text{ LEV I ULEV standard}] \text{ for MDVs meeting the ULEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW.}$$

(C) A manufacturer that fails to produce and deliver for sale in California the equivalent quantity of MDVs certified to LEV, ULEV and/or SULEV exhaust emission standards, shall receive “Vehicle-Equivalent Debits” (or “VEDs”) equal to the amount of negative VECs determined by the equation in section 1961(c)(2)(A).

(D) Only ZEVs certified as MDVs and not used to meet the ZEV requirement shall be included in the calculation of VECs.

(3) Procedure for Offsetting Debits.

(A) A manufacturer shall equalize emission debits by earning g/mi NMOG emission credits or VECs in an amount equal to the g/mi NMOG debits or VEDs, or by submitting a commensurate amount of g/mi NMOG credits or VECs to the Executive Officer that were earned previously or acquired from another manufacturer. For 2001 through 2003 and for 2007 through 2014 model years, manufacturers shall equalize emission debits by the end of the following model year. For 2004 through 2006 model years, a manufacturer shall equalize NMOG debits for PCs and LDTs and LEV II MDVs within three model years and prior to the end of the 2007 model year. If emission debits are not equalized within the specified time period, the manufacturer shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of passenger cars and light-duty trucks not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi NMOG emission debits for the model year by the g/mi NMOG fleet average requirement for PCs and LDTs 0-3750 lbs. LVW applicable for the model year in which the debits were first incurred and the number of medium-duty vehicles not meeting the state board's emission standards shall be equal to the amount of VEDs incurred.

(B) The emission credits earned in any given model year shall retain full value through the subsequent model year. The value of any credits not used to equalize the previous model-year's debit

shall be discounted by 50% at the beginning of second model year after being earned, shall be discounted to 25% of its original value if not used by the beginning of the third model year after being earned, and will have no value if not used by the beginning of the fourth model year after being earned.

(d) *Test Procedures.* The certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as amended December 6, 2012, the “California Non-Methane Organic Gas Test Procedures,” as amended December 6, 2012, which are incorporated herein by reference. In the case of hybrid electric vehicles and on-board fuel-fired heaters, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 through 2008 Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962, the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1, and the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes” incorporated by reference in section 1962.2.

(e) *Abbreviations.* The following abbreviations are used in this section 1961:

“ALVW” means adjusted loaded vehicle weight.

“ASTM” means American Society of Testing and Materials.

“CO” means carbon monoxide.

“FTP” means Federal Test Procedure.

“g/mi” means grams per mile.

“GVW” means gross vehicle weight.

“GVWR” means gross vehicle weight rating.

“HEV” means hybrid-electric vehicle.

“LDT” means light-duty truck.

“LDT1” means a light-duty truck with a loaded vehicle weight of 0-3750 pounds.

“LDT2” means a “LEV II” light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight of 8500 pounds or a “LEV I” light-duty truck with a loaded vehicle weight of 3751-5750 pounds.

“LEV” means low-emission vehicle.

“LPG” means liquefied petroleum gas.

“LVW” means loaded vehicle weight.

“MDV” means medium-duty vehicle.

“mg/mi” means milligrams per mile.

“NMHC” means non-methane hydrocarbons.

“Non-Methane Organic Gases” or “NMOG” means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

“NO<sub>x</sub>” means oxides of nitrogen.

“PC” means passenger car.

“SULEV” means super-ultra-low-emission vehicle.

“TLEV” means transitional low-emission vehicle.

“ULEV” means ultra-low-emission vehicle.

“VEC” means vehicle-equivalent credits.

“VED” means vehicle-equivalent debits.

“VMT” means vehicle miles traveled.

“ZEV” means zero-emission vehicle.

Note: Authority cited: Sections 39500, 39600, 39601, 43013, 43018, 43101, 43104, 43105 and 43106, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43204 and 43205, Health and Safety Code.

## HISTORY

1. New section filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
  2. Amendment filed 4-30-2001; operative 5-30-2001 (Register 2001, No. 18).
  3. Amendment of subsections (a)(8)(B) and (d) filed 5-24-2002; operative 6-23-2002 (Register 2002, No. 21).
  4. Amendment filed 9-16-2002; operative 10-16-2002 (Register 2002, No. 38).
  5. Amendment of third paragraph, subsections (a)(4), (a)(8)(A) and (a)(12)(A), new subsection (a)(15), amendment of subsections (b)(3)(B)-(D), new subsection (b)(3)(E) and amendment of subsections (d) and (e) filed 11-4-2003; operative 12-4-2003 (Register 2003, No. 45).
  6. Amendment of subsections (a)(8)(B) and (d) filed 2-25-2004; operative 3-26-2004 (Register 2004, No. 9).
  7. Amendment of subsection (d) filed 7-15-2004; operative 8-14-2004 (Register 2004, No. 29).
  8. Amendment of subsection (d) and Note filed 9-15-2005; operative 1-1-2006 (Register 2005, No. 37).
  9. Change without regulatory effect amending incorporated document California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles filed 9-15-2005 pursuant to section 100, title 1, California Code of Regulations (Register 2005, No. 37).
  10. Amendment of incorporated document California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and amendment of subsection (d) filed 1-18-2007; operative 2-17-2007 (Register 2007, No. 3).
  11. Amendment of subsection (d) and amendment of Note filed 12-5-2007; operative 1-4-2008 (Register 2007, No. 49).
  12. Amendment of incorporated document California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and amendment of subsection (d) filed 6-16-2008; operative 6-16-2008 pursuant to Government Code section 11343.4 (Register 2008, No. 25).
  13. Amendment of subsections (b)(1)(E) and (d) filed 1-14-2010; operative 2-13-2010 (Register 2010, No. 3).
  14. Amendment of subsection (d) indicating 2-22-2010 amendment of “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” (incorporated by reference) filed 4-1-2010; operative 4-1-2010 pursuant to Government Code section 11343.4 (Register 2010, No. 14).
  15. Amendment of subsection (d) indicating 3-29-2010 amendment of “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” (incorporated by reference) and amendment of Note filed 4-1-2010; operative 4-1-2010 pursuant to Government Code section 11343.4 (Register 2010, No. 14).
  16. Amendment of subsection (d) and amendment of Note filed 11-8-2010; operative 12-8-2010 (Register 2010, No. 46).
  17. Change without regulatory effect indicating 9-27-2010 amendment of “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” (incorporated by reference) filed 1-19-2011 pursuant to section 100, title 1, California Code of Regulations (Register 2011, No. 3).
  18. Amendment of section heading, section and Note filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
  19. Amendment of subsections (a)(1), (b)(1)(A) and (d) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
- This database is current through 5/22/20 Register 2020, No. 21  
13 CCR § 1961, 13 CA ADC § 1961

**Section 1961.1. Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2009 through 2016 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

(a) Greenhouse Gas Emission Requirements. The greenhouse gas emission levels from new 2009 through 2016 model year passenger cars, light-duty trucks, and medium-duty passenger vehicles shall not exceed the following requirements. Light-duty trucks from 3751 lbs. LVW - 8500 lbs. GVW that are certified to the Option 1 LEV II NOx Standard in section 1961(a)(1) are exempt from these greenhouse gas emission requirements, however, passenger cars, light-duty trucks 0-3750 lbs. LVW, and medium-duty passenger vehicles are not eligible for this exemption.

(1) Fleet Average Greenhouse Gas Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.

(A)(i) The fleet average greenhouse gas exhaust mass emission values from passenger cars, light-duty trucks, and medium-duty passenger vehicles that are produced and delivered for sale in California each model year by a large volume manufacturer shall not exceed:

*FLEET AVERAGE GREENHOUSE GAS EXHAUST MASS EMISSION REQUIREMENTS FOR PASSENGER CAR, LIGHT-DUTY TRUCK, AND MEDIUM-DUTY PASSENGER VEHICLE WEIGHT CLASSES<sup>1</sup>  
(4,000 mile Durability Vehicle Basis)*

	<i>Fleet Average Greenhouse Gas Emissions (grams per mile CO<sub>2</sub>-equivalent)</i>	
	<i>All PCs; LDTs 0-3750 lbs.</i>	<i>LDTs 3751 lbs. LVW - 8500 lbs.</i>
<i>Model Year</i>	<i>LVW</i>	<i>GVW; MDPVs</i>
2009	323	439
2010	301	420
2011	267	390
2012	233	361
2013	227	355
2014	222	350
2015	213	341
2016	205	332

<sup>1</sup> Each manufacturer shall demonstrate compliance with these values in accordance with section 1961.1(a)(1)(B).

1. For each model year, a manufacturer must demonstrate compliance with the fleet average requirements in this section 1961.1(a)(1)(A) based on one of two options applicable throughout the model year, either:

Option 1: the total number of passenger cars, light-duty trucks, and medium-duty passenger vehicles that are certified to the California exhaust emission standards in this section 1961.1, and are produced and delivered for sale in California; or

Option 2: the total number of passenger cars, light-duty trucks, and medium-duty passenger vehicles that are certified to the California exhaust emission standards in this section 1961.1, and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

a. For the 2009 and 2010 model years, a manufacturer that selects compliance Option 2 must notify the Executive Officer of that selection, in writing, within 30 days of the effective date of the amendments to this section (a)(1)(A)1 or must comply with Option 1.

b. For the 2011 through 2016 model years, a manufacturer that selects compliance Option 2 must notify the Executive Officer of that selection, in writing, prior to the start of the applicable model year or must comply with Option 1.

c. When a manufacturer is demonstrating compliance using Option 2 for a given model year, the term "in California" as used in subsections 1961.1(a)(1)(B)3. and 1961.1(b) means California, the District of Columbia, and all states that have adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

d. A manufacturer that selects compliance Option 2 must provide to the Executive Officer separate values for the number of vehicles produced and delivered for sale in the District of Columbia and for each individual state within the average.

(A)(ii) For the 2012 through 2016 model years, a manufacturer may elect to demonstrate compliance with this section 1961.1 by demonstrating compliance with the 2012 through 2016 MY National greenhouse gas program as follows:

1. A manufacturer that selects compliance with this option 1961.1(a)(1)(A)(ii) must notify the Executive Officer of that selection, in writing, prior to the start of the applicable model year or must comply with 1961.1(a)(1)(A)(i);

2. The manufacturer must submit to ARB a copy of the Model Year CAFE report that it submitted to EPA as required under 40 CFR §86.1865-12 (May 7, 2010), for demonstrating compliance with the 2012 through 2016 MY National greenhouse gas program and the EPA determination of compliance. These must be submitted within 30 days of receipt of the EPA determination of compliance, for each model year that a manufacturer selects compliance with this option 1961.1(a)(1)(A)(ii);

3. The manufacturer must provide to the Executive Officer separate values for the number of vehicles produced and delivered for sale in California, the District of Columbia, and each individual state that has adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507); and

4. If a manufacturer has outstanding greenhouse gas debits at the end of the 2011 model year, as calculated in accordance with 1961.1(b), the manufacturer must submit to the Executive Officer a plan for offsetting all outstanding greenhouse gas debits by using greenhouse gas credits earned under the 2012 through 2016 MY National greenhouse gas program before applying those credits to offset any 2012 through 2016 MY National greenhouse as program debits. Upon approval of the plan by the Executive Officer, the manufacturer may demonstrate compliance with this section 1961.1 by demonstrating compliance with the 2012 through 2016 MY National greenhouse gas program. Any California debits not offset by the end of the 2016 model year National greenhouse gas program reporting period are subject to penalties as provided in this Section 1961.1.

(B) Calculation of Fleet Average Greenhouse Gas Value.

1. Basic Calculation.

a. Option A: Each manufacturer shall calculate both a “city” grams per mile average CO<sub>2</sub>-equivalent value for each GHG vehicle test group and a “highway” grams per mile average CO<sub>2</sub>-equivalent value for each GHG vehicle test group, including vehicles certified in accordance with section 1960.5 and vehicles certified in accordance with section 1961(a)(14), using the following formula. Option B: For a manufacturer that elects to demonstrate compliance with the greenhouse gas requirements using CAFE data, “GHG vehicle test group” shall mean “subconfiguration” in this subsection 1961.1(a)(1)(B)1.a. Greenhouse Gas emissions used for the “city” CO<sub>2</sub>-equivalent value calculation shall be measured using the “FTP” test cycle (40 CFR, Part 86, Subpart B). Greenhouse Gas emissions used for the “highway” CO<sub>2</sub>-equivalent value calculation shall be based on emissions measured using the Highway Test Procedures.

$$\text{CO}_2\text{-Equivalent Value} = \text{CO}_2 + 296 \times \text{N}_2\text{O} + 23 \times \text{CH}_4 - \text{A/C Direct Emissions Allowance} - \text{A/C Indirect Emissions Allowance}$$

A manufacturer may use N<sub>2</sub>O = 0.006 grams per mile in lieu of measuring N<sub>2</sub>O exhaust emissions. A manufacturer that elects to use CAFE data to demonstrate compliance with the greenhouse requirements may substitute the term 1.9 CO<sub>2</sub>-equivalent grams per mile for the terms “296 x N<sub>2</sub>O + 23 x CH<sub>4</sub>” in this equation.

b. A/C Direct Emissions Allowance. A manufacturer may use the following A/C Direct Emission Allowances, upon approval of the Executive Officer, if that manufacturer demonstrates that the following requirements are met. Such demonstration shall include specifications of the components used and an engineering evaluation that verifies the estimated lifetime emissions from the components and the system. A manufacturer shall also provide confirmation that the number of fittings and joints has been minimized and components have been optimized to minimize leakage. No A/C Direct Emissions Allowance is permitted if the following requirements are not met.

i. A “low-leak air conditioning system” shall be defined as one that meets all of the following criteria:

A. All pipe and hose connections are equipped with multiple o-rings, seal washers, or metal gaskets only (e.g., no single o-rings);

B. All hoses in contact with the refrigerant must be ultra-low permeability barrier or veneer hose on both the high-pressure and the low-pressure sides of the system (e.g., no rubber hoses); and

C. Only multiple-lip compressor shaft seals shall be used (with either compressor body o-rings or gaskets).

ii. For an air conditioning system that uses HFC-134a as the refrigerant:

A. An A/C Direct Emissions Allowance of 3.0 CO<sub>2</sub>-equivalent grams per mile shall apply if the system meets the criteria for a “low-leak air conditioning system.”

B. An A/C Direct Emissions Allowance of 3.0 CO<sub>2</sub>-equivalent grams per mile shall apply if the manufacturer demonstrates alternative technology that achieves equal or lower direct emissions than a “low-leak air conditioning system.”

C. An A/C Direct Emissions Allowance greater than 3.0 CO<sub>2</sub>- equivalent grams per mile may apply for an air conditioning system that reduces refrigerant leakage further than would be obtained from a “low-leak air conditioning system.” A maximum A/C Direct Emissions Allowance of 6.0 CO<sub>2</sub>-equivalent grams per mile may be earned for an air conditioning system that has 100 percent containment of refrigerant during “normal operation.” To obtain an A/C Direct Emissions Allowance greater than 3.0 CO<sub>2</sub>-equivalent grams per mile, the manufacturer must provide an engineering evaluation that supports the allowance requested.

iii. For an air conditioning system that uses HFC-152a, CO<sub>2</sub> refrigerant, or any refrigerant with a GWP of 150 or less: An A/C Direct Emissions Allowance shall be calculated using the following formula:

$$\text{A/C Direct Emissions Allowance} = A - (B \times C)$$

where: A = 9 CO<sub>2</sub>-equivalent grams per mile (the lifetime vehicle emissions expected from an air conditioning system that uses refrigerant HFC-134a);

[https://govt.westlaw.com/calregs/Link/Document/Blob/I9822d844718f11daa805740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=3d1050e1-602b-42c9-8c81-ef3b8eee0d45&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I9822d844718f11daa805740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=3d1050e1-602b-42c9-8c81-ef3b8eee0d45&contextData=(sc.Default))



$$B=9 \text{ CO}_2 \text{ – equivalent g/mi} \times \frac{\text{GWP}}{1300}$$

where: B is the lifetime vehicle emissions expected from an air conditioning system that uses a refrigerant with a GWP of 150 or less, and

“GWP” means the GWP of this refrigerant; and

C = 1, except for an air conditioning system that meets the criteria of a “low-leak air conditioning system.”

For an air conditioning system that meets or exceeds the criteria of a “low-leak air conditioning system,” the following formula shall apply:

$$C = 1 - (0.12 \times \text{credit})$$

where: “credit” equals 3.0 CO<sub>2</sub>-equivalent grams per mile for a “low-leak air conditioning system” that meets the criteria of section 1961.1(a)(1)(B)1.b.i., or

“credit” equals a value greater than 3.0 CO<sub>2</sub>-equivalent grams per mile for an air conditioning system that reduces refrigerant leakage further than would be obtained from a “low-leak air conditioning system.” A maximum credit of 6.0 CO<sub>2</sub> -equivalent grams per mile may be earned for an air conditioning system that has 100 percent containment of refrigerant during normal operation. To obtain a credit greater than 3.0 CO<sub>2</sub>-equivalent grams per mile, the manufacturer must provide an engineering evaluation that supports the credit requested.

iv. A manufacturer that elects to use CAFE Program emissions data to demonstrate compliance with the greenhouse requirements shall calculate the A/C Indirect Emissions Allowance for each Vehicle Configuration by calculating the A/C Indirect Emissions Allowance for each air conditioning system used in that Vehicle Configuration and calculating a sales-weighted average for that Vehicle Configuration.

c. A/C Indirect Emissions Allowance. A manufacturer may use the following A/C Indirect Emissions Allowances, upon approval of the Executive Officer, if the manufacturer demonstrates using data or an engineering evaluation that the air conditioning system meets the following requirements. A manufacturer may use the following A/C Indirect Emissions Allowances for other technologies, upon approval of the Executive Officer, if that manufacturer demonstrates that the air conditioning system achieves equal or greater CO<sub>2</sub>-equivalent grams per mile emissions reductions.

i. An “A/C system with reduced indirect emissions” shall be defined as one that meets all of the following criteria:

A. Has managed outside and recirculated air balance to achieve comfort, demisting, and safety requirements, based on such factors as temperature, humidity, pressure, and level of fresh air in the passenger compartment to minimize compressor usage;

B. Is optimized for energy efficiency by utilizing state-of-the-art high efficiency evaporators, condensers, and other components; and

C. Has an externally controlled compressor (such as an externally controlled variable displacement or variable speed compressor or an externally controlled fully cycling fixed displacement compressor) that adjusts evaporative temperature to minimize the necessity of reheating cold air to satisfy occupant comfort.

ii. For an A/C system that meets all of the criteria for an “A/C system with reduced indirect emissions,” the allowance shall be calculated using the following emission factors, up to a maximum allowance of 9.0 CO<sub>2</sub>-equivalent grams per mile if the system has one evaporator and up to a maximum allowance of 11.0 CO<sub>2</sub> -equivalent grams per mile if the system has two evaporators:

A. 5.0 CO<sub>2</sub>-equivalent grams per mile per 100 cc of maximum compressor displacement for a system that does not use CO<sub>2</sub> as the refrigerant

B. 27.5 CO<sub>2</sub>-equivalent grams per mile per 100 cc of maximum compressor displacement for a system that uses CO<sub>2</sub> as the refrigerant

iii. For an air conditioning system equipped with a refrigerant having a GWP of 150 or less, the allowance shall be calculated using the following emission factors, up to a maximum allowance of 0.5 CO<sub>2</sub>-equivalent grams per mile:

A. 0.2 CO<sub>2</sub>-equivalent grams per mile per 100cc of maximum compressor displacement for a system that does not use CO<sub>2</sub> as the refrigerant and

B. 1.1 CO<sub>2</sub>-equivalent grams per mile per 100cc of maximum compressor displacement for a system that uses CO<sub>2</sub> as the refrigerant.

iv. A manufacturer that elects to use CAFE Program emissions data to demonstrate compliance with the greenhouse requirements shall calculate the A/C Indirect Emissions Allowance for each Vehicle Configuration by calculating the A/C Indirect Emissions Allowance for each air conditioning system used in that Vehicle Configuration and calculating a sales-weighted average for that Vehicle Configuration.

d. Upstream Greenhouse Gas Emission Adjustment Factors for Alternative Fuel Vehicles. A grams per mile average CO<sub>2</sub>- equivalent value for each GHG vehicle test group certifying on a fuel other than conventional gasoline, including vehicles certified in accordance with section

1960.5 and vehicles certified in accordance with section 1961(a)(14), shall be calculated as follows:

$$(\text{CO}_2 + \text{A/C Indirect Emissions}) \times (\text{Fuel Adjustment Factor}) + 296 \times \text{N}_2\text{O} + 23 \times \text{CH}_4 + \text{A/C Direct Emissions}$$

where:

$$\text{A/C Indirect Emissions} = A - B$$

where: “A” represents the indirect emissions associated with an A/C system that does not incorporate any of the A/C improvements described in section 1961.1(a)(1)(B)1.c. A is determined by the following emission factors, with a maximum value of 17.0 CO<sub>2</sub>-equivalent grams per mile for a system that has one evaporator and a maximum value of 21.0 CO<sub>2</sub>-equivalent grams per mile for a system that has two evaporators.

A = 9.6 CO<sub>2</sub>-equivalent grams per mile per 100cc of maximum compressor displacement for an A/C system that does not use CO<sub>2</sub> as the refrigerant or

A = 52.8 CO<sub>2</sub>-equivalent grams per mile per 100cc of maximum compressor displacement for an A/C system that uses CO<sub>2</sub> as the refrigerant.

B = A/C Indirect Emissions Allowance as calculated per section 1961.1(a)(1)(B)1.c.

$$\text{A/C Direct Emissions} = 9 \text{ CO}_2\text{-equivalent grams per mile} - \text{A/C Direct Emissions Allowance as calculated per section 1961.1(a)(1)(B)1.b.}$$

The Fuel Adjustment Factors are:

<i>Fuel</i>	<i>Fuel Adjustment Factor</i>
Natural Gas	1.03
LPG	0.89
E85	0.74

e. Calculation of CO<sub>2</sub>-Equivalent Emissions for Hydrogen Internal Combustion Engine Vehicles and for Electric and Hydrogen ZEVs. The grams per mile average CO<sub>2</sub>-equivalent value for each GHG vehicle test group certifying to ZEV standards, including vehicles certified in accordance with section 1960.5 and vehicles certified in accordance with section 1961(a)(14), shall be:

$$\text{A/C Direct Emissions} + \text{Upstream Emissions Factor}$$

where: A/C Direct Emissions = 9 CO<sub>2</sub>-equivalent grams per mile - A/C Direct Emissions Allowance as calculated per section 1961.1(a)(1)(B)1.b.

The Upstream Emissions Factors are:

<i>Vehicle Type</i>	<i>Upstream Emissions Factor</i> <sup>1</sup> (CO <sub>2</sub> -equivalent g/mi)
Electric ZEV	130
Hydrogen Internal Combustion Engine Vehicle	290
Hydrogen ZEV	210

<sup>1</sup> The Executive Officer may approve use of a lower upstream emissions factor if a manufacturer demonstrates the appropriateness of the lower value by providing information that includes, but is not limited to, the percentage of hydrogen fuel or the percentage of electricity produced for sale in California using a “renewable energy resource.”

2. Calculation of Greenhouse Gas Values for Bi-Fuel Vehicles, Fuel-Flexible Vehicles, Dual-Fuel Vehicles, and Grid-connected Hybrid Electric Vehicles. For bi-fuel, fuel-flexible, dual-fuel, and grid-connected hybrid, electric vehicles, a manufacturer shall calculate a grams per mile average CO<sub>2</sub>-equivalent value for each GHG vehicle test group, in accordance with section 1961.1(a)(1)(B)1., based on exhaust mass emission tests when the vehicle is operating on gasoline.

a. Optional Alternative Compliance Mechanisms. Beginning with the 2010 model year, a manufacturer that demonstrates that a bi-fuel, fuel-flexible, dual-fuel, or grid-connected hybrid electric GHG vehicle test group will be operated in use in California on the alternative fuel shall be eligible to certify those vehicles using this optional alternative compliance procedure, upon approval of the Executive Officer.

i. To demonstrate that bi-fuel, fuel-flexible, dual-fuel, or grid-connected hybrid electric vehicles within a GHG vehicle test group will be operated in use in California on the alternative fuel, the manufacturer shall provide data that shows the previous model year sales of such vehicles to fleets that provide the alternative fuel on-site or, for grid-connected hybrid electric vehicles, to end users with the capability to recharge the vehicle on-site. This data shall include both the total number of vehicles sales that were made to such fleets or end users with the capability to recharge the vehicle on-site and as the percentage of total GHG vehicle test group sales. The manufacturer shall also provide data demonstrating the percentage of total vehicle miles traveled by the bi-fuel, fuel-flexible, dual-fuel, or grid-connected hybrid electric vehicles sold to each fleet or to end users with the capability to recharge the vehicle on-site in the previous model year using the alternative fuel and using gasoline.

ii. For each GHG vehicle test group that receives approval by the Executive Officer under section 1961.1(a)(1)(B)2.a.i., a grams per mile CO<sub>2</sub>-equivalent value shall be calculated as follows:

$$\text{CO}_2\text{-equivalent value} = [A \times E \times B \times C] + [(1 - (A \times E \times B)) \times D]$$

where: A = the percentage of previous model year vehicles within a GHG vehicle test group that were operated in use in California on the alternative fuel during the previous calendar year;

B = the percentage of miles traveled by “A” during the previous calendar year;

C = the CO<sub>2</sub>-equivalent value for the GHG vehicle test group, as calculated in section 1961.1(a)(1)(B)1, when tested using the alternative fuel;

D = the CO<sub>2</sub>-equivalent value for the GHG vehicle test group, as calculated in section 1961.1(a)(1)(B)1, when tested using gasoline; and

E = 0.9 for grid-connected hybrid electric vehicles or

E = 1 for bi-fuel, fuel-flexible, and dual-fuel vehicles.

The Executive Officer may approve use of a higher value for “E” for a grid-connected hybrid electric vehicle GHG vehicle test group if a manufacturer demonstrates that the vehicles can reasonably be expected to maintain more than 90 percent of their original battery capacity over a 200,000 mile vehicle lifetime. The manufacturer may demonstrate the appropriateness of a higher value either by providing data from real world vehicle operation; or by showing that these vehicles are equipped with batteries that do not lose energy storage capacity until after 100,000 miles; or by offering 10 year/150,000 mile warranties on the batteries.

iii. For the first model year in which a grid-connected hybrid electric vehicle model is certified for sale in California, the manufacturer may estimate the sales and percentage of total vehicle miles traveled information requested in section 1961.1(a)(1)(B)2.a.i. in lieu of providing actual data, and provide final sales data and data demonstrating the percentage of total vehicle miles traveled using electricity by no later than March 1 of the calendar year following the close of the model year.

### 3. Calculation of Fleet Average Greenhouse Gas Values.

a. Each manufacturer's PC and LDT1 fleet average Greenhouse Gas value for the total number of PCs and LDT1s produced and delivered for sale in California, including vehicles certified in accordance with section 1960.5 and vehicles certified in accordance with section 1961(a)(14), shall be calculated as follows:

$$[0.55 \times (\Sigma \text{ City Test Group Greenhouse Gas Values}) + 0.45 \times (\Sigma \text{ Highway Test Group Greenhouse Gas Values})] \div \text{Total Number of PCs and LDT1s Produced, Including ZEVs and HEVs}$$

where:

City Test Group Greenhouse Gas Value = [(Total Number of Vehicles in a Test Group -  $\Sigma$  Number of Vehicles in Optional GHG Test Vehicle Configurations) x “worst-case” calculated CO<sub>2</sub>-equivalent value +  $\Sigma$  (Number of vehicles in Optional GHG Test Vehicle Configurations x applicable calculated CO<sub>2</sub>-equivalent value)] measured using the FTP test cycle; and

Highway Test Group Greenhouse Gas Value = [(Total Number of Vehicles in a Test Group -  $\Sigma$  (Number of Vehicles in Optional GHG Test Vehicle Configurations) x “worst-case” calculated CO<sub>2</sub>-equivalent value +  $\Sigma$  (Number of vehicles in Optional GHG Test Vehicle Configurations x applicable calculated CO<sub>2</sub>-equivalent value)] measured using the Highway Test Procedures.

b. Each manufacturer's LDT2 and MDPV fleet average Greenhouse Gas value for the total number of LDT2s and MDPVs produced and delivered for sale in California, including vehicles certified in accordance with section 1960.5 and vehicles certified in accordance with section 1961(a)(14), shall be calculated as follows:

$$[0.55 \times (\Sigma \text{ City Test Group Greenhouse Gas Values}) + 0.45 \times (\Sigma \text{ Highway Test Group Greenhouse Gas Values})] \div \text{Total Number of LDT2s and MDPVs Produced, Including ZEVs and HEVs}$$

where:

City Test Group Greenhouse Gas Value = [(Total Number of Vehicles in a Test Group -  $\Sigma$  Number of Vehicles in Optional GHG Test Vehicle Configurations) x “worst-case” calculated CO<sub>2</sub>-equivalent value +  $\Sigma$  (Number of vehicles in Optional GHG Test Vehicle Configurations x applicable calculated CO<sub>2</sub>-equivalent value)] measured using the FTP test cycle; and

Highway Test Group Greenhouse Gas Value = [(Total Number of Vehicles in a Test Group -  $\Sigma$  Number of Vehicles in Optional GHG Test Vehicle Configurations) x “worst-case” calculated CO<sub>2</sub>-equivalent value +  $\Sigma$  (Number of vehicles in Optional GHG Test Vehicle Configurations x applicable calculated CO<sub>2</sub>-equivalent value)] measured using the Highway Test Procedures.

(C) Requirements for Intermediate Volume Manufacturers.

1. Before the 2016 model year, compliance with this section 1961.1 shall be waived for intermediate volume manufacturers.

2. For each intermediate volume manufacturer, the manufacturer's baseline fleet average greenhouse gas value for PCs and LDT1s and baseline fleet average greenhouse gas value for LDT2s and MDPVs shall be calculated, in accordance with section 1961.1(a)(1)(B) using its 2002 model year fleet.

3. In the 2016 model year, an intermediate volume manufacturer shall either:

a. not exceed a fleet average greenhouse gas emissions value of 233 g/mi for PCs and LDT1s and 361 g/mi for LDT2s and MDPVs, or

b. not exceed a fleet average greenhouse gas value of 0.75 times the baseline fleet average greenhouse gas value for PCs and LDT1s and 0.82 times the baseline fleet average greenhouse gas value for LDT2s and MDPVs, as calculated in section 1961.1(a)(1)(C)2.

4. If a manufacturer's average annual California sales exceed 60,000 units of new PCs, LDTs, MDVs and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall no longer be treated as an intermediate volume manufacturer and shall comply with the fleet average requirements applicable to large volume manufacturers as specified in section 1961.1(a)(1) beginning with the fourth model year after the last of the three consecutive model years.

5. If a manufacturer's average annual California sales fall below 60,001 units of new PCs, LDTs, MDVs and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall be treated as an intermediate volume manufacturer and shall be subject to the requirements for intermediate volume manufacturers beginning with the next model year.

(D) Requirements for Small Volume Manufacturers and Independent Low Volume Manufacturers.

1. Before the 2016 model year, compliance with this section 1961.1 shall be waived for small volume manufacturers and independent low volume manufacturers.

2. At the beginning of the 2013 model year, each small volume manufacturer and independent low volume manufacturer shall identify all 2012 model year vehicle models, certified by a large volume manufacturer that are comparable to that small volume manufacturer or independent low volume manufacturer's 2016 model year vehicle models, based on horsepower and horsepower to weight ratio. The small volume manufacturer and independent low volume manufacturer shall demonstrate to the Executive Officer the appropriateness of each comparable vehicle model selected. Upon approval of the Executive Officer, s/he shall provide to the small volume manufacturer and to the independent low volume manufacturer the CO<sub>2</sub>-equivalent value for each 2012 model year vehicle model that is approved. The small volume manufacturer and independent low volume manufacturer shall calculate an average greenhouse gas emissions value for each its greenhouse gas vehicle test groups based on the CO<sub>2</sub>-equivalent values provided by the Executive Officer.

3. In the 2016 model year, a small volume manufacturer and an independent low volume manufacturer shall either:

a. not exceed the fleet average greenhouse gas emissions value calculated for each GHG vehicle test group for which a comparable vehicle is sold by a large volume manufacturer, in accordance with section 1961.1(a)(1)(D)2; or

b. not exceed a fleet average greenhouse gas emissions value of 233 g/mi for PCs and LDT1s and 361 g/mi for LDT2s and MDPVs; or

c. upon approval of the Executive Officer, if a small volume manufacturer demonstrates a vehicle model uses an engine, transmission, and emission control system that is identical to a configuration certified for sale in California by a large volume manufacturer, those small volume

manufacturer vehicle models are exempt from meeting the requirements in paragraphs 3.a. and b. of this section.

4. If a manufacturer's average annual California sales exceed 4,500 units of new PCs, LDTs, MDVs and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall no longer be treated as a small volume manufacturer and shall comply with the fleet average requirements applicable to larger volume manufacturers as specified in section 1961.1(a)(1) beginning with the fourth model year after the last of the three consecutive model years.

5. If a manufacturer's average annual California sales exceed 10,000 units of new PCs, LDTs, MDVs and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall no longer be treated as an independent low volume manufacturer and shall comply with the fleet average requirements applicable to larger volume manufacturers as specified in section 1961.1(a)(1) beginning with the fourth model year after the last of the three consecutive model years.

6. If a manufacturer's average annual California sales fall below 4,501 units of new PCs, LDTs, MDVs and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall be treated as a small volume manufacturer and shall be subject to the requirements for small volume manufacturers beginning with the next model year.

(b) Calculation of Greenhouse Gas Credits/Debits.

(1) Calculation of Greenhouse Gas Credits for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.

(A) In the 2000 through 2008 model years, a manufacturer that achieves fleet average Greenhouse Gas values lower than the fleet average Greenhouse Gas requirement applicable to the 2012 model year shall receive credits for each model year in units of g/mi determined as:

$$[(\text{Fleet Average Greenhouse Gas Requirement for the 2012 model year}) - (\text{Manufacturer's Fleet Average Greenhouse Gas Value})] \times (\text{Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs}).$$

(B) In 2009 through 2016 model years, a manufacturer that achieves fleet average Greenhouse Gas values lower than the fleet average Greenhouse Gas requirement for the corresponding model year shall receive credits in units of g/mi Greenhouse Gas determined as:

$$[(\text{Fleet Average Greenhouse Gas Requirement}) - (\text{Manufacturer's Fleet Average Greenhouse Gas Value})] \times (\text{Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs}).$$

(2) A manufacturer with 2009 through 2016 model year fleet average Greenhouse Gas values greater than the fleet average requirement for the corresponding model year shall receive debits in units of



g/mi Greenhouse Gas equal to the amount of negative credits determined by the aforementioned equation. For the 2009 through 2016 model years, the total g/mi Greenhouse Gas credits or debits earned for PCs and LDT1s and for LDT2s and MDPVs shall be summed together. The resulting amount shall constitute the g/mi Greenhouse Gas credits or debits accrued by the manufacturer for the model year.

(3) Procedure for Offsetting Greenhouse Gas Debits.

(A) A manufacturer shall equalize Greenhouse Gas emission debits by earning g/mi Greenhouse Gas emission credits in an amount equal to the g/mi Greenhouse Gas debits, or by submitting a commensurate amount of g/mi Greenhouse Gas credits to the Executive Officer that were earned previously or acquired from another manufacturer. A manufacturer shall equalize Greenhouse Gas debits for PCs, LDTs, and MDPVs within five model years after they are earned. If emission debits are not equalized within the specified time period, the manufacturer shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period. For a manufacturer demonstrating compliance under Option 2 in subsection 1961.1(a)(1)(A)1., the emission debits that are subject to a civil penalty under Health and Safety Code section 43211 shall be calculated separately for California, the District of Columbia, and each individual state that is included in the fleet average greenhouse gas requirements in subsection 1961.1(a)(1)(A)1. These emission debits shall be calculated for each individual state using the formula in subsections 1961.1(b)(1)(B) and 1961.1(b)(2), except that the "Total No. of Vehicles Produced and Delivered for Sale in California, including ZEVs and HEVs" shall be calculated separately for the District of Columbia and each individual state.

For the purposes of Health and Safety Code section 43211, the number of passenger cars and LDT1s not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi Greenhouse Gas emission debits for the model year calculated for California by the g/mi Greenhouse Gas fleet average requirement for PCs and LDTs 0-3750 lbs. LVW applicable for the model year in which the debits were first incurred. For the purposes of Health and Safety Code section 43211, the number of LDT2s and MDPVs not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi Greenhouse Gas emission debits for the model year calculated for California by the g/mi Greenhouse Gas fleet average requirement for LDTs 3751 lbs. LVW - 8500 lbs. GVW and MDPVs applicable for the model year in which the debits were first incurred.

(B) Greenhouse Gas emission credits earned in the 2000 through 2008 model years shall be treated as if they were earned in the 2011 model year and shall retain full value through the 2012 model year. Greenhouse Gas emission credits earned in the 2009 through 2016 model years shall retain full value through the fifth model year after they are earned. The value of any credits earned in the 2000 through 2008 model years that are not used to equalize debits accrued in the 2009 through 2012 model years shall be discounted by 50% at the beginning of the 2013 model year, shall be discounted to 25% of its original value if not used by the beginning of the 2014 model year, and will have no

value if not used by the beginning of the 2015 model year. Any credits earned in the 2009 through 2016 model years that are not used by the end of the fifth model year after they are accrued shall be discounted by 50% at the beginning of the sixth model year after being earned, shall be discounted to 25% of its original value if not used by the beginning of the seventh model year after being earned, and will have no value if not used by the beginning of the eighth model year after being earned.

(c) Test Procedures. The certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” incorporated by reference in section 1961(d). In the case of hybrid electric vehicles and on-board fuel-fired heaters, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1.

(d) Abbreviations. The following abbreviations are used in this section 1962.1.

“cc” mean cubic centimeters.

“CH<sub>4</sub>” means methane.

“CO<sub>2</sub>” means carbon dioxide.

“E85” means a blend of 85 percent ethanol and 15 percent gasoline.

“FTP” means Federal Test Procedure.

“GHG” means greenhouse gas.

“g/mi” means grams per mile.

“GVW” means gross vehicle weight.

“GVWR” means gross vehicle weight rating.

“GWP” means the global warming potential.

“HEV” means hybrid-electric vehicle.

“LDT” means light-duty truck.

“LDT1” means a light-duty truck with a loaded vehicle weight of 0-3750 pounds.

“LDT2” means a “LEV II” light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight of 8500 pounds.

“LEV” means low-emission vehicle.

“LPG” means liquefied petroleum gas.

“LVW” means loaded vehicle weight.

“MDPV” means medium-duty passenger vehicle.

“MDV” means medium-duty vehicle.

“mg/mi” means milligrams per mile.

“N<sub>2</sub>O” means nitrous oxide.

“PC” means passenger car.

“SULEV” means super-ultra-low-emission vehicle.

“ULEV” means ultra-low-emission vehicle.

“ZEV” means zero-emission vehicle.

(e) Definitions Specific to this Section. The following definitions apply to this section 1961.1:

(1) “A/C Direct Emissions” means any refrigerant released from a motor vehicle's air conditioning system.

(2) “A/C Indirect Emissions” means any increase in motor vehicle exhaust CO<sub>2</sub> emissions that can be attributed to the operation of the air conditioning system.

(3) “GHG Vehicle Test Group” means vehicles that have an identical test group, vehicle make and model, transmission class and driveline, aspiration method (e.g., naturally aspirated, turbocharged), camshaft configuration, valvetrain configuration, and inertia weight class.

(4) “Greenhouse Gas” means the following gases: carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons.

(5) “Grid-Connected Hybrid Electric Vehicle” means a hybrid electric vehicle that has the capacity for the battery to be recharged from an off-board source of electricity and has some all-electric range.

(6) “GWP” means the 100-year global warming potential specified in IPCC (Intergovernmental Panel on Climate Change) 2000: Emissions Scenarios. N. Nakicenovic et. al. editors, Special Report of Working Group III of the IPCC, Cambridge University Press, Cambridge UK, ISBN 0-521-80493-0.

(7) “2012 through 2016 MY National greenhouse gas program” means the national program that applies to new 2012 through 2016 model year passenger cars, light-duty trucks, and medium-duty passenger vehicles as adopted by the U.S. Environmental Protection Agency at 75 Fed.Reg. 25324 (May 7, 2010), as incorporated in and amended by the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.”

(8) “Normal Operation” of an air conditioning system means typical everyday use of the A/C system to cool a vehicle. “Normal Operation” does not include car accidents, dismantling of an air conditioning system, or any other non-typical events.

(9) “Optional GHG Test Vehicle Configuration” means any GHG vehicle configuration that is selected for testing by the manufacturer as allowed by section G.2.3 of the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” other than the worst-case configuration.

(10) “Renewable Energy Resource” means a facility that meets all of the criteria set forth in Public Resources Code section 25741(a), except that the facility is not required to be located in California or near the border of California.

(11) “Variable Displacement Compressor” means a compressor in which the mass flow rate of refrigerant is adjusted independently of compressor speed by the control system in response to cooling load demand.

(12) “Variable Speed Compressor” means a compressor in which the mass flow rate of refrigerant can be adjusted by control of the compressor input shaft speed, independent of vehicle engine speed. For example, a variable speed compressor can have electric drive, hydraulic drive, or mechanical drive through a variable speed transmission.

(13) “Worst-Case” means the vehicle configuration within each test group that is expected to have the highest CO<sub>2</sub>-equivalent value, as calculated in section 1961.1(a)(1)(B)1.

(f) Severability. Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of this article remains in full force and effect.

(g) Effective Date of this Section. The requirements of this section 1961.1 shall become effective on January 1, 2006.

Note: Authority cited: Sections 39500, 39600, 39601, 43013, 43018, 43018.5, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43018.5, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43204, 43205 and 43211, Health and Safety Code.

## HISTORY

1. New section filed 9-15-2005; operative 1-1-2006 (Register 2005, No. 37).
2. New subsections (a)(1)(A)1.-(a)(1)(A)1.d., amendment of subsection (a)(1)(B)1.a., new subsections (a)(1)(B)1.b.iv. and (a)(1)(B)1.c.iv. and amendment of subsection (b)(3)(A) filed 4-1-2010; operative 4-1-2010 pursuant to Government Code section 11343.4 (Register 2010, No. 14).
3. Amendment designating former subsection (a)(1)(A) as subsection (a)(1)(A)(i), new subsections (a)(1)(A)(ii)-(a)(1)(A)(ii)3., new subsection (e)(7) and subsection renumbering filed 4-1-2010; operative 4-1-2010 pursuant to Government Code section 11343.4 (Register 2010, No. 14).
4. Amendment of section heading and section filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).

This database is current through 5/22/20 Register 2020, No. 21  
13 CCR § 1961.1, 13 CA ADC § 1961.1

## **Section 1961.2. Exhaust Emission Standards and Test Procedures - 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

*Introduction.* This section 1961.2 contains the California “LEV III” exhaust emission standards for 2015 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles. A manufacturer must demonstrate compliance with the exhaust standards in subsection (a) applicable to specific test groups, and with the composite phase-in requirements in subsection (b) applicable to the manufacturer's entire fleet.

Before the 2015 model year, a manufacturer that produces vehicles that meet the standards in subsection (a) has the option of certifying the vehicles to those standards, in which case the vehicles will be treated as LEV III vehicles for purposes of the fleet-wide phase-in requirements. Similarly, 2015 - 2019 model-year vehicles may be certified to the “LEV II” exhaust emission standards in subsection 1961(a)(1), in which case the vehicles will be treated as LEV II vehicles for purposes of the fleet-wide phase-in requirements.

A manufacturer has the option of certifying engines used in incomplete and diesel medium-duty vehicles with a gross vehicle weight rating of greater than 10,000 lbs. GVW to the heavy-duty engine standards and test procedures set forth in title 13, CCR, subsections 1956.8(c) and (h). All medium-duty vehicles with a gross vehicle weight rating of less than or equal to 10,000 lbs. GVW, including incomplete otto-cycle medium-duty vehicles and medium-duty vehicles that use diesel cycle engines, must be certified to the LEV III chassis standards and test procedures set forth in this section 1961.2 in 2020 and subsequent model years.

### *Pooling Provision.*

For each model year, a manufacturer must demonstrate compliance with this section 1961.2 based on one of two options applicable throughout the model year, either:

Option 1: the total number of passenger cars, light-duty trucks, and medium-duty vehicles that are certified to the California exhaust emission standards in subsection (a) and subsection 1961(a)(1), and are produced and delivered for sale in California; or

Option 2: the total number of passenger cars, light-duty trucks, and medium-duty vehicles that are certified to the California exhaust emission standards in subsection (a) and subsection 1961(a)(1), and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's criteria pollutant emission standards set forth in this section 1961.2 for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

A manufacturer that selects compliance Option 2 must notify the Executive Officer of that selection in writing prior to the start of the applicable model year or must comply with Option 1. Once a manufacturer has selected compliance Option 2, that selection applies unless the manufacturer selects Option 1 and notifies the Executive Officer of that selection in writing before the start of the applicable model year.

When a manufacturer is demonstrating compliance using Option 2 for a given model year, the term “in California” as used in this section 1961.2 means California, the District of Columbia, and all states that have adopted California's criteria pollutant emission standards set forth in this section 1961.2 for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

(a) Exhaust Emission Standards.

(1) “*LEV III*” *Exhaust Standards*. The following standards are the maximum exhaust emissions for the full useful life from new 2015 and subsequent model year “LEV III” passenger cars, light-duty trucks, and medium-duty vehicles, including fuel-flexible, bi-fuel and dual-fuel vehicles when operating on the gaseous or alcohol fuel they are designed to use. 2015 - 2019 model-year LEV II LEV vehicles may be certified to the 150,000 mile NMOG+NO<sub>x</sub> emission standards for LEV160, LEV395, or LEV630, as applicable, in this subsection (a)(1) and the corresponding NMOG+NO<sub>x</sub> numerical values in subsection (a)(4), in lieu of the separate NMOG and NO<sub>x</sub> exhaust emission standards in subsection 1961(a)(1) and the corresponding NMOG numerical values in subsection 1961(a)(4) and LEV II ULEV vehicles may be certified to the 150,000 mile NMOG+NO<sub>x</sub> emission standards for ULEV125, ULEV340, or ULEV570, as applicable, in this subsection (a)(1) and the corresponding NMOG+NO<sub>x</sub> numerical values in subsection (a)(4), in lieu of the separate NMOG and NO<sub>x</sub> exhaust emission standards in subsection 1961(a)(1) and the corresponding NMOG numerical values in subsection 1961(a)(4). 2015 - 2019 model-year LEV II SULEV vehicles that receive a partial ZEV allowance in accordance with the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes” and 2015 - 2016 model year vehicles that are allowed to certify to LEV II SULEV standards using “carryover” of emission test data under the provisions in subsection (b)(2) may be certified to the 150,000 mile NMOG+NO<sub>x</sub> emission standards for SULEV30, SULEV170, or SULEV230, as applicable, in this subsection (a)(1) and the corresponding NMOG+NO<sub>x</sub> numerical values in subsection (a)(4), in lieu of the separate NMOG and NO<sub>x</sub> exhaust emission standards in subsection 1961(a)(1) and the corresponding NMOG numerical values in subsection 1961(a)(4). LEV II SULEV vehicles that do not either (1) receive a partial ZEV allowance or (2) certify to LEV II SULEV standards in the 2015 - 2016 model years using “carryover” of emission test data may not certify to combined NMOG+NO<sub>x</sub> standards. LEV II vehicles that certify to combined NMOG+NO<sub>x</sub> standards will be treated as LEV II vehicles for purposes of the fleet-wide phase-in requirements.

*LEV III Exhaust Mass Emission Standards for New 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles<sup>3</sup>*

	<i>Durability</i>					
	<i>Vehicle</i>	<i>Vehicle</i>	<i>NMOG +</i>	<i>Carbon</i>		
<i>Vehicle Type</i>	<i>Basis</i>	<i>Emission</i>	<i>Oxides of</i>	<i>Monoxide</i>	<i>Formaldehyde</i>	<i>Particulates<sup>1</sup></i>
	<i>(mi)</i>	<i>Category<sup>2</sup></i>	<i>Nitrogen<sup>4</sup> (g/mi)</i>	<i>(g/mi)</i>	<i>(mg/mi)</i>	<i>(g/mi)</i>
All PCs;	150,000	LEV160	0.160	4.2	4	0.01
LDTs 8500 lbs. GVWR		ULEV125	0.125	2.1	4	0.01
or less; and MDPVs		ULEV70	0.070	1.7	4	0.01
		ULEV50	0.050	1.7	4	0.01
Vehicles in this category are tested		SULEV30	0.030	1.0	4	0.01
at their loaded vehicle weight		SULEV20	0.020	1.0	4	0.01
MDVs	150,000	LEV395 <sup>5,6</sup>	0.395	6.4	6	0.12
8501 - 10,000 lbs. GVWR,		ULEV340 <sup>5,6</sup>	0.340	6.4	6	0.06
excluding MDPVs		ULEV250	0.250	6.4	6	0.06
Vehicles in this category are tested		ULEV200	0.200	4.2	6	0.06
at		SULEV170	0.170	4.2	6	0.06
their adjusted loaded vehicle weight		SULEV150	0.150	3.2	6	0.06
MDVs	150,000	LEV630 <sup>5,6</sup>	0.630	7.3	6	0.12
10,001-14,000 lbs. GVWR		ULEV570 <sup>5,6</sup>	0.570	7.3	6	0.06
		ULEV400	0.400	7.3	6	0.06
Vehicles in this category are tested		ULEV270	0.270	4.2	6	0.06
at		SULEV230	0.230	4.2	6	0.06
their adjusted loaded vehicle weight		SULEV200	0.200	3.7	6	0.06

<sup>1</sup> These standards shall apply only to vehicles not included in the phase-in of the particulate standards set forth in subsection (a)(2).

<sup>2</sup> The numeric portion of the category name is the NMOG+NOx value in thousandths of grams per mile.

<sup>3</sup> These standards apply at both low altitude and high altitude except as noted in footnote 4.

<sup>4</sup> The LEV III NMOG+NOx 150,000-mile exhaust mass emission standards for passenger cars and light-duty trucks that apply at high-altitude conditions are: 0.160 g/mi for LEV160 and ULEV125; 0.105 g/mi for ULEV70; 0.070 g/mi for ULEV50; and 0.050 g/mi for SULEV30 and SULEV20.

<sup>5</sup> These vehicle emission categories are only applicable for the 2015 through 2021 model years.

<sup>6</sup> The following NOx standards also apply for certification testing with emission-data vehicles: 0.2 g/mi for LEV395 and ULEV340; 0.4 g/mi for LEV630 and ULEV570.

(2) “LEV III” Particulate Standards.

(A) *Particulate Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.* Beginning in the 2017 model year, a manufacturer, except a small volume manufacturer, shall certify a percentage of its passenger car, light-duty truck, and medium-duty passenger vehicle fleet to the following particulate standards according to the following phase-in schedule. These standards are the maximum particulate emissions allowed at full useful life. All vehicles certifying to these particulate standards must certify to the LEV III exhaust emission standards set forth in subsection (a)(1).

LEV III Particulate Emission Standard Values and Phase-in for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles

	<i>% of vehicles certified to a</i>	<i>% of vehicles certified to a</i>
<i>Model Year</i>	<i>3 mg/mi standard</i>	<i>1 mg/mi standard</i>
2017	10	0
2018	20	0
2019	40	0
2020	70	0
2021	100	0
2022	100	0
2023	100	0
2024	100	0
2025	75	25
2026	50	50
2027	25	75
2028 and subsequent	0	100

(B) Particulate Standards for Medium-Duty Vehicles Other than Medium-Duty Passenger Vehicles.

1. Beginning in the 2017 model year, a manufacturer, except a small volume manufacturer, shall certify a percentage of its medium-duty vehicle fleet to the following particulate standards. These standards are the maximum particulate emissions allowed at full useful life. All vehicles certifying to



these particulate standards must certify to the LEV III exhaust emission standards set forth in subsection (a)(1). This subsection (a)(2)(B)1 shall not apply to medium-duty passenger vehicles.

*LEV III Particulate Emission Standard Values for Medium-Duty Vehicles, Other than Medium-Duty Passenger Vehicles*

<i>Vehicle Type<sup>1</sup></i>	<i>Particulates</i>
	<i>(mg/mi)</i>
MDVs	
8501 - 10,000 lbs. GVWR, excluding MDPVs	8
MDVs	
10,001 - 14,000 lbs. GVWR	10

<sup>1</sup> Vehicles in these categories are tested at their adjusted loaded vehicle weight.

2. A manufacturer of medium-duty vehicles, except a small volume manufacturer, shall certify at least the following percentage of its medium-duty vehicle fleet to the particulate standards in subsection (a)(2)(B)1 according to the following phase-in schedule. This subsection (a)(2)(B)2 shall not apply to medium-duty passenger vehicles.

*LEV III Particulate Emission Standard Phase-in for Medium-Duty Vehicles, Other than Medium-Duty Passenger Vehicles*

<i>Model Year</i>	<i>Total % of MDVs certified to the 8 mg/mi PM Standard or to the 10 mg/mi PM Standard, as applicable</i>
2017	10
2018	20
2019	40
2020	70
2021 and subsequent	100

(C) Particulate Standards for Small Volume Manufacturers. In the 2021 through 2027 model years, a small volume manufacturer shall certify 100 percent of its passenger car, light-duty truck, and medium-duty passenger vehicle fleet to the 3 mg/mi particulate standard. In the 2028 and subsequent model years, a small volume manufacturer shall certify 100 percent of its passenger car, light-duty truck, and medium-duty passenger vehicle fleet to the 1 mg/mi particulate standard. In the 2021 and subsequent model years, a small volume manufacturer shall certify 100 percent of its medium-duty vehicles 8501 - 10,000 lbs. GVWR, excluding MDPVs, to the 8 mg/mi particulate standard. In the 2021 and subsequent model years, a small volume manufacturer shall certify 100 percent of its medium-duty vehicles 10,001 - 14,000 lbs. GVWR to the 10 mg/mi particulate standard. These standards are the maximum particulate emissions allowed at full useful life. All vehicles certifying to these particulate standards must certify to the LEV III exhaust emission standards set forth in subsection (a)(1).

(D) Alternative Phase-in Schedule for Particulate Standards.

1. Alternative Phase-in Schedules for the 3 mg/mi Particulate Standard for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. A manufacturer may use an alternative phase-in schedule to comply with the 3 mg/mi particulate standard phase-in requirements as long as: (1) the percent of PC+LDT+MDPV vehicles meeting the 3 mg/mi particulate standard in the 2019 model year is greater than or equal to the highest percent of PC+LDT+MDPV vehicles meeting the 3 mg/mi particulate standard in the 2016, 2017, and 2018 model years individually; (2) the percent of PC+LDT+MDPV vehicles meeting the 3 mg/mi particulate standard in the 2020 model year is greater than or equal to the highest percent of PC+LDT+MDPV vehicles meeting the 3 mg/mi particulate standard in the 2016, 2017, and 2018 model years individually; and (3) equivalent PM emission reductions are achieved by the 2021 model year from passenger cars, light-duty trucks, and medium-duty passenger vehicles. Model year emission reductions shall be calculated by multiplying the percent of PC+LDT+MDPV vehicles meeting the 3 mg/mi particulate standard in a given model year (based on a manufacturer's projected sales volume of vehicles in each category) by 5 for the 2017 model year, 4 for the 2018 model year, 3 for the 2019 model year, 2 for the 2020 model year, and 1 for the 2021 model year. The yearly results for PC+LDT+MDPV vehicles shall be summed together to determine a cumulative total for PC+LDT+MDPV vehicles. In the 2021 model year, the cumulative total must be equal to or greater than 490, and 100 percent of the manufacturer's passenger cars, light-duty trucks, and medium-duty passenger vehicles must be certified to the 3 mg/mi particulate standard, to be considered equivalent. A manufacturer may add vehicles introduced before the 2017 model year (e.g., the percent of vehicles introduced in 2016 would be multiplied by 5) to the cumulative total.

2. Alternative Phase-in Schedules for the 1 mg/mi Particulate Standard for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. A manufacturer may use an alternative phase-in schedule to comply with the 1 mg/mi particulate standard phase-in requirements as long as equivalent PM emission reductions are achieved by the 2028 model year from passenger cars, light-duty trucks, and medium-duty passenger vehicles. Model year emission reductions shall be calculated by multiplying the percent of PC+LDT+MDPV vehicles meeting the 1 mg/mi particulate standard in a given model year (based on a manufacturer's projected sales volume of vehicles in each category) by 4 for the 2025 model year, 3 for the 2026 model year, 2 for the 2027 model year, and 1 for the 2028 model year. The yearly results for PC+LDT+MDPV vehicles shall be summed together to determine a cumulative total for PC+LDT+MDPV vehicles. In the 2028 model year, the cumulative total must be equal to or greater than 500, and 100 percent of the manufacturer's passenger cars, light-duty trucks, and medium-duty passenger vehicles must be certified to the 1 mg/mi particulate standard, to be considered equivalent. A manufacturer may add vehicles introduced before the 2025 model year (e.g., the percent of vehicles introduced in 2024 would be multiplied by 4) to the cumulative total.

3. Alternative Phase-in Schedules for the Particulate Standards for Medium-Duty Vehicles Other than Medium-Duty Passenger Vehicles. A manufacturer may use an alternative phase-in schedule to comply with the particulate standard phase-in requirements as long as equivalent PM emission reductions are achieved by the 2021 model year from medium-duty vehicles other than medium-duty passenger vehicles. Model year emission reductions shall be calculated by multiplying the total

percent of MDVs certified to the 8 mg/mi PM standard or to the 10 mg/mi PM standard, as applicable, in a given model year (based on a manufacturer's projected sales volume of vehicles in each category) by 5 for the 2017 model year, 4 for the 2018 model year, 3 for the 2019 model year, 2 for the 2020 model year, and 1 for the 2021 model year. The yearly results for MDVs shall be summed together to determine a cumulative total for MDVs. In the 2021 model year, the cumulative total must be equal to or greater than 490, and 100 percent of the manufacturer's MDVs must be certified to the 8 mg/mi PM standard or to the 10 mg/mi PM standard, as applicable, to be considered equivalent. A manufacturer may add vehicles introduced before the 2017 model year (e.g., the percent of vehicles introduced in 2016 would be multiplied by 5) to the cumulative total.

(3) NMOG+NO<sub>x</sub> Standards for Bi-Fuel, Fuel-Flexible, and Dual-Fuel Vehicles. For fuel-flexible, bi-fuel, and dual-fuel PCs, LDTs and MDVs, compliance with the NMOG+NO<sub>x</sub> exhaust mass emission standards must be based on exhaust emission tests both when the vehicle is operated on the gaseous or alcohol fuel it is designed to use, and when the vehicle is operated on gasoline. A manufacturer must demonstrate compliance with the applicable exhaust mass emission standards for NMOG+NO<sub>x</sub>, CO, and formaldehyde set forth in the table in subsection (a)(1) when certifying the vehicle for operation on the gaseous or alcohol fuel, as applicable, and on gasoline or diesel, as applicable.

A manufacturer may measure NMHC in lieu of NMOG when fuel-flexible, bi-fuel and dual-fuel vehicles are operated on gasoline, in accordance with the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” Testing at 50°F is not required for fuel-flexible, bi-fuel, and dual-fuel vehicles when operating on gasoline.

(4) 50°F Exhaust Emission Standards. All passenger cars, light-duty trucks, and medium-duty vehicles, other than natural gas and diesel-fueled vehicles, must demonstrate compliance with the following 4,000 mile exhaust emission standards for NMOG+NO<sub>x</sub> and formaldehyde (HCHO) measured on the FTP (40 CFR, Part 86, Subpart B) conducted at a nominal test temperature of 50°F, as modified by Part II, Section D of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” A manufacturer may demonstrate compliance with the NMOG+NO<sub>x</sub> and HCHO certification standards contained in this subparagraph by measuring NMHC exhaust emissions or issuing a statement of compliance for HCHO in accordance with Section D.10 and Section G.3.1.2, respectively, of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” Emissions of CO measured at 50°F at 4,000 miles shall not exceed the standards set forth in subsection (a)(1) applicable to vehicles of the same emission category and vehicle type subject to a cold soak and emission test at 68° to 86°F.

(A) Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles Certified to the LEV III Standards.

*50°F Exhaust Emission Standards for LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles*

<i>Vehicle Emission</i>	<i>NMOG + NOx</i>		<i>HCHO</i>
<i>Category</i>	<i>(g/mi)</i>		<i>(g/mi)</i>
	Gasoline	Alcohol	Both Gasoline
		Fuel	and Alcohol Fuel
LEV160	0.320	0.320	0.030
ULEV125	0.250	0.250	0.016
ULEV70	0.140	0.250	0.016
ULEV50	0.100	0.140	0.016
SULEV30	0.060	0.125	0.008
SULEV20	0.040	0.075	0.008

(B) Standards for Medium-Duty Vehicles (Excluding MDPVs) Certified to the LEV III Standards.

*50°F Exhaust Emission Standards for LEV III Medium-Duty Vehicles (Excluding MDPVs)*

<i>Vehicle Emission</i>	<i>NMOG + NOx</i>		<i>HCHO</i>
<i>Category</i>	<i>(g/mi)</i>		<i>(g/mi)</i>
	Gasoline	Alcohol	Both Gasoline
		Fuel	and Alcohol Fuel
LEV395	0.790	0.790	0.064
ULEV340	0.680	0.680	0.032
ULEV250	0.500	0.500	0.032
ULEV200	0.400	0.500	0.016
SULEV170	0.340	0.425	0.016
SULEV150	0.300	0.375	0.016
LEV630	1.260	1.260	0.080
ULEV570	1.140	1.140	0.042
ULEV400	0.800	0.800	0.042
ULEV270	0.540	0.675	0.020
SULEV230	0.460	0.575	0.020
SULEV200	0.400	0.500	0.020

(5) Cold CO Standard. The following standards are the 50,000 mile cold temperature exhaust carbon monoxide emission levels from new 2015 and subsequent model-year passenger cars, light-duty trucks, and medium-duty passenger vehicles:

*2015 AND SUBSEQUENT MODEL-YEAR COLD TEMPERATURE CARBON MONOXIDE EXHAUST EMISSIONS STANDARDS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY PASSENGER VEHICLES (grams per mile)*

<i>Vehicle Type</i>	<i>Carbon Monoxide</i>
All PCs, LDTs 0-3750 lbs. LVW;	10.0
LDTs, 3751 lbs. LVW - 8500 lbs. GVWR;	12.5
MDPVs 10000 lbs. GVWR and less	

These standards apply to vehicles tested at a nominal temperature of 20°F (-7°C) in accordance with 40 CFR Part 86 Subpart C, as amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” Natural gas, diesel-fueled and zero-emission vehicles are exempt from these standards.

(6) Highway NMOG + NO<sub>x</sub> Standard. The maximum emissions of non-methane organic gas plus oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B or 40 CFR §1066.840), as modified by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” must not be greater than the applicable LEV III NMOG+NO<sub>x</sub> standard set forth in subsection (a)(1). Both the sum of the NMOG+NO<sub>x</sub> emissions and the HWFET standard must be rounded in accordance with ASTM E29-67 to the nearest 0.001 g/mi before being compared.

(7) Supplemental Federal Test Procedure (SFTP) Off-Cycle Emission Standards.

(A) SFTP NMOG+NO<sub>x</sub> and CO Exhaust Emission Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. Manufacturers shall certify 2015 and subsequent model year LEVs, ULEVs, and SULEVs in the PC, LDT, and MDPV classes to either the SFTP NMOG+NO<sub>x</sub> and CO Stand-Alone Exhaust Emission Standards set forth in subsection (a)(7)(A)1, or in accordance with the SFTP NMOG+NO<sub>x</sub> and CO Composite Exhaust Emission Standards and Fleet-Average Requirements set forth in subsection (a)(7)(A)2. A manufacturer may also certify 2014 model LEVs, ULEVs, or SULEVs in the PC, LDT, or MDPV classes to LEV III SFTP standards, in which case, the manufacturer shall be subject to the LEV III SFTP emission standards and requirements, including the sales-weighted fleet-average NMOG+NO<sub>x</sub> composite emission standard applicable to 2015 model vehicles if choosing to comply with the SFTP NMOG+NO<sub>x</sub> and CO Composite Exhaust Emission Standards and Fleet-Average Requirements set forth in subsection (a)(7)(A)2. The manufacturer shall notify the Executive Officer of its selected emission standard type in the Application for Certification of the first test group certifying to SFTP NMOG+NO<sub>x</sub> and CO emission standards on a 150,000 mile durability basis. Once an emission standard type for NMOG+NO<sub>x</sub> and CO is selected for a fleet, and the Executive Officer is notified of such selection, the selection must be kept through the 2025 model year for the entire fleet, which includes LEV II vehicles if selecting to comply with subsection (a)(7)(A)2. The manufacturer may not change its

selection until the 2026 model year. Test groups not certifying to the 150,000-mile SFTP NMOG+NOx and CO emission standards pursuant to this subsection (a)(7)(A) shall be subject to the 4,000-mile SFTP NMOG+NOx and CO emission standards set forth in subsection 1960.1(r).

1. SFTP NMOG+NOx and CO Exhaust Stand-Alone Emission Standards. The following standards are the maximum SFTP NMOG+NOx and CO exhaust emissions through full useful life from 2015 and subsequent model-year LEV III LEVs, ULEVs, and SULEVs when operating on the same gaseous or liquid fuel they use for FTP certification. These standards only apply to 2015 through 2016 model year fuel-flexible vehicles ≤ 6,000 lbs. GVWR and 2015 through 2017 model year fuel-flexible vehicles > 6,000 lbs. GVWR when operating on the LEV III certification gasoline specified in Part II, Section A.100.3.1.2 of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” 2017 and subsequent model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles) ≤ 6,000 lbs. GVWR as well as 2018 and subsequent model year multi-fueled vehicles > 6,000 lbs. GVWR, including vehicles certifying with carryover data, shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of fuel-flexible vehicles).

*SFTP NMOG+NOx and CO Stand-Alone Exhaust Emission Standards for 2015 and Subsequent Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles*

	<i>Durability</i>					
	<i>Vehicle</i>	<i>Vehicle</i>				
	<i>Basis</i>	<i>Emission</i>	<i>US06 Test (g/mi)</i>			<i>SC03 Test (g/mi)</i>
<i>Vehicle Type</i>	<i>(mi)</i>	<i>Category</i> <sup>1</sup>	<i>NMOG + NOx</i>	<i>CO</i>	<i>NMOG + NOx</i>	<i>CO</i>
All PCs;						
LDTs 0-8,500 lbs. GVWR; and MDPVs	150,000	LEV	0.140	9.6	0.100	3.2
		ULEV	0.120	9.6	0.070	3.2
Vehicles in these categories are tested at their loaded vehicle weight (curb weight plus 300 pounds).		SULEV (Option A) <sup>2</sup>	0.060	9.6	0.020	3.2
		SULEV	0.050	9.6	0.020	3.2

<sup>1</sup> *Vehicle Emission Category.* Manufacturers must certify all vehicles, which are certifying to a LEV III FTP emission category on a 150,000-mile durability basis, to the emission standards of the equivalent, or a more stringent, SFTP emission category set forth on this table. That is, all LEV III LEVs certified to 150,000-mile FTP emission standards shall comply with the SFTP LEV emission standards in this table, all LEV III ULEVs certified to 150,000-mile FTP emission standards shall comply with the SFTP ULEV emission standards in this table, and all LEV III SULEVs certified to 150,000-mile FTP emission standards shall comply with the SFTP SULEV emission standards in this table.

<sup>2</sup> *Optional SFTP SULEV Standards.* A manufacturer may certify light-duty truck test groups from 6,001 to 8,500 lbs. GVWR and MDPV test groups to the SULEV, option A, emission standards set forth in this table for the 2015 through 2020 model year, only if the vehicles in the test group are equipped with a particulate filter and the manufacturer extends the particulate filter emission warranty mileage to 200,000 miles. Passenger cars and light-duty trucks 0-6,000 lbs. GVWR are not eligible for this option.

2. *SFTP NMOG+NOx and CO Composite Exhaust Emission Standards.* For the 2015 and subsequent model years, a manufacturer selecting this option must certify LEV II and LEV III LEVs, ULEVs, and SULEVs, such that the manufacturer's sales-weighted fleet-average NMOG+NOx composite emission value does not exceed the applicable NMOG+NOx composite emission standard set forth in the following table. In addition, the CO composite emission value of any LEV III test group shall not exceed the CO composite emission standard set forth in the following table. SFTP compliance shall be demonstrated using the same gaseous or liquid fuel used for FTP certification. These standards only apply to 2015 through 2016 model year fuel-flexible vehicles  $\leq$  6,000 lbs. GVWR and 2015 through 2017 model year fuel-flexible vehicles  $>$  6,000 lbs. GVWR when operating on the LEV III certification gasoline specified in Part II, Section A.100.3.1.2 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles." 2017 and subsequent model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles)  $\leq$  6,000 lbs. GVWR as well as 2018 and subsequent model year multi-fueled vehicles  $>$  6,000 lbs. GVWR, including vehicles certifying with carryover data, shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of fuel-flexible vehicles).

For each test group subject to this subsection, manufacturers shall calculate a Composite Emission Value for NMOG+NOx and, for LEV III test groups, a separate Composite Emission Value for CO, using the following equation:

$$\text{Composite Emission Value} = 0.28 \times \text{US06} + 0.37 \times \text{SC03} + 0.35 \times \text{FTP} \text{ [Eq. 1]}$$

where

"US06" = the test group's NMOG+NOx or CO emission value, as applicable, determined through the US06 test;

"SC03" = the test group's NMOG+NOx or CO emission value, as applicable, determined through the SC03 test; and

"FTP" = the test group's NMOG+NOx or CO emission value, as applicable, determined through the FTP test.

If no vehicles in a test group have air conditioning units, the FTP cycle emission value can be used in place of the SC03 cycle emission value in Equation 1. To determine compliance with the SFTP NMOG+NOx composite emission standard applicable to the model year, manufacturers shall use a sales-weighted fleet average of the NMOG+NOx composite emission values of every applicable

test group. The sales-weighted fleet average shall be calculated using a combination of carry-over and new certification SFTP composite emission values (converted to NMOG+NOx, as applicable). LEV II test groups will use their emission values in the fleet average calculation but will not be considered LEV III test groups. Compliance with the CO composite emission standard cannot be demonstrated through fleet averaging. The NMOG+NOx sales-weighted fleet-average composite emission value for the fleet and the CO composite emission value for each test group shall not exceed:

*SFTP NMOG+NOx and CO Composite Emission Standards for 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles (g/mi)<sup>1</sup>*

Model Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025+
All PCs;											
LDTs 8,500 lbs. GVWR or less; and MDPVs <sup>3</sup>	<i>Sales-Weighted Fleet Average NMOG+NOx Composite Exhaust Emission Standards<sup>2,4,5,6</sup></i>										
	0.140	0.110	0.103	0.097	0.090	0.083	0.077	0.070	0.063	0.057	0.050
Vehicles in this category are tested at their loaded vehicle weight (curb weight plus 300 pounds) except LEV II vehicles, which are subject to the test weights specified in § 1960.1(r), title 13, CCR.	<i>CO Composite Exhaust Emission Standard<sup>7</sup></i>										
	4.2										

<sup>1</sup> *Mileage for Compliance.* All test groups certifying to LEV III FTP emission standards on a 150,000-mile durability basis shall also certify to the SFTP on a 150,000-mile durability basis, as tested in accordance with the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.”

<sup>2</sup> *Determining NMOG+NOx Composite Emission Values of LEV II Test Groups and Cleaner Federal Vehicles.* For test groups certified to LEV II FTP emission standards, SFTP emission values shall be converted to NMOG+NOx and projected out to the same full useful life mileage as their LEV II FTP certification, 120,000 miles or 150,000 miles using deterioration factors or aged components. In lieu of deriving a deterioration factor specific to SFTP test cycles, carry-over LEV II test groups may use the applicable deterioration factor from the FTP cycle in order to determine the carry-over composite emission values for the purpose of the NMOG+NOx sales-weighted fleet-average calculation. If an SFTP full-useful life emission value is used to comply with the LEV II SFTP 4k standards, that value may be used in the sales-weighted fleet-average without applying an additional deterioration factor. For federally-certified test groups certifying in California in accordance with Section H.1.4 of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” the full-useful life emission value used to comply with federal full-useful life SFTP requirements may be used in the sales-weighted fleet-average without applying an additional deterioration factor. For gasoline-fueled vehicles, NMHC emission values for the US06 and SC03 test cycles shall be converted to NMOG emission values by multiplying by a factor of 1.03. LEV II test groups that contain vehicles at or below 6,000 lbs. GVWR shall certify to SFTP bins as described in footnote 4 at the same



full useful life mileage as their LEV II FTP certification starting model year 2017 and in each subsequent model year, thereafter. LEV II test groups that only contain vehicles above 6,000 lbs. GVWR shall certify to SFTP bins as described in footnote 4 at the same full useful life mileage as their LEV II FTP certification starting model year 2018 and in each subsequent model year, thereafter. Test groups certifying to bins shall be subject to the in-use requirements in section (a)(8)(c).

<sup>3</sup> MDPVs are excluded from SFTP NMOG+NOx and CO emission standards and the sales-weighted fleet average until they are certified to LEV III FTP 150,000-mile NMOG+NOx and CO requirements.

<sup>4</sup> LEV III test groups shall certify to bins in increments of 0.010 g/mi. Beginning with the 2018 model year, vehicles may not certify to bin values above a maximum of 0.180 g/mi.

<sup>5</sup> *Calculating the sales-weighted average for NMOG+NOx.* For each model year, the manufacturer shall calculate its sales-weighted fleet-average NMOG+NOx composite emission value as follows.

[https://govt.westlaw.com/calregs/Link/Document/Blob/I60bfa97aeb5111e183a1ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I60bfa97aeb5111e183a1ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$\frac{\left[ \sum_{i=1}^n (\text{number of vehicles in the test group})_i \times (\text{composite value of bin})_i \right]}{\sum_{i=1}^n (\text{number of vehicles in the test group})_i} \quad \text{[Eq. 2]}$$

where “n” = a manufacturer’s total number of PC, LDT, and, if applicable, MDPV certification bins, in a given model year including carry-over certification bins, certifying to SFTP composite emission standards in that model year; “number of vehicles in the test group” = the number of vehicles produced and delivered for sale in California in the certification test group; and

“Composite Value of Bin” = the numerical value selected by the manufacturer for the certification bin that serves as the emission standard for the vehicles in the test group with respect to all testing for test groups certifying to SFTP on a 150,000-mile durability basis, and the SFTP carry-over composite emission value, as described in footnote 2 of this table, for carry-over LEV II test groups. For each test group, the manufacturer shall report to the Executive Officer the composite value of bin and the number of vehicles within the test group.

<sup>6</sup> Calculation of Fleet Average Total NMOG+NOx Credits or Debits. A manufacturer shall calculate the total NMOG+NOx credits or debits, as follows:

$$[(\text{NMOG+NOx Composite Emission Standard}) - (\text{Manufacturer's Sales-Weighted Fleet-Average Composite Emission Value})] \times (\text{Total Number of Vehicles Produced and Delivered for Sale in California in the 0-8,500 lbs GVWR plus MDPVs classes, if applicable}) \quad \text{[Eq. 3]}$$

A negative number constitutes total NMOG+NOx debits, and a positive number constitutes total NMOG+NOx credits accrued by the manufacturer for the given model year. Total NMOG+NOx credits earned in a given model year retain full value through the fifth model year after they are earned. At the beginning of the sixth model year, the total NMOG+NOx credits have no value. A manufacturer may trade credits with other manufacturers

A manufacturer shall equalize total NMOG+NOx debits within three model years after they have been incurred by earning NMOG+NOx credits in an amount equal to the total NMOG+NOx debits. If total NMOG+NOx debits are not equalized within the three model-year period, the manufacturer is subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the total NMOG+NOx debits are not equalized by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state

board's emission standards is determined by dividing the NMOG+NOx debits for the model year by the NMOG+NOx composite emission standard in effect during the model year in which the debits were incurred.

<sup>7</sup> *Calculating the CO composite emission value.* Composite emission values for CO shall be calculated in accordance with Equation 1 above. Unlike the NMOG+NOx composite emission standards, manufacturers may not comply with the CO composite emission standard through fleet averaging; each individual test group must comply with the standard. Test groups certified to 4,000-mile SFTP emission standards and federally-certified test groups certifying in California in accordance with Section H subparagraph 1.4 of “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” are not subject to this CO emission standard.

(B) *SFTP PM Exhaust Emission Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.* The following standards are the maximum PM exhaust emissions through the full useful life from 2017 and subsequent model-year LEV III LEVs, ULEVs, and SULEVs in the PC, LDT, and MDPV classes when operating on the same gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles  $\leq$  6,000 lbs. GVWR certified to LEV III FTP standards prior to model year 2017 and fuel-flexible vehicles  $>$  6,000 lbs. GVWR certified to LEV III FTP standards prior to model year 2018, these standards only apply when the vehicles is operating on the LEV III certification gasoline specified in Part II, Section A.100.3.1.2 of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” 2017 and subsequent model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles)  $\leq$  6,000 lbs. GVWR and 2018 and subsequent model year multi-fueled vehicles  $>$  6,000 lbs. GVWR, including vehicles certifying with carryover data, shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of fuel-flexible vehicles). Manufacturers must certify LEVs, ULEVs, and SULEVs in the PC, LDT, and MDPV classes, which are certifying to LEV III FTP PM emission standards in subsection (a)(2) on a 150,000-mile durability basis, to the *SFTP PM Exhaust Emission Standards* set forth in this subsection (a)(7)(B).

*SFTP PM Exhaust Emission Standards for 2017 and Subsequent Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles* <sup>1</sup>

Vehicle Type	Test Weight	Mileage for Compliance	Test Cycle	PM <sup>2</sup> (mg/mi)	
				2018 and Prior Model Years	2019 and Subsequent Model Years
All PCs and LDTs through 8,500 lbs GVWR; MDPVs	Loaded vehicle weight	150,000	US06	10	6

<sup>1</sup> All PCs, LDTs, and MDPVs certified to LEV III FTP PM emission standards in subsection (a)(2) on a 150,000-mile durability basis shall comply with the SFTP PM Exhaust Emission Standards in this table.

<sup>2</sup> *Relaxed Interim Certification Standard.* Manufacturers shall certify 2018 and prior model test groups to a relaxed interim US06 PM certification standard of 10 mg/mi. However, all 2019 and subsequent model vehicles certifying to the LEV III FTP PM standard, including those from carryover test groups, shall be subject to the 6 mg/mi US06 PM standard.

(C) *SFTP NMOG+NOx and CO Exhaust Emission Standards for Medium-Duty Vehicles.* The following standards are the maximum NMOG+NOx and CO composite emission values for full

useful life of 2016 and subsequent model-year medium-duty LEV III ULEVs and SULEVs from 8,501 through 14,000 pounds GVWR when operating on the same gaseous or liquid fuel they use for FTP certification. In the case of flex-fueled vehicles certified to LEV III FTP standards prior to model year 2018, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2 of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” 2018 and subsequent model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles), including vehicles certifying with carryover data, shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of fuel-flexible vehicles). The following composite emission standards do not apply to MDPVs subject to the emission standards presented in subsections (a)(7)(A) and (a)(7)(B).

*SFTP NMOG+NOx and CO Composite Exhaust Emission Standards for 2016 and Subsequent Model ULEVs and SULEVs in the Medium-Duty Vehicle Class*

					<i>Composite Emission Standard<sup>1</sup> (g/mi)</i>	
					<i>Vehicle Emission</i>	<i>NMOG + Carbon Monoxide</i>
<i>Vehicle Type</i>	<i>Mileage for Compliance</i>	<i>HP/GVWR<sup>2</sup></i>	<i>Test Cycle<sup>3,4,5</sup></i>	<i>Category<sup>6</sup></i>	<i>NOx</i>	<i>Monoxide</i>
MDVs 8,501 - 10,000 lbs GVWR	150,000	≤ 0.024	US06 Bag 2,	ULEV	0.550	22.0
			SC03, FTP	SULEV	0.350	12.0
		> 0.024	Full US06,	ULEV	0.800	22.0
			SC03, FTP	SULEV	0.450	12.0
MDVs 10,001-14,000 lbs GVWR	150,000	n/a	Hot 1435 UC	ULEV	0.550	6.0
			(Hot 1435 LA92),	SULEV	0.350	4.0
			SC03, FTP			

<sup>1</sup> Manufacturers shall use Equation 1 in subsection (a)(7)(A)2 to calculate SFTP Composite Emission Values for each test group subject to the emission standards in this table. For MDVs 10,001-14,000 lbs. GVWR, the emission results from the UC test shall be used in place of results from the US06 test.

<sup>2</sup> *Power to Weight Ratio.* If all vehicles in a test group have a power to weight ratio at or below a threshold of 0.024, they may opt to run the US06 Bag 2 in lieu of the full US06 cycle. The cutoff is determined by using a ratio of the engine's maximum rated horsepower, as established by the engine manufacturer in the vehicle's Application for Certification, to the vehicle's GVWR in pounds and does not include any horsepower contributed by electric motors in the case of hybrid electric or plug-in hybrid electric vehicles. Manufacturers may opt to test to the full cycle regardless of the calculated ratio; in such case, manufacturers shall meet the emission standards applicable to vehicles with power-to-weight ratios greater than 0.024.

<sup>3</sup> *Test Weight.* Medium-duty vehicles are tested at their adjusted loaded vehicle weight (average of curb weight and GVWR).

<sup>4</sup> *Road Speed Fan.* Manufacturers have the option to use a road speed modulated fan as specified in 40-CFR § 86.107-96(d)(1) or §1066.105, as applicable, instead of a fixed speed fan for MDV SFTP testing.

<sup>5</sup> If a manufacturer provides an engineering evaluation for a test group showing that SC03 emissions are equivalent to or lower than FTP emissions, the FTP emission value may be used in place of the SC03 emission value when determining the composite emission value for that test group.

<sup>6</sup> *Vehicle Emission Categories.* For MDVs 8,501-10,000 lbs. GVWR certified prior to the 2018 model year, for each model year, the percentage of MDVs certified to an SFTP emission category set forth in this section 1961.2 shall be equal to or greater than the total percentage certified to the FTP ULEV250, ULEV200, SULEV170, and SULEV150 emission categories; of these vehicles, the percentage of MDVs certified to an SFTP SULEV emission category shall be equal to or greater than the total percentage certified to both the FTP SULEV170 and SULEV150 emission categories. For MDVs 10,001-14,000 lbs. GVWR, for each model year, the percentage of MDVs certified to an SFTP emission category set forth in this section 1961.2 shall be equal to or greater than the total percentage certified to the FTP ULEV400, ULEV270, SULEV230, and SULEV200 emission categories; of these vehicles, the percentage of MDVs certified to an SFTP SULEV emission category shall be equal to or greater than the total percentage certified to both the FTP SULEV230 and SULEV200 emission categories. 2018 and subsequent model year MDVs 8,501-10,000 lbs. GVWR certifying to the FTP ULEV250 and ULEV200 emission categories, including vehicles certifying with carryover data, shall comply with the SFTP ULEV standards set forth in this subsection (a)(7)(C), and those certifying to FTP SULEV170 and SULEV150, including vehicles certifying with carryover data, shall comply with the SFTP SULEV standards set forth in this subsection (a)(7)(C). 2018 and subsequent model year MDVs 10,001-14,000 lbs. GVWR certifying to FTP ULEV400 and ULEV270 emission categories, including vehicles certifying with carryover data, shall comply with the SFTP ULEV standards set forth in this subsection (a)(7)(C), and those certifying to SULEV230 and SULEV200, including vehicles certifying with carryover data, shall comply with the SFTP SULEV standards set forth in this subsection (a)(7)(C).

(D) *SFTP PM Exhaust Emission Standards for Medium-Duty Vehicles.* The following standards are the maximum PM composite emission values for the full useful life of 2017 and subsequent model-year LEV III LEVs, ULEVs, and SULEVs when operating on the same gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles certified to LEV III FTP standards prior to model year 2018, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2 of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” 2018 and subsequent model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles), including vehicles certifying with carryover data, shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of fuel-flexible vehicles). The following composite emission standards do not apply to MDPVs subject to the emission standards set forth in subsections (a)(7)(A) and (a)(7)(B).

*SFTP PM Exhaust Emission Standards for 2017 and Subsequent Model Medium-Duty Vehicles<sup>1</sup>*

<i>Vehicle Type</i>	<i>Test Weight</i>	<i>Compliance</i>	<i>Mileage for Hp/GVWR<sup>2</sup></i>	<i>Test Cycle<sup>3,4</sup></i>	<i>(mg/mi)</i>
MDVs 8,501-10,000 lbs GVWR	Adjusted loaded	150,000	≤ 0.024	US06 Bag 2	7
	vehicle weight		> 0.024	US06	10
MDVs 10,001-14,000 lbs GVWR	Adjusted loaded	150,000	n/a	Hot 1435 UC	7
	vehicle weight			(Hot 1435 LA92)	

<sup>1</sup> Except for MDPVs subject to the emission standards set forth in subsection (a)(7)(B), MDVs certified to 150,000-mile FTP PM emission standards in subsection (a)(2) shall comply with the SFTP PM Exhaust Emission Standards in this table.

<sup>2</sup> *Power to Weight Ratio.* If all vehicles in a test group have a power to weight ratio at or below a threshold of 0.024, they may opt to run the US06 Bag 2 in lieu of the full US06 cycle. The cutoff is determined by using a ratio of the engine's horsepower to the vehicle's GVWR in pounds and does not include any horsepower contributed by electric motors in the case of hybrid electric or plug-in hybrid electric vehicles. Manufacturers may opt to test to the full cycle regardless of the calculated ratio; in such case, manufacturers shall meet the emission standards applicable to vehicles with power-to-weight ratios greater than 0.024.

<sup>3</sup> *Road Speed Fan.* Manufacturers have the option to use a road speed modulated fan as specified in 40-CFR § 86.107-96(d)(1) or §1066.105, as applicable, instead of a fixed speed fan for MDV SFTP testing.

<sup>4</sup> Manufacturers shall use Equation 1 above to calculate SFTP Composite PM Emission Values for each test group subject to the emission standards in this table. For MDVs 8,501-10,000 lbs. GVWR certifying to the US06 Bag 2 PM emission standard, the emission results from the US06 Bag 2 test shall be used in place of results from the full US06 test. For MDVs 10,001-14,000 lbs. GVWR, the emission results from the UC test shall be used in place of results from the US06 test.

<sup>5</sup> If a manufacturer provides an engineering evaluation for a test group demonstrating that SC03 PM emissions are equivalent to or lower than FTP PM emissions, the FTP PM emission value may be used in lieu of the SC03 PM emission value when determining the composite emission value for that test group.

(8) *Interim In-Use Compliance Standards.*

(A) *LEV III NMOG+NOx Interim In-Use Compliance Standards.* The following interim in-use compliance standards shall apply for the first two model years that a test group is certified to LEV III standards that are more stringent than the standards to which the test group was certified in a prior model year.

1. NMOG+NOx Interim In-Use Compliance Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. For the 2015 through 2019 model years, these standards shall apply.

		<i>LEV III PCs, LDTs, and MDPVs</i>
	<i>Durability</i>	<i>NMOG + NOx</i>
<i>Emission Category</i>	<i>Vehicle Basis (miles)</i>	<i>(g/mi)</i>
LEV160	150,000	n/a
ULEV125	150,000	n/a
ULEV70	150,000	0.098
ULEV50	150,000	0.070
SULEV30	150,000	0.042 <sup>1</sup>
SULEV20	150,000	0.028 <sup>1</sup>

<sup>1</sup> not applicable to test groups that receive PZEV credits

2. NMOG+NOx Interim In-Use Compliance Standards for Medium-Duty Vehicles, Excluding Medium-Duty Passenger Vehicles. For the 2015 through 2020 model years, these standards shall apply.

		<i>LEV III MDVs,</i>	
		<i>(excluding MDPVs)</i>	<i>LEV III MDVs,</i>
		<i>8,501 - 10,000 lbs.</i>	<i>10,001 - 14,000 lbs.</i>
		<i>GVW</i>	<i>GVW</i>
	<i>Durability</i>		
<i>Emission</i>	<i>Vehicle Basis</i>	<i>NMOG + NOx</i>	<i>NMOG + NOx</i>
Category	(miles)	(g/mi)	(g/mi)
LEV395	150,000	n/a	n/a
ULEV340	150,000	n/a	n/a
ULEV250	150,000	0.370	n/a
ULEV200	150,000	0.300	n/a
SULEV170	150,000	0.250	n/a
SULEV150	150,000	0.220	n/a
LEV630	150,000	n/a	n/a
ULEV570	150,000	n/a	n/a
ULEV400	150,000	n/a	0.600
ULEV270	150,000	n/a	0.400
SULEV230	150,000	n/a	0.340
SULEV200	150,000	n/a	0.300

(B) LEV III Particulate Interim In-Use Compliance Standards. The following interim in-use compliance standards shall apply for the first two model years that a test group is certified to the LEV III standards.

1. LEV III Particulate Interim In-Use Compliance Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. For the 2017 through 2020 model years, the interim in-use compliance standard for vehicles certifying to the 3 mg/mi particulate standard is 6 mg/mi. For the 2025 through 2028 model years, the interim in-use compliance standard for vehicles certifying to the 1 mg/mi particulate standard is 2 mg/mi.

2. LEV III Particulate Interim In-Use Compliance Standards for Medium-Duty Vehicles, excluding Medium-Duty Passenger Vehicles. For the 2017 through 2020 model years, the interim in-use compliance standard for vehicles certifying to the 8 mg/mi particulate standard shall be 16 mg/mi and the interim in-use compliance standard for vehicles certifying to the 10 mg/mi particulate standard shall be 20 mg/mi.

(C) SFTP Interim In-Use Compliance Standards.

1. 2016 and prior model year light-duty and medium-duty passenger vehicle test groups that contain vehicles at or below 6,000 lbs. GVWR, 2017 and prior model year light-duty and medium-duty passenger vehicle test groups with only vehicles above 6,000 lbs. GVWR, and 2019 and prior model year medium-duty vehicle test groups may use an in-use compliance standard for

NMOG+NO<sub>x</sub> for the first two model years that they are certified to LEV III NMOG+NO<sub>x</sub> standards or a LEV III SFTP NMOG+NO<sub>x</sub> bin.

a. For light-duty vehicle test groups and medium-duty passenger vehicle test groups certifying to the standards in subsection (a)(7)(A)1, in-use compliance emission standards for NMOG+NO<sub>x</sub> shall be 1.4 times the applicable certification standard.

b. For light-duty vehicle test groups and medium-duty passenger vehicle test groups certifying to the standards in subsection (a)(7)(A)2, in-use compliance emission standards for NMOG+NO<sub>x</sub> shall be 1.4 times the Composite Value of the bin to which a test group is certified.

c. For medium-duty vehicle tests groups certifying to the standards in subsection (a)(7)(C), in-use compliance emission standards for NMOG+NO<sub>x</sub> shall be 1.4 times the applicable certification standard.

2. 2023 and prior model year light-duty and medium-duty passenger vehicle test groups that certify to a LEV III SFTP PM exhaust emission standard in subsection (a)(7)(B) may use an in-use compliance standard for SFTP PM regardless of the model year that the test groups first certified to the LEV III SFTP PM standard. 2022 and prior model year medium-duty vehicle test groups may use an in-use compliance standard for PM for the first two model years that they are certified to a LEV III SFTP PM exhaust emission standard in subsection (a)(7)(D).

a. For light-duty vehicle test groups and medium-duty passenger vehicle test groups certifying to SFTP PM exhaust emission standards in subsection (a)(7)(B), in-use compliance emission standards for PM shall be 10 mg/mi.

b. For medium-duty vehicle test groups certifying to SFTP PM Exhaust Emission Standards in subsection (a)(7)(D), in-use compliance emission standards for PM shall be 5.0 mg/mi higher than the applicable certification standard.

(9) *Requirement to Generate Additional NMOG+NO<sub>x</sub> Fleet Average Credit.* For a vehicle that is certified to the LEV III standards in subsection (a)(1), which does not generate a partial ZEV allocation according to the criteria set forth in section C.3 of the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes” and the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” a manufacturer may subtract 5 mg/mi from the NMOG+NO<sub>x</sub> emission standards value set forth in subsection (b)(1)(B)1.c when calculating the manufacturer's fleet average, provided that the manufacturer extends the performance and defects warranty period to 15 years or 150,000 miles, whichever occurs first, except that the time period is to be 10 years for a zero emission energy storage device (such as battery, ultracapacitor, or other electric storage device).

(10) *Requirement to Generate a Partial ZEV Allowance.* For the 2015 through 2017 model years, a manufacturer that certifies to the LEV III SULEV30 or the LEV III SULEV20 standards may also generate a partial ZEV allocation according to the criteria set forth in section C.3 of the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes.”

(11) *NMOG Credit for Direct Ozone Reduction Technology.* A manufacturer that certifies vehicles equipped with direct ozone reduction technologies shall be eligible to receive NMOG credits that can be applied to the NMOG exhaust emissions of the vehicle when determining compliance with the standard. In order to receive credit, the manufacturer must submit the following information for each vehicle model for which it gets credit, including, but not limited to:

(A) a demonstration of the airflow rate through the direct ozone reduction device and the ozone-reducing efficiency of the device over the range of speeds encountered in the Unified Cycle Driving Schedule contained in Part II G. of the “California 2015 and Subsequent Model Criteria Pollutant Emission Standards and Test Procedures for and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty trucks and Medium-duty Vehicles”

(B) an evaluation of the durability of the device for the full useful life of the vehicle; and

(C) a description of the on-board diagnostic strategy for monitoring the performance of the device in-use.

Using the above information, the Executive Officer shall determine the value of the NMOG credit based on the calculated change in the one-hour peak ozone level using an approved airshed model. This credit can only be used for determining compliance with the exhaust standards in subsection (a)(1) or subsection 1961(a)(1), as applicable.

(12) *When a Federally-Certified Vehicle Model is Required in California.*

(A) *General Requirement.* Whenever a manufacturer federally-certifies a 2015 or subsequent model-year passenger car, light-duty truck, or medium-duty vehicle model to the standards for a particular emissions bin that are more stringent than the standards for an applicable California emission category, the equivalent California model may only be certified to (i) the California standards for a vehicle emissions category that are at least as stringent as the standards for the corresponding federal emissions bin, or (ii) the exhaust emission standards to which the federal model is certified. However, where the federal exhaust emission standards for the particular emissions bin and the California standards for a vehicle emissions category are equally stringent, the California model may only be certified to either the California standards for that vehicle emissions category or more stringent California standards. The federal emission bins are those contained in Tables S04-1 and S04-2 of 40 CFR §86.1811-04(c), as adopted February 10, 2000, and in Table 2 of 40 CFR §86.1811.17(b), as adopted April 28, 2014. The criteria for applying this requirement are set forth in



Part I. Section H.1 of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.”

(B) Exception for clean fuel fleet vehicles. Subsection (a)(12)(A) does not apply in the case of a federally-certified vehicle model that is only marketed to fleet operators for applications that are subject to clean fuel fleet requirements established pursuant to section 246 of the federal Clean Air Act (42 U.S.C. sec. 7586). In addition, the Executive Officer shall exclude from the requirement a federally-certified vehicle model where the manufacturer demonstrates to the Executive Officer's reasonable satisfaction that the model will primarily be sold or leased to clean fuel fleet operators for such applications, and that other sales or leases of the model will be incidental to marketing to those clean fuel fleet operators.

(13) *Emission Standard for a Fuel-Fired Heater.* Whenever a manufacturer elects to utilize an on-board fuel-fired heater on any passenger car, light-duty truck or medium-duty vehicle, the fuel-fired heater must meet ULEV125 standards for passenger cars and light-duty trucks less than 8,500 pounds GVWR as set forth in subsection (a)(1). The exhaust emissions from the fuel-fired heater shall be determined in accordance with the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes” or the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” as applicable. If the on-board fuel-fired heater is capable of operating at ambient temperatures above 40°F, the measured emission levels of the on-board fuel-fired heater shall be added to the emissions measured on the FTP (40 CFR, Part 86, Subpart B), as amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” to determine compliance with the exhaust emission standards in subsection (a)(1).

(b) Emission Standards Phase-In Requirements for Manufacturers.

(1) Fleet Average NMOG + NO<sub>x</sub> Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.

(A) The fleet average non-methane organic gas plus oxides of nitrogen exhaust mass emission values from the passenger cars, light-duty trucks, and medium-duty passenger vehicles that are produced and delivered for sale in California each model year by a manufacturer other than a small volume manufacturer shall not exceed:

**FLEET AVERAGE NON-METHANE ORGANIC GAS PLUS OXIDES OF NITROGEN EXHAUST MASS  
EMISSION REQUIREMENTS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-  
DUTY PASSENGER VEHICLES**

*(150,000 mile Durability Vehicle Basis)*

	<i>Fleet Average NMOG + NOx</i>	
	<i>(grams per mile)</i>	
	<i>All PCs;</i>	<i>LDTs 3751 lbs.</i>
	<i>LDTs 0-3750 lbs.</i>	<i>LVW - 8500 lbs.</i>
<i>Model Year</i>	<i>LVW</i>	<i>GVWR; All MDPVs</i>
2014 <sup>1</sup>	0.107	0.128
2015	0.100	0.119
2016	0.093	0.110
2017	0.086	0.101
2018	0.079	0.092
2019	0.072	0.083
2020	0.065	0.074
2021	0.058	0.065
2022	0.051	0.056
2023	0.044	0.047
2024	0.037	0.038
2025+	0.030	0.030

<sup>1</sup> For the 2014 model year, a manufacturer may comply with the fleet average NMOG+NOx values in this table in lieu of complying with the NMOG fleet average values in subsection 1961(a)(b)(1)(A). A manufacturer must either comply with the NMOG+NOx fleet average requirements for both its PC/LDT1 fleet and its LDT2/MDPV fleet or comply with the NMOG fleet average requirements for both its PC/LDT1 fleet and its LDT2 fleet. A manufacturer must calculate its fleet average NMOG+NOx values using the applicable full useful life standards.

1. A manufacturer that selects compliance Option 2 must provide to the Executive Officer separate values for the number of vehicles in each test group produced and delivered for sale in the District of Columbia and for each individual state within the average.

2. *PZEV Anti-Backsliding Requirement.* In the 2018 and subsequent model years, a manufacturer must produce and deliver for sale in California a minimum percentage of its passenger car and light-duty truck fleet that certifies to SULEV30 and SULEV20 standards. This minimum percentage must be equal to the average percentage of PZEVs produced and deliver for sale in California for that manufacturer for the 2015 through 2017 model year. A manufacturer may calculate this average percentage using the projected sales for these model years in lieu of actual sales. The percentage of a manufacturer's passenger car and light-duty truck fleet that certifies to SULEV30 and SULEV20 standards averaged across the applicable model year and the two previous model years shall be used to determine compliance with this requirement, beginning with the 2020 model year.

(B) Calculation of Fleet Average NMOG + NOx Value.

1. Basic Calculation.

a. Each manufacturer's PC and LDT1 fleet average NMOG + NOx value for the total number of PCs and LDT1s produced and delivered for sale in California shall be calculated as follows:

$$\frac{(\Sigma [\text{Number of vehicles in a test group excluding off-vehicle charge capable hybrid electric vehicles} \times \text{applicable emission standard}] + \Sigma [\text{Number of off-vehicle charge capable hybrid electric vehicles in a test group} \times \text{HEV NMOG+NOx contribution factor}]) \div \text{Total Number of PCs plus LDT1s Produced and Delivered for sale in California, Including ZEVs and HEVs}}$$

b. Each manufacturer's LDT2 and MDPV fleet average NMOG+NOx value for the total number of LDT2s and MDPVs produced and delivered for sale in California shall be calculated as follows:

$$\frac{(\Sigma [\text{Number of vehicles in a test group excluding off-vehicle charge capable hybrid electric vehicles} \times \text{applicable emission standard}] + \Sigma [\text{Number of off-vehicle charge capable hybrid electric vehicles in a test group} \times \text{HEV NMOG factor}]) \div \text{Total Number of LDT2s plus MDPVs Produced and Delivered for sale in California, Including ZEVs and HEVs}}$$

c. The applicable emission standards to be used in the above equations are as follows:

		<i>Emission Standard Value<sup>1</sup> (g/mi)</i>	
	<i>Emission</i>	<i>All PCs;</i>	<i>LDTs 3751-5750 lbs.</i>
<i>Model Year</i>	<i>Category</i>	<i>LDTs 0-3750 lbs. LVW</i>	<i>LVW; All MDPVs</i>
2015 and subsequent model year	All	Sum of the full useful life	Sum of the full useful life
federally-certified vehicles		NMOG and NOx Federal	NMOG and NOx Federal
		Emission Standards to which Vehicle is Certified	Emission Standards to which Vehicle is Certified
	<i>Emission</i>	<i>All PCs;</i>	<i>LDTs 3751 lbs. LVW - 8500 lbs.</i>
<i>Model Year</i>	<i>Category</i>	<i>LDTs 0-3750 lbs. LVW</i>	<i>GVWR; All MDPVs</i>
2015 through 2019 model year vehicles	LEV II LEVs; ; LEV160s	0.160	0.160
certified to the “LEV II” standards in subsection 1961(a)(1);	LEV II ULEVs; LEV125s	0.125	0.125
	ULEV70s	0.070	0.070
	ULEV50s	0.050	0.050
2015 and subsequent model year vehicles	LEV II SULEVs; SULEV30s	0.030	0.030
certified to the “LEV III” standards in subsection 1961.2(a)(1)	SULEV20s	0.020	0.020
	LEV II LEVs; LEV395s	n/a	0.395
	LEV II ULEVs	n/a	0.343
	ULEV340s	n/a	0.340
	ULEV250s	n/a	0.250
	ULEV200s	n/a	0.200
	SULEV170s	n/a	0.170
	SULEV150s	n/a	0.150

<sup>1</sup> For LEV III vehicle test groups that meet the extended emission warranty requirements in subsection (a)(9), the applicable emission standard value shall be the emission standard value set forth in this table minus 5 mg/mi.

2. *NMOG+NOx Contribution Factor for Off-vehicle Charge Capable HEVs.* The HEV NMOG+NOx contribution factor for light-duty off-vehicle charge capable hybrid electric vehicles is calculated as follows. For the purpose of applying this formula to light-duty off-vehicle charge capable hybrid electric vehicles that are certified to the LEV II standards set forth in subsection 1961(a)(1), a LEV II LEV shall use the formula for LEV160, a LEV II ULEV shall use the formula for ULEV125, and a LEV II SULEV shall use the formula for SULEV30.

$$\text{LEV160 HEV Contribution Factor} = 0.160 - [(\text{Zero-emission VMT Allowance}) \times 0.035]$$

ULEV125 HEV Contribution Factor =  $0.125 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.055]$

ULEV70 HEV Contribution Factor =  $0.070 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.020]$

ULEV50 HEV Contribution Factor =  $0.050 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.020]$

SULEV30 HEV Contribution Factor =  $0.030 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.010]$

SULEV20 HEV Contribution Factor =  $0.020 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.020]$

Where the Zero-emission VMT Allowance for 2015 through 2017 model year off-vehicle charge capable HEVs is determined in accordance with section C.3 of the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes.” For the 2018 and subsequent model years, the Zero-emission VMT Allowance is equal to the sum of the Zero-Emission Vehicles Miles Traveled TZEV Allowance and the Allowance for US06 Capability in section C.3.3 of the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” as applicable. For the purposes of this subsection (b)(1)(B)2, the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

*(C) Phase-In Requirements for Small Volume Manufacturers.*

1. In the 2015 through 2016 model years, a small volume manufacturer shall not exceed a fleet average NMOG+NO<sub>x</sub> value of 0.160 g/mi for PCs and LDTs from 0-3750 lbs. LVW or 0.160 g/mi for LDTs from 3751-5750 lbs. LVW calculated in accordance with subsection (b)(1)(B). In the 2017 through 2021 model years, a small volume manufacturer shall not exceed a fleet average NMOG+NO<sub>x</sub> value of 0.125 g/mi for PCs and LDTs from 0-3750 lbs. LVW or 0.125 g/mi for LDTs from 3751 lbs. LVW - 8,500 lbs. GVW and MDPVs calculated in accordance with subsection (b)(1)(B). In 2022 and subsequent model years, a small volume manufacturer shall not exceed a fleet average NMOG+NO<sub>x</sub> value of 0.051 g/mi for PCs and LDTs from 0-3750 lbs. LVW or 0.051 g/mi for LDTs from 3751 lbs. LVW - 8,500 lbs. GVW and MDPVs calculated in accordance with subsection (b)(1)(B). For the 2015 through 2021 model years, a small volume manufacturer may certify its vehicles to the LEV II exhaust standards in section 1961. All vehicles certified by a small volume manufacturer for the 2022 and subsequent model years must meet the LEV III exhaust standards in this section 1961.2.

2. If a manufacturer's average California sales exceeds 4500 units of new PCs, LDTs, MDVs, heavy-duty vehicles, and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall no longer be treated as a small volume manufacturer. If this is the first time the manufacturer exceeds the 4500 unit sales limit, the manufacturer must comply with the fleet average requirements applicable to a large volume manufacturer, as specified in subsection (b)(1)(A) beginning with the fourth model year after the last

of the three consecutive model years. If during this four year lead time period the manufacturer's sales drop below the 4500 unit sales limit and then increase again above the 4500 unit sales limit, the four year lead time period shall be calculated based on the first model year in which the manufacturer again exceeds the 4500 unit sales limit. Except as noted above - i.e., if this is not the first time the manufacturer has exceeded the 4500 unit sales limit - the manufacturer shall comply with the fleet average requirements applicable to larger manufacturers as specified in subsection (b)(1)(A) beginning with the following model year after the last of the three consecutive model years.

3. If a manufacturer's average California sales fall below 4500 units of new PCs, LDTs, MDVs and heavy duty engines based on the average number of vehicles sold for the three previous consecutive model years, the manufacturer shall be treated as a small volume manufacturer and shall be subject to the requirements for small volume manufacturers beginning with the next model year.

(D) *Treatment of ZEVs.* ZEVs classified as LDTs (>3750 lbs. LVW) that have been counted toward the ZEV requirement for PCs and LDTs (0-3750 lbs. LVW) as specified in sections 1962.1 and 1962.2 shall be included as LDT1s in the calculation of a fleet average NMOG+NO<sub>x</sub> value.

(2) *LEV III Phase-In Requirement for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.* For the 2015 and 2016 model years, the LEV II SULEV emission standards set forth in section 1961(a)(1) that are applicable to PCs, LDTs, and MDPVs shall only apply to those PCs, LDT1s, LDT2s, and MDPVs that certify to SULEV emission standards using “carryover” of emission test data from a previous model year in accordance with U.S. EPA OMS Advisory Circular A/C No. 17F, issued November 16, 1982, and last amended January 21, 1988, incorporated herein by reference. Beginning in the 2017 model year, the LEV II SULEV emission standards set forth in section 1961(a)(1) that are applicable to PCs, LDTs, and MDPVs shall only apply to those PCs, LDT1s, LDT2s, and MDPVs that receive partial ZEV allowances in accordance with the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes.” A manufacturer, other than a small volume manufacturer, must certify 100 percent of its PC, LDT, and MDPV fleet to the LEV III standards in subsection (a)(1) in 2020 and subsequent model years. A small volume manufacturer must certify 100 percent of its PC, LDT, and MDPV fleet to the LEV III standards in subsection (a)(1) in 2022 and subsequent model years.

(3) *LEV III Phase-In Requirements for Medium-Duty Vehicles, Other than Medium-Duty Passenger Vehicles.*

(A) *Requirement for Manufacturers Other than Small Volume Manufacturers.* A manufacturer of MDVs, other than a small volume manufacturer, shall certify its MDV fleet according to the following phase-in schedule:

					<i>Vehicles</i>
					<i>Certified to</i>
<i>Model</i>	<i>Vehicles Certified to §1961.2(a)(1)<sup>1</sup></i>				<i>§1956.8(c)</i>
<i>Year</i>	<i>(%)</i>				<i>or (h) (%)</i>
	<i>LEV II LEV;</i>	<i>LEV II ULEV;</i>			
	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	
	<i>LEV395</i>	<i>ULEV340</i>	<i>ULEV250</i>	<i>SULEV170</i>	
	<i>or LEV630</i>	<i>or ULEV570</i>	<i>or ULEV400</i>	<i>or SULEV230</i>	<i>ULEV</i>
2015	40	60	0	0	100
2016	20	60	20	0	100
2017	10	50	40	0	100
2018	0	40	50	10	100
2019	0	30	40	30	100
2020	0	20	30	50	100
2021	0	10	20	70	100
2022+	0	0	10	90	100

<sup>1</sup> The LEV II LEV and LEV II ULEV emission categories are only applicable for the 2015 through 2019 model years. The LEV III LEV395, LEV630, ULEV340, and ULEV570 emission categories are only applicable for the 2015 through 2021 model years.

**(B) Requirements for Small Volume Manufacturers.** In the 2015 through 2017 model years, a small volume manufacturer shall certify, produce, and deliver for sale in California vehicles or engines certified to the MDV LEV II LEV standards or to the LEV III LEV395 or LEV III LEV630 standards, as applicable, in a quantity equivalent to 100% of its MDV fleet. In the 2018 through 2021 model years, a small volume manufacturer shall certify, produce, and deliver for sale in California vehicles or engines certified to the MDV LEV II ULEV standards or to the LEV III ULEV340 or LEV III ULEV570 standards, as applicable, in a quantity equivalent to 100% of its MDV fleet. In the 2022 and subsequent model years, a small volume manufacturer shall certify, produce, and deliver for sale in California vehicles or engines certified to the MDV LEV III ULEV250 or LEV III ULEV400 standards, as applicable, in a quantity equivalent to 100% of its MDV fleet. Engines certified to these MDV standards are not eligible for emissions averaging.

**(C) Alternate Phase-In Schedules for LEV III MDVs.**

1. Alternate Phase-In Schedules for LEV III MDVs for All Manufacturers.

a. For the 2016 and subsequent model years, the fleet average non methane organic gas plus oxides of nitrogen exhaust mass emission values from the medium-duty vehicles produced and delivered for sale in California each model year shall not exceed:

**FLEET AVERAGE NON-METHANE ORGANIC GAS PLUS OXIDES OF NITROGEN EXHAUST MASS  
EMISSION REQUIREMENTS FOR MEDIUM-DUTY VEHICLES**  
(150,000 mile Durability Vehicle Basis)

Model Year	Fleet Average NMOG+NOx	
	(g/mi)	
	MDVs	MDVs
	8,501 - 10,000 lbs.	10,001 - 14,000 lbs.
	GVWR	GVWR
2016	0.333	0.548
2017	0.310	0.508
2018	0.278	0.451
2019	0.253	0.400
2020	0.228	0.349
2021	0.203	0.298
2022+	0.178	0.247

b. Each manufacturer's fleet average NMOG+NOx value for the total number of MDVs 8,501-10,000 lbs. GVWR produced and delivered for sale in California shall be calculated as follows:

$$\frac{(\sum [\text{Number of MDVs 8,501-10,000 lbs. GVWR in a test group excluding off-vehicle charge capable hybrid electric vehicles} \times \text{applicable emission standard}] + \sum [\text{Number of off-vehicle charge capable hybrid electric vehicles in a test group} \times \text{HEV NMOG+NOx contribution factor}])}{\text{Total Number of MDVs 8,501-10,000 lbs. GVWR Produced and Delivered for sale in California, Including ZEVs and HEVs}}$$

c. Each manufacturer's fleet average NMOG+NOx value for the total number of MDVs 10,001-14,000 lbs. GVWR produced and delivered for sale in California shall be calculated as follows:

$$\frac{(\sum [\text{Number of MDVs 10,001-14,000 lbs. GVWR in a test group excluding off-vehicle charge capable hybrid electric vehicles} \times \text{applicable emission standard}] + \sum [\text{Number of off-vehicle charge capable hybrid electric vehicles in a test group} \times \text{HEV NMOG+NOx contribution factor}])}{\text{Total Number of MDVs 10,001-14,000 lbs. GVWR Produced and Delivered for sale in California, Including ZEVs and HEVs}}$$

d. The applicable emission standards to be used in the above equations are as follows:



<i>Model Year</i>	<i>Emission Category</i>	<i>Emission Standard Value (g/mi)</i>
2016 and subsequent model year federally-certified vehicles	All	Sum of the full useful life NMOG and NOx Federal Emission Standards or full useful life NMOG+NOx Federal Emission Standard to which Vehicle is Certified
2016 through 2019 model year vehicles Certified to the “LEV III” standards in subsection 1961(a)(1)	All	Sum of the full useful life NMOG and NOx LEV II Emission Standards to which Vehicle is Certified
2016 and subsequent model year vehicles certified to the “LEV III” standards in subsection (a)(1)	All	Full useful life NMOG+NOx LEV III Emission Standards to which Vehicle is Certified

e. *NMOG+NOx Contribution Factor for Off-vehicle Charge Capable HEVs.* The HEV NMOG+NOx contribution factors for medium-duty off-vehicle charge capable hybrid electric vehicles are calculated as follows.

The Zero-emission VMT Allowance for 2016 and 2017 model year off-vehicle charge capable HEVs is determined in accordance with section C.3 of the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes.” For the 2018 and subsequent model years, the Zero-emission VMT Allowance is equal to the sum of the Zero-Emission Vehicles Miles Traveled TZEV Allowance and the Allowance for US06 Capability in section C.3.3 of the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” as applicable. For the purposes of this subsection (b)(3)(C)1.e, the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

i. *NMOG+NOx Contribution Factor for Off-vehicle Charge Capable HEVs 8,501-10,000 lbs. GVWR.* The HEV NMOG+NOx contribution factors for medium-duty off-vehicle charge capable hybrid electric vehicles 8,501-10,000 lbs. GVWR are calculated as follows.

For the purpose of applying this formula to medium-duty off-vehicle charge capable hybrid electric vehicles 8,501-10,000 lbs. GVWR that are certified to the LEV II standards set forth in subsection 1961(a)(1), a LEV II LEV shall use the formula for LEV395, a LEV II ULEV shall use the formula for ULEV340, and a LEV II SULEV shall use the formula for ULEV200.

LEV395 HEV Contribution Factor =  $0.395 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.055]$   
ULEV340 HEV Contribution Factor =  $0.340 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.090]$   
ULEV250 HEV Contribution Factor =  $0.250 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.050]$   
ULEV200 HEV Contribution Factor =  $0.200 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.030]$   
SULEV170 HEV Contribution Factor =  $0.170 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.020]$   
SULEV150 HEV Contribution Factor =  $0.150 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.020]$

ii. *NMOG+NOx Contribution Factor for Off-vehicle Charge Capable HEVs 10,001-14,000 lbs. GVWR.* The HEV NMOG+NOx contribution factors for medium-duty off-vehicle charge capable hybrid electric vehicles 10,001-14,000 lbs. GVWR are calculated as follows.

For the purpose of applying this formula to medium-duty off-vehicle charge capable hybrid electric vehicles 10,001-14,000 lbs. GVWR that are certified to the LEV II standards set forth in subsection 1961(a)(1), a LEV II LEV shall use the formula for LEV630, a LEV II ULEV shall use the formula for ULEV570, and a LEV II SULEV shall use the formula as follows.

LEV II SULEV HEV Contribution Factor =  $0.327 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.057]$   
LEV630 HEV Contribution Factor =  $0.630 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.060]$   
ULEV570 HEV Contribution Factor =  $0.570 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.170]$   
ULEV400 HEV Contribution Factor =  $0.400 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.130]$   
ULEV270 HEV Contribution Factor =  $0.270 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.040]$   
SULEV230 HEV Contribution Factor =  $0.230 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.030]$   
SULEV200 HEV Contribution Factor =  $0.200 - [(Zero\text{-}emission\ VMT\ Allowance) \times 0.030]$

2. *Alternate Phase-In Schedules for LEV III MDVs for Manufacturers with a Limited Number of Test Groups.* For the 2016 and subsequent model years, a manufacturer that produces and delivers for sale in California four or fewer medium-duty test groups may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles.

a. A manufacturer that produces and delivers for sale in California four medium-duty test groups may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles.

					<i>Vehicles</i>
					<i>Certified to</i>
<i>Model</i>					<i>§1956.8(c)</i>
<i>Year</i>	<i>Number of Test Groups Certified to §1961.2(a)(1)</i>				<i>or (h) (%)</i>
	<i>LEV II LEV;</i>	<i>LEV II ULEV;</i>			
	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	
	<i>LEV395</i>	<i>ULEV340</i>	<i>ULEV250</i>	<i>SULEV170</i>	
	<i>or LEV630</i>	<i>or ULEV570</i>	<i>or ULEV400</i>	<i>or SULEV230</i>	<i>ULEV</i>
2016-					
2017	1	2	1	0	100
2018	0	2	2	0	100
2019	0	1	2	1	100
2020	0	1	1	2	100
2021	0	0	1	3	100
2022 +	0	0	0	4	100

b. A manufacturer that produces and delivers for sale in California three medium-duty test groups may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles.

					<i>Vehicles</i>
					<i>Certified to</i>
<i>Model</i>					<i>§1956.8(c)</i>
<i>Year</i>	<i>Number of Test Groups Certified to §1961.2(a)(1)</i>				<i>or (h) (%)</i>
	<i>LEV II LEV;</i>	<i>LEV II ULEV;</i>			
	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	
	<i>LEV395</i>	<i>ULEV340</i>	<i>ULEV250</i>	<i>SULEV170</i>	
	<i>or LEV630</i>	<i>or ULEV570</i>	<i>or ULEV400</i>	<i>or SULEV230</i>	<i>ULEV</i>
2016	1	2	0	0	100
2017	0	2	1	0	100
2018	0	1	2	0	100
2019-					
2020	0	1	1	1	100
2021	0	0	1	2	100
2022 +	0	0	0	3	100

c. A manufacturer that produces and delivers for sale in California two medium-duty test groups may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles.

					<i>Vehicles</i>
					<i>Certified to</i>
<i>Model</i>					<i>§1956.8(c)</i>
<i>Year</i>	<i>Number of Test Groups Certified to §1961.2(a)(1)</i>				<i>or (h) (%)</i>
	<i>LEV II LEV;</i>	<i>LEV II ULEV;</i>			
	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	
	<i>LEV395</i>	<i>ULEV340</i>	<i>ULEV250</i>	<i>SULEV170</i>	
	<i>or LEV630</i>	<i>or ULEV570</i>	<i>or ULEV400</i>	<i>or SULEV230</i>	<i>ULEV</i>
2016	1	1	0	0	100
2017-					
2019	0	1	1	0	100
2020-					
2021	0	0	1	1	100
2022 +	0	0	0	2	100

d. A manufacturer that produces and delivers for sale in California one medium-duty test groups may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles.

					<i>Vehicles</i>
					<i>Certified to</i>
<i>Model</i>					<i>§1956.8(c)</i>
<i>Year</i>	<i>Number of Test Groups Certified to §1961.2(a)(1)</i>				<i>or (h) (%)</i>
	<i>LEV II LEV;</i>	<i>LEV II ULEV;</i>			
	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	<i>LEV III</i>	
	<i>LEV395</i>	<i>ULEV340</i>	<i>ULEV250</i>	<i>SULEV170</i>	
	<i>or LEV630</i>	<i>or ULEV570</i>	<i>or ULEV400</i>	<i>or SULEV230</i>	<i>ULEV</i>
2016-					
2018	0	1	0	0	100
2019-					
2021	0	0	1	0	100
2022 +	0	0	0	1	100

(D) *Identifying a Manufacturer's MDV Fleet.* Each manufacturer's MDV fleet shall be defined as the total number of California-certified MDVs produced and delivered for sale in California. The percentages shall be applied to the manufacturers' total production of California-certified medium-duty vehicles delivered for sale in California. A manufacturer that elects to certify to the optional medium-duty engine standards in subsections 1956.8(c) or (h) shall not count those engines in the manufacturer's total production of California-certified medium-duty vehicles for purposes of this subsection.

(E) For a manufacturer that elects to certify to the optional medium-duty engine standards in title 13, CCR subsections 1956.8(c) or (h), all such MDVs, including those produced by a small volume manufacturer, shall be subject to the emissions averaging provisions applicable to heavy-duty diesel

or Otto-cycle engines as set forth in the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines,” or the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines, incorporated by reference in subsections 1956.8(b) or (d), as applicable.

(4) *SFTP Phase-In Requirements.*

(A) *Phase-In Requirement for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.* A test group certifying to LEV III FTP emission categories on a 150,000-mile durability basis shall also certify to SFTP requirements on a 150,000-mile durability basis.

Manufacturers shall have two options for phase in to the SFTP NMOG+NO<sub>x</sub> and CO emission standards.

1. Under Option 1, beginning with the 2015 model year, a manufacturer shall certify its PCs, LDTs, and MDPVs to the SFTP NMOG+NO<sub>x</sub> and CO emission standards in subsection (a)(7)(A)1 when the vehicles are also certifying to a LEV III FTP emission category at 150,000-mile durability.

2. Under Option 2, for 2015 and subsequent model years, a manufacturer shall certify its fleet of PCs, LDTs, and MDPVs such that the manufacturer's sales-weighted fleet-average NMOG+NO<sub>x</sub> composite emission value and each test group's CO composite emission value does not exceed the applicable composite emission standards in effect for that model year in accordance with subsection (a)(7)(A)2.

Beginning with the 2017 model year, a manufacturer shall certify its PCs, LDTs, and MDPVs certifying to LEV III FTP PM emission standards on a 150,000-mile durability basis to the SFTP PM emission standards in subsection (a)(7)(B).

(B) *Phase-In Requirements for Medium-Duty Vehicle Manufacturers.* Phase-in for NMOG+NO<sub>x</sub> and CO emission standards begins with the 2016 model year. For MDVs 8,501-10,000 lbs. GVWR certified prior to the 2018 model year, for each model year, the percentage of MDVs certified to an SFTP emission category set forth in this section 1961.2 shall be equal to or greater than the total percentage certified to the FTP ULEV250, ULEV200, SULEV170, and SULEV150 emission categories; of these vehicles, the percentage of MDVs certified to an SFTP SULEV emission category shall be equal to or greater than the total percentage certified to both the FTP SULEV170 and SULEV150 emission categories. For MDVs 10,001-14,000 lbs. GVWR, for each model year, the percentage of MDVs certified to an SFTP emission category set forth in this section 1961.2 shall be equal to or greater than the total percentage certified to the FTP ULEV400, ULEV270, SULEV230, and SULEV200 emission categories; of these vehicles, the percentage of MDVs certified to an SFTP SULEV emission category shall be equal to or greater than the total percentage certified to both the FTP SULEV230 and SULEV200 emission categories. 2018 and subsequent model year MDVs 8,501-10,000 lbs. GVWR certifying to the FTP ULEV250 and ULEV200 emission categories, including vehicles certifying with carryover data, shall comply with the SFTP ULEV standards set forth in subsection (a)(7)(C), and those certifying to FTP SULEV170 and

SULEV150, including vehicles certifying with carryover data, shall comply with the SFTP SULEV standards set forth in subsection (a)(7)(C). 2018 and subsequent model year MDVs 10,001-14,000 lbs. GVWR certifying to FTP ULEV400 and ULEV270 emission categories, including vehicles certifying with carryover data, shall comply with the SFTP ULEV standards set forth in subsection (a)(7)(C), and those certifying to SULEV230 and SULEV200, including vehicles certifying with carryover data, shall comply with the SFTP SULEV standards set forth in subsection (a)(7)(C).

In addition, 2017 and subsequent model MDVs certifying to LEV III FTP PM emission standards on a 150,000-mile durability basis must also certify to the SFTP emission standards set forth in subsection (a)(7)(D).

*(C) Identifying a Manufacturer's Medium-Duty Vehicle Fleet.* For the 2016 and subsequent model years, each manufacturer's MDV fleet shall be defined as the total number of California-certified MDVs, other than MDPVs, produced and delivered for sale in California. For 2016 and subsequent model years, a manufacturer that elects to certify engines to the optional medium-duty engine emission standards in subsections 1956.8(c) or (h) shall not count those engines in the manufacturer's total production of California-certified medium-duty vehicles for purposes of this subparagraph.

*(c) Calculation of NMOG + NOx Credits/Debits*

*(1) Calculation of NMOG+NOx Credits and Debits for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.*

(A) In 2015 and subsequent model years, a manufacturer shall calculate its credits or debits using the following equation.

$$[(\text{Fleet Average NMOG+NOx Requirement}) - (\text{Manufacturer's Fleet Average NMOG+NOx Value})] \times (\text{Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs}).$$

(B) In 2015 and subsequent model years, a manufacturer that achieves fleet average NMOG+NOx values lower than the fleet average NMOG+NOx requirement for the corresponding model year shall receive credits in units of g/mi NMOG + NOx. A manufacturer with 2015 and subsequent model year fleet average NMOG+NOx values greater than the fleet average requirement for the corresponding model year shall receive debits in units of g/mi NMOG + NOx equal to the amount of negative credits determined by the aforementioned equation. The total g/mi NMOG+NOx credits or debits earned for PCs and LDTs 0-3750 lbs. LVW, and for LDTs 3751 lbs. LVW - 8500 lbs. GVWR and for MDPVs shall be summed together. The resulting amount shall constitute the g/mi NMOG+NOx credits or debits accrued by the manufacturer for the model year.

*(2) Calculation of NMOG+NOx Credits and Debits for Medium-Duty Vehicles Other than MDPVs.*

A manufacturer that elects to comply with the phase-in requirements for LEV III medium-duty vehicles other than MDPVs in subsection (b)(3)(A) or subsection (b)(3)(B) shall calculate vehicle-equivalent NMOG+NOx credits in accordance with subsection (c)(2)(A). A manufacturer that elects to

comply with the alternative phase-in schedule for LEV III medium-duty vehicles other than MDPVs in subsection (b)(3)(C) shall calculate fleet average NMOG+NOx credits in accordance with subsection (c)(2)(B).

(A) Calculation of Vehicle-Equivalent NMOG + NOx Credits for Medium-Duty Vehicles Other than MDPVs.

1. In 2016 and subsequent model years, a manufacturer that produces and delivers for sale in California MDVs, other than MDPVs, in excess of the equivalent requirements for LEV III vehicles certified to the exhaust emission standards set forth in subsection (a)(1), shall receive “Vehicle-Equivalent Credits” (or “VECs”) calculated in accordance with the following equation, where the term “produced” means produced and delivered for sale in California:

$$\begin{aligned}
 & (1.00) \times [( \text{No. of LEV395s and LEV630s Produced excluding HEVs} ) + \\
 & \quad ( \text{No. of LEV395 HEVs} \times \text{HEV VEC factor for LEV395s} ) + \\
 & \quad ( \text{No. of LEV630 HEVs} \times \text{HEV VEC factor for LEV630s} ) ] - \\
 & \quad ( \text{No. of LEV395s and LEV630s Required to be Produced} ) \text{E} + \\
 & (1.14) \times [( \text{No. of ULEV340s and ULEV570s Produced excluding HEVs} ) + \\
 & \quad ( \text{No. of ULEV340 HEVs} \times \text{HEV VEC factor for ULEV340s} ) + \\
 & \quad ( \text{No. of ULEV570 HEVs} \times \text{HEV VEC factor for ULEV570s} ) ] - \\
 & \quad ( \text{No. of ULEV340s and ULEV570s Required to be Produced} ) \text{E} + \\
 & (1.37) \times [( \text{No. of ULEV250s and ULEV400s Produced excluding HEVs} ) + \\
 & \quad ( \text{No. of ULEV250 HEVs} \times \text{HEV VEC factor for ULEV250s} ) + \\
 & \quad ( \text{No. of ULEV400 HEVs} \times \text{HEV VEC factor for ULEV400s} ) ] - \\
 & \quad ( \text{No. of ULEV250s and ULEV400s Required to be Produced} ) \text{E} + \\
 & (1.49) \times [( \text{No. of ULEV200s and ULEV270s Produced excluding HEVs} ) + \\
 & \quad ( \text{No. of ULEV200 HEVs} \times \text{HEV VEC factor for ULEV200s} ) + \\
 & \quad ( \text{No. of ULEV270 HEVs} \times \text{HEV VEC factor for ULEV270s} ) ] - \\
 & \quad ( \text{No. of ULEV200s and ULEV270s Required to be Produced} ) \text{E} + \\
 & (1.57) \times [( \text{No. of SULEV170s and SULEV230s Produced excluding HEVs} ) + \\
 & \quad ( \text{No. of SULEV170 HEVs} \times \text{HEV VEC factor for SULEV170s} ) + \\
 & \quad ( \text{No. of SULEV230 HEVs} \times \text{HEV VEC factor for SULEV230s} ) ] - \\
 & \quad ( \text{No. of SULEV170s and SULEV230s Required to be Produced} ) \text{E} + \\
 & (1.62) \times [( \text{No. of SULEV150s and SULEV200s Produced excluding HEVs} ) + \\
 & \quad ( \text{No. of SULEV150 HEVs} \times \text{HEV VEC factor for SULEV150s} ) + \\
 & \quad ( \text{No. of SULEV200 HEVs} \times \text{HEV VEC factor for SULEV200s} ) ] - \\
 & \quad ( \text{No. of SULEV150s and SULEV200s Required to be Produced} ) \text{E} + \\
 & \quad (2.00) \times ( \text{No. of ZEVs Certified and Produced as MDVs} ) ].
 \end{aligned}$$

1. *MDV HEV VEC factor.* The MDV HEV VEC factor is calculated as follows:

For LEV395s:

<https://govt.westlaw.com/calregs/Link/Document/Blob/I60f68f1ceb5111e193d0ad00d20c6353.png?target>

Type=admin-

codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default)

$$1 + \left[ \frac{(LEV395 \text{ standard} - ULEV340 \text{ standard}) \times \text{Zero-emission VMT Allowance}}{LEV395 \text{ standard}} \right];$$

For ULEV340s:

https://govt.westlaw.com/calregs/Link/Document/Blob/I61387288eb5111e185fbad00d20c6353.png?targetType=admin-

codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default)

$$1 + \left[ \frac{(ULEV340 \text{ standard} - ULEV250 \text{ standard}) \times \text{Zero-emission VMT Allowance}}{ULEV340 \text{ standard}} \right];$$

For ULEV250s:

https://govt.westlaw.com/calregs/Link/Document/Blob/I618197a6eb5111e1a1f3ad00d20c6353.png?targetType=admin-

codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default)

$$1 + \left[ \frac{(ULEV250 \text{ standard} - ULEV200 \text{ standard}) \times \text{Zero-emission VMT Allowance}}{ULEV250 \text{ standard}} \right];$$

For ULEV200s:

https://govt.westlaw.com/calregs/Link/Document/Blob/I61c56a8aeb5111e19f43ad00d20c6353.png?targetType=admin-

codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default)

$$1 + \left[ \frac{(ULEV200 \text{ standard} - SULEV170 \text{ standard}) \times \text{Zero-emission VMT Allowance}}{ULEV200 \text{ standard}} \right];$$

For SULEV170s:

https://govt.westlaw.com/calregs/Link/Document/Blob/I62101bc0eb5111e1bcf5ad00d20c6353.png?targetType=admin-

codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default)

$$1 + \left[ \frac{(SULEV170 \text{ standard} - SULEV150 \text{ standard}) \times \text{Zero-emission VMT Allowance}}{SULEV170 \text{ standard}} \right];$$



For SULEV150s:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I6257aa26eb5111e191e1ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I6257aa26eb5111e191e1ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$1 + \left[ \frac{(SULEV150\ standard - ZEV\ standard) \times Zero-emission\ VMT\ Allowance}{SULEV150\ standard} \right];$$

For LEV630s:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I62a36d80eb5111e183fcad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I62a36d80eb5111e183fcad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$1 + \left[ \frac{(LEV630\ standard - ULEV570\ standard) \times Zero-emission\ VMT\ Allowance}{LEV630\ standard} \right];$$

For ULEV570s:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I63032374eb5111e1b370ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I63032374eb5111e1b370ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$1 + \left[ \frac{(ULEV570\ standard - ULEV400\ standard) \times Zero-emission\ VMT\ Allowance}{ULEV570\ standard} \right];$$

For ULEV400s:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I634fc3faeb5111e1acc8ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I634fc3faeb5111e1acc8ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$1 + \left[ \frac{(ULEV400\ standard - ULEV270\ standard) \times Zero-emission\ VMT\ Allowance}{ULEV400\ standard} \right];$$

For ULEV270s:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I639c6e1ceb5111e1bea3ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I639c6e1ceb5111e1bea3ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

[codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I63f2133aeb5111e1b66fad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$1 + \left[ \frac{(SULEV270 \text{ standard} - SULEV230 \text{ standard}) \times \text{Zero-emission VMT Allowance}}{SULEV270 \text{ standard}} \right];$$

For SULEV230s:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I63f2133aeb5111e1b66fad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I644a1508eb5111e189a8ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$1 + \left[ \frac{(SULEV230 \text{ standard} - SULEV200 \text{ standard}) \times \text{Zero-emission VMT Allowance}}{SULEV230 \text{ standard}} \right];$$

For SULEV200s:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I644a1508eb5111e189a8ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I644a1508eb5111e189a8ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=ba520391-04d6-4feb-91b4-ea879ec099c7&contextData=(sc.Default))

$$1 + \left[ \frac{(SULEV200 \text{ standard} - ZEV \text{ standard}) \times \text{Zero-emission VMT Allowance}}{SULEV200 \text{ standard}} \right];$$

where “Zero-emission VMT Allowance” for an HEV is determined in accordance with section C of the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1, or the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.2, as applicable, except that for the purposes of this subsection (c)(2)(B), the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

3. A manufacturer that fails to produce and deliver for sale in California the equivalent quantity of MDVs certified to LEV III exhaust emission standards, shall receive “Vehicle-Equivalent Debits” (or “VEDs”) equal to the amount of negative VECs determined by the equation in subsection (c)(2)(A).

*(B) Calculation of Fleet Average NMOG+NO<sub>x</sub> Credits and Debits for Medium-Duty Vehicles Other than MDPVs.*

1. In 2016 and subsequent model years, a manufacturer shall calculate its medium-duty vehicle fleet average credits or debits using the following equation.

$$[(\text{Fleet Average NMOG+NOx Requirement}) - (\text{Manufacturer's Fleet Average NMOG+NOx Value})] \times (\text{Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs}).$$

2. In 2016 and subsequent model years, a manufacturer that achieves fleet average NMOG+NOx values lower than the fleet average NMOG+NOx requirement for the corresponding model year shall receive credits in units of g/mi NMOG+NOx. A manufacturer with 2016 and subsequent model year fleet average NMOG+NOx values greater than the fleet average requirement for the corresponding model year shall receive debits in units of g/mi NMOG+NOx equal to the amount of negative credits determined by the aforementioned equation. The total g/mi NMOG+NOx credits or debits earned for MDVs 8,501-10,000 lbs. GVWR excluding MDPVs, and for MDVs 10,001-14,000 lbs. GVWR shall be summed together. The resulting amount shall constitute the g/mi NMOG+NOx credits or debits accrued by the manufacturer for the model year. Medium-duty fleet average credits and debits earned in accordance with subsection (c)(2)(B) may not be summed together with fleet average credits and debits earned for passenger cars, light-duty trucks, and medium-duty passenger vehicles in accordance with subsection (c)(1).

(C) Only ZEVs certified as MDVs and not used to meet the ZEV requirement shall be included in the calculation of VECs or the calculation of NMOG+NOx credits and debits.

*(3) Procedure for Offsetting Debits.*

(A) A manufacturer shall equalize emission debits by earning g/mi NMOG+NOx emission credits or VECs in an amount equal to the g/mi NMOG+NOx debits or VEDs, or by submitting a commensurate amount of g/mi NMOG+NOx credits or VECs to the Executive Officer that were earned previously or acquired from another manufacturer. A manufacturer shall equalize NMOG+NOx debits for PCs, LDTs, and MDPVs and VEC debits or NMOG+NOx debits, as applicable, for MDVs within three model years. If emission debits are not equalized within the specified time period, the manufacturer shall be subject to the Health and Safety Code §43211 civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period. A manufacturer demonstrating compliance under Option 2 in subsection (b)(1)(A)1.a, must calculate the emission debits that are subject to a civil penalty under Health and Safety Code section 43211 separately for California, the District of Columbia, and for each individual state that is included in the fleet average greenhouse gas requirements in subsection (b)(1)(A)1.a. The manufacturer must calculate these emission debits separately for California, the District of Columbia, and each individual state using the formula in subsections (c)(1) and (c)(2), except that the “Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs” shall be calculated separately for the District of Columbia and each individual state.

For the purposes of Health and Safety Code §43211, the number of passenger cars, light-duty trucks, and medium-duty passenger vehicles not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi NMOG+NOx emission debits for the model year by

the g/mi NMOG+NO<sub>x</sub> fleet average requirement for PCs and LDTs 0-3750 lbs. LVW and for LDTs 3751 lbs. LVW - 8500 lbs. GVW and MDPVs applicable for the model year in which the debits were first incurred; and the number of medium-duty vehicles not meeting the state board's emission standards shall be equal to the amount of VEDs incurred or shall be determined by dividing the total amount of g/mi NMOG+NO<sub>x</sub> emission debits for the model year by the g/mi NMOG+NO<sub>x</sub> fleet average requirement for MDVs 8,501-10,000 lbs. GVW and for MDVs 10,001 lbs. - 14,000 lbs. GVW applicable for the model year in which the debits were first incurred.

(B) For the 2015 and subsequent model years, the emission credits earned in any given model year shall retain full value through five subsequent model years. Credits will have no value if not used by the beginning of the sixth model year after being earned.

(4) *Changing NMOG Credits and Debits to NMOG+NO<sub>x</sub> Credits and Debits.* The value of any emission credits that have not been used prior to the start of the 2015 model year and any emission debits that have not been equalized prior to the start of the 2015 model year earned shall be converted to NMOG+NO<sub>x</sub> credits at the start of the 2015 model year by multiplying their values by a factor of 3.0. These credits and debits are subject to the provisions in subsection 1961(c)(3).

(5) *Changing Vehicle-Equivalent Credits and Debits to NMOG+NO<sub>x</sub> Fleet Average Credits and Debits.* The value of any vehicle-equivalent credits and debits earned in accordance with subsection (c)(2) or subsection 1961(c)(2) shall be converted to NMOG+NO<sub>x</sub> fleet average credits and debits using the provisions in subsection (c)(2)(B), for each model year in which the credits or debits are accrued. For the purpose of applying the formula in subsection (c)(2)(B)1, for credits and debits earned in accordance with subsection 1961(c)(2), the Fleet Average NMOG+NO<sub>x</sub> Requirement is 0.364 g/mi for MDVs between 8,501-10,000 lbs. GVWR and 0.592 g/mi for MDVs between 10,001-14,000 lbs. GVWR. These credits and debits are subject to the provisions in subsection (c)(3) or subsection 1961(c)(3), as applicable, based on the model year in which they are first earned as vehicle-equivalent credits or debits.

(d) *Test Procedures.* The certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as amended December 19, 2018, the “California Non-Methane Organic Gas Test Procedures for 1993 through 2016 Model Year Vehicles,” as amended September 2, 2015, and the “California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles,” as adopted September 2, 2015, which are all incorporated herein by reference. In the case of hybrid electric vehicles and on-board fuel-fired heaters, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1, and the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.2.

(e) *Abbreviations.* The following abbreviations are used in this section 1961.2:

“ALVW” means adjusted loaded vehicle weight.

“ASTM” means American Society of Testing and Materials.

“CO” means carbon monoxide.

“FTP” means Federal Test Procedure.

“g/mi” means grams per mile.

“GVW” means gross vehicle weight.

“GVWR” means gross vehicle weight rating.

“HEV” means hybrid-electric vehicle.

“LDT” means light-duty truck.

“LDT1” means a light-duty truck with a loaded vehicle weight of 0-3750 pounds.

“LDT2” means a light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight rating of 8500 pounds.

“LEV” means low-emission vehicle.

“LPG” means liquefied petroleum gas.

“LVW” means loaded vehicle weight.

“MDPV” means medium-duty passenger vehicle.

“MDV” means medium-duty vehicle.

“NMHC” means non-methane hydrocarbons.

“mg/mi” means milligrams per mile.

“NMHC” means non-methane hydrocarbons.

“Non-Methane Organic Gases” or “NMOG” means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

“NO<sub>x</sub>” means oxides of nitrogen.

“PC” means passenger car.

“SULEV” means super-ultra-low-emission vehicle.

“ULEV” means ultra-low-emission vehicle.

“VEC” means vehicle-equivalent credits.

“VED” means vehicle-equivalent debits.

“VMT” means vehicle miles traveled.

“ZEV” means zero-emission vehicle.

(f) *Severability*. Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of both this section and this article remains in full force and effect.

Note: Authority cited: Sections 39500, 39600, 39601, 43013, 43018, 43101, 43104, 43105 and 43106, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43204 and 43205, Health and Safety Code.

### **HISTORY**

1. New section filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
2. Amendment of third paragraph and subsections (a)(1), (a)(2)(A), (a)(2)(D)1.-3., (a)(7)(A)2., (a)(9), (b)(1)(A), (b)(1)(A)2., (b)(1)(D), (b)(4)(A)2., (c)(1)(B), (c)(3)(B) and (d) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
3. Amendment filed 10-8-2015; operative 10-8-2015 pursuant to Government Code section 11343.4(b)(3) (Register 2015, No. 41).
4. Amendment of subsection (d) filed 12-12-2018; operative 12-12-2018 pursuant to Government Code section 11343.4(b)(3) (Register 2018, No. 50).
5. Amendment of subsection (d) filed 2-7-2019; operative 4-1-2019 (Register 2019, No. 6).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1961.2, 13 CA ADC § 1961.2

**Section 1961.3. Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2017 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.**

Introduction. This section 1961.3 sets the greenhouse gas emission levels from new 2017 and subsequent model year passenger cars, light-duty trucks, and medium-duty passenger vehicles. Light-duty trucks from 3751 lbs. LVW - 8500 lbs. GVW that are certified to the Option 1 LEV II NOx Standard in section 1961(a)(1) are exempt from these greenhouse gas emission requirements, however, passenger cars, light-duty trucks 0-3750 lbs. LVW, and medium-duty passenger vehicles are not eligible for this exemption.

Emergency vehicles may be excluded from these greenhouse gas emission requirements. The manufacturer must notify the Executive Officer that they are making such an election, in writing, prior to the start of the applicable model year or must comply with this section 1961.3.

(a) Greenhouse Gas Emission Requirements.

(1) Fleet Average Carbon Dioxide Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. For the purpose of determining compliance with this subsection (a)(1), the applicable fleet average CO<sub>2</sub> mass emission standards for each model year is the sales-weighted average of the calculated CO<sub>2</sub> exhaust mass emission target values for each manufacturer. For each model year, the sales-weighted fleet average CO<sub>2</sub> mass emissions value shall not exceed the sales-weighted average of the calculated CO<sub>2</sub> exhaust mass emission target values for that manufacturer.

(A) Fleet Average Carbon Dioxide Target Values for Passenger Cars. The fleet average CO<sub>2</sub> exhaust mass emission target values for passenger cars that are produced and delivered for sale in California each model year shall be determined as follows:

1. For passenger cars with a footprint of less than or equal to 41 square feet, the gram per mile CO<sub>2</sub> target value shall be selected for the appropriate model year from the following table:

	<i>CO<sub>2</sub> Target Value</i>
<i>Model Year</i>	<i>(grams/mile)</i>
2017	195.0
2018	185.0
2019	175.0
2020	166.0
2021	157.0
2022	150.0
2023	143.0
2024	137.0
2025 and subsequent	131.0

2. For passenger cars with a footprint of greater than 56 square feet, the gram per mile CO<sub>2</sub> target value shall be selected for the appropriate model year from the following table:

	<i>CO<sub>2</sub> Target Value</i>
<i>Model Year</i>	<i>(grams/mile)</i>
2017	263.0
2018	250.0
2019	238.0
2020	226.0
2021	215.0
2022	205.0
2023	196.0
2024	188.0
2025 and subsequent	179.0

3. For passenger cars with a footprint that is greater than 41 square feet and less than or equal to 56 square feet, the gram per mile CO<sub>2</sub> target value shall be calculated using the following equation and rounded to the nearest 0.1 grams/mile:

$$\text{Target gCO}_2 / \text{mile} = [a \times f] + b$$

Where: *f* is the vehicle footprint and coefficients *a* and *b* are selected from the following table for the applicable model year.

<i>Model year</i>	<i>a</i>	<i>b</i>
2017	4.53	8.9
2018	4.35	6.5
2019	4.17	4.2
2020	4.01	1.9
2021	3.84	-0.4
2022	3.69	-1.1
2023	3.54	-1.8
2024	3.4	-2.5
2025 and subsequent	3.26	-3.2

(B) Fleet Average Carbon Dioxide Target Values for Light-Duty Trucks and Medium-Duty Passenger Vehicles. The fleet average CO<sub>2</sub> exhaust mass emission target values for light-duty trucks and medium-duty passenger vehicles that are produced and delivered for sale in California each model year shall be determined as follows:

1. For light-duty trucks and medium-duty passenger vehicles with a footprint of less than or equal to 41 square feet, the gram per mile CO<sub>2</sub> target value shall be selected from the following table:



	<i>CO<sub>2</sub> Target Value</i>
<i>Model Year</i>	<i>(grams/mile)</i>
2017	238.0
2018	227.0
2019	220.0
2020	212.0
2021	195.0
2022	186.0
2023	176.0
2025	168.0
2025 and subsequent	159.0

2. For light-duty trucks and medium-duty passenger vehicles with a footprint of greater than 41 square feet and less than or equal to the maximum footprint value specified in the table below for each model year, the gram/mile CO<sub>2</sub> target value shall be calculated using the following equation and rounded to the nearest 0.1 grams/mile:

$$\text{Target gCO}_2 / \text{mile} = [a \times f] + b$$

Where: *f* is the vehicle footprint and coefficients *a* and *b* are selected from the following table for the applicable model year.

	<i>Maximum</i>		
<i>Model year</i>	<i>Footprint</i>	<i>a</i>	<i>b</i>
2017	50.7	4.87	38.3
2018	60.2	4.76	31.6
2019	66.4	4.68	27.7
2020	68.3	4.57	24.6
2021	73.5	4.28	19.8
2022	74.0	4.09	17.8
2023	74.0	3.91	16.0
2024	74.0	3.74	14.2
2025 and subsequent	74.0	3.58	12.5

3. For light-duty trucks and medium-duty passenger vehicles with a footprint that is greater than the minimum footprint value specified in the table below and less than or equal to the maximum footprint value specified in the table below for each model year, the gram/mile CO<sub>2</sub> target value shall be calculated using the following equation and rounded to the nearest 0.1 grams/mile:

$$\text{Target gCO}_2 / \text{mile} = [a \times f] + b$$

Where: *f* is the vehicle footprint and coefficients *a* and *b* are selected from the following table for the applicable model year.

<i>Model year</i>	<i>Minimum</i>	<i>Maximum</i>		
	<i>Footprint</i>	<i>Footprint</i>	<i>a</i>	<i>b</i>
2017	50.7	66.0	4.04	80.5
2018	60.2	66.0	4.04	75.0

4. For light-duty trucks and medium-duty passenger vehicles with a footprint that is greater than the minimum value specified in the table below for each model year, the gram/mile CO<sub>2</sub> target value shall be selected for the applicable model year from the following table:

	<i>Minimum</i>	<i>CO<sub>2</sub> target value</i>
<i>Model year</i>	<i>Footprint</i>	<i>(grams/mile)</i>
2017	66.0	347.0
2018	66.0	342.0
2019	66.4	339.0
2020	68.3	337.0
2021	73.5	335.0
2022	74.0	321.0
2023	74.0	306.0
2024	74.0	291.0
2025 and subsequent	74.0	277.0

(C) Calculation of Manufacturer-Specific Carbon Dioxide Fleet Average Standards. For each model year, each manufacturer must comply with fleet average CO<sub>2</sub> standards for passenger cars and for light-duty trucks plus medium-duty passenger vehicles, as applicable, calculated for that model year as follows. For each model year, a manufacturer must calculate separate fleet average CO<sub>2</sub> values for its passenger car fleet and for its combined light-duty truck plus medium-duty passenger vehicle fleet using the CO<sub>2</sub> target values in subsection (a)(A). These calculated CO<sub>2</sub> values are the manufacturer-specific fleet average CO<sub>2</sub> standards for passenger cars and for light-duty trucks plus medium-duty passenger vehicles, as applicable, which apply for that model year.

1. A CO<sub>2</sub> target value shall be calculated in accordance with subparagraph (a)(1)(A) or (a)(1)(B), as applicable, for each unique combination of model type and footprint value.

2. Each CO<sub>2</sub> target value, determined for each unique combination of model type and footprint value, shall be multiplied by the total production of that model type/footprint combination for the applicable model year.

3. The resulting products shall be summed, and that sum shall be divided by the total production of passenger cars or total combined production of light-duty trucks and medium-duty passenger vehicles, as applicable, in that model year. The result shall be rounded to the nearest whole gram per mile. This result shall be the applicable fleet average CO<sub>2</sub> standard for the manufacturer's passenger car fleet or its combined light-duty truck and medium-duty passenger vehicle fleet, as applicable.

(2) Nitrous Oxide (N<sub>2</sub>O) and Methane (CH<sub>4</sub>) Exhaust Emission Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles. Each manufacturer's fleet of combined passenger automobile, light-duty trucks, and medium-duty passenger vehicles must comply with N<sub>2</sub>O and CH<sub>4</sub> standards using either the provisions of subsection (a)(2)(A), subsection (a)(2)(B), or subsection (a)(2)(C). Except with prior approval of the Executive Officer, a manufacturer may not use the provisions of both subsection (a)(2)(A) and subsection (a)(2)(B) in the same model year. For example, a manufacturer may not use the provisions of subsection (a)(2)(A) for their passenger automobile fleet and the provisions of subsection (a)(2)(B) for their light-duty truck and medium-duty passenger vehicle fleet in the same model year. The manufacturer may use the provisions of both subsections (a)(2)(A) and (a)(2)(C) in the same model year. For example, a manufacturer may meet the N<sub>2</sub>O standard in subsection (a)(2)(A)1 and an alternative CH<sub>4</sub> standard determined under subsection (a)(2)(C).

(A) Standards Applicable to Each Test Group.

1. Exhaust emissions of N<sub>2</sub>O shall not exceed 0.010 grams per mile at full useful life, as measured on the FTP (40 CFR, Part 86, Subpart B), as amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles.” Manufacturers may optionally determine an alternative N<sub>2</sub>O standard under subsection (a)(2)(C).

2. Exhaust emissions of CH<sub>4</sub> shall not exceed 0.030 grams per mile at full useful life, as measured on the FTP (40 CFR, Part 86, Subpart B), as amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” Manufacturers may optionally determine an alternative CH<sub>4</sub> standard under subsection (a)(2)(C).

(B) Including N<sub>2</sub>O and CH<sub>4</sub> in Fleet Averaging Program. Manufacturers may elect to not meet the emission standards in subsection (a)(2)(A). Manufacturers making this election shall measure N<sub>2</sub>O and CH<sub>4</sub> emissions for each unique combination of model type and footprint value on both the FTP test cycle and the Highway Fuel Economy test cycle at full useful life, multiply the measured N<sub>2</sub>O emissions value by 298 and the measured CH<sub>4</sub> emissions value by 25, and include both of these adjusted N<sub>2</sub>O and CH<sub>4</sub> full useful life values in the fleet average calculations for passenger automobiles and light-duty trucks plus medium-duty passenger vehicles, as calculated in accordance with subsection (a)(2)(A)(D).

(C) Optional Use of Alternative N<sub>2</sub>O and/or CH<sub>4</sub> Standards. Manufacturers may select an alternative standard applicable to a test group, for either N<sub>2</sub>O or CH<sub>4</sub>, or both. For example, a manufacturer may choose to meet the N<sub>2</sub>O standard in subsection (a)(2)(A)1 and an alternative CH<sub>4</sub> standard in lieu of the standard in subsection (a)(2)(A)2. The alternative standard for each pollutant must be less stringent than the applicable exhaust emission standard specified in subsection (a)(2)(A). Alternative

N<sub>2</sub>O and CH<sub>4</sub> standards apply to emissions as measured on the FTP (40 CFR, Part 86, Subpart B), as amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” for the full useful life, and become the applicable certification and in-use emission standard(s) for the test group. Manufacturers using an alternative standard for N<sub>2</sub>O and/or CH<sub>4</sub> must calculate emission debits according to the provisions of subsection (a)(2)(D) for each test group/alternative standard combination. Debits must be included in the calculation of total credits or debits generated in a model year as required under subsection (b)(1)(B). Flexible fuel vehicles (or other vehicles certified for multiple fuels) must meet these alternative standards when tested on all applicable test fuel type.

(D) CO<sub>2</sub>-Equivalent Debits. CO<sub>2</sub>-equivalent debits for test groups using an alternative N<sub>2</sub>O and/or CH<sub>4</sub> standard as determined under (a)(2)(C) shall be calculated according to the following equation and rounded to the nearest whole gram per mile:

$$\text{Debits} = \text{GWP} \times (\text{Production}) \times (\text{AltStd} - \text{Std})$$

Where:

Debits = N<sub>2</sub>O or CH<sub>4</sub> CO<sub>2</sub>-equivalent debits for a test group using an alternative N<sub>2</sub>O or CH<sub>4</sub> standard;  
GWP = 25 if calculating CH<sub>4</sub> debits and 298 if calculating N<sub>2</sub>O debits;  
Production = The number of vehicles of that test group produced and delivered for sale in California;  
AltStd = The alternative standard (N<sub>2</sub>O or CH<sub>4</sub>) selected by the manufacturer under (a)(2)(C); and  
Std = The exhaust emission standard for N<sub>2</sub>O or CH<sub>4</sub> specified in (a)(2)(A).

(3) Alternative Fleet Average Standards for Manufacturers with Limited U.S. Sales. Manufacturers meeting the criteria in this subsection (a)(3) may request that the Executive Officer establish alternative fleet average CO<sub>2</sub> standards that would apply instead of the standards in subsection (a)(1).

(A) Eligibility for Alternative Standards. Eligibility as determined in this subsection (a)(3) shall be based on the total sales of combined passenger cars, light-duty trucks, and medium-duty passenger vehicles. The terms “sales” and “sold” as used in this subsection (a)(3) shall mean vehicles produced and delivered for sale (or sold) in the states and territories of the United States. For the purpose of determining eligibility the sales of related companies shall be aggregated according to the provisions of section 1900. To be eligible for alternative standards established under this subsection (a)(3), the manufacturer's average sales for the three most recent consecutive model years must remain below 5,000. If a manufacturer's average sales for the three most recent consecutive model years exceeds 4,999, the manufacturer will no longer be eligible for exemption and must meet applicable emission standards as follows.

1. If a manufacturer's average sales for three consecutive model years exceeds 4,999, and if the increase in sales is the result of corporate acquisitions, mergers, or purchase by another manufacturer, the manufacturer shall comply with the emission standards described in subsections (a)(1) and (a)(2),

as applicable, beginning with the first model year after the last year of the three consecutive model years.

2. If a manufacturer's average sales for three consecutive model years exceeds 4,999 and is less than 50,000, and if the increase in sales is solely the result of the manufacturer's expansion in vehicle production (not the result of corporate acquisitions, mergers, or purchase by another manufacturer), the manufacturer shall comply with the emission standards described in subsections (a)(1) and (a)(2), as applicable, beginning with the second model year after the last year of the three consecutive model years.

(B) Requirements for New Entrants into the U.S. Market. New entrants are those manufacturers without a prior record of automobile sales in the United States and without prior certification to (or exemption from, under 40 CFR §86.1801-12(k)) greenhouse gas emission standards in 40 CFR §86.1818-12 or greenhouse gas standards in section 1961.1. In addition to the eligibility requirements stated in subsection (a)(3)(A), new entrants must meet the following requirements:

1. In addition to the information required under subsection (a)(3)(D), new entrants must provide documentation that shows a clear intent by the company to actually enter the U.S. market in the years for which alternative standards are requested. Demonstrating such intent could include providing documentation that shows the establishment of a U.S. dealer network, documentation of work underway to meet other U.S. requirements (e.g., safety standards), or other information that reasonably establishes intent to the satisfaction of the Executive Officer.

2. Sales of vehicles in the U.S. by new entrants must remain below 5,000 vehicles for the first two model years in the U.S. market and the average sales for any three consecutive years within the first five years of entering the U.S. market must remain below 5,000 vehicles. Vehicles sold in violation of these limits will be considered not covered by the certificate of conformity and the manufacturer will be subject to penalties on an individual-vehicle basis for sale of vehicles not covered by a certificate. In addition, violation of these limits will result in loss of eligibility for alternative standards until such point as the manufacturer demonstrates two consecutive model years of sales below 5,000 automobiles.

3. A manufacturer with sales in the most recent model year of less than 5,000 automobiles, but where prior model year sales were not less than 5,000 automobiles, is eligible to request alternative standards under subsection (a)(3). However, such a manufacturer will be considered a new entrant and subject to the provisions regarding new entrants in this subsection (a)(3), except that the requirement to demonstrate an intent to enter the U.S. market in subsection (a)(3)(B)(1) shall not apply.

(C) How to Request Alternative Fleet Average Standards. Eligible manufacturers may petition for alternative standards for up to five consecutive model years if sufficient information is available on which to base such standards.

1. To request alternative standards starting with the 2017 model year, eligible manufacturers must submit a completed application no later than July 30, 2013.

2. To request alternative standards starting with a model after 2017, eligible manufacturers must submit a completed application no later than 36 months prior to the start of the first model year to which the alternative standards would apply.

3. The application must contain all the information required in subsection (a)(3)(D), and must be signed by a chief officer of the company. If the Executive Officer determines that the content of the request is incomplete or insufficient, the manufacturer will be notified and given an additional 30 days to amend the request.

4. A manufacturer may elect to petition for alternative standards under this subsection (a)(3)(C) by submitting to ARB a copy of the data and information submitted to EPA as required under 40 CFR §86.1818-12(g), incorporated by reference in and amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” and the EPA approval of the manufacturer's request for alternative fleet average standards for the 2017 through 2025 MY National Greenhouse Gas Program.

(D) Data and Information Submittal Requirements. Eligible manufacturers requesting alternative standards under subsection (a)(3) must submit the following information to the California Air Resources Board. The Executive Officer may request additional information as s/he deems appropriate. The completed request must be sent to the California Air Resources Board at the following address: Chief, Mobile Source Operations Division, California Air Resources Board, 9480 Telstar Avenue, Suite 4, El Monte, California 91731.

1. Vehicle Model and Fleet Information.

a. The model years to which the requested alternative standards would apply, limited to five consecutive model years.

b. Vehicle models and projections of production volumes for each model year.

c. Detailed description of each model, including the vehicle type, vehicle mass, power, footprint, and expected pricing.

d. The expected production cycle for each model, including new model introductions and redesign or refresh cycles.

2. Technology Evaluation Information.

a. The CO<sub>2</sub> reduction technologies employed by the manufacturer on each vehicle model, including information regarding the cost and reduction technologies employed by the

manufacturer on each vehicle model, including information regarding the cost and CO<sub>2</sub>-reducing effectiveness. Include technologies that improve air conditioning efficiency and reduce air conditioning system leakage, and any “off-cycle” technologies that potentially provide benefits outside the operation represented by the FTP and the HWFET.

b. An evaluation of comparable models from other manufacturers, including CO<sub>2</sub> results and air conditioning credits generated by the models. Comparable vehicles should be similar, but not necessarily identical, in the following respects: vehicle type, horsepower, mass, power-to-weight ratio, footprint, retail price, and any other relevant factors. For manufacturers requesting alternative standards starting with the 2017 model year, the analysis of comparable vehicles should include vehicles from the 2012 and 2013 model years, otherwise the analysis should at a minimum include vehicles from the most recent two model years.

c. A discussion of the CO<sub>2</sub>-reducing technologies employed on vehicles offered outside of the U.S. market but not available in the U.S., including a discussion as to why those vehicles and/or technologies are not being used to achieve CO<sub>2</sub> reductions for vehicles in the U.S. market.

d. An evaluation, at a minimum, of the technologies projected by the California Air Resources Board in the “Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider the “LEV III” Amendments to The California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards and Test Procedures and to the On-Board Diagnostic System Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and to the Evaporative Emission Requirements for Heavy-Duty Vehicles” and the appendices to this report, released on December 7, 2011, as those technologies likely to be used to meet greenhouse gas emission standards and the extent to which those technologies are employed or projected to be employed by the manufacturer. For any technology that is not projected to be fully employed, the manufacturer must explain why this is the case.

### 3. Information Supporting Eligibility.

a. U.S. sales for the three previous model years and projected sales for the model years for which the manufacturer is seeking alternative standards.

b. Information regarding ownership relationships with other manufacturers, including details regarding the application of the provisions of 40 CFR §86.1838-01(b)(3) and section 1900 regarding the aggregation of sales of related companies.

(E) Alternative Standards. Upon receiving a complete application, the Executive Officer will review the application and determine whether an alternative standard is warranted. If the Executive Officer judges that an alternative standard is warranted, the following standards shall apply. For the purposes of this subsection (a)(3)(E), an “ultra-small volume manufacturer” shall mean a manufacturer that meets the requirements of subsection (a)(3).

1. At the beginning of the model year that is three model years prior to the model year for which an alternative standard is requested, each ultra-small volume manufacturer shall identify all vehicle models from the model year that is four model years prior to the model year for which an alternative standard is requested, certified by a large volume manufacturer that are comparable to that small volume manufacturer's vehicle models for the model year for which an alternative standard is requested, based on model type and footprint value. The ultra-small volume manufacturer shall demonstrate to the Executive Officer the appropriateness of each comparable vehicle model selected. Upon approval of the Executive Officer, s/he shall provide to the ultra-small volume manufacturer the target grams CO<sub>2</sub> per mile for each vehicle model type and footprint value that is approved. The ultra-small volume manufacturer shall calculate its fleet average CO<sub>2</sub> standard in accordance with subsection (a)(1)(C) based on these target grams CO<sub>2</sub> per mile values provided by the Executive Officer.

2. In the 2017 and subsequent model years, an ultra-small volume manufacturer shall either:

a. not exceed its fleet average CO<sub>2</sub> standard calculated in accordance with subsection (a)(1)(C) based on the target grams CO<sub>2</sub> per mile values provided by the Executive Officer; or

b. upon approval of the Executive Officer, if an ultra-small volume manufacturer demonstrates a vehicle model uses an engine, transmission, and emission control system and has a footprint value that are identical to a configuration certified for sale in California by a large volume manufacturer, those ultra-small volume manufacturer vehicle models are exempt from meeting the requirements in paragraph 2.a of this subsection.

(F) Restrictions on Credit Trading. Manufacturers subject to alternative standards approved by the Executive Officer under this subsection (a)(3) may not trade credits to another manufacturer. Transfers of credits between a manufacturer's car and truck fleets are allowed.

(4) Greenhouse Gas Emissions Values for Electric Vehicles, "Plug-In" Hybrid Electric Vehicles, and Fuel Cell Vehicles.

(A) Electric Vehicle Calculations.

1. For each unique combination of model type and footprint value, a manufacturer shall calculate the City CO<sub>2</sub> Value using the following formula: Value using the following formula:

$$\text{City CO}_2 \text{ Value} = (270 \text{ Gco}_2\text{e/kWh}) * E_{EV} - 0.25 * \text{CO}_{2\text{target}}$$

Where EEV is measured directly from each cycle for each test vehicle of battery electric vehicle technology in units of kilowatt-hours per mile (per SAE J1634, incorporated herein by reference). is measured directly from each cycle for each test vehicle of battery electric vehicle technology in units of kilowatt-hours per mile (per SAE J1634, incorporated herein by reference).



2. For each unique combination of model type and footprint value, a manufacturer shall calculate the Highway CO<sub>2</sub> Value using the following formula:

$$\text{Highway CO}_2 \text{ Value} = (270 \text{ gCO}_2\text{e/kWh}) * E_{EV} - 0.25 * \text{CO}_{2\text{target}}$$

Where  $E_{EV}$  is measured directly from each cycle for each test vehicle of battery electric vehicle technology in units of kilowatt-hours per mile (per SAE J1634, incorporated herein by reference).

(B) “Plug-In” Hybrid Electric Vehicle Calculations. For each unique combination of model type and footprint value, a manufacturer shall calculate the City CO<sub>2</sub> Value and the Highway CO<sub>2</sub> Value using the following formulas:

$$\begin{aligned} \text{City CO}_2 \text{ Value} &= \text{GHG}_{\text{urban}} \\ &\text{and} \\ \text{Highway CO}_2 \text{ Value} &= \text{GHG}_{\text{highway}} \end{aligned}$$

Where

$\text{GHG}_{\text{urban}}$  and  $\text{GHG}_{\text{highway}}$  are measured in accordance with section G.12 of the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes” or the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” as applicable.

(C) Fuel Cell Vehicle Calculations. For each unique combination of model type and footprint value, a manufacturer shall calculate the City CO<sub>2</sub> Value and the Highway CO<sub>2</sub> Value using the following formulas:

$$\begin{aligned} \text{City CO}_2 &= \text{GHG}_{\text{FCV}} = (9132 \text{ gCO}_2\text{e/kg H}_2) * H_{\text{FCV}} - G_{\text{upstream}} \\ &\text{and} \\ \text{Highway CO}_2 &= \text{GHG}_{\text{FCV}} = (9132 \text{ gCO}_2\text{e/kg H}_2) * H_{\text{FCV}} - G_{\text{upstream}} \end{aligned}$$

Where

$H_{\text{FCV}}$  means hydrogen consumption in kilograms of hydrogen per mile, measured for the applicable test cycle, in accordance with SAE J2572 (published October 2008), incorporated herein by reference. means hydrogen consumption in kilograms of hydrogen per mile, measured for the applicable test cycle, in accordance with SAE J2572 (published October 2008), incorporated herein by reference.

(5) Calculation of Fleet Average Carbon Dioxide Value.

(A) For each unique combination of model type and footprint value, a manufacturer shall calculate a combined city/highway CO<sub>2</sub> exhaust emission value as follows: exhaust emission value as follows:

$$0.55 \times \text{City CO}_2 \text{ Value} + 0.45 \times \text{Highway CO}_2 \text{ Value}$$

“City” CO<sub>2</sub> exhaust emissions shall be measured using the FTP test cycle (40 CFR, Part 86, Subpart B), as amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles.” “Highway” CO<sub>2</sub> exhaust emission shall be measured using the using the Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B).

(B) Each combined city/highway CO<sub>2</sub> exhaust emission, determined for each unique combination of model type and footprint value, shall be multiplied by the total production of that model type/footprint combination for the applicable model year.

(C) The resulting products shall be summed, and that sum shall be divided by the total production of passenger cars or total combined production of light-duty trucks and medium-duty passenger vehicles, as applicable, in that model year. The result shall be rounded to the nearest whole gram per mile. This result shall be the manufacturer's actual sales-weighted fleet average CO<sub>2</sub> value for the manufacturer's passenger car fleet or its combined light-duty truck and medium-duty passenger vehicle fleet, as applicable.

(D) For each model year, a manufacturer must demonstrate compliance with the fleet average requirements in section (a)(1) based on one of two options applicable throughout the model year, either:

Option 1: the total number of passenger cars, light-duty trucks, and medium-duty passenger vehicles that are certified to the California exhaust emission standards in section 1961.3, and are produced and delivered for sale in California; or

Option 2: the total number of passenger cars, light-duty trucks, and medium-duty passenger vehicles that are certified to the California exhaust emission standards in this section 1961.3, and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

1. A manufacturer that selects compliance Option 2 must notify the Executive Officer of that selection, in writing, prior to the start of the applicable model year or must comply with Option 1. Once a manufacturer has selected compliance Option 2, that selection applies unless the manufacturer selects Option 1 and notifies the Executive Officer of that selection in writing before the start of the applicable model year.

2. When a manufacturer is demonstrating compliance using Option 2 for a given model year, the term “in California” as used in section 1961.3 means California, the District of Columbia, and all states that have adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

3. A manufacturer that selects compliance Option 2 must provide to the Executive Officer separate values for the number of vehicles in each model type and footprint value produced and delivered for sale in the District of Columbia and for each individual state within the average and the City CO<sub>2</sub> Value and Highway CO<sub>2</sub> exhaust emission values that apply to each model type and footprint value.

(6) Credits for Reduction of Air Conditioning Direct Emissions. Manufacturers may generate A/C Direct Emissions Credits by implementing specific air conditioning system technologies designed to reduce air conditioning direct emissions over the useful life of their vehicles. A manufacturer may only use an A/C Direct Emissions Credit for vehicles within a model type upon approval of the A/C Direct Emissions Credit for that model type by the Executive Officer. The conditions and requirements for obtaining approval of an A/C Direct Emissions Credit are described in (A) through (F), below.

(A) Applications for approval of an A/C Direct Emissions Credit must be organized by model type. The applications must also include:

- vehicle make and
- number of vehicles within the model type that will be equipped with the air conditioning system to which the leakage credit shall apply.

Separate applications must be submitted for any two configurations of an A/C system with differences other than dimensional variation.

(B) To obtain approval of the A/C Direct Emissions Credit, the manufacturer must demonstrate through an engineering evaluation that the A/C system under consideration reduces A/C direct emissions. The demonstration must include all of the following elements:

- the amount of A/C Direct Emissions Credit requested, in grams of CO<sub>2</sub>-equivalent per mile (gCO<sub>2</sub>e/mi);
- the calculations identified in section (a)(6)(C) justifying that credit amount;
- schematic of the A/C system;
- specifications of the system components with sufficient detail to allow reproduction of the calculation; and
- an explanation describing what efforts have been made to minimize the number of fittings and joints and to optimize the components in order to minimize leakage.

Calculated values must be carried to at least three significant figures throughout the calculations, and the final credit value must be rounded to one tenth of a gram of CO<sub>2</sub>-equivalent per mile (gCO<sub>2</sub>e/mi).

(C) The calculation of A/C Direct Emissions Credit depends on the refrigerant or type of system, and is specified in paragraphs 1, 2, and 3 of this subsection.

1. HFC-134a vapor compression systems

For A/C systems that use HFC-134a refrigerant, the A/C Direct Emissions Credit is calculated using the following formula:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I649945d8eb5111e19406ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I649945d8eb5111e19406ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=(sc.Default))

$$A/C \text{ Direct Credit} = \text{Direct Credit Baseline} \times \left(1 - \frac{LR}{\text{Avg LR}}\right)$$

Where:

Direct Credit Baseline = 12.6 gCO<sub>2</sub>e/mi for passenger cars;

Direct Credit Baseline = 15.6 gCO<sub>2</sub>e/mi for light-duty trucks and medium-duty passenger vehicles;

Avg LR = 16.6 grams/year for passenger cars;

Avg LR = 20.7 grams/year for light-duty trucks and medium-duty passenger vehicles;

LR = the larger of SAE LR or Min LR;

Where:

SAE LR = initial leak rate evaluated using SAE International's Surface Vehicle Standard SAE J2727 (Revised February 2012), incorporated by reference, herein;

Min LR = 8.3 grams/year for passenger car A/C systems with belt-driven compressors;

Min LR = 10.4 grams/year for light-duty truck and medium-duty passenger vehicle A/C systems with belt-driven compressors;

Min LR = 4.1 grams/year for passenger car A/C systems with electric compressors;

Min LR = 5.2 grams/year for light-duty truck and medium-duty passenger vehicle A/C systems with electric compressors.

Note: Initial leak rate is the rate of refrigerant leakage from a newly manufactured A/C system in grams of refrigerant per year. The Executive Officer may allow a manufacturer to use an updated version of SAE J2727 or an alternate method if s/he determines that the updated SAE J2727 or the alternate method provides more accurate estimates of the initial leak rate of A/C systems than the February 2012 version of SAE J2727 does.

## 2. Low-GWP vapor compression systems

For A/C systems that use a refrigerant having a GWP of 150 or less, the A/C Direct Emissions Credit shall be calculated using the following formula:

$$A/C \text{ Direct Credit} = \text{Low GWP Credit} - \text{High Leak Penalty}$$

Where:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I64d13222eb5111e19e68ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Link/Document/Blob/I64d13222eb5111e19e68ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=(sc.Default)&bhcp=1)

$$\text{Low GWP Credit} = \text{Max Low GWP Credit} \times \left(1 - \frac{GWP}{1,430}\right),$$

and

[https://govt.westlaw.com/calregs/Link/Document/Blob/I6508d7cceb5111e1abcdad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Link/Document/Blob/I6508d7cceb5111e1abcdad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=(sc.Default)&bhcp=1)

*High Leak Penalty*

$$= \begin{cases} \text{Max High Leak Penalty,} & \text{if SAE LR} > \text{Avg LR;} \\ \text{Max High Leak Penalty} \times \frac{\text{SAE LR} - \text{Min LR}}{\text{Avg LR} - \text{Min LR}}, & \text{if Min LR} < \text{SAE LR} \leq \text{Avg LR;} \\ 0, & \text{if SAE LR} \leq \text{Min LR.} \end{cases}$$

Where:

Max Low GWP Credit = 13.8 gCO<sub>2</sub>e/mi for passenger cars;

Max Low GWP Credit = 17.2 gCO<sub>2</sub>e/mi for light-duty trucks and medium-duty passenger vehicles;

GWP = the global warming potential of the refrigerant over a 100-year horizon, as specified in section (a)(6)(F);

Max High Leak Penalty = 1.8 gCO<sub>2</sub>e/mi for passenger cars;

Max High Leak Penalty = 2.1 gCO<sub>2</sub>e/mi for light-duty trucks and medium-duty passenger vehicles;

Avg LR = 13.1 g/yr for passenger cars;

Avg LR = 16.6 g/yr for light-duty trucks and medium-duty passenger vehicles;

and where:

SAE LR = initial leak rate evaluated using SAE International's Surface Vehicle Standard SAE J2727 (Revised February 2012);

Min LR = 8.3 g/yr for passenger cars;

Min LR = 10.4 g/yr for light-duty trucks and medium-duty passenger vehicles.

Note: Initial leak rate is the rate of refrigerant leakage from a newly manufactured A/C system in grams of refrigerant per year. The Executive Officer may allow a manufacturer to use an updated version of SAE J2727 or an alternate applicable test method if s/he finds the update or the alternate method provides more accurate estimates of the initial leak rate of A/C systems than the February 2012 version of SAE J2727 does.

### 3. Other A/C systems

For an A/C system that uses a technology other than vapor compression cycles, an A/C Direct Emissions Credit may be approved by the Executive Officer. The amount of credit requested must be based on demonstration of the reduction of A/C direct emissions of the technology using an engineering evaluation that includes verifiable laboratory test data, and cannot exceed 13.8 gCO<sub>2</sub>e/mi for passenger cars and 17.2 gCO<sub>2</sub>e/mi for light-duty trucks and medium-duty passenger vehicles.

(D) The total leakage reduction credits generated by the air conditioning system shall be calculated separately for passenger cars, and for light-duty trucks and medium-duty passenger vehicles, according to the following formula:

$$\text{Total Credits (g/mi)} = \text{A/C Direct Credit} \times \text{Production}$$

Where:

A/C Direct Credit is calculated as specified in subsection (a)(6)(C).

Production = The total number of passenger cars or light-duty trucks plus medium-duty passenger vehicles, whichever is applicable, produced and delivered for sale in California, with the air conditioning system to which the A/D Direct Credit value from subsection (a)(6)(C) applies.

(E) The results of subsection (a)(6)(D), rounded to the nearest whole gram per mile, shall be included in the manufacturer's credit/debit totals calculated in subsection (b)(1)(B).

(F) The following values for refrigerant global warming potential (GWP), or alternative values as determined by the Executive Officer, shall be used in the calculations of this subsection (a)(6). The Executive Officer shall determine values for refrigerants not included in this subsection (a)(6)(F) upon request by a manufacturer, based on findings by the Intergovernmental Panel on Climate Change (IPCC) or from other applicable research studies.

<i>Refrigerant</i>	<i>GWP</i>
HFC-134a	1,430
HFC-152a	124
HFO-1234yf	4
CO <sub>2</sub>	1

(7) Credits for Improving Air Conditioning System Efficiency. Manufacturers may generate CO<sub>2</sub> credits by implementing specific air conditioning system technologies designed to reduce air conditioning-related CO<sub>2</sub> emissions over the useful life of their passenger cars, light-duty trucks, and/or medium-duty passenger vehicles. Credits shall be calculated according to this subsection (a)(7) for each air conditioning system that the manufacturer is using to generate CO<sub>2</sub> credits. The eligibility requirements specified in subsection (a)(7)(E) must be met before an air conditioning system is allowed to generate credits.

(A) Air conditioning efficiency credits are available for the following technologies in the gram per mile amounts indicated for each vehicle category in the following table:

		<i>Light-Duty Trucks and Medium-Duty Passenger Cars</i>	<i>Passenger Vehicles</i>
<i>Air Conditioning Technology</i>	<i>(g/mi)</i>	<i>(g/mi)</i>	
Reduced reheat, with externally-controlled, variable-displacement compressor (e.g.a compressor that controls displacement based on temperature setpoint and/or cooling demand of the air conditioning system control settings inside the passenger compartment).	1.5	2.2	
Reduced reheat, with externally-controlled, fixed-displacement or pneumatic variable displacement compressor (e.g.a compressor that controls displacement based on conditions within, or internal to, the air conditioning system, such as head pressure, suction pressure, or evaporator outlet temperature).	1.0	1.4	
Default to recirculated air with closed-loop control of the air supply (sensor feedback to control interior air quality) whenever the ambient temperature is 75°F or higher: Air conditioning systems that operated with closed-loop control of the air supply at different temperatures may receive credits by submitting an engineering analysis to the Administrator for approval.	1.5	2.2	
Default to recirculated air with open-loop control air supply (no sensor feedback) whenever the ambient temperature is 75°F or higher. Air conditioning systems that operate with open-loop control of the air supply at different temperatures may receive credits by submitting an engineering analysis to the Administrator for approval.	1.0	1.4	
Blower motor controls which limit wasted electrical energy (e.g.pulse width modulated power controller).	0.8	1.1	
Internal heat exchanger (e.g.a device that transfers heat from the high-pressure, liquid-phase refrigerant entering the evaporator to the low-pressure, gas-phase refrigerant exiting the evaporator).	1.0	1.4	
Improved condensers and/or evaporators with system analysis on the component(s) indicating a coefficient of performance improvement for the system of greater than 10% when compared to previous industry standard designs).	1.0	1.4	
Oil separator. The manufacturer must submit an engineering analysis demonstrating the increased improvement	0.5	0.7	

of the system relative to the baseline design, where the baseline component for comparison is the version which		
a manufacturer most recently had in production on the same vehicle design or in a similar or related vehicle		
model. The characteristics of the baseline component shall be compared to the new component to demonstrate the improvement.		

(B) Air conditioning efficiency credits are determined on an air conditioning system basis. For each air conditioning system that is eligible for a credit based on the use of one or more of the items listed in subsection (a)(7)(A), the total credit value is the sum of the gram per mile values listed in subsection (a)(7)(A) for each item that applies to the air conditioning system. However, the total credit value for an air conditioning system may not be greater than 5.0 grams per mile for any passenger car or 7.2 grams per mile for any light-duty truck or medium-duty passenger vehicle.

(C) The total efficiency credits generated by an air conditioning system shall be calculated separately for passenger cars and for light-duty trucks plus medium-duty passenger vehicles according to the following formula:

$$\text{Total Credits (g/mi)} = \text{Credit} \times \text{Production}$$

Where:

Credit = the CO<sub>2</sub> efficiency credit value in grams per mile determined in subsection (a)(7)(B) or (a)(7)(E), whichever is applicable. efficiency credit value in grams per mile determined in subsection (a)(7)(B) or (a)(7)(E), whichever is applicable.

Production = The total number of passenger cars or light-duty trucks plus medium-duty passenger vehicles, whichever is applicable, produced and delivered for sale in California, with the air conditioning system to which to the efficiency credit value from subsection (a)(7)(B) applies.

(D) The results of subsection (a)(7)(C), rounded to the nearest whole gram per mile, shall be included in the manufacturer's credit/debit totals calculated in subsection (b)(1)(B).

(E) For the purposes of this subsection (a)(7)(E), the AC17 Test Procedure shall mean the AC17 Air Conditioning Efficiency Test Procedure set forth in 40 CFR §86.167-17, incorporated in and amended by the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles."

1. For each air conditioning system selected by the manufacturer to generate air conditioning efficiency credits, the manufacturer shall perform the AC17 Test Procedure.

2. Using good engineering judgment, the manufacturer must select the vehicle configuration to be tested that is expected to result in the greatest increased CO<sub>2</sub> emissions as a result of the operation of



the air conditioning system for which efficiency credits are being sought. If the air conditioning system is being installed in passenger cars, light-duty trucks, and medium-duty passenger vehicles, a separate determination of the quantity of credits for passenger cars and for light-duty trucks and medium-duty passenger vehicles must be made, but only one test vehicle is required to represent the air conditioning system, provided it represents the worst-case impact of the system on CO<sub>2</sub> emissions.

3. For each air conditioning system selected by the manufacturer to generate air conditioning efficiency credits, the manufacturer shall perform the AC17 Test Procedure according to the following requirements. Each air conditioning system shall be tested as follows:

a. Perform the AC17 test on a vehicle that incorporates the air conditioning system with the credit-generating technologies.

b. Perform the AC17 test on a vehicle which does not incorporate the credit-generating technologies. The tested vehicle must be similar to the vehicle tested under subsection (a)(7)(E)(3)a.

c. Subtract the CO<sub>2</sub> emissions determined from testing under subsection (a)(7)(E)(3)a from the CO<sub>2</sub> emissions determined from testing under subsection (a)(7)(E)(3)b and round to the nearest 0.1 grams/mile. If the result is less than or equal to zero, the air conditioning system is not eligible to generate credits. If the result is greater than or equal to the total of the gram per mile credits determined under subsection (a)(7)(B), then the air conditioning system is eligible to generate the maximum allowable value determined under subsection (a)(7)(B). If the result is greater than zero but less than the total of the gram per mile credits determined under subsection (a)(7)(B), then the air conditioning system is eligible to generate credits in the amount determined by subtracting the CO<sub>2</sub> emissions determined from testing under subsection (a)(7)(E)(3)a from the CO<sub>2</sub> emissions determined from testing under subsection (a)(7)(E)(3)b and rounding to the nearest 0.1 grams/mile.

4. For the first model year for which an air conditioning system is expected to generate credits, the manufacturer must select for testing the highest-selling subconfiguration within each vehicle platform that uses the air conditioning system. Credits may continue to be generated by the air conditioning system installed in a vehicle platform provided that:

a. The air conditioning system components and/or control strategies do not change in any way that could be expected to cause a change in its efficiency;

b. The vehicle platform does not change in design such that the changes could be expected to cause a change in the efficiency of the air conditioning system; and

c. The manufacturer continues to test at least one sub-configuration within each platform using the air conditioning system, in each model year, until all sub-configurations within each platform have been tested.

5. Each air conditioning system must be tested and must meet the testing criteria in order to be allowed to generate credits. Using good engineering judgment, in the first model year for which an air conditioning system is expected to generate credits, the manufacturer must select for testing the highest-selling subconfiguration within each vehicle platform using the air conditioning system. Credits may continue to be generated by an air conditioning system in subsequent model years if the manufacturer continues to test at least one sub-configuration within each platform on annually, as long as the air conditioning system and vehicle platform do not change substantially.

(8) Off-Cycle Credits. Manufacturers may generate credits for CO<sub>2</sub>-reducing technologies where the CO<sub>2</sub> reduction benefit of the technology is not adequately captured on the FTP and/or the HWFET. These technologies must have a measurable, demonstrable, and verifiable real-world CO<sub>2</sub> reduction that occurs outside the conditions of the FTP and the HWFET. These optional credits are referred to as “off-cycle” credits. Off-cycle technologies used to generate emission credits are considered emission-related components subject to applicable requirements, and must be demonstrated to be effective for the full useful life of the vehicle. Unless the manufacturer demonstrates that the technology is not subject to in-use deterioration, the manufacturer must account for the deterioration in their analysis. The manufacturer must use one of the three options specified in this subsection (a)(8) to determine the CO<sub>2</sub> gram per mile credit applicable to an off-cycle technology. The manufacturer should notify the Executive Officer in its pre-model year report of its intention to generate any credits under this subsection (a)(8).

(A) Credit available for certain off-cycle technologies.

1. The manufacturer may generate a CO<sub>2</sub> gram/mile credit for certain technologies as specified in the following table, provided that each technology is applied to the minimum percentage of the manufacturer's total U.S. production of passenger cars, light-duty trucks, and medium-duty passenger vehicles specified in the table in each model year for which credit is claimed. Technology definitions are in subsection (e). gram/mile credit for certain technologies as specified in the following table, provided that each technology is applied to the minimum percentage of the manufacturer's total U.S. production of passenger cars, light-duty trucks, and medium-duty passenger vehicles specified in the table in each model year for which credit is claimed. Technology definitions are in subsection (e).

		<i>Light-Duty Trucks and Medium-Duty</i>	<i>Minimum Total</i>
<i>Off-Cycle Technology</i>	<i>Passenger Cars (g/mi)</i>	<i>Passenger Vehicles (g/mi)</i>	<i>Percent of U.S. Production</i>
Active aerodynamics	0.6	1.0	10
High efficiency exterior lighting	1.1	1.1	10
Engine heat recovery	0.7 per 100W of capacity	0.7 per 100W of capacity	10
Engine start-stop (idle-off)	2.9	4.5	10
Active transmission warm-up	1.8	1.8	10
Active engine warm-up	1.8	1.8	10
Electric heater circulation pump	1.0	1.5	n/a
Solar roof panels	3.0	3.0	n/a
Thermal control	≤3.0	≤4.3	n/a

a. Credits may also be accrued for thermal control technologies as defined in subsection (e) in the amounts shown in the following table:

	<i>Credit value: Passenger Cars (g/mi)</i>	<i>Credit Value: Light-Duty Trucks and Medium- Duty Passenger Vehicles (g/mi)</i>
<i>Thermal Control Technology</i>		
Glass or glazing	≤2.9	≤3.9
Active seat ventilation	1.0	1.3
Solar reflective paint	0.4	0.5
Passive cabin ventilation	1.7	2.3
Active cabin ventilation	2.1	2.8

b. The maximum credit allowed for thermal control technologies is limited to 3.0 g/mi for passenger cars and to 4.3 g/mi for light-duty trucks and medium-duty passenger vehicles. The maximum credit allowed for glass or glazing is limited to 2.9 g/mi for passenger cars and to 3.9 g/mi for light-duty trucks and medium-duty passenger vehicles.

c. Glass or glazing credits are calculated using the following equation:

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[codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I6576c2e6eb5111e1ac2ead00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=(sc.Default))

$$\text{Credit} = \left[ Z \times \sum_{i=1}^n \frac{T_i \times G_i}{G} \right]$$

Where:

Credit = the total glass or glazing credits, in grams per mile, for a vehicle, which may not exceed 3.0 g/mi for passenger cars or 4.3 g/mi for light-duty trucks and medium-duty passenger vehicles;

Z = 0.3 for passenger cars and 0.4 for light-duty trucks and medium-duty passenger vehicles;

G<sub>i</sub> = the measured glass area of window i, in square meters and rounded to the nearest tenth;

G = the total glass area of the vehicle, in square meters and rounded to the nearest tenth;

T<sub>i</sub> = the estimated temperature reduction for the glass area of window i, determined using the following formula:

$$T_i = 0.3987 \times (T_{t_{\text{base}}} - T_{t_{\text{new}}})$$

Where:

T<sub>t<sub>new</sub></sub> = the total solar transmittance of the glass, measured according to ISO 13837:2008, “Safety glazing materials - Method for determination of solar transmittance” (incorporated by reference, herein).

T<sub>t<sub>base</sub></sub> = 62 for the windshield, side-front, side-rear, rear-quarter, and backlite locations, and 40 for rooflite locations.

2. The maximum allowable decrease in the manufacturer's combined passenger car and light-duty truck plus medium-duty passenger vehicle fleet average CO<sub>2</sub> emissions attributable to use of the default credit values in subsection (a)(8)(A)1 is 10 grams per mile. If the total of the CO<sub>2</sub> g/mi credit values from the table in subsection (a)(8)(A)1 does not exceed 10 g/mi for any passenger automobile or light truck in a manufacturer's fleet, then the total off-cycle credits may be calculated according to subsection (a)(8)(D). If the total of the CO<sub>2</sub> g/mi credit values from the table in subsection (a)(8)(A)1 exceeds 10 g/mi for any passenger car, light-duty truck, or medium-duty passenger vehicle in a manufacturer's fleet, then the gram per mile decrease for the combined passenger car and light-duty truck plus medium-duty passenger vehicle fleet must be determined according to subsection (a)(8)(A)2.a to determine whether the 10 g/mi limitation has been exceeded.

a. Determine the gram per mile decrease for the combined passenger car and light-duty truck plus medium-duty passenger vehicle fleet using the following formula:

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[codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I6576c2e6eb5111e1ac2ead00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=2765cb04-37c3-4755-9181-9d310872f86f&contextData=(sc.Default))

$$\text{Decrease} = \frac{\text{Credits} \times 1,000,000}{[(\text{Prod}_c \times 195,264) + (\text{Prod}_T \times 225,865)]}$$

Where:

Credits = The total of passenger car and light-duty truck plus medium-duty passenger vehicles credits, in Megagrams, determined according to subsection (a)(8)(D) and limited to those credits accrued by using the default gram per mile values in subsection (a)(8)(A)1.

Prod<sub>C</sub> = The number of passenger cars produced by the manufacturer and delivered for sale in the U.S.

Prod<sub>T</sub> = The number of light-duty trucks and medium-duty passenger vehicles produced by the manufacturer and delivered for sale in the U.S.

b. If the value determined in subsection (a)(8)(A)2.a is greater than 10 grams per mile, the total credits, in Megagrams, that may be accrued by a manufacturer using the default gram per mile values in subsection (a)(8)(A)1 shall be determined using the following formula:

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$$\text{Credit (Megagrams)} = \frac{[10 \times ((\text{Prod}_C \times 195,264) + (\text{Prod}_T \times 225,865))]}{1,000,000}$$

Where:

Prod<sub>C</sub> = The number of passenger cars produced by the manufacturer and delivered for sale in the U.S. =  
The number of passenger cars produced by the manufacturer and delivered for sale in the U.S.

Prod<sub>T</sub> = The number of light-duty trucks and medium-duty passenger vehicles produced by the manufacturer and delivered for sale in the U.S.

c. If the value determined in subsection (a)(8)(A)2.a is not greater than 10 grams per mile, then the credits that may be accrued by a manufacturer using the default gram per mile values in subsection (a)(8)(A)1 do not exceed the allowable limit, and total credits may be determined for each category of vehicles according to subsection (a)(8)(D).

d. If the value determined in subsection (a)(8)(A)2.a is greater than 10 grams per mile, then the combined passenger car and light-duty truck plus medium-duty passenger vehicle credits, in Megagrams, that may be accrued using the calculations in subsection (a)(8)(D) must not exceed the value determined in subsection (a)(8)(A)2.b. This limitation should generally be done by reducing the amount of credits attributable to the vehicle category that caused the limit to be exceeded such that the total value does not exceed the value determined in subsection (a)(8)(A)2.b.

3. In lieu of using the default gram per mile values specified in subsection (a)(8)(A)1 for specific technologies, a manufacturer may determine an alternative value for any of the specified technologies. An alternative value must be determined using one of the methods specified in subsection (a)(8)(B) or subsection (a)(8)(C).

(B) Technology demonstration using EPA 5-cycle methodology. To demonstrate an off-cycle technology and to determine a CO<sub>2</sub> credit using the EPA 5-cycle methodology, the manufacturer shall determine the off-cycle city/highway combined carbon-related exhaust emissions benefit by

using the EPA 5-cycle methodology described in 40 CFR Part 600. Testing shall be performed on a representative vehicle, selected using good engineering judgment, for each model type for which the credit is being demonstrated. The emission benefit of a technology is determined by testing both with and without the off-cycle technology operating. Multiple off-cycle technologies may be demonstrated on a test vehicle. The manufacturer shall conduct the following steps and submit all test data to the Executive Officer.

1. Testing without the off-cycle technology installed and/or operating. Determine carbon-related exhaust emissions over the FTP, the HWFET, the US06, the SC03, and the cold temperature FTP test procedures according to the test procedure provisions specified in 40 CFR part 600 subpart B and using the calculation procedures specified in §600.113-08 of this chapter. Run each of these tests a minimum of three times without the off-cycle technology installed and operating and average the per phase (bag) results for each test procedure. Calculate the 5-cycle weighted city/highway combined carbon-related exhaust emissions from the averaged per phase results, where the 5-cycle city value is weighted 55% and the 5-cycle highway value is weighted 45%. The resulting combined city/highway value is the baseline 5-cycle carbon-related exhaust emission value for the vehicle.

2. Testing with the off-cycle technology installed and/or operating. Determine carbon-related exhaust emissions over the US06, the SC03, and the cold temperature FTP test procedures according to the test procedure provisions specified in 40 CFR part 600 subpart B and using the calculation procedures specified in 40 CFR §600.113-08. Run each of these tests a minimum of three times with the off-cycle technology installed and operating and average the per phase (bag) results for each test procedure. Calculate the 5-cycle weighted city/highway combined carbon-related exhaust emissions from the averaged per phase results, where the 5-cycle city value is weighted 55% and the 5-cycle highway value is weighted 45%. Use the averaged per phase results for the FTP and HWFET determined in subsection (a)(8)(B)1 for operation without the off-cycle technology in this calculation. The resulting combined city/highway value is the 5-cycle carbon-related exhaust emission value showing the off-cycle benefit of the technology but excluding any benefit of the technology on the FTP and HWFET.

3. Subtract the combined city/highway value determined in subsection (a)(8)(B)1 from the value determined in subsection (a)(8)(B)2. The result is the off-cycle benefit of the technology or technologies being evaluated. If this benefit is greater than or equal to three percent of the value determined in subsection (a)(8)(B)1 then the manufacturer may use this value, rounded to the nearest tenth of a gram per mile, to determine credits under subsection (a)(8)(C).

4. If the value calculated in subsection (a)(8)(B)3 is less than two percent of the value determined in subsection (a)(8)(B)1, then the manufacturer must repeat the testing required under subsections (a)(8)(B)1 and (a)(8)(B)2, except instead of running each test three times they shall run each test two additional times. The off-cycle benefit of the technology or technologies being evaluated shall be calculated as in subsection (a)(8)(B)3 using all the tests conducted under subsections (a)(8)(B)1, (a)(8)(B)2, and (a)(8)(B)4. If the value calculated in subsection (a)(8)(B)3 is less than two percent of the value determined in subsection (a)(8)(B)1, then the manufacturer must verify the emission reduction potential of the off-cycle technology or technologies using the EPA Vehicle Simulation

Tool, and if the results support a credit value that is less than two percent of the value determined in subsection (a)(8)(B)1 then the manufacturer may use the off-cycle benefit of the technology or technologies calculated as in subsection (a)(8)(B)3 using all the tests conducted under subsections (a)(8)(B)1, (a)(8)(B)2, and (a)(8)(B)4, rounded to the nearest tenth of a gram per mile, to determine credits under subsection (a)(8)(C).

(C) Review and approval process for off-cycle credits.

1. Initial steps required.

a. A manufacturer requesting off-cycle credits under the provisions of subsection (a)(8)(B) must conduct the testing and/or simulation described in that paragraph.

b. A manufacturer requesting off-cycle credits under subsection (a)(8)(B) must conduct testing and/or prepare engineering analyses that demonstrate the in-use durability of the technology for the full useful life of the vehicle.

2. Data and information requirements. The manufacturer seeking off-cycle credits must submit an application for off-cycle credits determined under subsection (a)(8)(B). The application must contain the following:

a. A detailed description of the off-cycle technology and how it functions to reduce CO<sub>2</sub> emissions under conditions not represented on the FTP and HWFET.

b. A list of the vehicle model(s) which will be equipped with the technology.

c. A detailed description of the test vehicles selected and an engineering analysis that supports the selection of those vehicles for testing.

d. All testing and/or simulation data required under subsection (a)(8)(B), as applicable, plus any other data the manufacturer has considered in the analysis.

e. An estimate of the off-cycle benefit by vehicle model and the fleetwide benefit based on projected sales of vehicle models equipped with the technology.

f. An engineering analysis and/or component durability testing data or whole vehicle testing data demonstrating the in-use durability of the off-cycle technology components.

3. Review of the off-cycle credit application. Upon receipt of an application from a manufacturer, the Executive Officer will do the following:

a. Review the application for completeness and notify the manufacturer within 30 days if additional information is required.

b. Review the data and information provided in the application to determine if the application supports the level of credits estimated by the manufacturer.

4. Decision on off-cycle application. The Executive Officer will notify the manufacturer in writing of its decision to approve or deny the application within 60 days of receiving a complete application, and if denied, the Executive Officer will provide the reasons for the denial.

(D) Calculation of total off-cycle credits. Total off-cycle credits in grams per mile of CO<sub>2</sub> (rounded to the nearest tenth of a gram per mile) shall be calculated separately for passenger cars and light-duty trucks plus medium-duty passenger vehicles according to the following formula:

$$\text{Total Credits (g/mi)} = \text{Credit} \times \text{Production}$$

Where:

Credit = the credit value in grams per mile determined in subsection (a)(8)(A) or subsection (a)(8)(B).

Production = The total number of passenger cars or light-duty trucks plus medium-duty passenger vehicles, whichever is applicable, produced and delivered for sale in California, produced with the off-cycle technology to which the credit value determined in subsection (a)(8)(A) or subsection (a)(8)(B) applies.

(9) Credits for certain full-size pickup trucks. Full-size pickup trucks may be eligible for additional credits based on the implementation of hybrid technologies or on exhaust emission performance, as described in this subsection (a)(9). Credits may be generated under either subsection (a)(9)(A) or subsection (a)(9)(B) for a qualifying pickup truck, but not both.

(A) Credits for implementation of gasoline-electric hybrid technology. Full-size pickup trucks that implement hybrid gasoline-electric technologies may be eligible for an additional credit under this subsection (a)(9)(A). Pickup trucks using the credits under this subsection (a)(9)(A) may not use the credits described in subsection (a)(9)(B).

1. Full-size pickup trucks that are mild hybrid gasoline-electric vehicles and that are produced in the 2017 through 2021 model years are eligible for a credit of 10 grams/mile. To receive this credit, the manufacturer must produce a quantity of mild hybrid full-size pickup trucks such that the proportion of production of such vehicles, when compared to the manufacturer's total production of full-size pickup trucks, is not less than the amount specified in the table below for each model year.

<i>Model year</i>	<i>Required minimum percent of full-size pickup trucks</i>
2017	30%
2018	40%
2019	55%
2020	70%
2021	80%



2. Full-size pickup trucks that are strong hybrid gasoline-electric vehicles and that are produced in the 2017 through 2025 model years are eligible for a credit of 20 grams/mile. To receive this credit, the manufacturer must produce a quantity of strong hybrid full-size pickup trucks such that the proportion of production of such vehicles, when compared to the manufacturer's total production of full-size pickup trucks, is not less than 10 percent for each model year.

(B) Credits for emission reduction performance. 2017 through 2021 model year full-size pickup trucks that achieve carbon-related exhaust emission values below the applicable target value determined in subsection (a)(1)(B) may be eligible for an additional credit. Pickup trucks using the credits under this subsection (a)(9)(B) may not use the credits described in subsection (a)(9)(A).

1. Full-size pickup trucks that achieve carbon-related exhaust emissions less than or equal to the applicable target value determined in subsection (a)(1)(B) multiplied by 0.85 (rounded to the nearest gram per mile) and greater than the applicable target value determined in subsection (a)(1)(B) multiplied by 0.80 (rounded to the nearest gram per mile) in a model year are eligible for a credit of 10 grams/mile. A pickup truck that qualifies for this credit in a model year may claim this credit for subsequent model years through the 2021 model year if the carbon-related exhaust emissions of that pickup truck do not increase relative to the emissions in the model year in which the pickup truck qualified for the credit. To qualify for this credit in each model year, the manufacturer must produce a quantity of full-size pickup trucks that meet the emission requirements of this subsection (a)(9)(B)1 such that the proportion of production of such vehicles, when compared to the manufacturer's total production of full-size pickup trucks, is not less than the amount specified in the table below for each model year.

<i>Model year</i>	<i>Required minimum percent of full-size pickup trucks</i>
2017	15%
2018	20%
2019	28%
2020	35%
2021	40%

2. Full-size pickup trucks that achieve carbon-related exhaust emissions less than or equal to the applicable target value determined in subsection (a)(1)(B) multiplied by 0.80 (rounded to the nearest gram per mile) in a model year are eligible for a credit of 20 grams/mile. A pickup truck that qualifies for this credit in a model year may claim this credit for a maximum of five subsequent model years if the carbon-related exhaust emissions of that pickup truck do not increase relative to the emissions in the model year in which the pickup truck first qualified for the credit. This credit may not be claimed in any model year after 2025. To qualify for this credit, the manufacturer must produce a quantity of full-size pickup trucks that meet the emission requirements of subsection (a)(9)(B)1 such that the proportion of production of such vehicles, when compared to the manufacturer's total production of full-size pickup trucks, is not less than 10 percent in each model year.

(C) Calculation of total full-size pickup truck credits. Total credits in grams per mile of CO<sub>2</sub> (rounded to the nearest whole gram per mile) shall be calculated for qualifying full-size pickup trucks according to the following formula:

$$\text{Total Credits (g/mi)} = (10 \times \text{Production}_{10}) + (20 \times \text{Production}_{20})$$

Where:

Production<sub>10</sub> = The total number of full-size pickup trucks produced and delivered for sale in California with a credit value of 10 grams per mile from subsection (a)(9)(A) and subsection (a)(9)(B).

Production<sub>20</sub> = The total number of full-size pickup trucks produced and delivered for sale in California with a credit value of 20 grams per mile from subsection (a)(9)(A) and subsection (a)(9)(B).

(10) Greenhouse Gas In-Use Compliance Standards. The in-use exhaust CO<sub>2</sub> emission standard shall be the combined city/highway exhaust emission value calculated according to the provisions of subsection (a)(5)(A) for the vehicle model type and footprint value multiplied by 1.1 and rounded to the nearest whole gram per mile. For vehicles that are capable of operating on multiple fuels, a separate value shall be determined for each fuel that the vehicle is capable of operating on. These standards apply to in-use testing performed by the manufacturer pursuant to the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.”

(11) *Mid-Term Review of the 2022 through 2025 MY Standards.* The Executive Officer shall conduct a mid-term review to re-evaluate the state of vehicle technology to determine whether any adjustments to the stringency of the 2022 through 2025 model year standards are appropriate. California's mid-term review will be coordinated with its planned full participation in EPA's mid-term evaluation as set forth in 40 CFR §86.1818-12 (h).

(b) Calculation of Greenhouse Gas Credits/Debits. Credits that are earned as part of the 2012 through 2016 MY National greenhouse gas program shall not be applicable to California's greenhouse gas program. Debits that are earned as part of the 2012 through 2016 MY National greenhouse gas program shall not be applicable to California's greenhouse gas program.

(1) Calculation of Greenhouse Gas Credits for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.

(A) A manufacturer that achieves fleet average CO<sub>2</sub> values lower than the fleet average CO values lower than the fleet average CO<sub>2</sub> requirement for the corresponding model year shall receive credits for each model year in units of g/mi. A manufacturer that achieves fleet average CO<sub>2</sub> values higher than the fleet average CO<sub>2</sub> requirement for the corresponding model year shall receive debits for each model year in units of g/mi. Manufacturers must calculate greenhouse gas credits and greenhouse gas debits separately for passenger cars and for combined light-duty trucks and medium-duty passenger vehicles as follows:

$$\text{CO}_2 \text{ Credits or Debits} = (\text{CO}_2 \text{ Standard} - \text{Manufacturer's Fleet Average CO}_2 \text{ Value}) \times (\text{Total No. of Vehicles Produced and Delivered for Sale in California, Including ZEVs and HEVs}).$$

Where:

CO<sub>2</sub> Standard = the applicable standard for the model year as determined in subsection (a)(1)(C);

Manufacturer's Fleet Average CO<sub>2</sub> Value = average calculated according to subsection (a)(5);

(B) A manufacturer's total Greenhouse Gas credits or debits generated in a model year shall be the sum of its CO<sub>2</sub> credits or debits and any of the following credits or debits, if applicable. The manufacturer shall calculate, maintain, and report Greenhouse Gas credits or debits separately for its passenger car fleet and for its light-duty truck plus medium-duty passenger vehicle fleet.

1. Air conditioning leakage credits earned according to the provisions of subsection (a)(6);
2. Air conditioning efficiency credits earned according to the provisions of subsection (a)(7);
3. Off-cycle technology credits earned according to the provisions of subsection (a)(8).
4. CO<sub>2</sub>-equivalent debits earned according to the provisions of subsection (a)(2)(D).

(2) A manufacturer with 2017 and subsequent model year fleet average Greenhouse Gas values greater than the fleet average CO<sub>2</sub> standard applicable for the corresponding model year shall receive debits in units of g/mi Greenhouse Gas equal to the amount of negative credits determined by the aforementioned equation. For the 2017 and subsequent model years, the total g/mi Greenhouse Gas credits or debits earned for passenger cars and for light-duty trucks and medium-duty passenger vehicles shall be summed together. The resulting amount shall constitute the g/mi Greenhouse Gas credits or debits accrued by the manufacturer for the model year.

(3) Procedure for Offsetting Greenhouse Gas Debits.

(A) A manufacturer shall equalize Greenhouse Gas emission debits by earning g/mi Greenhouse Gas emission credits in an amount equal to the g/mi Greenhouse Gas debits, or by submitting a commensurate amount of g/mi Greenhouse Gas credits to the Executive Officer that were earned previously or acquired from another manufacturer. A manufacturer shall equalize combined Greenhouse Gas debits for passenger cars, light-duty trucks, and medium-duty passenger vehicles within five model years after they are earned. If emission debits are not equalized within the specified time period, the manufacturer shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the emission debits are not equalized by the end of the specified time period. For a manufacturer demonstrating compliance under Option 2 in subsection (a)(5)(D), the emission debits that are subject to a civil penalty under Health and Safety Code section 43211 shall be calculated separately for California, the District of Columbia, and each individual state that is included in the fleet average greenhouse gas requirements in subsection (a)(1). These emission debits shall be

calculated for each individual state using the formula in subsections (b)(1) and (b)(2), except that the “Total No. of Vehicles Produced and Delivered for Sale in California, including ZEVs and HEVs” shall be calculated separately for the District of Columbia and each individual state.

For the purposes of Health and Safety Code section 43211, the number of passenger cars not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi Greenhouse Gas emission debits for the model year calculated for California by the g/mi Greenhouse Gas fleet average requirement for passenger car applicable for the model year in which the debits were first incurred. For the purposes of Health and Safety Code section 43211, the number of light-duty trucks and medium-duty passenger vehicles not meeting the state board's emission standards shall be determined by dividing the total amount of g/mi Greenhouse Gas emission debits for the model year calculated for California by the g/mi Greenhouse Gas fleet average requirement for light-duty trucks and medium-duty passenger vehicles, applicable for the model year in which the debits were first incurred.

(B) Greenhouse Gas emission credits earned in the 2017 and subsequent model years shall retain full value through the fifth model year after they are earned, and will have no value if not used by the beginning of the sixth model year after being earned.

(4) Use of Greenhouse Gas Emission Credits to Offset a Manufacturer's ZEV Obligations.

(A) For a given model year, a manufacturer that has Greenhouse Gas credits remaining after equalizing all of its Greenhouse Gas debits may use those Greenhouse Gas credits to comply with its ZEV obligations for that model year, in accordance with the provisions set forth in the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.2.

(B) Any Greenhouse Gas credits used by a manufacturer to comply with its ZEV obligations shall retain no value for the purposes of complying with this section 1961.3.

(5) Credits and debits that are earned as part of the 2012 through 2016 MY National Greenhouse Gas Program, shall have no value for the purpose of complying with this section 1961.3.

*(c) Optional Compliance with the 2017 through 2025 MY National Greenhouse Gas Program.*

The optional compliance approach provided by this section 1961.3 (c) shall not be available for 2021 through 2025 model year passenger cars, light-duty trucks, and medium-duty passenger vehicles if the “2017 through 2025 MY National Greenhouse Gas Program” is altered via a final rule published in the *Federal Register* subsequent to October 25, 2016.

For the 2017 through 2025 model years, a manufacturer may elect to demonstrate compliance with this section 1961.3 by demonstrating compliance with the 2017 through 2025 MY National greenhouse gas program as follows:

(1) A manufacturer that selects compliance with this option must notify the Executive Officer of that selection, in writing, prior to the start of the applicable model year or must comply with 1961.3 (a) and (b);

(2) The manufacturer must submit to ARB all data that it submits to EPA in accordance with the reporting requirements as required under 40 CFR §86.1865-12, incorporated by reference in and amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” for demonstrating compliance with the 2017 through 2025 MY National greenhouse gas program and the EPA determination of compliance. All such data must be submitted within 30 days of receipt of the EPA determination of compliance for each model year that a manufacturer selects compliance with this option;

(3) The manufacturer must provide to the Executive Officer separate values for the number of vehicles in each model type and footprint value produced and delivered for sale in California, the District of Columbia, and each individual state that has adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507), the applicable fleet average CO<sub>2</sub> standards for each of these model types and footprint values, the calculated fleet average CO<sub>2</sub> value for each of these model types and footprint values, and all values used in calculating the fleet average CO<sub>2</sub> values.

(d) *Test Procedures.* The certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” incorporated by reference in section 1961.2. In the case of hybrid electric vehicles, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1, or the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.2, as applicable.

(e) *Abbreviations.* The following abbreviations are used in this section 1961.3:

“CFR” means Code of Federal Regulations.

“CH<sub>4</sub>” means methane.

“CO<sub>2</sub>” means carbon dioxide.

“FTP” means Federal Test Procedure.

“GHG” means greenhouse gas.

“g/mi” means grams per mile.

“GVW” means gross vehicle weight.  
“GVWR” means gross vehicle weight rating.  
“GWP” means the global warming potential.  
“HEV” means hybrid-electric vehicle.  
“HWFET” means Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B).  
“LDT” means light-duty truck.  
“LVW” means loaded vehicle weight.  
“MDPV” means medium-duty passenger vehicle.  
“mg/mi” means milligrams per mile.  
“MY” means model year.  
“NHTSA” means National Highway Traffic Safety Administration.  
“N<sub>2</sub>O” means nitrous oxide.  
“ZEV” means zero-emission vehicle.

(f) *Definitions Specific to this Section.* The following definitions apply to this section 1961.3:

(1) “A/C Direct Emissions” means any refrigerant released from a motor vehicle's air conditioning system.

(2) “Active Aerodynamic Improvements” means technologies that are activated only at certain speeds to improve aerodynamic efficiency by a minimum of three percent, while preserving other vehicle attributes or functions.

(3) “Active Cabin Ventilation” means devices that mechanically move heated air from the cabin interior to the exterior of the vehicle.

(4) “Active Transmission Warmup” means a system that uses waste heat from the exhaust system to warm the transmission fluid to an operating temperature range quickly using a heat exchanger in the exhaust system, increasing the overall transmission efficiency by reducing parasitic losses associated with the transmission fluid, such as losses related to friction and fluid viscosity.

(5) “Active Engine Warmup” means a system using waste heat from the exhaust system to warm up targeted parts of the engine so that it reduces engine friction losses and enables the closed-loop fuel control to activate more quickly. It allows a faster transition from cold operation to warm operation, decreasing CO<sub>2</sub> emissions.

(6) “Active Seat Ventilation” means a device that draws air from the seating surface which is in contact with the occupant and exhausts it to a location away from the seat.

(7) “Blower motor controls which limit waste energy” means a method of controlling fan and blower speeds that does not use resistive elements to decrease the voltage supplied to the motor.

(8) “Default to recirculated air mode” means that the default position of the mechanism which controls the source of air supplied to the air conditioning system shall change from outside air to recirculated

air when the operator or the automatic climate control system has engaged the air conditioning system (i.e., evaporator is removing heat), except under those conditions where dehumidification is required for visibility (i.e., defogger mode). In vehicles equipped with interior air quality sensors (e.g., humidity sensor, or carbon dioxide sensor), the controls may determine proper blend of air supply sources to maintain freshness of the cabin air and prevent fogging of windows while continuing to maximize the use of recirculated air. At any time, the vehicle operator may manually select the non-recirculated air setting during vehicle operation but the system must default to recirculated air mode on subsequent vehicle operations (i.e., next vehicle start). The climate control system may delay switching to recirculation mode until the interior air temperature is less than the outside air temperature, at which time the system must switch to recirculated air mode.

(9) “Electric Heater Circulation Pump” means a pump system installed in a stop-start equipped vehicle or in a hybrid electric vehicle or plug-in hybrid electric vehicle that continues to circulate hot coolant through the heater core when the engine is stopped during a stop-start event. This system must be calibrated to keep the engine off for 1 minute or more when the external ambient temperature is 30 deg F.

(10) “Emergency Vehicle” means a motor vehicle manufactured primarily for use as an ambulance or combination ambulance-hearse or for use by the United States Government or a State or local government for law enforcement.

(11) “Engine Heat Recovery” means a system that captures heat that would otherwise be lost through the exhaust system or through the radiator and converting that heat to electrical energy that is used to meet the electrical requirements of the vehicle. Such a system must have a capacity of at least 100W to achieve 0.7 g/mi of credit. Every additional 100W of capacity will result in an additional 0.7 g/mi of credit.

(12) “Engine Start-Stop” means a technology which enables a vehicle to automatically turn off the engine when the vehicle comes to a rest and restart the engine when the driver applies pressure to the accelerator or releases the brake.

(13) “EPA Vehicle Simulation Tool” means the “EPA Vehicle Simulation Tool” as incorporated by reference in 40 CFR §86.1 in the Notice of Proposed Rulemaking for EPA's 2017 and subsequent MY National Greenhouse Gas Program, as proposed at 76 Fed. Reg. 74854, 75357 (December 1, 2011).

(14) “Executive Officer” means the Executive Officer of the California Air Resources Board.

(15) “Footprint” means the product of average track width (rounded to the nearest tenth of an inch) and wheelbase (measured in inches and rounded to the nearest tenth of an inch), divided by 144 and then rounded to the nearest tenth of a square foot, where the average track width is the average of the front and rear track widths, where each is measured in inches and rounded to the nearest tenth of an inch.

(16) “Federal Test Procedure” or “FTP” means 40 CFR, Part 86, Subpart B, as amended by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.”

(17) “Full-size pickup truck” means a light-duty truck that has a passenger compartment and an open cargo box and which meets the following specifications:

1. A minimum cargo bed width between the wheelhouses of 48 inches, measured as the minimum lateral distance between the limiting interferences (pass-through) of the wheelhouses. The measurement shall exclude the transitional arc, local protrusions, and depressions or pockets, if present. An open cargo box means a vehicle where the cargo box does not have a permanent roof or cover. Vehicles produced with detachable covers are considered “open” for the purposes of these criteria.

2. A minimum open cargo box length of 60 inches, where the length is defined by the lesser of the pickup bed length at the top of the body and the pickup bed length at the floor, where the length at the top of the body is defined as the longitudinal distance from the inside front of the pickup bed to the inside of the closed endgate as measured at the height of the top of the open pickup bed along vehicle centerline, and the length at the floor is defined as the longitudinal distance from the inside front of the pickup bed to the inside of the closed endgate as measured at the cargo floor surface along vehicle centerline.

3. A minimum towing capability of 5,000 pounds, where minimum towing capability is determined by subtracting the gross vehicle weight rating from the gross combined weight rating, or a minimum payload capability of 1,700 pounds, where minimum payload capability is determined by subtracting the curb weight from the gross vehicle weight rating.

(18) “Greenhouse Gas” means the following gases: carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons.

(19) “GWP” means the global warming potential of the refrigerant over a 100-year horizon, as specified in Intergovernmental Panel on Climate Change (IPCC) 2007: Climate Change 2007 - The Physical Science Basis. S. Solomon et al. (editors), Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK and New York, NY, USA, ISBN 0-521-70596-7, or determined by ARB if such information is not available in the IPCC Fourth Assessment Report.

(20) “High Efficiency Exterior Lighting” means a lighting technology that, when installed on the vehicle, is expected to reduce the total electrical demand of the exterior lighting system by a minimum of 60 watts when compared to conventional lighting systems. To be eligible for this credit the high efficiency lighting must be installed in the following components: parking/position, front and rear turn signals, front and rear side markers, stop/brake lights (including the center-mounted location), taillights, backup/reverse lights, and license plate lighting.



(21) “Improved condensers and/or evaporators” means that the coefficient of performance (COP) of air conditioning system using improved evaporator and condenser designs is 10 percent higher, as determined using the bench test procedures described in SAE J2765 “Procedure for Measuring System COP of a Mobile Air Conditioning System on a Test Bench,” when compared to a system using standard, or prior model year, component designs. SAE J2765 is incorporated by reference herein. The manufacturer must submit an engineering analysis demonstrating the increased improvement of the system relative to the baseline design, where the baseline component(s) for comparison is the version which a manufacturer most recently had in production on the same vehicle design or in a similar or related vehicle model. The dimensional characteristics (e.g., tube configuration/thickness/spacing, and fin density) of the baseline component(s) shall be compared to the new component(s) to demonstrate the improvement in coefficient of performance.

(22) “Mild hybrid gasoline-electric vehicle” means a vehicle that has start/stop capability and regenerative braking capability, where the recaptured braking energy over the FTP is at least 15 percent but less than 75 percent of the total braking energy, where the percent of recaptured braking energy is measured and calculated according to 40 CFR §600.108(g).

(23) “Model Type” means a unique combination of car line, basic engine, and transmission class.

(24) “2012 through 2016 MY National Greenhouse Gas Program” means the national program that applies to new 2012 through 2016 model year passenger cars, light-duty-trucks, and medium-duty passenger vehicles as adopted by the U.S. Environmental Protection Agency on April 1, 2010 (75 Fed. Reg. 25324, 25677 (May 7, 2010)).

(25) “2017 through 2025 MY National Greenhouse Gas Program” means the national program that applies to new 2017 through 2025 model year passenger cars, light-duty-trucks, and medium-duty passenger vehicles as adopted by the U.S. Environmental Protection Agency as codified in 40 CFR Part 86, Subpart S, except as follows:

For model years 2021 through 2025, the “2017 through 2025 MY National Greenhouse Gas Program” means the national program that applies to new 2021 through 2025 model year passenger cars, light-duty-trucks, and medium-duty passenger vehicles as adopted by the U.S. Environmental Protection Agency as codified in 40 CFR Part 86, Subpart S, as last amended on October 25, 2016 that incorporates CFR sections 86.1818-12 (October 25, 2016), 86.1865-12 (October 25, 2016), 86.1866-12 (October 25, 2016), 86.1867-12 (October 25, 2016), 86.1868-12 (October 25, 2016), 86.1869-12 (October 25, 2016), 86.1870-12 (October 25, 2016), and 86.1871-12 (October 25, 2016).

(26) “Oil separator” means a mechanism that removes at least 50 percent of the oil entrained in the oil/refrigerant mixture exiting the compressor and returns it to the compressor housing or compressor inlet, or a compressor design that does not rely on the circulation of an oil/refrigerant mixture for lubrication.

(27) “Passive Cabin Ventilation” means ducts or devices which utilize convective airflow to move heated air from the cabin interior to the exterior of the vehicle.

(28) “Plug-in Hybrid Electric Vehicle” means “off-vehicle charge capable hybrid electric vehicle” as defined in the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes.”

(29) “Reduced reheat, with externally controlled, fixed-displacement or pneumatic variable displacement compressor” means a system in which the output of either compressor is controlled by cycling the compressor clutch off-and-on via an electronic signal, based on input from sensors (e.g., position or setpoint of interior temperature control, interior temperature, evaporator outlet air temperature, or refrigerant temperature) and air temperature at the outlet of the evaporator can be controlled to a level at 41°F, or higher.

(30) “Reduced reheat, with externally-controlled, variable displacement compressor” means a system in which compressor displacement is controlled via an electronic signal, based on input from sensors (e.g., position or setpoint of interior temperature control, interior temperature, evaporator outlet air temperature, or refrigerant temperature) and air temperature at the outlet of the evaporator can be controlled to a level at 41°F, or higher.

(31) “SC03” means the SC03 test cycle as set forth in the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles.”

(32) “Solar Reflective Paint” means a vehicle paint or surface coating which reflects at least 65 percent of the impinging infrared solar energy, as determined using ASTM standards E903-96 (Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres, DOI: 10.1520/E0903-96 (Withdrawn 2005)), E1918-06 (Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field, DOI: 10.1520/E1918-06), or C1549-09 (Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer, DOI: 10.1520/C1549-09). These ASTM standards are incorporated by reference, herein.

(33) “Solar Roof Panels” means the installation of solar panels on an electric vehicle or a plug-in hybrid electric vehicle such that the solar energy is used to provide energy to the electric drive system of the vehicle by charging the battery or directly providing power to the electric motor with the equivalent of at least 50 Watts of rated electricity output.

(34) “Strong hybrid gasoline-electric vehicle” means a vehicle that has start/stop capability and regenerative braking capability, where the recaptured braking energy over the Federal Test Procedure is at least 75 percent of the total braking energy, where the percent of recaptured braking energy is measured and calculated according to 40 CFR §600.108(g).

(35) “Subconfiguration” means a unique combination within a vehicle configuration of equivalent test weight, road load horsepower, and any other operational characteristics or parameters which is accepted by USEPA.

(36) “US06” means the US06 test cycle as set forth in the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles.”

(37) “Worst-Case” means the vehicle configuration within each test group that is expected to have the highest CO<sub>2</sub> - equivalent value, as calculated in section (a)(5).

(g) Severability. Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of both this section and this article remains in full force and effect.

Note: Authority cited: Sections 38550, 38566, 39500, 39600, 39601, 43013, 43018, 43018.5, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43018.5, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106 and 43211, Health and Safety Code.

### **HISTORY**

1. New section filed 8-8-2012; operative 8-8-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
2. New subsection (a)(3)(C)4., amendment of subsections (a)(6)(C)1.-2 and (a)(7)(E), new subsection (a)(11), amendment of subsection (b)(4)(A), new subsections (c)-(c)(3), subsection relettering, amendment of newly designated subsections (f)(13) and (f)(17)1.-2., new subsection (f)(25) and subsection renumbering filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
3. Amendment of section heading and subsections (a)(1)(A)1.-2., (a)(1)(B)1., (c) and (f)(25) and amendment of Note filed 12-12-2018; operative 12-12-2018 pursuant to Government Code section 11343.4(b)(3) (Register 2018, No. 50).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1961.3, 13 CA ADC § 1961.3

**Section 1962. Zero-Emission Vehicle Standards for 2005 through 2008 Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

(a) *ZEV Emission Standard.* The Executive Officer shall certify new 2005 through 2008 model passenger cars, light-duty trucks and medium-duty vehicles as ZEVs if the vehicles produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) under any and all possible operational modes and conditions. Incorporation of a fuel-fired heater shall not preclude a vehicle from being certified as a ZEV provided: (1) the fuel-fired heater cannot be operated at ambient temperatures above 40° F, (2) the heater is demonstrated to have zero fuel evaporative emissions under any and all possible operational modes and conditions, and (3) the emissions of any pollutant from the fuel-fired heater when operated at an ambient temperature between 68° F and 86° F do not exceed the emission standard for that pollutant for a ULEV under section 1961(a)(1).

A vehicle that would meet the emissions standards for a ZEV except that it uses a fuel-fired heater that can be operated at ambient temperatures above 40° F, that cannot be demonstrated to have zero fuel evaporative emissions under any and all possible operation modes and conditions, or that has emissions of any pollutant exceeding the emission standard for that pollutant for a ULEV under section 1961(a)(1), shall be certified based on the emission level of the fuel-fired heater.

(b) Percentage ZEV Requirements.

(1) General Percentage ZEV Requirement.

(A) *Basic Requirement.* The minimum percentage ZEV requirement for each manufacturer is listed in the table below as the percentage of the PCs and LDT1s, and LDT2s to the extent required by section (b)(1)(C), produced by the manufacturer and delivered for sale in California that must be ZEVs, subject to the conditions in this section 1962(b).

Model Years	Minimum ZEV Requirement
2005 through 2008	10 percent

(B) *Calculating the Number of Vehicles to Which the Percentage ZEV Requirement is Applied.* A manufacturer's volume of PCs and LDT1s produced and delivered for sale in California will be averaged for the 1997, 1998, and 1999 model years to determine the California PC and LDT1 production volume for the model year 2005 ZEV requirements. For the three-year period following model year 2005, a manufacturer's California production volume of PCs and LDT1s, and LDT2s as applicable, will be based on a three-year average of the manufacturer's volume of PCs and LDT1s, and LDT2s as applicable, produced and delivered for sale in California in the prior fourth, fifth and sixth years (e.g. 2006 to 2008 model-year ZEV requirements will be based on California production volumes of PCs and LDT1s, and LDT2s as applicable, for 2000 to 2002 model years). This production averaging is used to determine ZEV requirements only, and has no effect on a manufacturer's size determination. As an alternative to the three year averaging of prior year production described above, a manufacturer may during model year 2005 or the first model year of a subsequent three year period elect to base its ZEV obligation on the number of PCs and LDT1s, and LDT2s to the extent required by section (b)(1)(C), produced by the manufacturer and delivered for

sale in California that same year. If a manufacturer elects to use this method after model year 2005 it must be used for each year of the three-year period. In applying the ZEV requirement, a PC, LDT1, or LDT2 as applicable, that is produced by a small volume manufacturer, but is marketed in California by another manufacturer under the other manufacturer's nameplate, shall be treated as having been produced by the marketing manufacturer.

(C) *Phase-in of ZEV Requirements for LDT2s.* The ZEV requirements for the 2008 model year, 34% of a manufacturer's LDT2 production shall be included in determining the manufacturer's overall ZEV requirement under section (b)(1)(A).

(D) *Exclusion of ZEVs in Determining a Manufacturer's Sales Volume.* In calculating for purposes of sections 1962(b)(1)(B) and 1962(b)(1)(C) the volume of PCs, LDT1s and LDT2s a manufacturer has produced and delivered for sale in California, the manufacturer shall exclude the number of ZEVs produced by the manufacturer, or by a subsidiary in which the manufacturer has a greater than 50% ownership interest, and delivered for sale in California.

(2) Requirements for Large Volume Manufacturers.

(A) *Primary Requirements for Large Volume Manufacturers.* In the 2005 through 2008 model years, a large-volume manufacturer must meet at least 20% of its ZEV requirement with ZEVs or ZEV credits generated by such vehicles, and at least another 20% with ZEVs, advanced technology PZEVs, or credits generated by such vehicles. The remainder of the large-volume manufacturer's ZEV requirement may be met using PZEVs or credits generated by such vehicles.

(B) Alternative Requirements for Large Volume Manufacturers.

1. Minimum Floor for Production of Type III ZEVs.

a. *Requirement For the 2005-2008 Model Years.* A large volume manufacturer electing to be subject to the alternative compliance requirements during model years 2005 through 2008 must produce, deliver for sale, and place in service in California enough 2001-2008 model-year Type III ZEVs to generate ZEV credits sufficient to meet a cumulative percentage ZEV requirement of 1.09 percent of the manufacturer's average annual California sales of PCs and LDT1s over the five year period from model years 1997 through 2001, or submit an equivalent number of credits generated by such vehicles. The manufacturer may meet up to one half of this requirement with [i] 2004-2008 model-year Type I or Type II ZEVs, provided that 20 Type I ZEVs or 10 Type II ZEVs will equal one Type III ZEV, and [ii] 1997-2003 model-year Type I or Type II ZEVs that qualify for an extended service multiplier under section 1962(f) for a year primarily during calendar years 2004-2008, provided that 33 years of such a multiplier will equal one Type III ZEV.

b. [Reserved]

c. [Reserved]

d. [Reserved]

e. [Reserved]

f. *Exclusion of Additional Credits for Transportation Systems.* Any additional credits for transportation systems generated in accordance with section 1962(g)(5) shall not be counted towards compliance with this section 1962(b)(2)(B)1.a.

g. *Carry-over of Excess Credits.* ZEV credits generated from excess production in model years 2005 through 2008 may be carried forward and applied to the 2009 through 2011 minimum floor requirement specified in 1962.1(b)(2)(B)1.b. provided that the value of these carryover credits shall be based on the model year in which the credits are used.

h. *Failure to Meet Requirement for Production of Type III ZEVs.* A manufacturer that, after electing to be subject to the alternative requirements in section 1962(b)(2)(B) for any model year from 2005 through 2008, fails to meet the requirement in section 1962(b)(2)(B)1.a. by the end of the specified four year period in which the model year falls, shall be treated as subject to the primary requirements in section 1962(b)(2)(A) for all model years in the specified four year period.

i. The number of Type III ZEVs needed for a manufacturer under section 1962(b)(2)(B)1. a. shall be rounded to the nearest whole number.

2. *Compliance With Percentage ZEV Requirements.* In the 2005 through 2008 model years, a large volume manufacturer electing to be subject to the alternative compliance requirements in a given model year must meet at least 40 percent of its ZEV requirement for that model year with ZEVs, advanced technology PZEVs, or credits generated from such vehicles. The remainder of the large volume manufacturer's ZEV requirement may be met using PZEVs or credits generated from such vehicles.

3. [Reserved]

(C) *Election of the Primary or Alternative Requirements for Large Volume Manufacturers for the 2005 through 2008 Model Years.* A large volume manufacturer shall be subject to the primary ZEV requirements for the 2005 model year unless it notifies the Executive Officer in writing prior to the start of the 2005 model year that it is electing to be subject to the alternative compliance requirements for that model year. Thereafter, through the 2008 model year, a manufacturer shall be subject to the same compliance option as applied in the previous model year unless it notifies the Executive Officer in writing prior to the start of a new model year that it is electing to switch to the other compliance option for that new model year. However, a large volume manufacturer that has previously elected to be subject to the primary ZEV requirements for one or more of the model years in the four year period identified in section 1962(b)(2)(B)1.a. may prior to the end of the four year period elect to become subject to the alternative compliance requirements for the full four year period upon a demonstration that it has complied with all of the applicable requirements for that period in section 1962(b)(2)(B)1.a.

(D) *Use of Credits from Model Year 2003-2004 PZEVs.* A large volume manufacturer may produce, and deliver for sale in California, model year 2003 or 2004 PZEVs that generate credits exceeding the number of credits equal to 6 percent of the average annual volume of 1997, 1998 and 1999 PCs and LDTs produced and delivered for sale in California by the manufacturer. In that event, the manufacturer may use those excess credits as AT PZEV credits in the 2005 and 2006 model years.

(3) *Requirements for Intermediate Volume Manufacturers.* In the 2005 through 2008 model years, an intermediate volume manufacturer may meet its ZEV requirement with up to 100 percent PZEVs or credits generated by such vehicles.

(4) *Requirements for Small Volume Manufacturers and Independent Low Volume Manufacturers.* A small volume manufacturer or an independent low volume manufacturer is not required to meet the percentage ZEV requirements. However, a small volume manufacturer or an independent low volume manufacturer may earn and market credits for the ZEVs or PZEVs it produces and delivers for sale in California.

(5) *Counting ZEVs and PZEVs in Fleet Average NMOG Calculations.* For purposes of calculating a manufacturer's fleet average NMOG value and NMOG credits under sections 1960.1(g)(2) and 1961(b) and (c), a vehicle certified as a ZEV is counted as one ZEV, and a PZEV is counted as one SULEV certified to the 150,000 mile standards regardless of any ZEV or PZEV multipliers.

(6) *Implementation Prior to 2005 Model Year.* Prior to the 2005 model year, a manufacturer that voluntarily produces vehicles meeting the ZEV emission standards applicable to 2005 and subsequent model year vehicles may certify the vehicles to those standards and requirements for purposes of calculating fleet average NMOG exhaust emission values and NMOG credits under sections 1960.1(g)(2) and 1961(b) and (c), and for calculating ZEV credits as set forth in section 1962(g).

(7) *Changes in Small Volume, Independent Low Volume, and Intermediate Volume Manufacturer Status.*

(A) *Increases in California Production Volume.* In the 2003 through 2008 model years, if a small volume manufacturer's average California production volume exceeds 4,500 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, or if an independent low volume manufacturer's average California production volume exceeds 10,000 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, or if an intermediate volume manufacturer's average California production volume exceeds 60,000 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years (i.e., total production volume exceeds 180,000 in a three-year period), the manufacturer shall no longer be treated as a small volume, independent low volume, or intermediate volume manufacturer, as applicable, and shall comply with the ZEV requirements for independent low volume, intermediate volume or large volume manufacturers, as applicable, beginning with the sixth model year after the last of the three consecutive model years. Requirements will begin in the fourth model year rather than the sixth

model year where a manufacturer ceases to be a small or intermediate volume manufacturer in the 2003 through 2008 model years due to the aggregation requirements in majority ownership situations, except that if the majority ownership in the manufacturer was acquired prior to the 2001 model year, the manufacturer must comply with the stepped-up ZEV requirements starting in the 2010 model year.

(B) *Decreases in California Production Volume.* If a manufacturer's average California production volume falls below 4,500, 10,000 or 60,000 units of new PCs, LDTs, and MDVs, as applicable, based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, the manufacturer shall be treated as a small volume, independent low volume, or intermediate volume manufacturer, as applicable, and shall be subject to the requirements for a small volume, independent low volume, or intermediate volume manufacturer beginning with the next model year.

(C) *Calculating California Production Volume in Change of Ownership Situations.* Where a manufacturer experiences a change in ownership in a particular model year, the change will affect application of the aggregation requirements on the manufacturer starting with the next model year. The manufacturer's small or intermediate volume manufacturer status for the next model year shall be based on the average California production volume in the three previous consecutive model years of those manufacturers whose production must be aggregated for that next model year. For example, where a change of ownership during the 2004 model year results in a requirement that the production volume of Manufacturer A be aggregated with the production volume of Manufacturer B, Manufacturer A's status for the 2005 model year will be based on the production volumes of Manufacturers A and B in the 2002-2004 model years. Where the production volume of Manufacturer A must be aggregated with the production volumes of Manufacturers B and C for the 2004 model year, and during that model year a change in ownership eliminates the requirement that Manufacturer B's production volume be aggregated with Manufacturer A's, Manufacturer A's status for the 2005 model year will be based on the production volumes of Manufacturers A and C in the 2002-2004 model years. In either case, the lead time provisions in section 1962(b)(7)(A) and (B) will apply.

(c) Partial ZEV Allowance Vehicles (PZEVs).

(1) *Introduction.* This section 1962(c) sets forth the criteria for identifying vehicles delivered for sale in California as PZEVs. A PZEV is a vehicle that cannot be certified as a ZEV but qualifies for a PZEV allowance of at least 0.2.

(2) *Baseline PZEV Allowance.* In order for a vehicle to be eligible to receive a PZEV allowance, the manufacturer must demonstrate compliance with all of the following requirements. A qualifying vehicle will receive a baseline PZEV allowance of 0.2.

(A) *SULEV Standards.* Certify the vehicle to the 150,000-mile SULEV exhaust emission standards for PCs and LDTs in section 1961(a)(1) (for model years 2003 through 2006, existing SULEV intermediate in-use compliance standards shall apply to all PZEVs). Bi-fuel, fuel-flexible and dual-



fuel vehicles must certify to the applicable 150,000-mile SULEV exhaust emission standards when operating on both fuels;

(B) *Evaporative Emissions*. Certify the vehicle to the evaporative emission standards in section 1976(b)(1)(E) (zero-fuel evaporative emissions standards);

(C) *OBD*. Certify that the vehicle will meet the applicable on-board diagnostic requirements in sections 1968.1 or 1968.2, as applicable, for 150,000 miles; and

(D) *Extended Warranty*. Extend the performance and defects warranty period set forth in sections 2037(b)(2) and 2038(b)(2) to 15 years or 150,000 miles, whichever occurs first, except that the time period is to be 10 years for a zero emission energy storage device used for traction power (such as battery, ultracapacitor, or other electric storage device).

(3) Zero-Emission VMT PZEV Allowance.

(A) *Calculation of Zero Emission VMT Allowance*. A vehicle that meets the requirements of section 1962(c)(2) and has zero-emission vehicle miles traveled (“VMT”) capability will generate an additional zero emission VMT PZEV allowance, calculated as follows:

Urban All-Electric Range	Zero-emission VMT Allowance
< 10 miles	0.0
10 miles to 90 miles	$(33.8 + [0.5 \times \text{Urban AER}])/35$
90 miles	2.25

The urban all-electric range shall be determined in accordance with section E.3.2.1 of the “California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962(h).

(B) *Alternative Procedures*. As an alternative to determining the zero-emission VMT allowance in accordance with the preceding section 1962(c)(3)(A), a manufacturer may submit for Executive Officer approval an alternative procedure for determining the zero-emission VMT potential of the vehicle as a percent of total VMT, along with an engineering evaluation that adequately substantiates the zero-emission VMT determination. For example, an alternative procedure may provide that a vehicle with zero-emissions of one regulated pollutant (e.g. NOx) and not another (e.g. NMOG) will qualify for a zero-emission VMT allowance of 1.5.

(C) *Additional Allowances for Qualifying HEVs*. The Executive Officer shall approve an additional 0.1 zero-emission VMT partial ZEV allowance for an HEV with an all-electric range if the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer that the HEV is equipped with software and/or other strategies that would promote maximum use of off-vehicle charging, and that the strategies employed are reasonably reliable and tamper-proof.

(4) *PZEV Allowance for Advanced ZEV Componentry.* A vehicle that meets the requirements of section 1962(c)(2) may qualify for an advanced componentry PZEV allowance as provided in this section 1962(c)(4).

(A) *Use of High Pressure Gaseous Fuel or Hydrogen Storage System.* A vehicle equipped with a high pressure gaseous fuel storage system capable of refueling at 3600 pounds per square inch or more and operating exclusively on this gaseous fuel shall qualify for an advanced componentry PZEV allowance of 0.2. A vehicle capable of operating exclusively on hydrogen stored in a high pressure system capable of refueling at 3600 pounds per square inch or more, or stored in nongaseous form, shall instead qualify for an advanced componentry PZEV allowance of 0.3.

(B) *Use of Qualifying HEV Electric Drive System.*

1. *Classification of HEVs.* HEVs qualifying for additional allowances or allowances that may be used in the AT PZEV category are classified in one of five types of HEVs based on the criteria in the following table.

Characteristics	Type A	Type B	Type C	Type D	Type E
Electric Drive System Peak Power Output	>= 4 kW	>= 4 kW	>= 10 kW	>= 10 kW	>= 50 kW
Traction Drive System Voltage	<60 Volts	>=60 Volts	<60 Volts	>=60 Volts	>=60 volts
Traction Drive Boost	Yes	Yes	Yes	Yes	Yes
Regenerative Braking	Yes	Yes	Yes	Yes	Yes
Idle Start/Stop	Yes	Yes	Yes	Yes	Yes

2. *Type A HEVs.* A 2008 or earlier model-year PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type A HEV does not receive an additional allowance for meeting those criteria but generates credits that may be used in the AT PZEV category through the 2008 model year.

3. *Type B HEVs.* A 2008 or earlier model-year PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type B HEV qualifies for an additional advanced componentry allowance of 0.2.

4. *Type C HEVs.* A 2008 or earlier model-year PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type C HEV, and that is equipped with an advanced traction energy storage system - such as nickel metal-hydride batteries, ultracapacitors, or other similar systems - with a design lifetime of at least 10 years, qualifies for an additional advanced componentry allowance of 0.2.

5. *Type D HEVs.* A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type D HEV qualifies for an additional advanced componentry allowance of 0.4 in the 2003 through 2008 model years.

6. *Type E HEVs.* A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type E HEV qualifies for an additional advanced componentry allowance of 0.5 in the 2003 through 2008 model years.

7. *Severability.* In the event that all or part of section 1962(c)(4)(B)1.-6. is found invalid, the remainder of section 1962, including the remainder of section 1962(c)(4)(B)1.-6. if any, remains in full force and effect.

(5) *PZEV Allowance for Low Fuel-Cycle Emissions.* A vehicle that uses fuel(s) with very low fuel-cycle emissions shall receive a PZEV allowance not to exceed 0.3 (0.15 in the case of an HEV that uses for propulsion any fuel that does not have very low fuel-cycle emissions). In order to receive the fuel-cycle PZEV allowance, a manufacturer must demonstrate to the Executive Officer, using peer-reviewed studies or other relevant information, that NMOG emissions associated with the fuel(s) used by the vehicle (on a grams/mile basis) are lower than or equal to 0.01 grams/mile. Fuel-cycle emissions must be calculated based on near-term production methods and infrastructure assumptions, and the uncertainty in the results must be quantified. The fuel-cycle PZEV allowance is calculated according to the following formula:

$$\text{PZEV Fuel Cycle Allowance} = 0.3 \times [(\text{percent of VMT using fuel(s) meeting the requirements of the preceding paragraph}) / 100]$$

A manufacturer's demonstration to the Executive Officer that a vehicle qualifies for a fuel-cycle PZEV allowance shall include test results and/or empirical data supporting the estimate of the relative proportion of VMT while operating on fuel(s) with very low fuel-cycle emissions.

(6) Calculation of PZEV Allowance.

(A) *Calculation of Combined PZEV Allowance for a Vehicle.* The combined PZEV allowance for a qualifying vehicle in a particular model year is the sum of the PZEV allowances listed in this section 1962(c)(6), multiplied by any PZEV introduction phase-in multiplier listed in section 1962(c)(7), subject to the caps in section 1962(c)(6)(B).

1. *Baseline PZEV Allowance.* The baseline PZEV allowance of 0.2 for vehicles meeting the criteria in section 1962(c)(2);

2. *Zero Emission VMT PZEV Allowance.* The zero-emission VMT PZEV allowance, if any, determined in accordance with section 1962(c)(3);

3. *Advanced ZEV Componentry PZEV Allowance.* The advanced ZEV componentry PZEV allowance, if any, determined in accordance with section 1962(c)(4); and

4. *Fuel-cycle Emissions PZEV Allowance.* The fuel-cycle emissions PZEV allowance, if any, determined in accordance with section 1962(c)(5).

(B) Caps on the Value of an AT PZEV Allowance.

1. [Reserved]

2. *Cap Based on the Credit Value of a Type III ZEV.* In no case may the combined AT PZEV allowance for a qualifying vehicle in a particular model year, including the baseline PZEV allowance, exceed the ZEV credits for a Type III ZEV placed in service in the same model year.

(7) PZEV Multipliers.

(A) *PZEV Introduction Phase-In Multiplier.* Each 2000 through 2005 model-year PZEV that is produced and delivered for sale in California, other than a PZEV qualifying for a phase-in multiplier under section 1962(c)(7)(B), qualifies for a PZEV introduction phase-in multiplier as follows:

	MY 2000-2003	MY 2004	MY 2005
Multiplier	4.0	2.0	1.33

(B) *Introduction Phase-In Multiplier for PZEVs That Earn a Zero Emission VMT Allowance.* Each 2000 through 2008 model year PZEV that earns a zero emission VMT allowance under section 1962(c)(3) and is produced and delivered for sale in California qualifies for a phase-in multiplier as follows:

	MY 2000-2008
Multiplier	6.0

(d) Qualification for ZEV Multipliers and Credits.

(1) 1996-1998 Model-Year ZEV Multipliers.

(A) *1996-1998 Model-Year ZEV Multiplier Based on Vehicle Range.* 1996-1998 model-year ZEVs shall qualify for a ZEV multiplier based on vehicle range as follows:

ZEV Multiplier	Vehicle Range (miles)	
	Model Years	Model Year
2	1996 and 1997	1998
3	any	>=100
	>=70	>=130

Range shall be determined in accordance with section 9.f.(2)(a) of the “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” incorporated by reference in section 1960.1(k).

(B) *1996-1998 Model-Year ZEV Multiplier Based on Specific Energy of Battery.* 1996-1998 model-year ZEVs shall qualify for a ZEV multiplier based on specific energy of the battery as follows:

ZEV	
Multiplier	Specific Energy of Battery (w-hr/kg)
2	any
3	>=40

(C) *Election of Multiplier.* A 1996-1998 model-year ZEV may qualify for a ZEV multiplier according to section 1962(d)(1)(A) or section 1962(d)(1)(B), but not both.

(2) *1999-2000 Model-Year ZEV Multiplier Calculation for Extended Electric Range Vehicles.* Each ZEV that is produced and delivered for sale in California in the 1999 - 2000 model years and that has an extended electric range shall qualify for a ZEV multiplier as follows:

All-electric range	MY 1999-2000
100-175	6-10

ZEV multipliers under the above schedule will be determined by linear interpolation between the values shown in the above schedule. Range shall be determined in accordance with section E.3.(2)(a) of the “California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962(h). ZEVs that have a refueling time of less than 10 minutes and a range of 100 miles or more shall be counted as having unlimited all-electric range, and shall consequently earn the maximum allowable ZEV multiplier for a specific model year. ZEVs that have a range of 80 to 99 miles shall qualify for ZEV multipliers in the 1999-2000 model years in accordance with the following equation:

$$\text{ZEV multiplier} = (6) \times (\text{AER equivalent to a 10 minute recharge}/100) \times 0.5.$$

As an option to the above mechanism, the manufacturer of a 1999 model-year ZEV may elect to have its multiplier based on the regulatory requirements pertaining to multipliers based on range or specific energy in section 1960.1(g)(2) and (h)(2), title 13, California Code of Regulations that were applicable to 1999 model-year ZEVs immediately before this section 1962 became operative on November 27, 1999 as a result of the “LEV II” rulemaking.

(3) ZEV Multipliers for 2001-2002 Model Years.

(A) *ZEV Phase-In Multiplier.* Each 2001 and 2002 model-year ZEV that is placed in service in California by September 30, 2003 qualifies for a ZEV phase-in multiplier of 4.0. A 2001 or 2002 model-year ZEV that is placed in service in California after September 30, 2003 earns credits in accordance with section 1962(d)(5) instead of section 1962(d)(3).

(B) ZEV Extended Electric Range Multiplier.

1. *Basic Multiplier Schedule.* Each 2001 and 2002 model-year ZEV that is placed in service in California and that has an extended urban electric range qualifies for a ZEV extended electric range multiplier as follows:

Urban All-Electric Range	Multiplier
< 50 miles	1
> 50 miles to < 275 miles	(Urban AER-25)/25
>275 miles	10

A NEV is not eligible to earn a ZEV extended electric range multiplier. In determining ZEV range multipliers, specialty ZEVs may, upon Executive Officer approval, be tested at the parameters used to determine the ZEV multipliers for the existing ZEV.

2. *Fast refueling.*

a. *Full Fueling in 10 Minutes or Less.* A 2001-2002 model-year ZEV with the demonstrated capability to accept fuel or electric charge until achieving at least 95% SOC or rated fuel capacity in 10 minutes or less when starting from all operationally allowable SOC or fuel states is counted as having unlimited zero emission range and qualifies for the maximum allowable ZEV extended electric range multiplier.

b. *At Least 60-Mile Range in Less Than 10 Minutes.* A 2001-2002 model year ZEV with the demonstrated capacity to accept fuel or electric charge equivalent to at least 60 miles of UDDS range when starting from 20% SOC in less than 10 minutes is counted as having 60 additional miles (up to a 275 mile maximum) of UDDS range in the range multiplier determination in section 1962(d)(3)(C)1.

(C) *Combined ZEV Multiplier.* During the 2001-2002 model years, the combined ZEV multiplier for each ZEV in a specific model year is the product of:

1. The ZEV phase-in multiplier if any as set forth in section 1962(d)(3)(A), times
2. The extended electric range multiplier if any as set forth in section 1962(d)(3)(B).

(4) *Effect of ZEV Multipliers in the 1996-2002 Model Years.* In calculating the number of ZEVs produced and delivered for sale in California by a manufacturer in the 1996-2002 model years and the ZEV credits from such vehicles, the number of ZEVs qualifying for a particular ZEV multiplier shall be multiplied by the combined ZEV multiplier.

(5) *ZEV Credits for the 2003 through 2008 Model Years.*

(A) *ZEV Tiers for Credit Calculations.* Starting in the 2003 model year, ZEV credits from a particular ZEV are based on the assignment of a given ZEV into one of the following five ZEV tiers:

	Common	UDDS ZEV	
ZEV Tier	Description	Range	Fast Refueling Capability
NEV	NEV	No minimum	N/A
Type 0	Utility EV	<50 miles	N/A
Type I	City EV	>=50, <100 miles	N/A
Type II	Full Function EV	>=100 miles	N/A
Type III	Fuel Cell EV	>=100 miles	Must be capable of replacing 95 miles (UDDS ZEV range) in <=10 minutes per section 1962.1(d)(5)(B)

A specialty ZEV that has the same zero emission energy storage device and chassis as an existing ZEV from which it was modified may, upon Executive Officer approval, be categorized on the basis of that existing ZEV. A specialty vehicle that optimized for a particular duty cycle that conflicts with optimization for maximum vehicle range may be promoted to the next higher ZEV tier upon a determination by the Executive Officer that the specialty vehicle has ZEV componentry equivalent to the utilized by ZEVs in the next tier and would meet the requirements for the next tier if optimized for maximum range.

(B) *ZEV Credits for 2003 through 2008 Model-Year ZEVs.* A 2003 through 2008 model-year ZEV, other than a NEV, earns 1 ZEV credit when it is produced and delivered for sale in California. A 2003 through 2008 model-year ZEV earns additional credits based on the earliest year in which the ZEV is placed in service (not earlier than the ZEV's model year). The following table identifies the total credits that a ZEV in each of the five ZEV tiers will earn, including the credit not contingent on placement in service, if it is placed in service in the specified calendar year or by June 30 after the end of the specified calendar year.

Total Credits Earned by ZEV Type and Model Year for Production and Delivery for Sale and for Placement

Tier	Calendar Year in Which ZEV is Placed in Service					
	2003	2004	2005	2006	2007	2008
NEV	1.25	0.625	0.625	0.15	0.15	0.15
Type 0	1.5	1.5	1.5	1.5	1.5	1.5
Type I	8	8	8	7	7	7
Type II	12	12	12	10	10	10
Type III	40	40	40	40	40	40

(C) *Multiplier for Certain Type I and Type II ZEVs.* A 2004 through 2008 model-year Type I and Type II ZEV shall qualify for a multiplier of 1.25 if it is either sold to a motorist or is leased for three or more years to a motorist who is given the option to purchase or re-lease the vehicle for two years or more at the end of the first lease term.

(D) *Counting a Type III ZEV Placed in a Section 177 State.* Through the 2008 model year, a Type III ZEV that is certified to the California ZEV standards and is placed in service in a state that is

administering the California ZEV requirements pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507) applicable for the ZEV's model year may be counted towards compliance with the California percentage ZEV requirements in section 1962(b), including the requirements in section 1962(b)(2)(B), as if it were delivered for sale and placed in service in California. Similarly, a 2008 and earlier model-year Type III ZEV that is certified to the California ZEV standards and is placed in service in California may be counted towards the percentage ZEV requirements of any state that is administering the California ZEV requirements pursuant to section 177 of the federal Clean Air Act, including requirements based on section 1962(b)(2)(B).

(e) [Reserved]

(f) *Extended Service Multiplier for 1997-2003 Model-Year ZEVs and PZEVs With  $\geq 10$  Mile Zero Emission Range.* Except in the case of a NEV, an additional ZEV or PZEV multiplier will be earned by the manufacturer of a 1997 through 2003 model-year ZEV, or PZEV with  $\geq 10$  mile zero emission range, for each full year it is registered for operation on public roads in California beyond its first three years of service, through the 2008 calendar year. For additional years of service starting earlier than April 24, 2003, the manufacturer will receive 0.1 times the ZEV credit that would be earned by the vehicle if it were leased or sold new in that year, including multipliers, on a year-by-year basis beginning in the fourth year after the vehicle is initially placed in service. For additional years of service starting April 24, 2003 or later, the manufacturer will receive 0.2 times the ZEV credit that would be earned by the vehicle if it were leased or sold new in that year, including multipliers, on a year-by-year basis beginning in the fourth year after the vehicle is initially placed in service. The extended service multiplier is reported and earned in the year following each continuous year of service. Additional credit cannot be earned after model year 2011.

(g) Generation and Use of ZEV Credits; Calculation of Penalties

(1) *Introduction.* A manufacturer that produces and delivers for sale in California ZEVs or PZEVs in a given model year exceeding the manufacturer's ZEV requirement set forth in section 1962(b) shall earn ZEV credits in accordance with this section 1962(g).

(2) *ZEV Credit Calculations.*

(A) *Credits from ZEVs.* The amount of g/mi ZEV credits earned by a manufacturer in a given model year from ZEVs shall be expressed in units of g/mi NMOG, and shall be equal to the number of credits from ZEVs produced and delivered for sale in California that the manufacturer applies towards meeting the ZEV requirements for the model year subtracted from the number of ZEVs produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for PCs and LDT1s for that model year.

(B) *Credits from PZEVs.* The amount of g/mi ZEV credits from PZEVs earned by a manufacturer in a given model year shall be expressed in units of g/mi NMOG, and shall be equal to the total number of PZEV allowances from PZEVs produced and delivered for sale in California that the manufacturer applies towards meeting its ZEV requirement for the model year subtracted from the



total number of PZEV allowances from PZEVs produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for PCs and LDT1s for that model year.

(C) *Separate Credit Accounts.* The number of credits from a manufacturer's [i] ZEVs [ii] advanced technology PZEVs, and [iii] all other PZEVs shall each be maintained separately.

(3) *ZEV Credits for MDVs and LDTs Other Than LDT1s.* ZEVs and PZEVs classified as MDVs or as LDTs other than LDT1s may be counted toward the ZEV requirement for PCs, LDT1s, and LDT2s as applicable, and included in the calculation of ZEV credits as specified in this section 1962(g) if the manufacturer so designates.

(4) *ZEV Credits for Advanced Technology Demonstration Programs.* A vehicle, other than a NEV, that is placed in a California advanced technology demonstration program may earn ZEV credits even if it is not "delivered for sale" or registered with the California Department of Motor Vehicles (DMV). To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicles will be regularly used in applications appropriate to evaluate issues related to safety, infrastructure, fuel specifications or public education, and that for more than 50 percent of the first year of placement the vehicle will be situated in California. Such a vehicle is eligible to receive the same allowances and credits that it would have earned if placed in service. To determine vehicle credit, the model-year designation for a demonstration vehicle shall be consistent with the model-year designation for conventional vehicles placed in the same timeframe.

(5) *ZEV Credits for Transportation Systems.*

(A) *General.* In model years 2001 through 2008, a ZEV, advanced technology PZEV or PZEV placed as part of a transportation system may earn additional ZEV credits, which may be used in the same manner as other credits earned by vehicles of that category, except as provided in section (g)(5)(C) below. A NEV is not eligible to earn credit for transportation systems. To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicle will be used as a part of a project that uses an innovative transportation system as described in section (g)(5)(B) below.

(B) *Credits Earned.* In order to earn additional credit under this section (g)(5), a project must at a minimum demonstrate [i] shared use of ZEVs, AT PZEVs or PZEVs, and [ii] the application of "intelligent" new technologies such as reservation management, card systems, depot management, location management, charge billing and real-time wireless information systems. If, in addition to factors [i] and [ii] above, a project also features linkage to transit, the project may receive further additional credit. For ZEVs only, not including NEVs, a project that features linkage to transit, such as dedicated parking and charging facilities at transit stations, but does not demonstrate shared use or the application of intelligent new technologies, may also receive additional credit for linkage to transit. The maximum credit awarded per vehicle shall be determined by the Executive Officer, based upon an application submitted by the manufacturer and, if appropriate, the project manager. The maximum credit awarded shall not exceed the following:

Type of Vehicle	Shared Use, Intelligence	Linkage to Transit
PZEV	2	1
Advanced Technology PZEV	4	2
ZEV	6	3

(C) *Cap on Use of Credits.*

1. *ZEVs.* Credits earned or allocated by ZEVs pursuant to this section (g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation in any given model year.

2. *AT PZEVs.* Credits earned or allocated by AT PZEVs pursuant to this section (g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-twentieth of a manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

3. *PZEVs.* Credits earned or allocated by PZEVs pursuant to s this section (g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-fiftieth of the manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

(D) *Allocation of Credits.* Credits shall be assigned by the Executive Officer to the project manager or, in the absence of a separate project manager, to the vehicle manufacturers upon demonstration that a vehicle has been placed in a project. Credits shall be allocated to vehicle manufacturers by the Executive Officer in accordance with a recommendation submitted in writing by the project manager and signed by all manufacturers participating in the project, and need not be allocated in direct proportion to the number of vehicles placed.

(6) *Use of ZEV Credits.* A manufacturer may meet the ZEV requirements in any given model year by submitting to the Executive Officer a commensurate amount of g/mi ZEV credits, consistent with section 1962(b). These credits may be earned previously by the manufacturer or acquired from another party, except that beginning with the 2006 model year credits earned from NEVs offered for sale or placed in service in model years 2001 through 2005 cannot be used to satisfy more than the following portion of a manufacturer's percentage ZEV obligation that may only be satisfied with credits from ZEVs:

ZEV Category	
2006	2007-2008
75%	50%

This limitation applies to credits earned in model years 2001 through 2005 by the same manufacturer or earned in model years 2001 through 2005 by another manufacturer and acquired. The amount of g/mi ZEV credits required to be submitted shall be calculated according to the criteria set forth in this section 1962(g).

(A) *Carry forward provisions for LVMs.* ZEV credits generated from excess production in model years 2005 through 2008, including those acquired from another party, may be carried forward and applied to the manufacturer's percentage ZEV obligation that may only be satisfied by credits from ZEVs in section 1962.1(b)(2)(B)1.b. Beginning with the 2012 model year, those earned ZEV credits may no longer be used to satisfy the manufacturer's percentage ZEV obligation that may only be satisfied by credits from ZEVs, but may be used to satisfy the manufacturer's percentage ZEV obligation that may be satisfied by credits from Enhanced AT PZEVs, AT PZEVs, or PZEVs. For example, ZEV credit earned in 2008 would retain full flexibility through 2011, at which time that credit could only be used as Enhanced AT PZEV, AT PZEV, or PZEV credits.

(B) *Carry forward provisions for manufacturers other than LVMs.* ZEV credits generated from 2008 model year production by manufacturers that are not LVMs may be carried forward by the manufacturer producing the ZEV credit until the manufacturer becomes subject to the LVM requirements, after the transition period permitted in section 1962(b)(7)(A). When subject to the LVM requirements, a manufacturer must comply with the provisions of section 1962(g)(6)(A).

ZEV credits generated from 2008 model year production traded by a manufacturer other than a LVM to any other manufacturer, including a LVM, are subject to section 1962(g)(6)(A), applicable beginning 2008 model year (e.g., a 2008 model year ZEV credit traded in calendar year 2010 can only be applied towards the portion of the manufacturer's requirement that must be met with ZEVs through model year 2011; beginning in model year 2012, the credit can only be applied to the portion of the manufacturer's requirement that may be met with Enhanced AT PZEVs, AT PZEVs, or PZEVs).

(7) Requirement to Make Up a ZEV Deficit.

(A) *General.* A manufacturer that produces and delivers for sale in California fewer ZEVs than required in a given model year shall make up the deficit by the end of the third model year by submitting to the Executive Officer a commensurate amount of g/mi ZEV credits. The amount of g/mi ZEV credits required to be submitted shall be calculated by [i] adding the number of ZEVs produced and delivered for sale in California by the manufacturer for the model year to the number of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California by the manufacturer for the model year (for a large volume manufacturer, not to exceed that permitted under section 1962(b)(2)), [ii] subtracting that total from the number of ZEVs required to be produced and delivered for sale in California by the manufacturer for the model year, and [iii] multiplying the resulting value by the fleet average requirements for PCs and LDT1s for the model year in which the deficit is incurred.

(8) *Penalty for Failure to Meet ZEV Requirements.* Any manufacturer that fails to produce and deliver for sale in California the required number of ZEVs and submit an appropriate amount of g/mi ZEV credits and does not make up ZEV deficits within the specified time period shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer that sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The

cause of action shall be deemed to accrue when the ZEV deficits are not balanced by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's standards shall be calculated according to the following equation, provided that the percentage of a large volume manufacturer's ZEV requirement for a given model year that may be satisfied with partial ZEV allowance vehicles or ZEV credits from such vehicles may not exceed the percentages permitted under section 1962(b)(2)(A):

$$\frac{(\text{No. of ZEVs required to be produced and delivered for sale in California for the model year}) - (\text{No. of ZEVs produced and delivered for sale in California for the model year}) - (\text{No. of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California for the model year}) - (\text{Amount of ZEV credits submitted for the model year})}{(\text{the fleet average requirement for PCs and LDT1s for the model-year})}$$

(h) *Test Procedures.* The certification requirements and test procedures for determining compliance with this section 1962 are set forth in “California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 through 2008 Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” adopted by the state board on August 5, 1999, and last amended December 2, 2009, which is incorporated herein by reference.

(i) *ZEV-Specific Definitions.* The following definitions apply to this section 1962.

(1) “Advanced technology PZEV” or “AT PZEV” means any PZEV with an allowance greater than 0.2 before application of the PZEV early introduction phase-in multiplier.

(2) “Battery electric vehicle” means any vehicle that operates solely by use of a battery or battery pack, or that is powered primarily through the use of an electric battery or battery pack but uses a flywheel or capacitor that stores energy produced by the electric motor or through regenerative braking to assist in vehicle operation.

(3) “Electric drive system” means an electric motor and associated power electronics which provide acceleration torque to the drive wheels sometime during normal vehicle operation. This does not include components that could act as a motor, but are configured to act only as a generator or engine starter in a particular vehicle application.

(4) “Neighborhood electric vehicle” means a motor vehicle that meets the definition of Low-Speed Vehicle either in section 385.5 of the Vehicle Code or in 49 CFR 571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.

(5) “Placed in service” means having been sold or leased to an end-user and not to a dealer or other distribution chain entity, and having been individually registered for on-road use by the California Department of Motor Vehicles.

(6) “Regenerative braking” means the partial recovery of the energy normally dissipated into friction braking that is returned as electrical current to an energy storage device.

(7) “Specialty ZEV” means a ZEV that is designed for a commercial or governmental fleet application, and either [i] has the same zero emissions energy storage device and chassis as an existing ZEV from which it is modified, or [ii] in the case of a vehicle that is not based on an existing ZEV platform, is optimized for a particular duty cycle, such as urban delivery service, that conflicts with optimization for maximum vehicle range.

(8) “Type 0, I, II, and III ZEV” all have the meanings set forth in section 1962(d)(5)(A).

(j) *Abbreviations.* The following abbreviations are used in this section 1962:

“AER” means all-electric range.

“AT PZEV” means advanced technology partial zero emission vehicle.

“DMV” means the California Department of Motor Vehicles

“HEV” means hybrid-electric vehicle.

“LDT” means light-duty truck.

“LDT1” means a light-truck with a loaded vehicle weight of 0-3750 pounds.

“LDT2” means a “LEV II” light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight of 8500 pounds, or a “LEV I” light-duty truck with a loaded vehicle weight of 3751-5750 pounds.

“LVM” means large volume manufacturer.

“MDV” means medium-duty vehicle.

“Non-Methane Organic Gases” or “NMOG” means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

“MY” means model year.

“NEV” means neighborhood electric vehicle.

“NOx” means oxides of nitrogen.

“PC” means passenger car.

“PZEV” means any partial zero emission vehicle that is delivered for sale in California and that qualifies for a partial ZEV allowance of at least 0.2.

“SOC” means state of charge.

“SULEV” means super ultra-low-emission-vehicle.

“UDDS” means urban dynamometer driving cycle.

“UF” means utility factor.

“ULEV” means ultra-low emission vehicle.

“VMT” means vehicle miles traveled.

“ZEV” means zero-emission vehicle.

(k) *Severability.* Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of this article remains in full force and effect.

Note: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106 and 43205, Health and Safety Code.

## HISTORY

1. New section filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
2. Amendment of section and Note filed 5-24-2002; operative 6-23-2002 (Register 2002, No. 21).
3. New subsections (b)(5)(A)-(C) filed 6-24-2002; operative 7-24-2002 (Register 2002, No. 26).
4. Amendment of subsection (c)(2)(A) filed 9-16-2002; operative 10-16-2002 (Register 2002, No. 38).
5. Amendment filed 2-25-2004; operative 3-26-2004 (Register 2004, No. 9).
6. Amendment of section heading, section and Note filed 3-18-2009; operative 4-17-2009 (Register 2009, No. 12).
7. Amendment of subsection (h) filed 1-14-2010; operative 2-13-2010 (Register 2010, No. 3).

This database is current through 5/22/20 Register 2020, No. 21  
13 CCR § 1962, 13 CA ADC § 1962

**Section 1962.1. Zero-Emission Vehicle Standards for 2009 through 2017  
Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

(a) *ZEV Emission Standard.* The Executive Officer shall certify new 2009 through 2017 model year passenger cars, light-duty trucks and medium-duty vehicles as ZEVs if the vehicles produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) under any and all possible operational modes and conditions.

(b) Percentage ZEV Requirements.

(1) General Percentage ZEV Requirement.

(A) *Basic Requirement.* The minimum percentage ZEV requirement for each manufacturer is listed in the table below as the percentage of the PCs and LDT1s, and LDT2s to the extent required by subdivision (b)(1)(C), produced by the manufacturer and delivered for sale in California that must be ZEVs, subject to the conditions in this subdivision 1962.1(b). The ZEV requirement will be based on the annual NMOG production report for the appropriate model year.

<i>Model Years</i>	<i>Minimum ZEV Requirement</i>
2009 through 2011	11 %
2012 through 2014	12 %
2015 through 2017	14 %

(B) *Calculating the Number of Vehicles to Which the Percentage ZEV Requirement is Applied.* For purposes of calculating a manufacturer's requirement in subdivision 1962.1(b)(1) for model years 2009 through 2017, a manufacturer may use a three year average method or same model year method, as described below in sections 1. and 2. A manufacturer may switch methods on an annual basis. This production averaging is used to determine ZEV requirements specified in subdivision 1962.1 (b)(1)(A) only, and has no effect on a manufacturer's size determination, specified in section 1900. In applying the ZEV requirement, a PC, LDT1, or LDT2, that is produced by one manufacturer (e.g., Manufacturer A), but is marketed in California by another manufacturer (e.g., Manufacturer B) under the other manufacturer's (Manufacturer B) nameplate, shall be treated as having been produced by the marketing manufacturer (Manufacturer B).

1. For the 2009 through 2011 model years, a manufacturer's production volume of PCs and LDT1s, and LDT2s as applicable, produced and delivered for sale in California will be based on the three-year average of the manufacturer's volume of PCs and LDT1s, and LDT2s as applicable, produced and delivered for sale in California in the 2003 through 2005 model years. As an alternative to the three-year averaging of prior year production described above, a manufacturer may elect to base its ZEV obligation on the number of PCs and LDT1s, and LDT2s, as applicable, produced by the manufacturer and delivered for sale in California that same model year.

2. For 2012 through 2017 model years, a manufacturer's production volume for the given model year will be based on the three-year average of the manufacturer's volume of PCs and LDTs, produced and delivered for sale in California in the prior fourth, fifth and sixth model year [for

example, 2013 model year ZEV requirements will be based on California production volume of PCs and LDTs, for the 2007 to 2009 model years, and 2014 model year ZEV requirements will be based on California production volume of PCs and LDTs, for the 2008 to 2010 model years]. As an alternative to the three-year averaging of prior year production described above, a manufacturer may elect to base its ZEV obligation on the number of PCs and LDTs, produced by the manufacturer and delivered for sale in California that same model year.

(C) *Phase-in of ZEV Requirements for LDT2s.* Beginning with the ZEV requirements for the 2009 model year, a manufacturer's LDT2 production shall be included in determining the manufacturer's overall ZEV requirement under subdivision (b)(1)(A) in the increasing percentages shown in the table below.

2009	2010	2011	2012+
51%	68%	85%	100%

(D) *Exclusion of ZEVs in Determining a Manufacturer's Sales Volume.* In calculating, for purposes of subdivisions 1962.1(b)(1)(B) and 1962.1(b)(1)(C), the volume of PCs, LDT1s, and LDT2s that a manufacturer has produced and delivered for sale in California, the manufacturer shall exclude the number of ZEVs produced by the manufacturer, or by a subsidiary in which that manufacturer has a greater than 50 percent ownership interest, and delivered for sale in California.

(2) Requirements for Large Volume Manufacturers.

(A) Primary Requirements for Large Volume Manufacturers through Model Year 2011.

In the 2009 through 2011 model years, a manufacturer must meet at least 22.5 percent of its ZEV requirement with ZEVs or ZEV credits generated by such vehicles, and at least another 22.5 percent with ZEVs, AT PZEVs, or credits generated by such vehicles. The remainder of the manufacturer's ZEV requirement may be met using PZEVs or credits generated by such vehicles.

(B) Alternative Requirements for Large Volume Manufacturers through Model Year 2011.

1. Minimum Floor for Production of Type III ZEVs.

a. [Reserved].

b. *Requirement for the 2009-2011 Model Years.* A manufacturer electing the alternative compliance requirements during model years 2009 through 2011 must produce ZEV credits equal to 0.82 percent of the manufacturer's average annual California sales of PCs and LDT1s, and LDT2s, as applicable, over the three-year period from model years 2003 through 2005, through production, delivery for sale, and placement in service of ZEVs, other than NEVs and Type 0 ZEVs, using the credit substitution ratios for each ZEV Type compared to a Type III prescribed in the table below, or submit an equivalent number of credits generated by such vehicles.



	<i>Credit Substitution Ratio</i>
<i>ZEV Types</i>	<i>Compared To A Type III ZEV</i>
Type I	2
Type I.5	1.6
Type II	1.33
Type IV	0.8
Type V	0.57

i. Manufacturers may use credits generated by 1997-2003 model year ZEVs that qualify for an extended service multiplier under subdivision 1962.1(f) for a year during calendar years 2009-2011, provided that 33 years of such a multiplier will equal 4 ZEV credits.

c. [Reserved].

d. [Reserved].

e. [Reserved].

f. *Exclusion of Additional Credits for Transportation Systems.* Any additional credits for transportation systems generated in accordance with subdivision 1962.1(g)(5) shall not be counted towards compliance with this subdivision 1962.1(b)(2)(B)1.b.

g. *Carry-over of Excess Credits.* ZEV credits generated from excess production in model years 2005 through 2008 may be carried forward and applied to the 2009 through 2011 minimum floor requirement specified in subdivision 1962.1(b)(2)(B)1.b. provided that the value of these carryover credits shall be based on the model year in which the credits are used. Beginning with the 2012 model year, these credits may no longer be used to meet the ZEV requirement specified in subdivision 1962.1(b)(2)(B)1.b.; they may be used as TZEV, AT PZEV, or PZEV credits. ZEV credits earned in model year 2009 through 2011 would be allowed to be carried forward for two years for application to the ZEV requirement. For example, ZEV credit earned in the 2010 model year would retain full flexibility through the 2012 model year. Starting 2013 model year, that credit could only be used as TZEV, AT PZEV, or PZEV credits, and could not be used to satisfy the ZEV credit obligation, which may only be satisfied with credit generated from ZEVs.

h. *Failure to Meet Requirement for Production of ZEVs.* A manufacturer that, after electing the alternative requirements in subdivision 1962.1(b)(2)(B) for any model year from 2009 through 2011, fails to meet the requirement in subdivision 1962.1(b)(2)(B)1.b. by the end of the 2011 model year, shall be treated as subject to the primary requirements in subdivision 1962.1(b)(2)(A) for the 2009 through 2011 model years.

i. *Rounding Convention.* The number of ZEVs needed for a manufacturer under subdivision 1962.1(b)(2)(B)1.b. shall be rounded to the nearest whole number.

2. *Compliance with Percentage ZEV Requirements.* In the 2009 through 2011 model years, a manufacturer electing the alternative compliance requirements in a given model year must meet at least 45 percent of its ZEV requirement for that model year with ZEVs, AT PZEVs, TZEVs, or credits generated from such vehicles. ZEV credits generated for compliance with the alternative

requirements during any given model year will be applied to the 45 percent which may be met with ZEVs, AT PZEVs, TZEVs, or credits generated from such vehicles, but not PZEVs. The remainder of the manufacturer's ZEV requirement may be met using PZEVs or credits generated from such vehicles.

3. *Sunset of Alternative Requirements after the 2011 Model Year.* The alternative requirements in subdivision 1962.1(b)(2)(B) are not available after the 2011 model year.

(C) *Election of the Primary or Alternative Requirements for Large Volume Manufacturers for the 2009 through 2011 Model Years.* A manufacturer shall be subject to the primary ZEV requirements for the 2009 model year unless it notifies the Executive Officer in writing prior to the start of the 2009 model year that it is electing to be subject to the alternative compliance requirements for that model year. Thereafter, a manufacturer shall be subject to the same compliance option as applied in the previous model year unless it notifies the Executive Officer in writing prior to the start of a new model year that it is electing to switch to the other compliance option for that new model year. However, a manufacturer that has previously elected the primary ZEV requirements for one or more of the 2009 through 2011 model years may prior to the end of the 2011 model year elect the alternative compliance requirements for the 2009 through 2011 model years upon a demonstration that it has complied with all of the applicable requirements for that period in subdivision 1962.1(b)(2)(B)1.b.

(D) *Requirements for Large Volume Manufacturers in Model Years 2012 through 2017.*

1. *2012 through 2014 Requirements.* On an annual basis, a manufacturer must meet the total ZEV obligation with ZEV credits generated by such vehicles, excluding credits generated by NEVs and Type 0 ZEVs, equal to at least 0.79% of its annual sales, using either production volume determination method described in subdivision 1962.1(b)(1)(B). No more than 50% of the total obligation may be met with credits generated from PZEVs. No more than 75% of the total obligation may be met with credits generated from AT PZEVs. No more than 93.4% may be met with credits generated from TZEVs, Type 0 ZEVs, and NEVs, as limited in subdivision 1962.1(g)(6). The entire obligation may be met solely with credits generated from ZEVs.

2. *2015 through 2017 Requirements.* On an annual basis, a manufacturer must meet its ZEV obligation with ZEV credits generated by such vehicles, excluding credits generated by NEVs and Type 0 ZEVs, equal to at least 3% of its annual sales, using either production volume determination method described in subdivision 1962.1(b)(1)(B). No more than 42.8% of the total obligation may be met with credits generated from PZEVs. No more than 57.1% of the total obligation may be met with credits generated from AT PZEVs. No more than 78.5% may be met with credits generated from TZEVs, Type 0 ZEVs, and NEVs, as limited in subdivision 1962.1(g)(6). The entire obligation may be met solely with credits generated from ZEVs.

3. The following table enumerates a manufacturer's annual percentage obligation for the 2012 through 2017 model years if the manufacturer produces the minimum number of credits required to

meet its ZEV obligation and the maximum percentage for the TZEV, AT PZEV, and PZEV categories.

	<i>Total ZEV</i>	<i>Minimum</i>	<i>TZEVs,</i>		
<i>Model Years</i>	<i>Percent Requirement</i>	<i>ZEV floor</i>	<i>Type 0s, or NEVs</i>	<i>AT PZEVs</i>	<i>PZEVs</i>
2012-2014	12	0.79	2.21	3.0	6.0
2015-2017	14	3.0	3.0	2.0	6.0

4. *Use of Additional Credits for Transportation Systems.* Any additional credits for transportation systems generated from ZEVs in accordance with subdivision 1962.1(g)(5) may be used to meet up to one tenth of the portion of the ZEV obligation which must be met with ZEVs, specified in subdivision 1962.1(b)(2)(D).

(E) [Reserved].

(3) *Requirements for Intermediate Volume Manufacturers.* For 2009 through 2017 model years, an intermediate volume manufacturer may meet its ZEV requirement with up to 100 percent PZEVs or credits generated by such vehicles. For 2015 through 2017 model years, the overall credit percentage requirement for an intermediate volume manufacturer will be 12%.

(4) *Requirements for Small Volume Manufacturers and Independent Low Volume Manufacturers.* A small volume manufacturer or an independent low volume manufacturer is not required to meet the percentage ZEV requirements. However, a small volume manufacturer or an independent low volume manufacturer may earn and market credits for the ZEVs, TZEVs, AT PZEVs or PZEVs it produces and delivers for sale in California.

(5) [Reserved].

(6) [Reserved].

(7) *Changes in Small Volume, Independent Low Volume, and Intermediate Volume Manufacturer Status.*

(A) *Increases in California Production Volume.* In 2009 through 2017 model years, if a small volume manufacturer's average California production volume exceeds 4,500 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, or if an independent low volume manufacturer's average California production volume exceeds 10,000 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, the manufacturer shall no longer be treated as a small volume, or independent low volume manufacturer, as applicable, and shall comply with the ZEV requirements for intermediate volume manufacturers, as applicable, beginning with the sixth model year after the last of the three consecutive model years.

If an intermediate volume manufacturer's average California production volume exceeds 60,000 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and

delivered for sale for the three previous consecutive model years (i.e., total production volume exceeds 180,000 vehicles in a three-year period), the manufacturer shall no longer be treated as an intermediate volume manufacturer and shall, beginning with the sixth model year after the last of the three consecutive model-years, or in model year 2018 (whichever occurs first), comply with all ZEV requirements for LVMs.

Requirements will begin in the sixth model year, or in model year 2018 (whichever occurs first) when a manufacturer ceases to be an intermediate volume manufacturer in 2003 through 2017 due to the aggregation requirements in majority ownership situation.

(B) *Decreases in California Production Volume.* If a manufacturer's average California production volume falls below 4,500, 10,000, or 60,000 units of new PCs, LDTs, and MDVs, based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, the manufacturer shall be treated as a small volume, independent low volume, or intermediate volume manufacturer, as applicable, and shall be subject to the requirements for a small volume, independent low volume, or intermediate volume manufacturer beginning with the next model year.

(C) *Calculating California Production Volume in Change of Ownership Situations.* Where a manufacturer experiences a change in ownership in a particular model year, the change will affect application of the aggregation requirements on the manufacturer starting with the next model year. When a manufacturer is simultaneously producing two model years of vehicles at the time of a change of ownership, the basis of determining next model year must be the earlier model year. The manufacturer's small, independent low, or intermediate volume manufacturer status for the next model year shall be based on the average California production volume in the three previous consecutive model years of those manufacturers whose production volumes must be aggregated for that next model year. For example, where a change of ownership during the 2010 calendar year occurs and the manufacturer is producing both 2010 and 2011 model year vehicles resulting in a requirement that the production volume of Manufacturer A be aggregated with the production volume of Manufacturer B, Manufacturer A's status for the 2011 model year will be based on the production volumes of Manufacturers A and B in the 2008-2010 model years. Where the production volume of Manufacturer A must be aggregated with the production volumes of Manufacturers B and C for the 2010 model year, and during that model year a change in ownership eliminates the requirement that Manufacturer B's production volume be aggregated with Manufacturer A's, Manufacturer A's status for the 2011 model year will be based on the production volumes of Manufacturers A and C in the 2008-2010 model years. In either case, the lead time provisions in subdivisions 1962.1(b)(7)(A) and (B) will apply.

(c) Partial ZEV Allowance Vehicles (PZEVs).

(1) *Introduction.* This subdivision 1962.1(c) sets forth the criteria for identifying vehicles delivered for sale in California as PZEVs. The PZEV is a vehicle that cannot be certified as a ZEV but qualifies for a PZEV allowance of at least 0.2.

(2) *Baseline PZEV Allowance.* In order for a vehicle to be eligible to receive a PZEV allowance, the manufacturer must demonstrate compliance with all of the following requirements. A qualifying vehicle will receive a baseline PZEV allowance of 0.2.

(A) *SULEV Standards.* For 2009 through 2013 model years, certify the vehicle to the 150,000-mile SULEV exhaust emission standards for PCs and LDTs in subdivision 1961(a)(1). Bi-fuel, fuel-flexible and dual-fuel vehicles must certify to the applicable 150,000-mile SULEV exhaust emission standards when operating on both fuels. For 2014 through 2017 model years, certify the vehicle to the 150,000-mile SULEV 20 or 30 exhaust emission standards for PCs and LDTs in subdivision 1961.2(a)(1), or to the 150,000-mile SULEV exhaust emission standards for PCs and LDTs in subdivision 1961(a)(1). Bi-fuel, fuel flexible and dual-fuel vehicles must certify to the applicable 150,000-mile SULEV exhaust emission standards when operating on both fuels;

(B) *Evaporative Emissions.* For 2009 through 2013 model years, certify the vehicle to the evaporative emission standards in subdivision 1976(b)(1)(E) (zero-fuel evaporative emissions standards). For 2014 through 2017 model years, certify the vehicle to the evaporative emission standards in subdivision 1976(b)(1)(G) or subdivision 1976(b)(1)(E);

(C) *OBD.* Certify that the vehicle will meet the applicable on-board diagnostic requirements in sections 1968.1 or 1968.2, as applicable, for 150,000 miles; and

(D) *Extended Warranty.* Extend the performance and defects warranty period set forth in subdivision 2037(b)(2) and 2038(b)(2) to 15 years or 150,000 miles, whichever occurs first except that the time period is to be 10 years for a zero-emission energy storage device used for traction power (such as a battery, ultracapacitor, or other electric storage device).

(3) *Zero-Emission VMT PZEV Allowance.*

(A) *Calculation of Zero-Emission VMT Allowance.* A vehicle that meets the requirements of subdivision 1962.1(c)(2) and has zero-emission vehicle miles traveled (“VMT”) capability will generate an additional zero-emission VMT PZEV allowance calculated as follows:

<i>Range</i>	<i>Zero-emission VMT Allowance</i>
$EAER_u < 10$ miles	0.0
$EAER_u \geq 10$ to 40 miles	$EAER_u \times (1 - UF_{R_{cda}})/11.028$
$EAER_u > 40$ miles	$3.627 \times (1 - UF_n)$
	Where,
	$n = 40 \times (R_{cda}/EAER_u)$

A vehicle cannot generate more than 1.39 zero-emission VMT PZEV allowances.

The urban equivalent all-electric range ( $EAER_u$ ) and urban charge depletion range actual ( $R_{cda}$ ) shall be determined in accordance with sections G.11.4 and G.11.9, respectively, of the “California

Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” adopted December 17, 2008, and last amended May 30, 2014, incorporated by reference in section 1962.1(h). The utility Factor (UF) shall be determined according to SAE International’s Surface Vehicle Information Report J2841 SEP2010 (Revised September 2010), incorporated by reference herein, from the Fleet Utility Factors (FUF) Table in Appendix B or using a polynomial curve fit with “FUF Fit” coefficients from Table 2 Utility Factor Equation Coefficients.

(B) *Alternative Procedures.* As an alternative to determining the zero-emission VMT allowance in accordance with the preceding section 1962.1(c)(3)(A), a manufacturer may submit for Executive Officer approval an alternative procedure for determining the zero-emission VMT potential of the vehicle as a percent of total VMT, along with an engineering evaluation that adequately substantiates the zero-emission VMT determination. For example, an alternative procedure may provide that a vehicle with zero-emissions of one regulated pollutant (e.g., NOx) and not another (e.g., NMOG) will qualify for a zero-emission VMT allowance of 1.5.

(4) *PZEV Allowance for Advanced ZEV Componentry.* A vehicle that meets the requirements of subdivision 1962.1(c)(2) may qualify for an advanced componentry PZEV allowance as provided in this section 1962.1(c)(4).

(A) *Use of High Pressure Gaseous Fuel or Hydrogen Storage System.* A vehicle equipped with a high pressure gaseous fuel storage system capable of refueling at 3600 pounds per square inch or more and operating exclusively on this gaseous fuel shall qualify for an advanced componentry PZEV allowance of 0.2. A vehicle capable of operating exclusively on hydrogen stored in a high pressure system capable of refueling at 5000 pounds per square inch or more, stored in nongaseous form, or at cryogenic temperatures, shall instead qualify for an advanced componentry PZEV allowance of 0.3.

(B) *Use of a Qualifying HEV Electric Drive System.*

1. *Classification of HEVs.* HEVs qualifying for additional advanced componentry PZEV allowance or allowances that may be used in the AT PZEV category are classified in one of four types of HEVs based on the criteria in the following table.

<i>Characteristics</i>	<i>Type D</i>	<i>Type E</i>	<i>Type F</i>	<i>Type G</i>
			Zero-Emission	Zero-Emission
			VMT allowance;	VMT allowance;
Electric Drive System	≥ 50 kW	allowance; ≥ 10	≥ 10 mile	≥ 10 mile
Peak Power Output			all-electric	all-electric range US06
			UDDS range	drive cycle range
Traction Drive System	≥ 60 Volts	≥ 60 volts	≥ 60 volts	≥ 60 volts
Voltage				
Traction Drive Boost	Yes	Yes	Yes	Yes
Regenerative Braking	Yes	Yes	Yes	Yes
Idle Start/Stop	Yes	Yes	Yes	Yes

2. [Reserved]

3. [Reserved]

4. [Reserved]

5. Type D HEVs. A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type D HEV qualifies for an additional advanced componentry allowance of 0.4 in the 2009 through 2011 model years, 0.35 in the 2012 through 2014 model years, and 0.25 in the 2015 through 2017 model years.

6. Type E HEVs. A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type E HEV qualifies for an additional advanced componentry allowance of 0.5 in the 2009 through 2011 model years, 0.45 in the 2012 through 2014 model years, and 0.35 in the 2015 through 2017 model years.

7. Type F HEVs. A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type F HEV, including achieving 10 miles or more of all-electric UDDS range, qualifies for an additional advanced componentry allowance of 0.72 in the 2009 through 2011 model years, 0.67 in the 2012 through 2014 model years, and 0.57 in the 2015 through 2017 model years.

8. Type G HEVs. A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type G HEV, including achieving 10 miles or more of all-electric US06 range, qualifies for an additional advanced componentry allowance of 0.95 in the 2009 through 2011 model years, 0.9 in the 2012 through 2014 model years, and 0.8 in the 2015 through 2017 model years.

9. Severability. In the event that all or part of subdivision 1962.1(c)(4)(B)1.-8. is found invalid, the remainder of section 1962.1 remains in full force and effect.

(5) *PZEV Allowance for Low Fuel-Cycle Emissions.* A vehicle that makes exclusive use of fuel(s) with very low fuel-cycle emissions shall receive a PZEV allowance of 0.3. In order to receive the PZEV low fuel-cycle emissions allowance, a manufacturer must demonstrate to the Executive Officer, using peer-reviewed studies or other relevant information, that NMOG emissions associated with the fuel(s) used by the vehicle (on a grams/mile basis) are lower than or equal to 0.01 grams/mile. Fuel-cycle emissions must be calculated based on near-term production methods and infrastructure assumptions, and the uncertainty in the results must be quantified.

(6) *Calculation of PZEV Allowance.*

(A) *Calculation of Combined PZEV Allowance for a Vehicle.* The combined PZEV allowance for a qualifying vehicle in a particular model year is the sum of the PZEV allowances listed in this subdivision 1962.1(c)(6), multiplied by any PZEV introduction phase-in multiplier listed in subdivision 1962.1(c)(7), subject to the caps in subdivision 1962.1(c)(6)(B).

1. *Baseline PZEV Allowance.* The baseline PZEV allowance of 0.2 for vehicles meeting the criteria in subdivision 1962.1(c)(2);

2. *Zero-Emission VMT PZEV Allowance.* The zero-emission VMT PZEV allowance, if any, determined in accordance with subdivision 1962.1(c)(3);

3. *Advanced Componentry PZEV Allowance.* The advanced ZEV componentry PZEV allowance, if any, determined in accordance with subdivision 1962.1(c)(4); and

4. *Fuel-Cycle Emissions PZEV Allowance.* The fuel-cycle emissions PZEV allowance, if any, determined in accordance with subdivision 1962.1(c)(5).

(B) *Caps on the Value of an AT PZEV Allowance.*

1. *Cap for 2009 through 2017 Model Year Vehicles.* The maximum value an AT PZEV may earn before phase-in multipliers, including the baseline PZEV allowance, is 3.0.

2. *[Reserved].*

(7) PZEV Multipliers.

(A) *[Reserved].*

(B) *Introduction Phase-In Multiplier for PZEVs That Earn a Zero-Emission VMT Allowance.* Each 2009 through 2011 model year PZEV that earns a zero-emission VMT allowance under section 1962.1(c)(3) and is sold to a California motorist or is leased for three or more years to a California motorist who is given the option to purchase or re-lease the vehicle for two years or more at the end of the first lease term, qualifies for a phase-in multiplier of 1.25. This subdivision 1962.1(c)(7)(B) multiplier will no longer be available after model year 2011.

(d) Qualification for ZEV Multipliers and Credits.

(1) *[Reserved].*

(2) *[Reserved].*

(3) *[Reserved].*

(4) *[Reserved].*

(5) Credits for 2009 through 2017 Model Year ZEVs.

(A) *ZEV Tiers for Credit Calculations.* Credits from a particular ZEV are based on the assignment of a given ZEV into one of the following eight ZEV tiers:



	<i>UDDS ZEV</i>	
<i>ZEV Tier</i>	<i>Range (miles)</i>	<i>Fast Refueling Capability</i>
NEV	No minimum	N/A
Type 0	< 50	N/A
Type I	≥ 50, <75	N/A
Type I.5	≥ 75, <100	N/A
Type II	≥ 100	N/A
		Must be capable of replacing 95 miles (UDDS ZEV range) in ≤ 10 minutes per section 1962.1(d)(5)(B)
Type III	≥ 100	N/A
	≥ 200	N/A
		Must be capable of replacing 190 miles (UDDS ZEV range) in ≤ 15 minutes per section 1962.1(d)(5)(B)
Type IV	> 200	N/A
		Must be capable of replacing 285 miles (UDDS ZEV range) in ≤ 15 minutes per section 1962.1(d)(5)(B)
Type V	≥ 300	N/A
		Must be capable of replacing 285 miles (UDDS ZEV range) in ≤ 15 minutes per section 1962.1(d)(5)(B)

Type I.5x and Type IIx vehicles are defined in subdivision 1962.1(d)(5)(G) and (i)(10). (B) *Fast Refueling*. For purposes of subdivision 1962.1(d)(5)(A), a Model Year 2009 through 2017 ZEV, inclusive, shall be deemed a Type III, Type IV or Type V ZEV if it has the capability to accumulate at least 95 miles of UDDS range in 10 minutes or less, at least 190 miles of UDDS range in 15 minutes or less, or 285 miles of UDDS range in 15 minutes or less, respectively. For ZEVs that utilize more than one ZEV fuel, such as plug-in fuel cell vehicles, the Executive Officer may choose to waive these subdivision 1962.1(d)(5)(B) fast refueling requirements and base the amount of credit earned on UDDS ZEV range, as specified in subdivision 1962.1(d)(5)(A).

For Model Years 2009 through 2014, inclusive, “capability to accumulate” means the ZEV’s refueling system has been demonstrated to the satisfaction of ARB’s Executive Officer as having the potential, with appropriate infrastructure or other equipment, to accumulate the miles required under this subdivision within the given time period for the claimed ZEV type. For Model Years 2015 through 2017, inclusive, “capability to accumulate” means the ZEV’s refueling system has been demonstrated to the satisfaction of ARB’s Executive Officer as actually accumulating the miles required under this subdivision within the initial 12 month period following vehicle placement in California for the claimed ZEV type, based on actual fast refueling events. Examples of fast refueling events include any refueling of an electric vehicle that meets the time and mileage fueling criteria for a Type III, IV, or V ZEV, including the refueling of a hydrogen fuel cell vehicle or any swapping of the depleted battery pack in a battery electric vehicle with an equivalent or larger capacity, fully-charged battery pack. To receive fast refueling credits, manufacturers must apply to ARB with the information and documentation as specified below.

1. Issuance of Fast Refueling Credits for Model Year 2015, 2016, or 2017 Type III, IV, and V ZEVs.

- a. To obtain fast refueling credits, the ZEV manufacturer must apply to ARB’s Executive Officer for such credits. No credits shall be granted without Executive Officer approval of the

application. Each application shall be specific to Type III, IV, or V ZEV vehicles of a single Model Year. Each application shall contain the documentation specified in subdivision 1962.1(d)(5)(B)2. No later than 15 days before submittal of the first application in a calendar year, the applicant shall provide written notice to the Executive Officer of its intent to conduct fast refueling for its Type III, IV, or V ZEVs in that calendar year.

b. Fast refueling capability shall be assigned to the number of Type III, IV, and V ZEVs of a given model year that have been fueled by an actual fast refueling event during the initial 12 month period following vehicle placement in California.

i. The total number of a manufacturer's Type III ZEVs assigned the fast refueling capability for a given model year, based on actual fast refueling events during the initial 12 month period following vehicle placement in California, shall not exceed the manufacturer's total number of Type III ZEVs sold in California for that model year that are capable of fast refueling (i.e., the sum of those Type III ZEVs that were fueled with an actual fast refueling event and those Type III ZEVs that are able to be fast refueled but were not actually fueled using any fast refueling).

ii. The provision in subdivision 1962.1(d)(5)(B)1.b.i. also applies to Type IV and V ZEVs in the same manner described for Type III ZEVs.

iii. Only the first 25 fast refueling events performed on any individual Type III, IV, or V ZEV, during the initial 12 month period following vehicle placement in California, shall count towards the total number of fast refueling events, respectively.

iv. The frequency at which fast refueling credits are issued shall be based on the frequency of records and documentation submitted to support a claim for fast refueling credits. For example, a manufacturer that submits records of fast refueling events on a monthly, quarterly, or yearly basis shall be issued fast refueling credits on the applicable monthly, quarterly, or yearly basis.

## 2. Documentation of Fast Refueling Events.

a. For each specific model-year ZEV type for which a manufacturer claims fast refueling credits, the manufacturer must submit documentation of the total number of fast refueling events used to refuel its Type III, IV, or V ZEVs during the initial 12 month period following vehicle placement in California.

b. To support a manufacturer's claimed number of fast refueling events, that manufacturer must provide documentation of each fast refueling event. For each claimed fast refueling event, the manufacturer shall document the date of the fast refueling event, street address of the fast refueling facility used, and the vehicle identification number of the vehicle that was fast refueled. Fast refueling credit applicants shall retain this documentation for a minimum of three

years from the date it was created and provide the documentation to ARB staff upon request within 3 business days.

3. The fast refueling application and data submission requirements in this subdivision do not apply to manufacturers of fuel cell electric vehicles because such vehicles are already designed to be fast refueled at all times.

(C) *Credits for 2009 through 2017 Model Year ZEVs.* A 2009 through 2017 model-year ZEV, including a Type I.5x and Type IIx, other than a NEV or Type 0, earns 1 ZEV credit when it is produced and delivered for sale in California. A 2009 through 2017 model-year ZEV earns additional credits based on the earliest year in which the ZEV is placed in service in California (not earlier than the ZEV's model year). The vehicle must be delivered for sale and placed in service in a Section 177 state or in California in order to earn the total credit amount. The total credit amount will be earned in the state (i.e. California or a Section 177 state) in which the vehicle was delivered for sale. The following table identifies the total credits that a ZEV in each of the eight ZEV tiers will earn, including the credit not contingent on placement in service, if it is placed in service in the specified calendar year or by June 30 after the end of the specified calendar year. A vehicle is not eligible to receive credits if it is placed in service after December 31, five calendar years after the model year. For example, if a vehicle is produced in 2012, but does not get placed until January 1, 2018, the vehicle would no longer be eligible for ZEV credits.

*Total Credit Earned by ZEV Type and Model Year for Production and Delivery for Sale and for Placement*

Tier	Calendar Year in Which ZEV is Placed in Service	
	2009-2011	2012-2017
NEV	0.30	0.30
Type 0	1	1
Type I	2	2
Type I.5	2.5	2.5
Type I.5x	n/a	2.5
Type II	3	3
Type IIx	n/a	3
Type III	4	4
Type IV	5	5*
Type V	7	2012-2014: 7 2015-2017: 9*

\* As specified in subdivision 1962.1(d)(5)(B)

(D) *Multiplier for Certain ZEVs.* 2009 through 2011 model-year ZEVs, excluding NEVs or Type 0 ZEVs, shall qualify for a multiplier of 1.25 if either sold to a motorist or leased for three or more years to a motorist who is given the option to purchase or re-lease the vehicle for two years or more at the end of the first lease term. This subdivision 1962.1(d)(5)(D) multiplier will no longer be available after model year 2011.

(E) *Counting Specified ZEVs Placed in a Section 177 State and in California.*

1. Provisions for 2009 Model Year.

a. Large volume manufacturers and intermediate volume manufacturers with credits earned from ZEVs, excluding NEVs and Type 0 ZEVs, that are either certified to the California ZEV standards or approved as part of an advanced technology demonstration program and are placed in service in a section 177 state, may be counted towards compliance with the California percentage ZEV requirements in subdivision 1962.1(b), including the requirements in subdivision 1962.1(b)(2)(B), as if they were delivered for sale and placed in service in California.

b. Large volume manufacturers and intermediate volume manufacturers with credits earned from ZEVs, excluding NEVs and Type 0 ZEVs, that are certified to the California ZEV standards or approved as part of an advanced technology demonstration program and are placed in service in California may be counted towards the percentage ZEV requirements of all section 177 states, including requirements based on subdivision 1962.1(b)(2)(B).

2. *Provisions for 2010 through 2017 Model Years.* Large volume manufacturers and intermediate volume manufacturers with credits earned from ZEVs, including Type I.5x and Type IIx vehicles, and excluding NEVs and Type 0 ZEVs, that are either certified to the California ZEV standards applicable for the ZEV's model year or approved as part of an advanced technology demonstration program and are placed in service in California or in a section 177 state may be counted towards compliance in California and in all section 177 states, with the percentage ZEV requirements in subdivision 1962.1(b), provided that the credits are multiplied by the ratio of a manufacturer's applicable production volume for a model year, as specified in subdivision 1962.1(b)(1)(B), in the state receiving credit to the manufacturer's applicable production volume (hereafter, "proportional value"), as specified in section 1962.1(b)(1)(B), for the same model year in California. Credits generated in a section 177 state will be earned at the proportional value in the section 177 state, and earned in California at the full value specified in subdivision 1962.1(d)(5)(C). However, credits generated by 2010 and 2011 model-year vehicles produced, delivered for sale, and placed in service or as part of an advanced technology demonstration program in California to meet any section 177 state's requirements that implement subdivision 1962.1(b)(2)(B) are exempt from proportional value, with the number of credits exempted from proportional value allowed being limited to the number of credits needed to satisfy a manufacturer's section 177 state's requirements that implement subdivision 1962.1(b)(2)(B)1.b. The table below specifies the qualifying model years for each ZEV type that may be counted towards compliance in all section 177 states.

<i>Vehicle Type</i>	<i>Model Years:</i>
Type I, I.5, or II ZEV	2009-2017
Type III, IV, or V ZEV	2009-2017
Type I.5x or Type IIx	2012-2017

3. *Optional Section 177 State Compliance Path.* Large volume manufacturers and intermediate volume manufacturers that choose to elect the optional Section 177 state compliance path must notify the Executive Officer and each Section 177 state in writing no later than September 1, 2014.

a. *Additional 2016 and 2017 Model Year ZEV Requirements.* Large volume manufacturers and intermediate volume manufacturers that elect the optional Section 177 state compliance path must generate additional 2012 through 2017 model year ZEV credits, including no more than 50% Type 1.5x and Type IIx vehicle credits and excluding all NEV, Type 0 ZEV credits, and transportation system credits, in each Section 177 state to fulfill the following percentage requirements of their sales volume determined under subdivision 1962.1(b)(1)(B):

	<i>Additional Section 177</i>
<i>Model Years</i>	<i>State ZEV Requirements</i>
2016	0.75%
2017	1.50%

Subdivision 1962.1(d)(5)(E)2. shall not apply to any ZEV credits used to meet a manufacturer's additional 2016 and 2017 model year ZEV requirements under this subdivision

1962.1(d)(5)(E)3.a. ZEVs produced to meet a manufacturer's additional 2016 and 2017 model year ZEV requirements under this subdivision 1962.1(d)(5)(E)3.a. must be placed in service in the Section 177 states no later than June 30, 2018.

i. *Trading and Transferring ZEV Credits within the West Region Pool and East Region Pool.* Starting in model year 2016, manufacturers may trade or transfer 2012 through 2017 model year ZEV credits, used to meet the requirements in subdivisions 1962.1(d)(5)(E)3.a. and c., within the West Region pool, and will incur no premium on their credit values. For example, for a manufacturer to make up a 2016 model year shortfall of 100 credits in State X, the manufacturer may transfer 100 (2012 through 2016 model year) ZEV credits from State Y, within the West Region pool. Starting in model year 2016, manufacturers may trade or transfer 2012 through 2017 model year ZEV credits, used to meet the requirements in subdivisions 1962.1(d)(5)(E)3.a. and c., within the East Region pool, and will incur no premium on their credit values. For example, for a manufacturer to make up a 2016 model year shortfall of 100 credits in State W, the manufacturer may transfer 100 (2012 through 2016 model year) ZEV credits from State Z, within the East Region pool.

ii. *Trading and Transferring ZEV Credits between the West Region Pool and East Region Pool.* Starting in model year 2016, manufacturers may trade or transfer 2012 through 2017 model year ZEV credits used to meet the requirements in subdivisions 1962.1(d)(5)(E)3.a. and c. between the West Region pool and the East Region pool; however, any credits traded or transferred will incur a premium of 30% of their value. For example, in order for a manufacturer to make up a 2016 model year shortfall of 100 credits in the West Region Pool, the manufacturer may transfer 130 (2012 through 2016 model year) ZEV credits from the East Region Pool. No credits may be traded or transferred to the East Region pool or West Region pool from a manufacturer's California ZEV bank, or from the East Region pool or West Region pool to a manufacturer's California ZEV bank.

b. *Reduced TZEV Percentages.* Large volume manufacturers and intermediate volume manufacturers that elect the optional Section 177 state compliance path and that fully comply with the additional 2016 and 2017 model year ZEV requirements in subdivision

1962.1(d)(5)(E)3.a. are allowed to meet TZEV percentages reduced from the allowed TZEV percentages in subdivision 1962.1(b)(2)(D)2. and 3. in 2015 through 2017 model year in each Section 177 state as enumerated below:

<i>Model Year</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
Existing TZEV Percentage	3.00%	3.00%	3.00%
Section 177 State Adjustment for			
Optional Compliance Path for TZEVs	75.00%	80.00%	85.00%
New Section 177 State Optional			
Compliance Path TZEV Percentage	2.25%	2.40%	2.55%

Manufacturers may meet the reduced TZEV percentages above with credits from ZEVs or credits from TZEVs. These reduced TZEV percentages also reduce the total ZEV percent requirement, as illustrated in subdivision 1962.1(d)(5)(E)3.c.

i. *Trading and Transferring TZEV Credits within the West Region Pool and the East Region Pool.* Starting in model year 2015, manufacturers may trade or transfer 2012 through 2017 model year TZEV credits, as applicable, used to meet the subdivision 1962.1(d)(5)(E)3.c. percentages within the West Region pool, and will incur no premium on their credit values. For example, for a manufacturer to make up a 2016 shortfall of 100 credits in State X, the manufacturer may transfer 100 (2012 through 2016 model year) TZEV credits from State Y, within the West Region pool. Starting in model year 2015, manufacturers may trade or transfer 2012 through 2017 model year TZEV credits, as applicable, used to meet the subdivision 1962.1(d)(5)(E)3.c. percentages within the East Region pool, and will incur no premium on their credit values. For example, for a manufacturer to make up a 2016 model year shortfall of 100 credits in State W, the manufacturer may transfer 100 (2012 through 2016 model year) TZEV credits from State Z, within the East Region pool.

ii. *Trading and Transferring TZEV Credits between the West Region Pool and the East Region Pool.* Starting in model year 2015, manufacturers may trade or transfer 2012 through 2017 model year TZEV credits, as applicable, used to meet the subdivision 1962.1(d)(5)(E)3.c. percentages between the West Region pool and the East Region pool; however, any credits traded or transferred will incur a premium of 30% of their value. For example, in order for a manufacturer to make up a 2016 model year shortfall of 100 credits in the West Region Pool, the manufacturer may transfer 130 (2012 through 2016 model year) TZEV credits from the East Region Pool. No credits may be traded or transferred to the East Region pool or West Region pool from a manufacturer's California ZEV bank, or from the East Region pool or West Region pool to a manufacturer's California ZEV bank.

c. *Total Requirement Percentages.* Requirements for the minimum ZEV floor, and allowed percentages for AT PZEVs and PZEVs in subdivision 1962.1(b) remain in effect for large and intermediate volume manufacturers choosing the optional Section 177 state compliance path in each Section 177 state. However, the optional Section 177 compliance path requires manufacturers to meet additional ZEV requirements and allows manufacturers to meet reduced TZEV percentages as described above in subdivision 1962.1(d)(5)(E)3.a. and b. The tables below

enumerate the total annual percentage obligation in each Section 177 state for the 2015 through 2017 model years if the manufacturer elects the optional Section 177 state compliance path and produces the minimum number of credits required to meet its minimum ZEV floor and the maximum percentage allowed to be met with credits from TZEVs, AT PZEVs and PZEVs.

Large Volume Manufacturer Annual Percentage Obligations under the Section 177 State Optional Compliance Path

<i>Years</i>	<i>Total ZEV</i>	<i>Minimum ZEV</i>	<i>TZEVs for Optional</i>	<i>AT PZEVs</i>	<i>PZEVs</i>
	<i>Percent Requirement for</i>	<i>Floor for Optional</i>	<i>Compliance Path</i>	<i>(no change)</i>	<i>(no change)</i>
	<i>Optional Compliance Path</i>	<i>Compliance Path</i>			
2015	13.25%	3.00%	2.25%	2.00%	6.00%
2016	14.15%	3.75%	2.40%	2.00%	6.00%
2017	15.05%	4.50%	2.55%	2.00%	6.00%

Intermediate Volume Manufacturer Annual Percentage Obligations under the Section 177 State Optional Compliance Path

<i>Years</i>	<i>Total ZEV</i>	<i>Additional ZEV</i>	<i>Percent Requirement</i>
	<i>Percent Requirement for</i>	<i>Percentage</i>	<i>that may be met with</i>
	<i>Optional Compliance Path</i>		<i>PZEVS</i>
2015	11.25%	0%	11.25%
2016	12.15%	0.75%	11.40%
2017	13.05%	1.50%	11.55%

d. *Reporting Requirements.* For 2015 to 2017 model year, by May 1st of the calendar year following the close of a model year, each manufacturer that elects the optional Section 177 state compliance path under subdivision 1962.1(d)(5)(E)3. shall submit, in writing, to the Executive Officer and each Section 177 state a report, including an itemized list, that demonstrates the manufacturer has met the requirements of this subdivision 1962.1(d)(5)(E)3. in each Section 177 state as well as in the East Region pool and in the West Region pool. The itemized list shall include the following:

- i. The manufacturer's total applicable volume of PCs and LDTs delivered for sale in each section 177 state within the pool, as determined under subdivision 1962.1(b)(1)(B).
- ii. Make, model, vehicle identification number, credit earned, and section 177 state where delivery for sale and placement in service for ZEV occurred to meet the manufacturer's additional ZEV obligation under subdivision 1962.1(d)(5)(E)3.a.

iii. Make, model, credit earned, and Section 177 state where delivery for sale of TZEVs occurred and Section 177 state where delivery for sale and placement in service of each ZEV occurred to meet manufacturer's requirements under subdivision 1962.1(d)(5)(E)3.c.

e. *Right to Request Vehicle Identification Numbers.* Upon request by the Executive Officer or a Section 177 state, each manufacturer that elects the optional Section 177 state compliance path under subdivision 1962.1(d)(5)(E)3. shall provide the vehicle identification numbers in the report required by subdivision 1962.1 (d)(5)(E)3.d.iii.

f. *Failure to Meet Optional Section 177 State Compliance Path Requirements.* A manufacturer that elects the optional Section 177 state compliance path and does not meet the requirements in subdivision 1962.1(d)(5)(E)3.a. by June 30, 2018 in all Section 177 states within an applicable pool shall be treated as subject to the total ZEV percentage requirements in section 1962.1(b) for all future model years in each Section 177 state and the pooling provisions in subdivision 1962.1(d)(5)(E)3.a. shall not apply. Any future transfers of ZEV credits between Section 177 states will be prohibited. A manufacturer that elects the optional Section 177 state compliance path and does not meet the percentages in subdivision 1962.1(d)(5)(E)3.b. in a model year or make up their deficit within the specified time and with the specified credits allowed by subdivision 1962.1(g)(7)(A) in all Section 177 states within an applicable pool shall be treated as subject to the total ZEV percentage requirements in section 1962.1(b) for all future model years in each Section 177 state and the pooling provisions in subdivision 1962.1(d)(5)(E)3.b. shall not apply. Any future transfers of TZEV credits between Section 177 states will be prohibited. Penalties shall be calculated separately by each Section 177 state where a manufacturer fails to make up the ZEV deficits by the end of the 2018 model year.

g. The provisions in section 1962.1 shall apply to a manufacturer electing the optional Section 177 state compliance path, except as specifically modified by this subdivision 1962.1(d)(5)(E)3.

(F) *NEVs.* Beginning in 2010 model year, to be eligible for the credit amount in subdivision 1962.1(d)(5)(C), NEVs must meet the following specifications and requirements in this subdivision 1962.1(d)(5)(F):

1. *Specifications.* A 2010 through 2017 model year NEV earns credit when it meets all the following specifications:

a. *Acceleration.* The vehicle has a 0-20 mph acceleration of 6.0 seconds or less when operating with a payload of 332 pounds and starting with the battery at a 50% state of charge.

b. *Top Speed.* The vehicle has a minimum top speed of 20 mph when operating with a payload of 332 pounds and starting with the battery at a 50% state of charge. The vehicle's top speed shall not exceed 25 mph when tested in accordance with 49 CFR 571.500 (68 FR 43972, July 25, 2003).



c. *Constant Speed Range.* The vehicle has a minimum 25-mile range when operating at constant top speed with a payload of 332 pounds and starting with the battery at 100% state of charge.

2. *Battery Requirement.* A 2010 through 2017 model year NEV must be equipped with one or more sealed, maintenance-free batteries.

3. *Warranty Requirement.* A 2010 through 2017 model year NEV drive train, including battery packs, must be covered for a period of at least 24 months. The first 6 months of the NEV warranty period must be covered by a full warranty; the remaining warranty period may be optional extended warranties (available for purchase) and may be prorated. If the extended warranty is prorated, the percentage of the battery pack's original value to be covered or refunded must be at least as high as the percentage of the prorated coverage period still remaining. For the purpose of this computation, the age of the battery pack must be expressed in intervals no larger than three months. Alternatively, a manufacturer may cover 50 percent of the original value of the battery pack for the full period of the extended warranty.

4. Prior to allowance approval, the Executive Officer may request that the manufacturer provide copies of representative vehicle and battery warranties.

5. *NEV Charging Requirements.* Model year 2014 through 2017 NEVs must meet charging connection standard portion of the requirements specified in subdivision 1962.3(c).

(G) *Type I.5x and Type IIx Vehicles.* Beginning in 2012 model year, to be eligible for the credit amount in subdivision 1962.1(d)(5)(C), Type I.5x and Type IIx vehicles must meet the following specifications and requirements:

1. *PZEV Requirements.* Type I.5x and Type IIx vehicles must meet all PZEV requirements, specified in subdivision 1962.1(c)(2)(A) through (D).

2. *Type G Requirements.* Type I.5x and Type IIx vehicles must meet the requirements for Type G advanced componentry allowance, specified in subdivision 1962.1(c)(4)(B).

3. *APU Operation.* The vehicle's UDDS range after the APU first starts and enters "charge sustaining hybrid operation" must be less than or equal to the vehicle's UDDS all-electric test range prior to APU start. The vehicle's APU cannot start under any user-selectable driving mode unless the energy storage system used for traction power is fully depleted.

4. *Minimum Zero Emission Range Requirements.*

<i>Vehicle Category</i>	<i>Zero Emission UDDS Range</i>
Type I.5x	≥ 75 miles, < 100 miles
Type IIx	≥ 100 miles

(e) [Reserved].

(f) *Extended Service Multiplier for 1997-2003 Model Year ZEVs and PZEVs With  $\geq 10$  Mile Zero-Emission Range.* Except in the case of a NEV, an additional ZEV or PZEV multiplier will be earned by the manufacturer of a 1997 through 2003 model year ZEV, or PZEV with  $\geq 10$  mile zero-emission range for each full year it is registered for operation on public roads in California beyond its first three years of service, in the 2009 through 2011 calendar years. For additional years of service starting earlier than April 24, 2003, the manufacturer will receive 0.1 times the ZEV credit that would be earned by the vehicle if it were leased or sold new in that year, including multipliers, on a year-by-year basis beginning in the fourth year after the vehicle is initially placed in service. For additional years of service starting April 24, 2003 or later, the manufacturer will receive 0.2 times the ZEV credit that would be earned by the vehicle if it were leased or sold new in that year, including multipliers, on a year-by-year basis beginning in the fourth year after the vehicle is initially placed in service. The extended service multiplier is reported and earned in the year following each continuous year of service. Additional credit cannot be earned after model year 2011.

(g) Generation and Use of Credits; Calculation of Penalties

(1) *Introduction.* A manufacturer that produces and delivers for sale in California ZEVs or PZEVs in a given model year exceeding the manufacturer's ZEV requirement set forth in subdivision 1962.1(b) shall earn credits in accordance with this subdivision 1962.1(g).

(2) *Credit Calculations.*

(A) *Credits from ZEVs.* For model years 2009 through 2014, the amount of g/mi credits earned by a manufacturer in a given model year from ZEVs shall be expressed in units of g/mi NMOG, and shall be equal to the number of credits from ZEVs produced and delivered for sale in California that the manufacturer applies towards meeting the ZEV requirements for the model year subtracted from the number of ZEVs produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for PCs and LDT1s, or LDT2s as applicable, for 2009 through 2011 model years, and for PCs and LDT1s for 2012 through 2014 model years.

For model years 2015 through 2017, the amount of credits earned by a manufacturer in a given model year from ZEVs shall be expressed in units of credits and shall be equal to the number of credits from ZEVs produced and delivered for sale in California that the manufacturer applies towards meeting the ZEV requirements, or, if applicable, requirements specified under subdivision 1962.1(d)(5)(E)3., for the model year subtracted from the number of ZEV credits produced and delivered for sale in California by the manufacturer in the model year or model years.

(B) *Credits from PZEVs.* For model years 2009 through 2014, the amount of g/mi credits from PZEVs earned by a manufacturer in a given model year shall be expressed in units of g/mi NMOG, and shall be equal to the total number of PZEVs produced and delivered for sale in California that the manufacturer applies towards meeting its ZEV requirement for the model year subtracted from the total number of PZEV allowances from PZEVs produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for

PCs and LDT1s, or LDT2s as applicable, for 2009 through 2011 model years, and for PCs and LDT1s for 2012 through 2014 model years.

For model years 2015 through 2017, the amount of credits earned by a manufacturer in a given model year from PZEVs shall be expressed in units of credits, and shall be equal to the number of credits from PZEVs produced and delivered for sale in California that the manufacturer applies towards meeting the ZEV requirements, or, if applicable, requirements specified under subdivision 1962.1(d)(5)(E)3., for the model year subtracted from the number of PZEV credits produced and delivered for sale in California by the manufacturer in the model year or model years.

(C) *Separate Credit Accounts.* The number of credits from a manufacturer's [i] ZEVs, [ii] Type I.5x and Type IIx vehicles, [iii] TZEVs, [iv] AT PZEVs, [v] all other PZEVs, and [vi] NEVs shall each be maintained separately.

(D) *Rounding Credits.* For model year 2012 through 2014, ZEV credits and debits shall be rounded to the nearest 1/1000th only on the final credit and debit totals using the conventional rounding method. For model year 2015 through 2017, ZEV credits and debits shall be rounded to the nearest 1/100th only on the final credit and debit totals using the conventional rounding method.

(E) *Converting g/mi NMOG ZEV Credits to ZEV Credits.* After model year 2014 compliance, all manufacturer ZEV, Type I.5x and Type IIx, TZEV, AT PZEV, PZEV, and NEV accounts will be converted from g/mi NMOG to credits. Each g/mi NMOG account balance will be divided by 0.035. Starting in model year 2015, credits will no longer be expressed in terms of g/mi credits, but only as credits.

(F) *Converting PZEV and AT PZEV Credits after Model Year 2017.* After model year 2017 compliance, a manufacturer's PZEV and AT PZEV credit accounts will be converted to be used for compliance with requirements specified in subdivision 1962.2(b). For LVMs, PZEV accounts will be discounted 93.25%, and AT PZEV accounts will be discounted 75%. For IVMs, PZEV accounts and AT PZEV accounts will be discounted 75%. This will be a one time calculation after model year 2017 compliance is complete.

(3) *ZEV Credits for MDVs and LDTs Other Than LDT1s.* ZEVs and PZEVs classified as MDVs or as LDTs other than LDT1s may be counted toward the ZEV requirement for PCs, LDT1s and LDT2s as applicable, and included in the calculation of ZEV credits as specified in this subdivision 1962.1(g) if the manufacturer so designates.

(4) *ZEV Credits for Advanced Technology Demonstration Programs.*

(A) *TZEVs.* For 2009 through 2014 model years, TZEVs placed in a California advanced technology demonstration program for a period of two or more years, may earn ZEV credits even if it is not "delivered for sale" or registered with the California Department of Motor Vehicles (DMV). To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicles will be regularly used in applications appropriate to evaluate issues related

to safety, infrastructure, fuel specifications or public education, and that for 50 percent or more of the first two years of placement the vehicle will be operated in California. Such a vehicle is eligible to receive the same allowances and credits that it would have earned if placed in service. To determine vehicle credit, the model year designation for a demonstration vehicle shall be consistent with the model year designation for conventional vehicles placed in the same timeframe. Manufacturers may earn credit for as many as 25 vehicles per model, per ZEV state, per year under this subdivision 1962.1(g)(4). A manufacturer's vehicles in excess of the 25-vehicle cap will not be eligible for advanced technology demonstration program credits.

(B) *ZEVs*. In model years 2009 through 2017, ZEVs, including Type I.5x and IIx vehicles, excluding NEVs and Type 0 ZEVs, placed in a California advanced technology demonstration program for a period of two or more years, may earn ZEV credits even if it is not “delivered for sale” or registered with the California DMV. To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicles will be regularly used in applications appropriate to evaluate issues related to safety, infrastructure, fuel specifications or public education, and that for 50 percent or more of the first two years of placement the vehicle will be operated in California. Such a vehicle is eligible to receive the same allowances and credits that it would have earned if placed in service. To determine vehicle credit, the model year designation for a demonstration vehicle shall be consistent with the model year designation for conventional vehicles placed in the same timeframe. Manufacturers may earn credit for as many as 25 vehicles per model, per ZEV state, per year under this subdivision 1962.1(g)(4). A manufacturer's vehicles in excess of the 25-vehicle cap will not be eligible for advanced technology demonstration program credits.

(5) ZEV Credits for Transportation Systems.

(A) *General*. In model years 2009 through 2011, a ZEV placed, for two or more years, as part of a transportation system may earn additional ZEV credits, which may be used in the same manner as other credits earned by vehicles of that category, except as provided in subdivision (g)(5)(C) below. In model years 2012 through 2017, a ZEV, Type I.5x and Type IIx vehicles, or TZEVE placed, for two or more years, as part of a transportation system may earn additional ZEV credits, which may be used in the same manner as other credits earned by vehicles of that category, except as provided in subdivision (d)(5)(E)2. and as provided in subdivision (g)(5)(C) below. In model years 2009 through 2011, an AT PZEVE or PZEVE placed as part of a transportation system may earn additional ZEV credits, which may be used in the same manner as other credits earned by vehicles of that category, except as provided in subdivision (g)(5)(C) below. A NEV is not eligible to earn credit for transportation systems. To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicle will be used as a part of a project that uses an innovative transportation system as described in subdivision (g)(5)(B) below.

(B) *Credits Earned*. In order to earn additional credit under this section (g)(5), a project must at a minimum demonstrate [i] shared use of ZEVs, Type I.5x and Type IIx vehicles, TZEVEs, AT PZEVEs or PZEVEs, and [ii] the application of “intelligent” new technologies such as reservation management, card systems, depot management, location management, charge billing and real-time wireless information systems. If, in addition to factors [i] and [ii] above, a project also features linkage to

transit, the project may receive further additional credit. For ZEVs only, not including NEVs, a project that features linkage to transit, such as dedicated parking and charging facilities at transit stations, but does not demonstrate shared use or the application of intelligent new technologies, may also receive additional credit for linkage to transit. The maximum credit awarded per vehicle shall be determined by the Executive Officer, based upon an application submitted by the manufacturer and, if appropriate, the project manager. The maximum credit awarded shall not exceed the following:

<i>Type of Vehicle</i>	<i>Model Year</i>	<i>Shared Use, Intelligence</i>	<i>Linkage to Transit</i>
PZEV	through 2011	2	1
AT PZEV	through 2011	4	2
TZEV	2009 through 2011	4	2
ZEV	2009 through 2011	6	3
TZEV	2012 through 2017	0.5	0.5
ZEV and Type I.5x and Type IIx vehicles	2012 through 2017	0.75	0.75

(C) Cap on Use of Transportation System Credits.

1. *ZEVs*. Credits earned or allocated by ZEVs or Type I.5x and Type IIx vehicles pursuant to this subdivision (g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation in any given model year, and may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation which must be met with ZEVs, as specified in subdivision 1962.1(b)(2)(D)3.

2. *TLEV*s. Credits earned or allocated by TZEVs pursuant to this subdivision (g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation in any given model year, or, if applicable, up to one-tenth of the total ZEV percentages specified under subdivision 1962.1(d)(5)(E)3., but may only be used in the same manner as other credits earned by vehicles of that category.

3. *AT PZEV*s. Credits earned or allocated by AT PZEVs pursuant to this subdivision (g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-twentieth of a manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

4. *PZEV*s. Credits earned or allocated by PZEVs pursuant to this subdivision (g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-fiftieth of the manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

(D) *Allocation of Transportation System Credits*. Credits shall be assigned by the Executive Officer to the project manager or, in the absence of a separate project manager, to the vehicle manufacturers upon demonstration that a vehicle has been placed in a project for the time specified in subdivision 1962.1(g)(5)(A). Credits shall be allocated to vehicle manufacturers by the Executive Officer in

accordance with a recommendation submitted in writing by the project manager and signed by all manufacturers participating in the project, and need not be allocated in direct proportion to the number of vehicles placed. Credits will no longer be allocated for vehicles placed in transportation systems after 2017 model year.

(6) Use of ZEV Credits. For model years 2009 through 2014, a manufacturer may meet the ZEV requirements in any given model year by submitting to the Executive Officer a commensurate amount of g/mi ZEV credits, consistent with subdivision 1962.1(b). For model years 2015 through 2017, a manufacturer may meet the ZEV requirements in any given model year by submitting to the Executive Officer a commensurate amount of ZEV credits, consistent with subdivision 1962.1(b). Credits in each of the categories may be used to meet the requirement for that category as well as the requirements for lesser credit earning ZEV categories, but shall not be used to meet the requirement for a greater credit earning ZEV category. For example, credits produced from TZEVs may be used to comply with AT PZEV requirements, but not with the portion that must be satisfied with ZEVs. These credits may be earned previously by the manufacturer or acquired from another party.

(A) *NEVs*. Credits earned from NEVs offered for sale or placed in service in model years 2001 through 2005 cannot be used to satisfy more than the percentage limits described in the following table:

<i>Model Years</i>	<i>ZEV Obligation that:</i>	<i>Percentage limit for NEVs allowed to meet each Obligation<sup>1</sup>:</i>
2009-2011	Must be met with ZEVs	50%
2009	May be met with AT PZEVs but not	75%
2010-2011	PZEVs	50%
2009-2011	May be met with PZEVs	No Limit
	Must be met with ZEVs	0%
2012-2017	May be met with TZEVs and	
	AT PZEVs	50%
	May be met with PZEVs	No Limit

<sup>1</sup> If applicable, obligation in this table means requirements specified under subdivision 1962.1(d)(5)(E)3.

Additionally, credits earned from NEVs placed in service in model years 2006 through 2017 can be used to meet the percentage limits described in the following table:

<i>Model Years</i>	<i>ZEV Obligation that:</i>	<i>Percentage Limit for NEVs allowed to meet each Obligation<sup>1</sup>:</i>
	May be met through compliance with Primary Requirements	No Limit
2009-2011	May be met through compliance with Alternative Requirements, and must be met with ZEVs	0%
	May be met through compliance with Alternative Requirements, and may be met with AT PZEVs or PZEVs	No Limit
	Must be met with ZEVs	0%
2012-2017	May be met with TZEVs, AT PZEVs, or PZEVs	No Limit

<sup>1</sup> If applicable, obligation in this table means requirements specified under subdivision 1962.1(d)(5)(E)3.

This limitation applies to NEV credits earned by the same manufacturer or earned by another manufacturer and acquired.

(B) *Carry forward provisions for LVMs for 2009-2011 Model Years.* Credits from ZEVs, excluding credits generated from NEVs, generated from excess production in 2009 through 2011 model years, including those acquired from another party, may be carried forward and applied to the ZEV minimum floor requirement specified in subdivisions 1962.1(b)(2)(B)1.b. and (b)(2)(D) for two subsequent model years. Beginning with the third subsequent model year, those earned credits may no longer be used to satisfy the manufacturer's percentage ZEV obligation that may only be satisfied by credits from ZEVs, but may be used to satisfy the manufacturer's percentage ZEV obligation that may be satisfied by credits from TZEVs, AT PZEVs, or PZEVs. For example, ZEV credit earned in 2010 would retain full flexibility through 2012, after which time that credit could only be used as TZEV, AT PZEV, or PZEV credits.

(C) *Carry forward provisions for manufacturers other than LVMs for 2009-2011 Model Years.* Credits generated from ZEVs, excluding credits generated from NEVs, from 2009 through 2011 model year production by manufacturers that are not LVMs may be carried forward by the manufacturer producing the credit until the manufacturer becomes subject to the LVM requirements, after the transition period permitted in subdivision 1962.1(b)(7)(A). When subject to the LVM requirements, a manufacturer must comply with the provisions of subdivision 1962.1(g)(6)(B).

Credits traded by a manufacturer other than a LVM to any other manufacturer, including a LVM, are subject to subdivision 1962.1(g)(6)(B), beginning in the model year in which they were produced (e.g., a 2009 model year credit traded in calendar year 2010 can only be applied towards the portion of the manufacturer's requirement that must be met with ZEVs through model year 2011; beginning in model year 2012, the credit can only be applied to the portion of the manufacturer's requirement that may be met with TZEVs, AT PZEVs, or PZEVs).

(D) *Type I.5x and Type IIx Vehicles.* Credits earned from Type I.5x and Type IIx vehicles offered for sale or placed in service may meet up to 50% of the portion of a manufacturer's requirement that must be met with credits from ZEVs.

(7) Requirement to Make Up a ZEV Deficit.

(A) *General.* A manufacturer that produces and delivers for sale in California fewer ZEVs than required in a given model year shall make up the deficit by the end of the third model year by submitting to the Executive Officer a commensurate amount of g/mi credits generated by ZEVs, for model year 2009 through 2014, and the commensurate amount of credits generated by ZEVs for model year 2015 through 2017. The amount of credits required to be submitted shall be calculated by [i] adding the number of ZEVs produced and delivered for sale in California by the manufacturer for the model year to the number of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California by the manufacturer for the model year (for a LVM, not to exceed that permitted under subdivision 1962.1(b)(2)), [ii] subtracting that total from the number of ZEV credits required to be produced and delivered for sale in California by the manufacturer for the model year, and, for model year 2009 through 2014 compliance, and [iii] multiplying the resulting value by the fleet average requirements for PCs and LDT1s for the model year in which the deficit is incurred. Credits earned by delivery for sale of Type I.5x and Type IIx vehicles, TZEV, NEV, AT PZEV, and PZEV are not allowed to be used to fulfill a manufacturer's ZEV deficit; only credits from ZEVs may be used to fulfill a manufacturer's ZEV deficit.

(8) *Penalty for Failure to Meet ZEV Requirements.* Any manufacturer that fails to produce and deliver for sale in California the required number of ZEVs and submit an appropriate amount of g/mi credits, for model years 2009 through 2014, and credits for model years 2015 through 2017, and does not make up ZEV deficits within the specified time allowed by subdivision 1962.1(g)(7)(A) shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer that sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the ZEV deficits are not balanced by the end of the specified time allowed by subdivision 1962.1(g)(7)(A). For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's standards shall be equal to the manufacturer's credit deficit, rounded to the nearest 1/1000th for model years 2009 through 2014 and rounded to the nearest 1/100th for model years 2015 through 2017, calculated according to the following equations, provided that the percentage of a manufacturer's ZEV requirement for a given model year that may be satisfied with PZEV allowance vehicles or credits from such vehicles may not exceed the percentages permitted under subdivision 1962.1(b)(2):

For 2009 through 2014 model years:

$$\frac{(\text{No. of credits required to be generated for the model year}) - (\text{Amount of credits submitted for compliance for the model year})}{(\text{the fleet average requirement for PCs and LDT1s for the model year})}$$

For 2015 through 2017 model years:



(No. of credits required to be generated for the model year) - (Amount of credits submitted for compliance for the model year)

(h) *Test Procedures.*

(1) *Determining Compliance.* The certification requirements and test procedures for determining compliance with this section 1962.1 are set forth in “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” adopted December 17, 2008, and last amended September 3, 2015, which is incorporated herein by reference.

(2) *NEV Compliance.* The test procedures for determining compliance with subdivision 1962.1(d)(5)(F)1. are set forth in ETA-NTP002 (revision 3) “Implementation of SAE Standard J1666 May 93: Electric Vehicle Acceleration, Gradeability, and Deceleration Test Procedure” (December 1, 2004), and ETA-NTP004 (revision 3) “Electric Vehicle Constant Speed Range Tests” (February 1, 2008), both of which are incorporated by reference herein.

(i) *ZEV-Specific Definitions.* The following definitions apply to this section 1962.1.

(1) “Advanced technology PZEV” or “AT PZEV” means any PZEV with an allowance greater than 0.2 before application of the PZEV early introduction phase-in multiplier.

(2) “Auxiliary power unit” or “APU” means any device that provides electrical or mechanical energy, meeting the requirements of subdivision 1962.1(c)(2), to a Type I.5x or Type IIx vehicle, after the zero emission range has been fully depleted. A fuel fired heater does not qualify under this definition for an APU.

(3) “Battery electric vehicle” means any vehicle that operates solely by use of a battery or battery pack, or that is powered primarily through the use of an electric battery or battery pack but uses a flywheel or capacitor that stores energy produced by the electric motor or through regenerative braking to assist in vehicle operation.

(4) “Charge depletion range actual” or “ $R_{cda}$ ” means the distance achieved by a hybrid electric vehicle on the urban driving cycle at the point when the zero-emission energy storage device is depleted of off-vehicle charge and regenerative braking derived energy.

(5) “Conventional rounding method” means to increase the last digit to be retained when the following digit is five or greater. Retain the last digit as is when the following digit is four or less.

(6) “East Region pool” means the combination Section 177 states east of the Mississippi River.

(7) “Electric drive system” means an electric motor and associated power electronics which provide acceleration torque to the drive wheels sometime during normal vehicle operation. This does not

include components that could act as a motor, but are configured to act only as a generator or engine starter in a particular vehicle application.

(8) “Enhanced AT PZEV” means any model year 2009 through 2011 PZEV that has an allowance of 1.0 or greater per vehicle without multipliers and makes use of a ZEV fuel. Enhanced AT PZEV means Transitional Zero Emission Vehicle.

(9) “Neighborhood electric vehicle” or “NEV” means a motor vehicle that meets the definition of Low-Speed Vehicle either in section 385.5 of the Vehicle Code or in 49 CFR 571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.

(10) “Placed in service” means having been sold or leased to an end-user and not to a dealer or other distribution chain entity, and having been individually registered for on-road use by the California DMV.

(11) “Proportional value” means the ratio of a manufacturer's California applicable sales volume to the manufacturer's Section 177 state applicable sales volume. In any given model year, the same applicable sale volume calculation method must be used to calculate proportional value.

(12) “Range Extended Battery Electric Vehicle” means a vehicle powered predominantly by a zero emission energy storage device, able to drive the vehicle for more than 75 all-electric miles, and also equipped with a backup APU, which does not operate until the energy storage device is fully depleted, and meeting requirements in subdivision 1962.1(d)(5)(G),

(13) “Regenerative braking” means the partial recovery of the energy normally dissipated into friction braking that is returned as electrical current to an energy storage device.

(14) “Section 177 state” means a state that is administering the California ZEV requirements pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

(15) “Transitional Zero Emission Vehicle” means a PZEV that has an allowance of 1.0 or greater, and makes use of a ZEV fuel.

(16) “Type 0, I, I.5, II, III, IV, and V ZEV” all have the meanings set forth in section 1962.1(d)(5)(A).

(17) “West Region pool” means the combination of Section 177 states west of the Mississippi River.

(18) “ZEV fuel” means a fuel that provides traction energy in on-road ZEVs. Examples of current technology ZEV fuels include electricity, hydrogen, and compressed air.

(j) *Abbreviations.* The following abbreviations are used in this section 1962.1:

“AER” means all-electric range.

“APU” means auxiliary power unit.

“AT PZEV” means advanced technology partial zero-emission vehicle.  
 “CFR” means Code of Federal Regulations.  
 “DMV” means the California Department of Motor Vehicles.  
 “EAER” means equivalent allelectric range.  
 “EAER<sub>u40</sub>” means the urban equivalent all-electric range that a 40 mile R<sub>cd</sub> plug-in hybrid electric vehicle achieves.  
 “FR” means Federal Register.  
 “HEV” means hybrid-electric vehicle.  
 “LDT” means light-duty truck.  
 “LDT1” means a light-truck with a loaded vehicle weight of 0-3750 pounds.  
 “LDT2” means a “LEV II” light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight of 8500 pounds, or a “LEV I” light-duty truck with a loaded vehicle weight of 3751-5750 pounds.  
 “LVM” means large volume manufacturer.  
 “MDV” means medium-duty vehicle.  
 “Non-Methane Organic Gases” or “NMOG” means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.  
 “NEV” means neighborhood electric vehicle.  
 “NOx” means oxides of nitrogen.  
 “PC” means passenger car.  
 “PZEV” means partial allowance zero-emission vehicle, any vehicle that is delivered for sale in California and that qualifies for a partial ZEV allowance of at least 0.2.  
 “R<sub>cd</sub>” means urban charge depletion range actual.  
 “SAE” means Society of Automotive Engineers.  
 “SULEV” means super-ultra-low-emission-vehicle.  
 “TZEV” means transitional zero emission vehicle.  
 “Type I.5x” means range extended 75 mile to 100 mile all electric range battery electric vehicle.  
 “Type IIx” means range extended 100 mile or greater all electric range battery electric vehicle.  
 “UDDS” means urban dynamometer driving cycle.  
 “UF” means utility factor.  
 “US06” means the US06 Supplemental Federal Test Procedure  
 “VMT” means vehicle miles traveled.  
 “ZEV” means zero-emission vehicle.

(k) *Severability*. Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of this article remains in full force and effect.

(l) *Public Disclosure*. Records in the Board's possession for the vehicles subject to the requirements of section 1962.1 shall be subject to disclosure as public records as follows:

(1) Each manufacturer's annual production data and the corresponding credits per vehicle earned for ZEVs (including ZEV type), TZEVs, AT PZEVs, and PZEVs for the 2009 through 2017 model years; and

(2) Each manufacturer's annual credit balances for 2010 through 2017 years for:

(A) Each type of vehicle: ZEVs (minus NEVs), Type I.5x, and Type IIx vehicles, NEVs, TZEVs, AT PZEVs, and PZEVs; and

(B) Advanced technology demonstration programs; and

(C) Transportation systems; and

(D) Credits earned under subdivision 1962.1(d)(5)(C), including credits acquired from, or transferred to another party.

Note: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 38562, 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43018.5, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43204, 43205, 43205.5 and 43206, Health and Safety Code.

### **HISTORY**

1. New section filed 6-24-2002; operative 7-24-2002 (Register 2002, No. 26).
  2. Renumbering of former section 1962.1 to section 1962.2 and new section 1962.1 filed 3-18-2009; operative 4-17-2009 (Register 2009, No. 12).
  3. Amendment of subsections (c)(3)(A), (h)(1), (i)(3) and (j) filed 1-14-2010; operative 2-13-2010 (Register 2010, No. 3).
  4. Amendment of section heading, section and Note filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
  5. Amendment of subsections (b)(2)(D)1.-2., (c)(3)(A) and (h)(1) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
  6. Amendment of subsection (c)(3)(A), subsections within subsection (d) and subsection (h)(1) filed 7-10-2014; operative 7-10-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 28).
  7. Amendment of subsections (d)(5)(B), (d)(5)(B)1.a.-b., (d)(5)(B)1.b.i., (d)(5)(B)1.b.iii., (d)(5)(B)2.a. and (h)(1) filed 10-12-2015; operative 1-1-2016 (Register 2015, No. 42).
- This database is current through 5/22/20 Register 2020, No. 21  
13 CCR § 1962.1, 13 CA ADC § 1962.1

**Section 1962.2. Zero-Emission Vehicle Standards for 2018 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

(a) *ZEV Emission Standard.* The Executive Officer shall certify new 2018 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles as ZEVs, vehicles that produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) or greenhouse gas, excluding emissions from air conditioning systems, under any possible operational modes or conditions.

(b) Percentage ZEV Requirements.

(1) General ZEV Credit Percentage Requirement.

(A) *Basic Requirement.* The minimum ZEV credit percentage requirement for each manufacturer is listed in the table below as the percentage of the PCs and LDTs, produced by the manufacturer and delivered for sale in California that must be ZEVs, subject to the conditions in this subdivision 1962.2(b). The ZEV requirement will be based on the annual NMOG production report for the appropriate model year.

<i>Model Year</i>	<i>Credit Percentage Requirement</i>
2018	4.5%
2019	7.0%
2020	9.5%
2021	12.0%
2022	14.5%
2023	17.0%
2024	19.5%
2025 and subsequent	22.0%

(B) *Calculating the Number of Vehicles to Which the Percentage ZEV Requirement is Applied.* For 2018 and subsequent model years, a manufacturer's production volume for the given model year will be based on the three-year average of the manufacturer's volume of PCs and LDTs, produced and delivered for sale in California in the prior second, third, and fourth model year [for example, 2019 model year ZEV requirements will be based on California production volume average of PCs and LDTs for the 2015 to 2017 model years]. This production averaging is used to determine ZEV requirements only, and has no effect on a manufacturer's size determination (eg. three-year average calculation method). In applying the ZEV requirement, a PC or LDT, that is produced by one manufacturer (e.g., Manufacturer A), but is marketed in California by another manufacturer (e.g., Manufacturer B) under the other manufacturer's (Manufacturer B) nameplate, shall be treated as having been produced by the marketing manufacturer (i.e., Manufacturer B).

1. [Reserved]
2. [Reserved]

3. A manufacturer may apply to the Executive Officer to be permitted to base its ZEV obligation on the number of PCs and LDTs, produced by the manufacturer and delivered for sale in California that same model year (ie, same model-year calculation method) as an alternative to the three-year averaging of prior year production described above, for up to two model years, total, between model year 2018 and model year 2025. For the same model-year calculation method to be allowed, a manufacturer's application to the Executive Officer must show that their volume of PCs and LDTs produced and delivered for sale in California has decreased by at least 30 percent from the previous year due to circumstances that were unforeseeable and beyond their control.

(C) [Reserved]

(D) Exclusion of ZEVs in Determining a Manufacturer's Sales Volume. In calculating a manufacturer's applicable sales, using either method described in subdivision 1962.2(b)(1)(B), a manufacturer shall exclude the number of NEVs produced and delivered for sale in California by the manufacturer itself, or by a subsidiary in which the manufacturer has more than 33.4% percent ownership interest.

(2) Requirements for Large Volume Manufacturers.

(A) [Reserved]

(B) [Reserved]

(C) [Reserved]

(D) [Reserved]

(E) *Requirements for Large Volume Manufacturers in 2018 and through 2025 Model Years.* LVMs must produce credits from ZEVs equal to minimum ZEV floor percentage requirement, as enumerated below. Manufacturers may fulfill the remaining ZEV requirement with credits from TZEVs, as enumerated below.

	<i>Total ZEV</i>	<i>Minimum</i>	
<i>Model Years</i>	<i>Percent Requirement</i>	<i>ZEV floor</i>	<i>TZEVs</i>
2018	4.5%	2.0%	2.5%
2019	7.0%	4.0%	3.0%
2020	9.5%	6.0%	3.5%
2021	12.0%	8.0%	4.0%
2022	14.5%	10.0%	4.5%
2023	17.0%	12.0%	5.0%
2024	19.5%	14.0%	5.5%
2025	22.0%	16.0%	6.0%

(F) *Requirements for Large Volume Manufacturers in Model Year 2026 and Subsequent.* In 2026 and subsequent model years, a manufacturer must meet a total ZEV credit percentage of 22%. The maximum portion of a manufacturer's credit percentage requirement that may be satisfied by TZEV

credits is limited to 6% of the manufacturer's applicable California PC and LDT production volume. ZEV credits must satisfy the remainder of the manufacturer's requirement.

(3) *Requirements for Intermediate Volume Manufacturers.* For 2018 and subsequent model years, an intermediate volume manufacturer may meet all of its ZEV credit percentage requirement, under subdivision 1962.2(b), with credits from TZEV.

(4) *Requirements for Small Volume Manufacturers.* A small volume manufacturer is not required to meet the ZEV credit percentage requirements. However, a small volume manufacturer may earn, bank, market, and trade credits for the ZEVs and TZEVs it produces and delivers for sale in California.

(5) *[Reserved]*

(6) *[Reserved]*

(7) *Changes in Small Volume and Intermediate Volume Manufacturer Status in 2018 and Subsequent Model Years.*

(A) *Increases in California Production Volume.* For 2018 and subsequent model years, if a small volume manufacturer's average California production volume exceeds 4,500 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years (i.e., total production volume exceeds 13,500 vehicles in a three-year period), for three consecutive averages, the manufacturer shall no longer be treated as a small volume manufacturer, and must comply with the ZEV requirements for intermediate volume manufacturers beginning with the next model year after the last model year of the third consecutive average. For example, if (a small volume) Manufacturer A exceeds 4,500 PCs, LDTs, and MDVs for their 2018-2020, 2019-2021, and 2020-2022 model year averages, Manufacturer A would be subject to intermediate volume requirements starting in 2023 model year.

If an intermediate volume manufacturer's average California production volume exceeds 20,000 units of new PCs, LDTs, and MDVs in five consecutive model years based on the average number of vehicles produced and delivered for sale in the five associated sets of three model year averages that begin no sooner than the 2018 model year associated with the 2015 through 2017 three-year average (i.e., total production volume exceeds 60,000 vehicles in each of five consecutive three-year periods), the manufacturer shall no longer be treated as an intermediate volume manufacturer and shall comply with the ZEV requirements for large volume manufacturers beginning with the next model year after the model year corresponding to the fifth consecutive three-year average. For example, if (an intermediate volume) Manufacturer B exceeds 20,000 PCs, LDTs, and MDVs for its 2016 - 2018, 2017 - 2019, 2018 - 2020, 2019 - 2021, and 2020 - 2022 averages, as evidenced by its 2019 through 2023 model year reports, Manufacturer B would be subject to large volume manufacturer requirements starting in the 2024 model year.

If an intermediate volume manufacturer's average annual automotive-related global revenue for the 2018, 2019, or 2020 fiscal year, based upon the immediately prior and consecutive three fiscal years, is no greater than 40 billion dollars, then the three-model-year production volume average

corresponding to that fiscal year will not apply to the five consecutive three-model-year production volume averages necessary for transition to large volume manufacturer requirements conditional upon the manufacturer submitting to the Executive Officer, in writing, a report that demonstrates the types and numbers of ZEVs and TZEVs the manufacturer will deliver to California subsequent to the 2020 fiscal year to meet the requirements specified in subdivision 1962.2(b)(1)(A). For example, assuming the production volumes described for Manufacturer B at the end of the preceding paragraph, and assuming Manufacturer B had automotive-related global revenue of 39 billion dollars in fiscal year 2019 and 41 billion dollars in fiscal year 2020, the 2016-2018 production volume average associated with fiscal year 2019 would not apply, but the 2017-2019 production volume average associated with fiscal year 2020 would apply. Thus, Manufacturer B would be subject to large volume manufacturer requirements starting in the 2025 model year.

Any new requirement described in this subdivision will begin with the next model year after the last model year of the third or fifth consecutive three-year average when a manufacturer ceases to be a small or intermediate volume manufacturer respectively in 2018 or subsequent years due to the aggregation requirements in majority ownership situations. The first of the consecutive three-year averages shall not precede the 2015 through 2017 three-year average.

*(B) Decreases in California Production Volume.* If a manufacturer's average California production volume falls below 4,500 or 20,000 units of new PCs, LDT1 and 2s, and MDVs, based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, for three consecutive averages, the manufacturer shall be treated as a small volume or intermediate volume manufacturer, as applicable, and shall be subject to the requirements for a small volume or intermediate volume manufacturer beginning with the next model year. For example, if Manufacturer C falls below 20,000 PCs, LDTs, and MDVs for its 2019-2021, 2020-2022, and 2021-2023 averages, Manufacturer C would be subject to IVM requirements starting in 2024 model year.

*(C) Calculating California Production Volume in Change of Ownership Situations.* Where a manufacturer experiences a change in ownership in a particular model year, the change will affect application of the aggregation requirements on the manufacturer starting with the next model year. When a manufacturer is simultaneously producing two model years of vehicles at the time of a change of ownership, the basis of determining next model year must be the earlier model year. The manufacturer's small or intermediate volume manufacturer status for the next model year shall be based on the average California production volume in the three previous consecutive model years of those manufacturers whose production volumes must be aggregated for that next model year. For example, where a change of ownership during the 2019 calendar year occurs and the manufacturer is producing both 2019 and 2020 model year vehicles resulting in a requirement that the production volume of Manufacturer A be aggregated with the production volume of Manufacturer B, Manufacturer A's status for the 2020 model year will be based on the production volumes of Manufacturers A and B in the 2017-2019 model years. Where the production volume of Manufacturer A must be aggregated with the production volumes of Manufacturers B and C for the 2019 model year, and during that model year a change in ownership eliminates the requirement that Manufacturer B's production volume be aggregated with Manufacturer A's, Manufacturer A's status for the 2020 model year will be based on the production volumes of Manufacturers A and C in the



2017-2019 model years. In either case, the lead time provisions in subdivisions 1962.2(b)(7)(A) and (B) will apply.

(c) *Transitional Zero-Emission Vehicles (TZEV).*

(1) *Introduction.* This subdivision 1962.2(c) sets forth the criteria for identifying vehicles delivered for sale in California as TZEVs.

(2) *TZEV Requirements.* In order for a vehicle to be eligible to receive a ZEV allowance, the manufacturer must demonstrate compliance with all of the following requirements:

(A) *SULEV Standards.* Certify the vehicle to the 150,000-mile SULEV 20 or 30 exhaust emission standards for PCs and LDTs in subdivision 1961.2(a)(1). Bi-fuel, fuel flexible and dual-fuel vehicles must certify to the applicable 150,000-mile SULEV 20 or 30 exhaust emission standards when operating on both fuels. Manufacturers may certify 2018 and 2019 TZEVs to the 150,000-mile SULEV exhaust emission standards for PCs and LDTs in subdivision 1961(a)(1);

(B) *Evaporative Emissions.* Certify the vehicle to the evaporative emission standards in subdivision 1976(b)(1)(G) or 1976(b)(1)(E);

(C) *OBD.* Certify that the vehicle will meet the applicable on-board diagnostic requirements in sections 1968.1 or 1968.2, as applicable, for 150,000 miles; and

(D) *Extended Warranty.* Extend the performance and defects warranty period set forth in subdivisions 2037(b)(2) and 2038(b)(2) to 15 years or 150,000 miles, whichever occurs first except that the time period is to be 10 years for a zero-emission energy storage device used for traction power (such as a battery, ultracapacitor, or other electric storage device).

(3) *Allowances for TZEVs*

(A) *Zero-Emission Vehicle Miles Traveled TZEV Allowance Calculation.* A vehicle that meets the requirements of subdivision 1962.2(c)(2) and has zero-emission vehicle miles traveled (VMT), as defined by and calculated by the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” adopted March 22, 2012, last amended September 3, 2015, which is incorporated herein by reference, and measured as equivalent all electric range (EAER) capability will generate an allowance according to the following equation:

<i>UDDS Test Cycle Range</i>	<i>Allowance</i>
<i>(AER)</i>	
< 10 all electric miles	0.00
≥ 10 all electric miles	TZEV Credit = [(0.01) * EAER + 0.30]
> 80 miles (credit cap)	1.10

1. *Allowance for US06 Capability.* TZEVs with US06 all electric range capability (AER) of at least 10 miles shall earn an additional 0.2 allowance. US06 test cycle range capability shall be determined in accordance with section G.7.5 of the “California Exhaust Emission Standards and Test Procedures for the 2018 and Subsequent Model Zero-Emission Vehicles, and Hybrid Electric Vehicles in the Passenger Car, Light-Duty Truck, and Medium Duty Vehicle Classes,” adopted March 22, 2012, last amended September 3, 2015, which is incorporated herein by reference.

- (B) [Reserved]
- (C) [Reserved]
- (D) [Reserved]

(E) *Credit for Hydrogen Internal Combustion Engine Vehicles.* A hydrogen internal combustion engine vehicle that meets the requirements of subdivision 1962.2(c)(2) and has a total range of at least 250 UDDS miles will earn an allowance of 0.75, which may be in addition to allowances earned in subdivision 1962.2(c)(3)(A), and subject to an overall credit cap of 1.25

(d) *Qualification for Credits From ZEVs.*

- (1) [Reserved]
- (2) [Reserved]
- (3) [Reserved]
- (4) [Reserved]

(5) *Credits for 2018 and Subsequent Model Year ZEVs.*

(A) *ZEV Credit Calculations.* Credits from a ZEV delivered for sale are based on the ZEV's UDDS all electric range, determined in accordance with the “California Exhaust Emission Standards and Test Procedures for the 2018 and Subsequent Model Zero-Emission Vehicles, and Hybrid Electric Vehicles in the Passenger Car, Light-Duty Truck, and Medium Duty Vehicle Classes,” adopted March 22, 2012, which is incorporated herein by reference, using the following equation:

$$\text{ZEV Credit} = (0.01) * (\text{UDDS range}) + 0.50$$

1. A ZEV with less than 50 miles UDDS range will receive zero credits.
2. Credits earned under this provision 1962.2(d)(5)(A) are be capped at 4 credits per ZEV.

- (B) [Reserved]
- (C) [Reserved]
- (D) [Reserved]

(E)

1. *Counting Specified ZEVs Placed in Service in a Section 177 State and in California.* Large volume manufacturers and intermediate volume manufacturers with credits earned from hydrogen fuel cell vehicles that are certified to the California ZEV standards applicable for the ZEV's model year, delivered for sale and placed in service in California or in a Section 177 state, may be counted towards compliance in California and in all Section 177 states with the percentage ZEV requirements in subdivision 1962.2(b). The credits earned are multiplied by the ratio of a manufacturer's applicable production volume for a model year, as specified in subdivision 1962.2(b)(1)(B), in the state receiving credit to the manufacturer's applicable production volume as specified in subdivision 1962.2(b)(1)(B), for the same model year in California (hereafter, "proportional value"). Credits generated from ZEV placement in a Section 177 state will be earned at the proportional value in the Section 177 state, and earned in California at the full value specified in subdivision 1962.2(d)(5)(A).

2. *Optional Section 177 State Compliance Path.*

a. *Additional ZEV Requirements for Intermediate Volume Manufacturers.* Intermediate volume manufacturers that elect the optional Section 177 state compliance path must generate additional 2012 and subsequent model year ZEV credits, including no more than 50% Type 1.5x and Type IIx vehicle credits and excluding all NEV, Type 0 ZEV credits, and transportation system credits, in each Section 177 state to fulfill the following percentage requirements of their sales volume determined under subdivision 1962.2(b)(1)(B):

***Intermediate Volume Manufacturers***

<i>Model Years</i>	<i>Additional Section 177 State ZEV Requirements</i>
Two model years prior to transition to LVM status	0.75%
One model year prior to transition LVM status	1.50%

Subdivision 1962.2(d)(5)(E)1. and subdivision 1962.1(d)(5)(E) shall not apply to any ZEV credits used to meet an intermediate volume manufacturer's additional ZEV requirements for the appropriate model years as described in the table above under this subdivision 1962.2(d)(5)(E)2.a.

Intermediate volume manufacturers that choose to elect the optional Section 177 state compliance path must notify the Executive Officer and each Section 177 state in writing no later than September 1, 2016.

b. *ZEV and TZEV Percentages for Intermediate Volume Manufacturers.* Intermediate volume manufacturers that have fully complied with the optional Section 177 state compliance path requirements in subdivision 1962.1(d)(5)(E)3. or intend to comply or have fully complied with requirements in subdivision 1962.2(d)(5)(E)2.a. are allowed to meet their total ZEV percentage

requirements specified in 1962.2(b) in each Section 177 state by utilizing subdivisions 1962.2(d)(5)(E)2.b.i and ii, below.

- i. *Trading and Transferring ZEV and TZEV Credits within West Region Pool and East Region Pool.* Intermediate volume manufacturers may trade or transfer 2012 and subsequent model year ZEV and TZEV credits within the West Region pool to meet the requirements in subdivision 1962.2(d)(5)(E)2.a, and will incur no premium on their credit values. For example, for a manufacturer to make up a 2020 model year shortfall of 100 credits in State X, the manufacturer may transfer 100 (2018 through 2020 model year) ZEV credits from State Y, within the West Region pool. Intermediate volume manufacturers that have fully complied with the optional Section 177 state compliance path requirements in subdivision 1962.1(d)(5)(E)3. or intend to comply or have fully complied with requirements in subdivision 1962.2(d)(5)(E)2.a. may trade or transfer 2018 and subsequent model year ZEV and TZEV credits within the East Region pool to meet the requirements in subdivision 1962.2(b), and will incur no premium on their credit values. For example, for a manufacturer to make up a 2020 model year shortfall of 100 credits in State W, the manufacturer may transfer 100 (2018 through 2020 model year) ZEV credits from State Z, within the East Region pool.
- ii. *Trading and Transferring ZEV and TZEV Credits between the West Region Pool and East Region Pool.* Intermediate volume manufacturers may trade or transfer 2012 and subsequent model year ZEV and TZEV credits to meet the requirements in subdivision 1962.2(b) between the West Region pool and the East Region pool; however, any credits traded will incur a premium of 30% of their value. For example, in order for a manufacturer to make up a 2020 model year shortfall of 100 credits in the West Region Pool, the manufacturer may transfer 130 (2018 through 2020 model year) credits from the East Region Pool. No credits may be traded or transferred to the East Region pool or West Region pool from a manufacturer's California ZEV bank, or from the East Region pool or West Region pool to a manufacturer's California ZEV bank.
- c. *Reduced ZEV and TZEV Percentages for Large Volume Manufacturers.* Large volume manufacturers that have fully complied with the optional Section 177 state compliance path requirements in subdivision 1962.1(d)(5)(E)3. are allowed to meet ZEV percentage requirements and optional TZEV percentages reduced from the minimum ZEV floor percentages and TZEV percentages in subdivision 1962.2(b)(2)(E) in each Section 177 state equal to the following percentages of their sales volume determined under subdivision 1962.2(b)(1)(B):

<i>ZEVs</i>				
<i>Model Year</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>
Existing Minimum ZEV Floor	2.00%	4.00%	6.00%	8.00%
Section 177 State Adjustment for				
Optional Compliance Path	62.5%	75%	87.5%	100%
Minimum Section 177 State				
ZEV Requirement	1.25%	3.00%	5.25%	8.00%
<i>TZEVs</i>				
<i>Model Year</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>
Existing TZEV Percentage	2.50%	3.00%	3.50%	4.00%
Section 177 State Adjustment for				
Optional Compliance Path	90.00%	100%	100%	100%
New Section 177 State TZEV				
Percentage	2.25%	3.00%	3.50%	4.00%
<i>Total Percent Requirement</i>				
<i>Model Year</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>
New Total Section 177 State				
Optional Requirements <sup>1</sup>	3.50%	6.00%	8.75%	12.00%

<sup>1</sup> Intermediate volume manufacturers may meet these new total Section 177 State optional requirements entirely with TZEV credits.

i. *Trading and Transferring ZEV and TZEV Credits within West Region Pool and East Region Pool.* Manufacturers that have fully complied with the optional Section 177 state compliance path requirements in subdivision 1962.1(d)(5)(E)3. may trade or transfer 2012 and subsequent model year ZEV and TZEV credits within the West Region pool to meet the requirements in subdivision 1962.2(d)(5)(E)2.c., and will incur no premium on their credit values. For example, for a manufacturer to make up a 2019 model year shortfall of 100 credits in State X, the manufacturer may transfer 100 (2012 through 2019 model year) ZEV credits from State Y, within the West Region pool. Manufacturers that have fully complied with the optional Section 177 state compliance path requirements in subdivision 1962.1(d)(5)(E)3. may trade or transfer 2012 and subsequent model year ZEV and TZEV credits within the East Region pool to meet the requirements in subdivision 1962.2(d)(5)(E)2.c, and will incur no premium on their credit values. For example, for a manufacturer to make up a 2019 model year shortfall of 100 credits in State W, the manufacturer may transfer 100 (2012 through 2019 model year) ZEV credits from State Z, within the East Region pool.

ii. *Trading and Transferring ZEV and TZEV Credits between the West Region Pool and East Region Pool.* Manufacturers that have fully complied with the optional Section 177 state compliance path requirements in subdivision 1962.1(d)(5)(E)3. may trade or transfer 2012 and subsequent model year ZEV and TZEV credits to meet the requirements in subdivision 1962.2(d)(5)(E)2.c. between the West Region pool and the East Region pool; however, any

credits traded will incur a premium of 30% of their value. For example, in order for a manufacturer to make up a 2019 model year shortfall of 100 credits in the West Region Pool, the manufacturer may transfer 130 (2012 through 2019 model year) credits from the East Region Pool. No credits may be traded or transferred to the East Region pool or West Region pool from a manufacturer's California ZEV bank, or from the East Region pool or West Region pool to a manufacturer's California ZEV bank.

d. *Reporting Requirements.* On an annual basis, by May 1st of the calendar year following the close of a model year, each manufacturer that elects the optional Section 177 state compliance path under subdivision 1962.1(d)(5)(E)3., shall submit, in writing, to the Executive Officer and each Section 177 state a report, including an itemized list, that demonstrates the manufacturer has met the requirements of this subdivision 1962.2(d)(5)(E)2. within the East Region pool and within the West Region pool. The itemized list shall include the following:

- i. The manufacturer's total applicable volume of PCs and LDTs delivered for sale in each Section 177 state within the regional pool, as determined under subdivision 1962.2(b)(1)(B).
- ii. Make, model, credit earned, and Section 177 state where delivery for sale of TZEVs and ZEVS occurred to meet manufacturer's requirements under subdivision 1962.2(d)(5)(E)2.a, 2.b, and 2.c.

e. *Right to Request Vehicle Identification Numbers.* Upon request by the Executive Officer or a Section 177 state, each manufacturer that elects the optional Section 177 state compliance path under subdivision 1962.1(d)(5)(E)3. shall provide the vehicle identification numbers in the report required by subdivision 1962.2 (d)(5)(E)3.d.

f. *Failure to Meet Optional Section 177 State Compliance Path Requirements.* A large volume manufacturer that elects the optional Section 177 state compliance path under subdivision 1962.1(d)(5)(E)3., and does not meet the modified percentages in subdivision 1962.2(d)(5)(E)2.c. in a model year or make up their deficit within the specified time and with the specified credits allowed by subdivision 1962.2(g)(7)(A) in all Section 177 states of the applicable pool, shall be treated as subject to the total ZEV percentage requirements in section 1962.2(b) for all future model years in each Section 177 state, and the pooling provisions in subdivision 1962.2(d)(5)(E)2.c. shall not apply. Any future transfers of ZEV or TZEVS credits between Section 177 states will be prohibited.

An intermediate volume manufacturer that elects the optional Section 177 state compliance path under subdivision 1962.1(d)(5)(E)3. or subdivision 1962.2(d)(5)(E)2. but delivers fewer ZEVS than required under subdivision 1962.2(d)(5)(E)2.a. shall make up the deficit by the end of the second model year in which the manufacturer is complying as a large volume manufacturer. For example, an intermediate volume manufacturer that becomes subject to large volume manufacturer requirements in 2019 model year must deliver the number of ZEVS required by subdivision 1962.2(d)(5)(E)2.a. by June 30, 2021. The pooling provisions in subdivision 1962.2(d)(5)(E)2.b.i and b.ii. shall not apply to an intermediate volume manufacturer that fails to

provide the required amount of ZEVs under subdivision 1962.2(d)(5)(E)2.a. In that case, any future transfers of ZEV or TZEV credits within or between Section 177 states will be prohibited.

Penalties shall be calculated separately by each Section 177 state where a manufacturer fails to make up the ZEV deficits within the specified time and with the credits allowed by subdivision 1962.2(g)(7)(A).

g. The provisions of section 1962.2 shall apply to a manufacturer electing the optional Section 177 state compliance path, except as specifically modified by this subdivision 1962.2(d)(5)(E)2.

(F) NEVs. NEVs must meet the following to be eligible for 0.15 credits:

1. *Specifications.* A NEV earns credit when it meets all the following specifications:

a. *Acceleration.* The vehicle has a 0-20 mph acceleration of 6.0 seconds or less when operating with a payload of at least 332 pounds and starting with the battery at a 50% state of charge.

b. *Top Speed.* The vehicle has a minimum top speed of 20 mph when operating with a payload of at least 332 pounds and starting with the battery at a 50% state of charge. The vehicle's top speed shall not exceed 25 mph when tested in accordance with 49 CFR 571.500 (68 FR 43972, July 25, 2003).

c. *Constant Speed Range.* The vehicle has a minimum 25-mile range when operating at constant top speed with a payload of least 332 pounds and starting with the battery at 100% state of charge.

2. *Battery Requirement.* A NEV must be equipped with one or more sealed, maintenance-free batteries.

3. *Warranty Requirement.* A NEV drive train, including battery packs, must be covered for a period of at least 24 months. The first 6 months of the NEV warranty period must be covered by a full warranty; the remaining warranty period may be optional extended warranties (available for purchase) and may be prorated. If the extended warranty is prorated, the percentage of the battery pack's original value to be covered or refunded must be at least as high as the percentage of the prorated coverage period still remaining. For the purpose of this computation, the age of the battery pack must be expressed in intervals no larger than three months. Alternatively, a manufacturer may cover 50 percent of the original value of the battery pack for the full period of the extended warranty.

Prior to credit approval, the Executive Officer may request that the manufacturer provide copies of representative vehicle and battery warranties.

4. *NEV Charging Requirements.* A NEV must meet charging requirements specific in subdivision 1962.3(c).

(G) *BEVx*. A BEV<sub>x</sub> must meet the following in order to receive credit, based on its all electric UDDS Range, through subdivision 1962.2(d)(5)(A):

1. *Emissions Requirements*. BEV<sub>x</sub>s must meet all TZE<sub>V</sub> requirements, specified in subdivision 1962.2(c)(2)(A) through (D).

2. *APU Operation*. The vehicle's UDDS range after the APU first starts and enters "charge sustaining hybrid operation" must be less than or equal to the vehicle's UDDS all-electric test range prior to APU start. The vehicle's APU cannot start under any user-selectable driving mode unless the energy storage system used for traction power is fully depleted.

3. *Minimum Zero Emission Range Requirements*. BEV<sub>x</sub>s must have a minimum of 75 miles UDDS all electric range.

(e) [Reserved]

(f) [Reserved]

(g) Generation and Use of Credits; Calculation of Penalties

(1) *Introduction*. A manufacturer that produces and delivers for sale in California ZEVs or TZE<sub>V</sub>s in a given model year exceeding the manufacturer's ZEV requirement set forth in subdivision 1962.2(b) shall earn ZEV credits in accordance with this subdivision 1962.2(g).

(2) *ZEV Credit Calculations*.

(A) *Credits from ZEVs*. The amount of credits earned by a manufacturer in a given model year from ZEVs shall be expressed in units of credits, and shall be equal to the number of credits from ZEVs produced and delivered for sale in California that the manufacturer applies towards meeting the ZEV requirements, or, if applicable, requirements specified under subdivision 1962.2(d)(5)(E)1.a. for the model year subtracted from the number of ZEVs produced and delivered for sale in California by the manufacturer in the model year.

(B) *Credits from TZE<sub>V</sub>s*. The amount of credits earned by a manufacturer in a given model year from TZE<sub>V</sub>s shall be expressed in units of credits, and shall be equal to the total number of TZE<sub>V</sub>s produced and delivered for sale in California that the manufacturer applies towards meeting its ZEV requirement, or, if applicable, requirements specified under subdivision 1962.2(d)(5)(E)1.a. for the model year subtracted from the total number of ZEV allowances from TZE<sub>V</sub>s produced and delivered for sale in California by the manufacturer in the model year.

(C) *Separate Credit Accounts*. Credits from a manufacturer's ZEVs, BEV<sub>x</sub>s, TZE<sub>V</sub>s, and NEVs shall each be maintained in separate accounts.

(D) *Rounding Credits*. ZEV credits and debits shall be rounded to the nearest 1/100th only on the final credit and debit totals using the conventional rounding method.



(3) *ZEV Credits for MDVs.* Credits from ZEVs and TZEVs classified as MDVs, may be counted toward the ZEV requirement for PCs and LDTs, and included in the calculation of ZEV credits as specified in this subdivision 1962.2(g) if the manufacturer so specifies.

(4) *ZEV Credits for Advanced Technology Demonstration Programs.*

(A) [Reserved]

(B) *ZEVs.* ZEVs, including BEVxs, excluding NEVs, placed in a small or intermediate volume manufacturer's California advanced technology demonstration program for a period of two or more years, may earn ZEV credits even if the vehicle is not "delivered for sale" or registered with the California DMV. To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicles will be regularly used in applications appropriate to evaluate issues related to safety, infrastructure, fuel specifications or public education, and that for 50 percent or more of the first two years of placement the vehicle will be operated in California. Such a vehicle is eligible to receive the same credit that it would have earned if delivered for sale, and for fuel cell vehicles, placed in service. To determine vehicle credit, the model year designation for a demonstration vehicle shall be consistent with the model year designation for conventional vehicles placed in the same timeframe. Manufacturers may earn credit for up to 25 vehicles per model, per Section 177 state, per year under this subdivision 1962.2(g)(4). A manufacturer's vehicles in excess of the 25-vehicle cap will not be eligible for advanced technology demonstration program credits.

(5) *ZEV Credits for Transportation Systems.*

(A) [Reserved]

(B) [Reserved]

(C) *Cap on Use of Transportation System Credits.*

1. *ZEVs.* Transportation system credits earned or allocated by ZEVs or BEVxs pursuant to subdivision 1962.1 (g)(5), not including any credits earned by the vehicle itself, may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation in any given model year, and may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation which must be met with ZEVs, as specified in subdivision 1962.2(b)(2)(E) or, if applicable, requirements specified under subdivision 1962.2(d)(5)(E)2.a.

2. *TZEVs.* Transportation system credits earned or allocated by TZEVs pursuant to subdivision 1962.1(g)(5), not including all credits earned by the vehicle itself, may be used to satisfy up to one-tenth of the portion of a manufacturer's ZEV obligation that may be met with TZEVs, or, if applicable, the portion of a manufacturer's obligation that may be met with TZEVs specified under subdivision 1962.2(d)(5)(E)2.a. in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

(6) *Use of ZEV Credits.* A manufacturer may meet the ZEV requirements in a given model year by submitting to the Executive Officer a commensurate amount of ZEV credits, consistent with subdivision 1962.2(b). Credits in each of the categories may be used to meet the requirement for that category as well as the requirements for lesser credit earning ZEV categories, but shall not be used to meet the requirement for a greater credit earning ZEV category, except for discounted PZEV and AT PZEV credits. For example, credits produced from TZEVs may be used to comply with the portion of the requirement that may be met with credits from TZEV, but not with the portion that must be satisfied with credits from ZEVs. These credits may be earned previously by the manufacturer or acquired from another party.

(A) *Use of Discounted PZEV and AT PZEV Credits and NEV Credits.* For model years 2018 through 2025, discounted PZEV and AT PZEV credits, and NEV credits may be used to satisfy up to one-quarter of the portion of a manufacturer's requirement that can be met with credits from TZEVs, or, if applicable, the portion of a manufacturer's obligation that may be met with TZEVs specified under subdivision 1962.2(d)(5)(E)2.a. Intermediate volume manufacturers may fulfill their entire requirement with discounted PZEV and AT PZEV credits, and NEV credits in model years 2018 and 2019. These credits may be earned previously by the manufacturer or acquired from another party. Discounted PZEV and AT PZEV credits may no longer be used after model year 2025 compliance.

(B) *Use of BEVx Credits.* BEVx credits may be used to satisfy up to 50% of the portion of a manufacturer's requirement that must be met with ZEV credits.

(C) *GHG-ZEV Over Compliance Credits.*

1. *Application.* Manufacturers may apply to the Executive Officer, no later than December 31, 2016, to be eligible for this subdivision 1962.2(g)(6)(C), based on the following qualifications:

a. A manufacturer must have no model year 2017 compliance debits and no outstanding debits from all previous model year compliance with sections 1961.1 and 1961.3, or must have demonstrated compliance with the National greenhouse gas program as allowed by subdivisions 1961.1(a)(1)(A)(ii) and 1961.3(c); and

b. A manufacturer must have no model year 2017 compliance debits and no outstanding debits from all previous model year compliance with section 1962.1; and

c. A manufacturer must submit documentation of its projected product plans to show over compliance with the manufacturer's section 1961.3 requirements, or over compliance with National greenhouse gas program requirements as allowed by subdivision 1961.3(c), by at least 2.0 gCO<sub>2</sub>/mile in each model year through the entire 2018 through 2021 model year period, and its commitment to do so in each year.

2. *Credit Generation and Calculation.* Manufacturers must calculate their over compliance with section 1961.3 requirements, or over compliance with the National greenhouse gas program

requirements as allowed by subdivision 1961.3(c), for model years 2018 through 2021 based on compliance with the previous model year standard. For example, to generate credits for this subdivision 1962.2(g)(6)(C) for model year 2018, manufacturers would calculate credits based on model year 2017 compliance with section 1961.3, or over compliance with the National greenhouse gas program as allowed by subdivision 1961.3(c).

a. At least 2.0 gCO<sub>2</sub>/mile over compliance with section 1961.3, or over compliance with the National greenhouse gas program as allowed by subdivision 1961.3(c), is required in each year and the following equation must be used to calculate the amount of ZEV credits earned for purposes of this subdivision 1962.2(g)(6)(C), and:

$$\frac{[(\text{Manufacturer US PC and LDT Sales}) \times (\text{gCO}_2/\text{mile below manufacturer GHG standard for a given model year})]}{(\text{Manufacturer GHG standard for a given model year})}$$

b. Credits earned under subdivision 1961.3(a)(9), or credits earned under 40 CFR, part 86, Subpart S, §86.1866-12(a), §86.1866-12(b), or §86.1870-12, may not be included in the calculation of gCO<sub>2</sub>/mile credits for use in the above equation in subdivision a. All ZEVs included in the calculation above must include upstream emission values found in section 1961.3.

c. Banked gCO<sub>2</sub>/mile credits earned under sections 1961.1 and 1961.3, or under the National greenhouse gas program requirements as allowed by subdivision 1961.3(c), from previous model years or from other manufacturers may not be included in the calculation of gCO<sub>2</sub>/mile credits for use in the above equation in subdivision a.

3. *Use of GHG-ZEV Over Compliance Credits.* A manufacturer may use no more than the percentage enumerated in the table below to meet either the total ZEV requirement nor the portion of their ZEV requirement that must be met with ZEV credits, with credits earned under this subdivision 1962.2(g)(6)(C).

2018	2019	2020	2021
50%	50%	40%	30%

Credits earned in any given model year under this subdivision 1962.2(g)(6)(C) may only be used in the applicable model year and may not be used in any other model year.

gCO<sub>2</sub>/mile credits used to calculate GHG-ZEV over compliance credits under this provision must also be removed from the manufacturer's GHG compliance bank, and cannot be banked for future compliance toward section 1961.3, or towards compliance with the National greenhouse gas program requirements as allowed by subdivision 1961.3(c).

4. *Reporting Requirements.* Annually, manufacturers are required to submit calculations of credits for this subdivision 1962.2(g)(6)(C) for the model year, any remaining credits/debits from previous model years under section 1961.3 or under the National greenhouse gas program requirements as allowed by subdivision 1961.3(c), and projected credits/debits for future years

through 2021 under section 1961.3 or under the National greenhouse gas program requirements as allowed by subdivision 1961.3(c) and this subdivision 1962.2(g)(6)(C).

If a manufacturer, who has been granted the ability to generate credits under this subdivision 1962.2(g)(6)(C), fails to over comply by at least 2.0 gCO<sub>2</sub>/mile in any one year, the manufacturer will be subject to the full ZEV requirements for the model year and future model years, and will not be able to earn credits for any other model year under this subdivision 1962.2(g)(6)(C).

(D) *Cap on Use of Specified Credits.* For 2018 and subsequent model year, manufacturers may only meet up to 50% of the portion of their requirement that must be met with credits from ZEVs from a combination of credits earned under subsections 1962.1(d)(5)(G), 1962.2 (d)(5)(G), 1962.1(g)(5), or 1962.2(g)(6)(C). Individual caps for credits earned under subsections 1962.1(d)(5)(G), 1962.2 (d)(5)(G), 1962.1(g)(5), or 1962.2(g)(6)(C) remain in effect in any given model year.

(7) Requirement to Make Up a ZEV Deficit.

(A) *General.* A manufacturer that produces and delivers for sale in California fewer ZEVs or TZEVs than required to meet its ZEV credit obligation in a given model year must make up the deficit by the next model year by submitting a commensurate amount of ZEV credits to the Executive Officer. An intermediate volume manufacturer may request, and the Executive Officer may grant, up to three consecutive model years to make up a credit deficit for a given model year provided that: (1) it has delivered for sale in California ZEVs or TZEVs within that model year, and (2) it submits a plan to the Executive Officer, as part of the request, demonstrating how it will make up the credit deficit within the requested time period. The amount of ZEV credits required to be submitted shall be calculated by [i] adding the number of credits from ZEVs produced and delivered for sale in California by the manufacturer for the model year to the number of credits from TZEVs produced and delivered for sale in California by the manufacturer for the model year (for a LVM, not to exceed that permitted under subdivision 1962.2(b)(2)), and [ii] subtracting that total from the number of credits required to be produced and delivered for sale in California by the manufacturer for the model year. BEVx, TZEV, NEV, or converted AT PZEV and PZEV credits are not allowed to be used to fulfill a manufacturer's ZEV deficit; only credits from ZEVs may be used to fulfill a large volume manufacturer's ZEV deficit. Intermediate volume manufacturers may only use ZEV and TZEV credits to fulfill a manufacturer's ZEV deficit.

(8) *Penalty for Failure to Meet ZEV Requirements.* Any manufacturer that fails to produce and deliver for sale in California the required number of ZEVs and submit an appropriate amount of credits and does not make up ZEV deficits within the specified time allowed by subdivision 1962.2(g)(7)(A) shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer that sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the ZEV deficit is not balanced by the end of the specified time allowed by subdivision 1962.2(g)(7)(A). For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's standards shall be equal to the manufacturer's credit deficit, rounded to the nearest 1/100th, calculated according to the following equation, provided that the percentage of a manufacturer's ZEV requirement for a given model year

that may be satisfied with TZEVs or credit from such vehicles may not exceed the percentages permitted under subdivision 1962.2(b)(2):

(No. of ZEV credits required to be generated for the model year) - (Amount of credits submitted for compliance for the model year)

(h) *Test Procedures.*

(1) *Determining Compliance.* The certification requirements and test procedures for determining compliance with this section 1962.2 are set forth in “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” adopted March 22, 2012, and last amended September 3, 2015, which is incorporated herein by reference.

(2) *NEV Compliance.* The test procedures for determining compliance with subdivision 1962.1(d)(5)(F)1. are set forth in ETA-NTP002 (revision 3) “Implementation of SAE Standard J1666 May 93: Electric Vehicle Acceleration, Gradeability, and Deceleration Test Procedure” (December 1, 2004), and ETA-NTP004 (revision 3) “Electric Vehicle Constant Speed Range Tests” (February 1, 2008), both of which are incorporated by reference herein.

(i) *ZEV-Specific Definitions.* The following definitions apply to this section 1962.2.

(1) “Auxiliary power unit” or “APU” means any device that provides electrical or mechanical energy, meeting the requirements of subdivision 1962.2(c)(2), to a BEVx, after the zero emission range has been fully depleted. A fuel fired heater does not qualify under this definition for an APU.

(2) “Charge depletion range actual” or “ $R_{cda}$ ” means the distance achieved by a hybrid electric vehicle on the urban driving cycle at the point when the zero-emission energy storage device is depleted of off-vehicle charge and regenerative braking derived energy.

(3) “Conventional rounding method” means to increase the last digit to be retained when the following digit is five or greater. Retain the last digit as is when the following digit is four or less.

(4) “Discounted PZEV and AT PZEV credits” means credits earned under section 1962 and 1962.1 by delivery for sale of PZEVs and AT PZEVs, discounted according to subdivision 1962.1(g)(2)(F).

(5) “East Region pool” means the combination of Section 177 states east of the Mississippi River.

(6) “Energy storage device” means a storage device able to provide the minimum power and energy storage capability to enable engine stop/start capability, traction boost, regenerative braking, and (nominal) charge sustaining mode driving capability. In the case of TZEVs, a minimum range threshold relative to certified, new-vehicle range capability is not specified or required.

(7) “Hydrogen fuel cell vehicle” means a ZEV that is fueled primarily by hydrogen, but may also have off-vehicle charge capability.

(8) “Hydrogen internal combustion engine vehicle” means a TZEV that is fueled exclusively by hydrogen.

(9) “Majority ownership situations” means when one manufacturer owns another manufacturer more than 33.4%, for determination of size under CCR Section 1900.

(10) “Manufacturer US PC and LDT Sales” means a manufacturer's total passenger car and light duty truck (up to 8,500 pounds loaded vehicle weight) sales sold in the United States of America in a given model year.

(11) “Neighborhood electric vehicle” or “NEV” means a motor vehicle that meets the definition of Low-Speed Vehicle either in section 385.5 of the Vehicle Code or in 49 CFR 571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.

(12) “Placed in service” means having been sold or leased to an end-user and not to a dealer or other distribution chain entity, and having been individually registered for on-road use by the California DMV.

(13) “Proportional value” means the ratio of a manufacturer's California applicable sales volume to the manufacturer's Section 177 state applicable sales volume. In any given model year, the same applicable sales volume calculation method must be used to calculate proportional value.

(14) “Range Extended Battery Electric Vehicle” or “BEVx” means a vehicle powered predominantly by a zero emission energy storage device, able to drive the vehicle for more than 75 all-electric miles, and also equipped with a backup APU, which does not operate until the energy storage device is fully depleted, and meeting requirements in subdivision 1962.2(d)(5)(G).

(15) “Section 177 state” means a state that is administering the California ZEV requirements pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

(16) “Transitional zero emission vehicle” or “TZEV” means a vehicle that meets all the criteria of subdivision 1962.2(c)(2) and qualifies for an allowance in subdivision 1962.2(c)(3)(A) or (E).

(17) “West Region pool” means the combination of Section 177 states west of the Mississippi River.

(18) “Zero emission vehicle” or “ZEV” means a vehicle that produces zero exhaust emissions of any criteria pollutant (or precursor pollutant) or greenhouse gas under any possible operational modes or conditions.

(19) “Zero emission vehicle fuel” means a fuel that provides traction energy in on-road ZEVs. Examples of current technology ZEV fuels include electricity, hydrogen, and compressed air.

(j) *Abbreviations.* The following abbreviations are used in this section 1962.2:

- “AER” means all-electric range.
- “APU” means auxiliary power unit.
- “AT PZEV” means advanced technology partial zero-emission vehicle.
- “BEVx” means range extended battery electric vehicle.
- “CFR” means Code of Federal Regulations.
- “CO<sub>2</sub>” means carbon dioxide.
- “DMV” means the California Department of Motor Vehicles.
- “EAER” means equivalent all-electric range.
- “FR” means Federal Register.
- “g” means grams.
- “HEV” means hybrid-electric vehicle.
- “LDT” means light-duty truck.
- “LDT1” means a light-truck with a loaded vehicle weight of 0-3750 pounds.
- “LDT2” means a “LEV II” light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight of 8500 pounds, or a “LEV I” light-duty truck with a loaded vehicle weight of 3751-5750 pounds.
- “LVM” means large volume manufacturer.
- “MDV” means medium-duty vehicle.
- “NMOG” means non-methane organic gases, or the total mass of oxygenated and non-oxygenated hydrocarbon emissions.
- “NEV” means neighborhood electric vehicle.
- “NO<sub>x</sub>” means oxides of nitrogen.
- “PC” means passenger car.
- “PZEV” means partial allowance zero-emission vehicle
- “SAE” means Society of Automotive Engineers.
- “SULEV” means super-ultra-low-emission-vehicle.
- “TZEV” means transitional zero emission vehicle.
- “UDDS” means urban dynamometer driving cycle.
- “US” means United States of America.
- “US06” means the US06 Supplemental Federal Test Procedure
- “VMT” means vehicle miles traveled.
- “ZEV” means zero-emission vehicle.

(k) *Severability.* Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of this article remains in full force and effect.

(l) *Public Disclosure.* Records in the Board's possession for the vehicles subject to the requirements of section 1962.2 shall be subject to disclosure as public records as follows:

- (1) Each manufacturer's annual production data and the corresponding credits per vehicle earned for ZEVs and TZEVs for the 2018 and subsequent model years; and

(2) Each manufacturer's annual credit balances for 2018 and subsequent years for:

(A) Each type of vehicle: ZEV (minus NEV), BEV<sub>x</sub>, NEV, TZEV, and discounted PZEV and AT PZEV credits; and

(B) Advanced technology demonstration programs; and

(C) Transportation systems; and

(D) Credits earned under section 1962.2(d)(5)(A), including credits acquired from, or transferred to another party, and the parties themselves.

Note: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 38562, 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43018.5, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43204 and 43205.5, Health and Safety Code.

### HISTORY

1. Renumbering of former section 1962.1 to new section 1962.2 filed 3-18-2009; operative 4-17-2009 (Register 2009, No. 12).
2. Renumbering of former section 1962.2 to section 1962.3 and new section 1962.2 filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
3. Amendment of subsections (c), (c)(2)(B), (c)(3)(A), (c)(3)(A)1., (g)(6)(C)1.a.-c. and (g)(6)(C)2.-(g)(6)(C)4., repealer of subsection (g)(6)(C)5. and amendment of subsection (h)(1) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).
4. Amendment of subsections (c)(3)(A)-(c)(3)(A)1., subsections within subsections (d) and (g) and subsection (h)(1) filed 7-10-2014; operative 7-10-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 28).
5. Amendment of subsection (h)(1) filed 10-8-2015; operative 10-8-2015 pursuant to Government Code section 11343.4(b)(3) (Register 2015, No. 41).
6. Amendment of subsections (b)(7)-(b)(7)(A), (c)(3)(A)-(c)(3)(A)1., redesignation of former subsection (d)(5)(E) as new subsection (d)(5)(E)1., subsection renumbering, new subsections (d)(5)(E)2.a.-(d)(5)(E)2.b.ii., subsection relettering and amendment of newly designated subsections (d)(5)(E)c.-g., (g)(7)(A), (h)(1) and (i)(16) filed 10-12-2015; operative 1-1-2016 (Register 2015, No. 42).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1962.2, 13 CA ADC § 1962.2



### **Section 1962.3. Electric Vehicle Charging Requirements.**

(a) *Applicability.* This section applies to:

(1) all battery electric vehicles, range extended battery electric vehicles, except for model year 2006 through 2013 neighborhood electric vehicles, that qualify for ZEV credit under section 1962.1 and 1962.2; and

(2) all hybrid electric vehicles that are capable of being recharged by a battery charger that transfers energy from the electricity grid to the vehicle for purposes of recharging the vehicle traction battery.

(b) *Definitions.*

(1) The definitions in section 1962.1 and 1962.2 apply to this section.

(c) *Requirements.*

(1) Beginning with the 2006 model year, all vehicles identified in subdivision (a) must be equipped with a conductive charger inlet and charging system which meets all the specifications applicable to AC Level 1 and Level 2 charging contained in Society of Automotive Engineers (SAE) Surface Vehicle Recommended Practice SAE J1772 REV JAN 2010, SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charger Coupler, which is incorporated herein by reference. All such vehicles must also be equipped with an on-board charger with a minimum output of 3.3 kilowatts, or, sufficient power to enable a complete charge in less than 4 hours.

(2) A manufacturer may apply to the Executive Officer for approval to use an alternative to the AC inlet described in subdivision (c)(1), provided that the following conditions are met:

(A) each vehicle is supplied with a rigid adaptor that would enable the vehicle to meet all of the remaining system and on-board charger requirements described in subdivision (c)(1); and

(B) the rigid adaptor and alternative inlet must be tested and approved by a Nationally Recognized Testing Laboratory (NRTL).

Note: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 38562, 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43018.5, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43204 and 43205.5, Health and Safety Code.

#### **HISTORY**

1. Renumbering of former section 1962.2 to new section 1962.3, including amendment of section and Note, filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1962.3, 13 CA ADC § 1962.3

## **Section 1965. Emission Control, Smog Index, and Environmental Performance Labels - 1979 and Subsequent Model-Year Motor Vehicles.**

In addition to all other requirements, emission control labels are required by the California certification procedures contained in the “California Motor Vehicle Emission Control and Smog Index Label Specifications for 1978 through 2003 Model Year Motorcycles, Light-, Medium- And Heavy-Duty Engines And Vehicles,” adopted March 1, 1978, as last amended September 5, 2003, which is incorporated herein by reference, the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty trucks and Medium-Duty Vehicles,” incorporated by reference in §1961(d), the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” incorporated by reference in §1961.2(d), the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles,” incorporated by reference in §1956.8(b), the “California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes,” incorporated by reference in §1956.8(b) and (d), the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines,” incorporated by reference in §1956.8(d), and the “California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles,” incorporated by reference in title 17, CCR, §95663(d).

Smog index labels for passenger cars and light-duty trucks shall conform to the “California Smog Index Label Specifications for 2004 Through 2009 Model Year Passenger Cars and Light-Duty Trucks,” adopted September 5, 2003, as last amended May 2, 2008, which is incorporated herein by reference. Environmental Performance labels for passenger cars, light-duty trucks, and medium-duty passenger vehicles shall conform to the “California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles,” adopted May 2, 2008, as last amended September 2, 2015, which is incorporated herein by reference. Environmental Performance labels for medium-duty vehicles, except medium-duty passenger vehicles, shall conform to the “California Environmental Performance Label Specifications for 2021 and Subsequent Model Year Medium-Duty Vehicles, Except Medium-Duty Passenger Vehicles,” adopted December 19, 2018, which is incorporated herein by reference. Motorcycles shall meet the requirements of Title 40 Code of Federal Regulations section 86.413-78, as last amended October 28, 1977, which is incorporated herein by reference.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018, 43101, 43104, 43105, 43200 and 43200.1, Health and Safety Code. Reference: Sections 39002, 39003, 43000, 43013, 43018.5, 43100, 43101, 43102, 43104, 43107, 43200 and 43200.1, Health and Safety Code.

### **HISTORY**

1. Amendment filed 6-20-83; effective upon filing pursuant to Government Code section 11346.2(d) (Register 83, No. 26).
2. Amendment filed 1-24-85; effective thirtieth day thereafter (Register 85, No. 4).
3. Amendment filed 5-15-85; effective thirtieth day thereafter (Register 85, No. 20).
4. Amendment filed 9-15-86; effective thirtieth day thereafter (Register 86, No. 38).
5. Amendment filed 6-6-88; operative 6-6-88 pursuant to Government Code section 11346.2(d) (Register 88, No. 25).
6. Amendment filed 8-22-88; operative 9-21-88 (Register 88, No. 39).

7. Amendment filed 2-21-90; operative 3-23-90 (Register 90, No. 8).
8. Amendment filed 6-14-90; effective 7-14-90 (Register 90, No. 33).
9. Amendment filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
10. Amendment filed 5-12-94; operative 6-13-94 (Register 94, No. 19).
11. Amendment filed 12-14-95; operative 1-13-96 (Register 95, No. 50).
12. Amendment of section heading, section and Note filed 9-23-96; operative 10-23-96 (Register 96, No. 39).
13. Amendment filed 4-15-99; operative 5-15-99 (Register 99, No. 16).
14. Amendment filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
15. Amendment filed 11-22-99; operative 12-22-99 (Register 99, No. 48).
16. Amendment filed 1-23-2001; operative 1-23-2001 pursuant to Government Code section 11343.4(c) (Register 2001, No. 4).
17. Amendment filed 11-4-2003; operative 12-4-2003 (Register 2003, No. 45).
18. Amendment of incorporated document California Smog Index Label Specifications for 2004 Through 2009 Model Year Passenger Cars and Light-Duty Trucks, incorporation of new document California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles and amendment of section heading, section and Note filed 6-16-2008; operative 6-16-2008 pursuant to Government Code section 11343.4 (Register 2008, No. 25).
19. Amendment filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
20. Amendment filed 10-8-2015; operative 10-8-2015 pursuant to Government Code section 11343.4(b)(3) (Register 2015, No. 41).
21. Amendment of section and Note filed 2-7-2019; operative 4-1-2019 (Register 2019, No. 6).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1965, 13 CA ADC § 1965

**Section 1968.2. Malfunction and Diagnostic System for 1988 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles with Three-Way Catalyst Systems and Feedback Control.**

(a) All 1988 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles equipped with a three-way catalyst system and feedback control shall be equipped with a means of informing the vehicle operator of the malfunction of computer-sensed emission-related components, and of the on-board computer processor, and of the malfunction of the emission-related functioning of the fuel metering device and EGR system on vehicles so equipped, and which provides for on-board diagnosis of the likely area of the malfunction without the aid of any external device. The system shall include a means of informing the vehicle operator, upon initiation of engine starting, that it is functioning properly. No malfunction and diagnostic system shall be required for malfunctions which would significantly impair vehicle driveability or prevent engine starting.

(b) This section shall be implemented as specified in this subsection or by any means determined by the executive officer to meet the requirements of this section:

The vehicles shall be equipped with a malfunction indicator light and an on-board self-diagnostic system. The on-board computer processor shall interrogate input parameters from computer-sensed emission-related components and shall also interrogate the functioning of the fuel metering device and of the EGR system on vehicles so equipped. Upon detection of a malfunction of any such component, device, or system, the computer processor shall cause the malfunction indicator light to illuminate. An on-board computer processor malfunction shall also cause the malfunction indicator light to illuminate. In the case of any such component, device or system whose malfunction would significantly impair vehicle driveability or prevent engine starting, no malfunction indication or diagnostic code shall be required. The indicator light shall also illuminate in the engine-run key position before engine cranking to indicate that the malfunction indicator light is functioning. The self-diagnostic system shall provide an on-board means of identifying, without the aid of any external device, the likely area responsible for the detected malfunction when the vehicle is serviced. The malfunction indicator light shall be located on the instrument panel and shall when illuminated, display the phrase "Check Engine" or "Service Engine Soon" or may display such other phrase determined by the executive officer to be likely to cause a vehicle owner to seek corrective action.

(c) For purposes of this section:

(1) A "computer-sensed emissions-related component of the three-way catalyst emission control system" means a component which provides emission control system input to the on-board computer processor.

(2) "Malfunction" means the partial or total failure of one or more computer-sensed emission-related components or the on-board computer processor, or of the emission-related functioning of a fuel metering device or EGR system to a degree which would likely cause the emissions of an average certification vehicle with the failure or failures, individually or in combination, to exceed the emissions standards applicable pursuant to Subchapter 1 (commencing with Section 1900), Chapter 3 of Title 13.

(d) The executive officer shall grant an extension for compliance with the requirements of this section with respect to a specific vehicle model or engine family if a manufacturer demonstrates that it cannot modify a present electronic control system by the 1988 model year because major design system changes not consistent with the manufacturer's projected changeover schedule would be needed to comply with the provisions of this regulation. The period of extension shall not exceed that necessary to enable modification of the electronic system in accordance with the manufacturer's projected changeover schedule or three years, whichever first occurs. Any manufacturer requesting an extension shall, no later than July 1, 1986, submit to the executive officer of the state board an application setting forth the required demonstration and specifying the period for which the extension is requested.

Note: Authority cited: Sections 39600, 39601 and 43013, Health and Safety Code. Reference: Sections 39002, 39003, 43000, 43013, 43100, 43101, 43102, 43104, 43105 and 43204, Health and Safety Code.

### **HISTORY**

1. New section filed 11-15-85; effective thirtieth day thereafter (Register 85, No. 46).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1968, 13 CA ADC § 1968

**Section 1968.5. Enforcement of Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines.**

(a) General

(1) Applicability.

(A) These procedures shall be used to assure compliance with the requirements of title 13, California Code of Regulations (CCR) section 1968.2 for all 2004 and subsequent model year passenger cars, light-duty trucks, medium-duty vehicles, and engines certified on an engine dynamometer for use in medium-duty vehicles (the classifications of which shall jointly be referred to for purposes of this regulation as vehicles) equipped with OBD II systems that have been certified for sale in California.

(B) Vehicles manufactured prior to the 2004 model year are covered by the general enforcement and penalty provisions of the Health and Safety Code, and the specific provisions of title 13, CCR sections 1968.1 and 2111 through 2149.

(2) Purpose.

The purpose of this section is to establish the enforcement protocol that shall be used by the ARB to assure that vehicles certified for sale in California are equipped with OBD II systems that properly function and meet the purposes and requirements of title 13, CCR section 1968.2.

(3) Definitions.

The definitions applicable to these rules include those set forth in Health and Safety Code section 39010 et seq. and in title 13, CCR sections 1900(b) and 1968.2(c), which are incorporated by reference herein. The following definitions are specifically applicable to section 1968.5 and take precedence over any contrary definitions.

“Days”, when computing any period of time, unless otherwise noted, means normal working days that a manufacturer is open for business.

“Executive Officer” means the Executive Officer of the Air Resources Board or his or her authorized representative.

“Influenced OBD II-Related Recall” means an inspection, repair, adjustment, or modification program initiated and conducted by a manufacturer as a result of enforcement testing conducted by the ARB or any other information for the purpose of correcting any nonconforming OBD II system for which direct notification of vehicle owners is necessary.

“Major Monitor” means those monitors covered by the requirements set forth in title 13, CCR sections 1968.2(e)(1.0) through (e)(8.0), (e)(11.0) through (e)(14.0), (e)(16.0), (f)(1.0) through (f)(9), (f)(12), (f)(13), (f)(14), and (f)(16).

“Motor Vehicle Class” means a group or set of vehicles subject to enforcement testing that have been determined by the Executive Officer to share common or similar hardware, software, OBD II monitoring strategy, or emission control strategy.

“Motor Vehicle Manufacturer” means the manufacturer granted certification to sell motor vehicles in the State of California.

“Nonconforming OBD II System” means an OBD II system on a production vehicle that has been determined not to comply with the requirements of title 13, CCR section 1968.2. For purposes of section 1968.5, a motor vehicle class shall be considered nonconforming irrespective of whether vehicles in the motor vehicle class, on average, meet applicable emission standards (e.g., exhaust emission standards defined in title 13, CCR section 1960.1, evaporative emission standards defined in title 13, CCR section 1976).

“OBD II Emission Testing” refers to testing conducted to determine compliance with the malfunction criteria in title 13, CCR sections 1968.2(e) and (f) that are based on a multiple of, or an additive to, a tailpipe emission standard or an absolute measurement from an applicable emission test cycle (e.g., 1.5 times the applicable FTP emission standards, PM standard plus 0.02 g/bhp-hr, PM level of 0.03 g/bhp-hr as measured from an applicable emission test cycle).

“OBD II Ratio Testing” refers to testing conducted to determine compliance with the required in-use monitor performance ratio in title 13, CCR section 1968.2(d)(3.2.1).

“Ordered OBD II-Related Recall” means an inspection, repair, adjustment, or modification program required by the ARB to be conducted by the manufacturer to correct any nonconforming OBD II system for which direct notification of vehicle owners is necessary.

“Quarterly Reports” refer to the following calendar periods: January 1 - March 31; April 1 - June 30; July 1 - September 30; October 1 - December 31.

“Test Sample Group” means a group of production vehicles in a designated motor vehicle class that are equipped with OBD II systems and are selected and tested as part of the ARB enforcement testing program set forth in section (b).

“Voluntary OBD II-Related Recall” means an inspection, repair, adjustment, or modification program voluntarily initiated and conducted by a manufacturer to correct any nonconforming OBD II system for which direct notification of vehicle owners is necessary.

(b) *Testing Purposes*

(1) *Purpose.*

To assure that OBD II systems on production motor vehicles comply with the requirements of title 13, CCR section 1968.2, the ARB may periodically evaluate vehicles from a motor vehicle class.

(2) *Preliminary Testing and Evaluation.*

(A) As part of his or her evaluation of vehicles to determine compliance with the requirements of title 13, CCR section 1968.2, the Executive Officer may routinely conduct testing on any production vehicles that have been certified for sale in California.

(B) Based upon such testing or any other information, including data from California or other State Inspection and Maintenance (I/M) stations, warranty information reports, and field information reports, the Executive Officer may conduct enforcement testing pursuant to sections (b)(3) through (5) below.

(3) *Vehicle Selection for Enforcement Testing.*

(A) *Determining the Motor Vehicle Class.*

(i) Upon deciding to conduct enforcement testing, the Executive Officer shall determine the motor vehicle class to be tested. In determining the scope of the motor vehicle class to be tested, the Executive Officer shall consider the similarities and differences in the OBD II systems of potentially affected vehicles. Among other things, the Executive Officer shall consider whether vehicles share similar computer hardware and software, calibrations, or OBD II monitoring and emission control strategies.

(ii) The default motor vehicle class is the test group or OBD II group used by the manufacturer to certify the vehicles to be tested. However, upon concluding that a subgroup of vehicles differs from other vehicles in the identified test group or OBD II group and that a reasonable basis exists to believe that the differences may directly impact the type of testing that will be performed, the Executive Officer may determine that a subgroup of the test group or OBD II group is the appropriate motor vehicle class for testing.

(iii) Similarly, upon concluding that vehicles from several OBD II groups (which may include OBD II groups from different model years) share such common characteristics that a reasonable basis exists to believe that results of enforcement testing may be applicable to a motor vehicle class larger than a specific test group or OBD II group, the Executive Officer may determine that the appropriate motor vehicle class includes more than one test group or OBD II group.

(iv) Except for testing to determine if an OBD II system has been designed to deactivate based on age and/or mileage (title 13, CCR section 1968.2 (d)(1.3)), the Executive Officer may not conduct testing of a motor vehicle class whose vehicles, on average, exceed the defined full useful life of the motor vehicle class. For purposes of the determination of this average, the Executive Officer shall use the accrual rates appropriate for vehicles in the motor vehicle class as defined in EMFAC2000 "Public Meeting to Consider Approval of Revisions to the State's On-Road Motor Vehicle Emissions



Inventory: Technical Support Document, Section 7.1, 'Estimation of Average Mileage Accrual Rates from Smog Check Data,'" May 2000, incorporated by reference.

(B) *Size of Test Sample Group.* After determining the motor vehicle class to be tested, the Executive Officer shall determine the appropriate number of vehicles to include in the test sample group for enforcement testing in accordance with the following guidelines:

(i) For OBD II emission testing, the Executive Officer shall follow the provisions of title 13, CCR section 2137 regarding test sample size. In accordance with section 2137, the Executive Officer shall test 10 vehicles that have been procured following the protocol of section (b)(3)(C) below and meet the selection criteria of section (b)(3)(D)(i) below to determine the emissions characteristics of the motor vehicle class being tested.

(ii) For OBD II ratio testing, the Executive Officer shall collect data from a test sample group of 30 vehicles that have been procured following the protocol of section (b)(3)(C) below and meet the selection criteria of section (b)(3)(D)(ii) below to determine the in-use OBD II monitoring performance of the motor vehicle class being tested.

(iii) In determining compliance with any other requirements of title 13, CCR section 1968.2 (e.g., diagnostic connector location, communication protocol standards, MIL illumination protocol, evaporative system diagnostics, etc.), the Executive Officer shall determine, on a case by case basis, the number of vehicles meeting the selection criteria of section (b)(3)(D)(iii) needed to assure that the results of such testing may be reasonably inferred to the motor vehicle class. The Executive Officer's determination shall be based upon the nature of the noncompliance and the scope of the motor vehicle class. The test sample group could be as few as two test vehicles.

(C) Protocol for Procuring Vehicles for Test Sample Group.

(i) For OBD II emission and ratio testing, the Executive Officer shall procure vehicles consistent with the procurement process followed by the Executive Officer under title 13, CCR section 2137 (e.g., obtaining lists of all vehicles in the motor vehicle class within a specified geographical area, mailing postcards soliciting participation of vehicles within the specified area, selecting vehicles from those that responded to the solicitation, inspecting selected vehicles to determine whether appropriate to include in sample group, etc.). In selecting vehicles for OBD II emission testing, the Executive Officer shall include only vehicles meeting the criteria set forth in section (b)(3)(D)(i) below. For OBD II ratio testing, the Executive Officer shall include only vehicles meeting the criteria set forth in section (b)(3)(D)(ii) below.

(ii) For all other testing, the Executive Officer shall, on a case by case basis, determine the appropriate manner for procuring vehicles. In making his or her determination, the Executive Officer shall consider the nature of the noncompliance and the scope of the motor vehicle class. If the Executive Officer concludes that a reasonable basis exists to believe that a vehicle operator's driving or maintenance habits would not substantially impact test results to determine noncompliance, he or she may procure vehicle(s) by any means that assures effective collection and testing of vehicles (e.g.,

rental car agencies, fleet vehicles, etc.). In all cases, however, the selection process must ensure proper selection of vehicles in accord with section (b)(3)(D)(iii) below.

(D) Vehicles to be included in a Test Sample Group.

(i) In selecting vehicles to be included in a test sample group for enforcement OBD II emission testing, the Executive Officer shall include only vehicles that:

- a. Are certified to the requirements of title 13, CCR section 1968.2 and California exhaust emission standards.
- b. Are registered for operation in California.
- c. Have mileage that is equal to or less than 75 percent of the certified full useful life mileage and have an age of less than the certified full useful life age for the subject vehicles.
- d. Have not been tampered with or equipped with add-on or modified parts that would cause the OBD II system not to comply with the requirements of title 13, CCR section 1968.2 or would have a permanent effect on exhaust emission performance.
- e. Have not been subjected to abuse (e.g., racing, overloading, misfueling) neglect, improper maintenance, or other factors that would cause the OBD II system not to comply with the requirements of title 13, CCR section 1968.2 or would have a permanent effect on exhaust emission performance.
- f. Have no detected or known malfunction(s) that would affect the performance of the OBD II system and are unrelated to the monitor or system being evaluated. At its discretion, the ARB may elect to repair a vehicle with a detected or known malfunction and then include the vehicle in the test sample group.
- g. Have had no major repair to the engine or major repair of the vehicle resulting from a collision.
- h. Have no problem that might jeopardize the safety of laboratory personnel.

(ii) In selecting vehicles to be included in a test sample group for enforcement OBD II ratio testing, the Executive Officer shall include only vehicles that:

- a. Are certified to the requirements of title 13, CCR section 1968.2.
- b. Have collected sufficient vehicle operation data for the monitor to be tested. For monitors required to meet the in-use monitor performance ratio and to track and report ratio data pursuant to title 13, CCR section 1968.2(d)(3.2), sufficient vehicle operation data shall mean the denominator meets the criteria set forth in sections (b)(3)(D)(ii)1. through 3. below. For monitors required to meet the in-use monitor performance ratio but not required to track and report ratio

data pursuant to title 13, CCR section 1968.2(d)(3.2), sufficient vehicle operation data shall mean that vehicles that have a denominator that meets the criteria set forth in sections (b)(3)(D)(ii)1. through 3. below after undergoing testing as set forth in section (b)(4)(C)(ii) below. Specifically, the denominator, as defined in title 13, CCR section 1968.2(d)(4.3), for the monitor to be tested must have a value equal to or greater than:

1. 150 for evaporative system monitors, secondary air system monitors, and monitors utilizing a denominator incremented in accordance with title 13, CCR sections 1968.2(d)(4.3.2)(E) or (F) (e.g., cold start monitors, air conditioning system monitors, etc.) and not covered in section (b)(3)(D)(ii)2. below, or
2. 50 for PM filter monitors, NMHC converting catalyst monitors, PM sensor monitors, and PM sensor heater monitors utilizing a denominator incremented in accordance with title 13, CCR section 1968.2(d)(4.3.2)(F), (G), (H), or (I), or
3. 300 for catalyst, oxygen sensor, EGR, VVT, and all other component monitors not covered in sections (b)(3)(D)(ii)1. and 2. above.

c. Have not been tampered with or equipped with add-on or modified parts that would cause the OBD II system not to comply with the requirements of title 13, CCR section 1968.2.

d. Have mileage and age that are less than or equal to the certified full useful life mileage and age for the subject vehicles.

(iii) In selecting vehicles to be included in a test sample group for enforcement testing of any other requirement of title 13, CCR section 1968.2 (not covered by sections (b)(3)(D)(i) or (ii) above), the Executive Officer shall include only vehicles that:

a. Are certified to the requirements of title 13, CCR section 1968.2.

b. Have not been tampered with or equipped with add-on or modified parts that would cause the OBD II system not to comply with the requirements of title 13, CCR section 1968.2.

c. Have no detected or known malfunction(s) that would affect the performance of the OBD II system and are unrelated to the monitor or system being evaluated. At its discretion, the ARB may elect to repair a vehicle with a detected or known malfunction and then include the vehicle in the test sample group.

d. Have mileage and age that are less than or equal to the certified full useful life mileage and age for the subject vehicles.

(iv) If the Executive Officer discovers, by either evidence presented by the manufacturer as provided in section (b)(7) or on his or her own, that a vehicle fails to meet one or more of the applicable criteria of section (b)(3)(D)(i) through (iii), the Executive Officer shall remove the vehicle

from the test sample group. The Executive Officer may replace any vehicle removed with an additional vehicle selected in accordance with sections (b)(3)(C) and (D) above. Test results relying on data from the removed vehicle shall be recalculated without using the data from the removed vehicle.

(4) Enforcement Testing Procedures.

(A) Prior to conducting any testing under section (b)(4), the Executive Officer may replace components monitored by the OBD II system with components that are sufficiently deteriorated or simulated to cause malfunctions that exceed the malfunction criteria established pursuant to title 13, CCR sections 1968.2(e) and (f) in a properly operating system. The Executive Officer may not use components deteriorated or simulated to represent failure modes that could not have been foreseen to occur by the manufacturer (e.g., the use of leaded gasoline in an unleaded vehicle, etc.). Upon request by the Executive Officer, the manufacturer shall make available all test equipment (e.g., malfunction simulators, deteriorated “threshold” components, etc.) necessary to duplicate testing done by the manufacturer to determine the malfunction criteria used for major monitors subject to OBD II emission testing.

(B) OBD II Emission Testing. After the test sample group has been selected and procured, the Executive Officer may perform one or more of the following tests:

(i) Emission testing with the test procedures used by the Executive Officer for in-use testing of compliance with exhaust emission standards in accordance with title 13, CCR sections 2138 and 2139.

(ii) On-road or dynamometer testing with the vehicle being driven in a manner that reasonably ensures that all of the monitoring conditions disclosed in the manufacturer's certification application for the tested monitor are encountered.

(C) OBD II Ratio Testing.

(i) For OBD II ratio testing of monitors required to meet the in-use monitor performance ratio and to track and report ratio data pursuant to title 13, CCR section 1968.2(d)(3.2), after the test sample group has been selected and procured, the Executive Officer shall download the data from monitors required to track and report such data.

(ii) For OBD II ratio testing of monitors required to meet the in-use monitor performance ratio but not required to track and report ratio data pursuant to title 13, CCR section 1968.2(d)(3.2), after the test sample group has been selected and procured, the Executive Officer shall collect data by installing instrumentation or data-logging equipment on the vehicles. After installation of the equipment, the vehicles shall be returned to the vehicle owner/operator to continue to operate the vehicle until the minimum denominator criteria (see section (b)(3)(D)(ii)b.) are satisfied. The Executive Officer shall then calculate the ratio from the data collected in a manner that will allow the

Executive Officer to effectively determine the in-use monitor performance ratio in accordance with the requirements of title 13, CCR section 1968.2(d)(3.2).

(D) *Testing for compliance with any other requirement of title 13, CCR section 1968.2.* After the test sample group has been selected and procured, the Executive Officer may perform one or more of the following tests:

(i) Emission testing on the applicable FTP cycle or other applicable emission test cycle used for measuring exhaust or evaporative emissions.

(ii) On-road or dynamometer testing with the vehicle being driven in a manner that reasonably ensures that all of the monitoring conditions disclosed in the manufacturer's certification application for the tested monitor are encountered.

(iii) Any other testing determined to be necessary by the Executive Officer. This may include, but is not limited to, the use of special test equipment to verify compliance with standardization requirements.

(5) *Additional Testing.*

(A) Based upon testing of the motor vehicle class in section (b)(4) above and after review of all evidence available at the conclusion of such testing, the Executive Officer may elect to conduct further testing of a subgroup of vehicles from the motor vehicle class if the Executive Officer has determined that:

(i) a subgroup of tested vehicles differs sufficiently enough from other vehicles in the tested motor vehicle class, and

(ii) a reasonable basis exists to believe that the identified differences may indicate that the subgroup may be nonconforming whereas the tested motor vehicle class as a whole is not.

(B) Hereinafter all references to motor vehicle class shall be applicable to the subgroup meeting the conditions of section (b)(5)(A) above.

(C) In any testing of a subgroup of vehicles under section (b)(5), the Executive Officer shall follow the vehicle selection and testing procedures set forth in sections (b)(3) and (4) above.

(6) *Finding of Nonconformance after Enforcement Testing.*

After conducting enforcement testing pursuant to section (b)(4) above, the Executive Officer shall make a finding of nonconformance of the OBD II system in the identified motor vehicle class if:

(A) OBD II Emission Testing.

(i) Intermediate In-Use Gasoline Thresholds. For 2004 through 2008 model year vehicles subject to gasoline/spark ignited monitoring requirements in title 13, CCR section 1968.2(e), the results of the OBD II emission tests indicate that 50 percent or more of the vehicles in the test sample do not properly illuminate the MIL when emissions exceed:

a. 2.0 times the FTP standards for malfunction criteria defined in title 13, CCR section 1968.2(e) that require MIL illumination at 1.5 or 1.75 times the FTP standards;

b. 3.5 times the FTP standards for malfunction criteria defined in title 13, CCR section 1968.2(e) that require MIL illumination at 2.5 times the FTP standards; or

c. 4.5 times the FTP standards for malfunction criteria defined in title 13, CCR section 1968.2(e) that require MIL illumination at 3.5 times the FTP standards.

(ii) Intermediate In-Use Diesel Thresholds.

a. For 2007 through 2012 model year vehicles subject to diesel/compression-ignition monitoring requirements in title 13, CCR section 1968.2(f), the results of the OBD II emission tests indicate that 50 percent or more of the vehicles in the test sample do not properly illuminate the MIL when emissions exceed:

1. an additional 1.0 times the applicable standards above the malfunction criteria for malfunction criteria defined in title 13, CCR section 1968.2(f) that require MIL illumination at less than 3.5 times the applicable standards (e.g., 3.5 times the applicable standards for a malfunction criteria of 2.5 times the applicable standards); or

2. an additional 1.5 times the applicable standards above the malfunction criteria for malfunction criteria defined in title 13, CCR section 1968.2(f) that require MIL illumination at greater than or equal to 3.5 times the applicable standards (e.g., 6.5 times the applicable standards for a malfunction criteria of 5.0 times the applicable standards); or

3. an additional 1.0 times the applicable standards above the malfunction criteria for malfunction criteria defined in title 13, CCR section 1968.2(f) that require MIL illumination at an additive threshold of less than or equal to 0.3 g/bhp-hr NO<sub>x</sub>, an additive threshold of less than or equal to 0.02 g/bhp-hr PM, or an absolute threshold of less than or equal to 0.03 g/bhp-hr (e.g., 0.07 g/bhp-hr PM for an additive malfunction criteria of 0.03 g/bhp-hr with a standard of 0.02 g/bhp-hr); or

4. an additional 1.5 times the applicable standards above the malfunction criteria for malfunction criteria defined in title 13, CCR section 1968.2(f) that require MIL illumination at an additive threshold of greater than 0.3 g/bhp-hr NO<sub>x</sub>, an additive threshold of greater than 0.02 g/bhp-hr PM, or an absolute threshold of greater than 0.03 g/bhp-hr PM (e.g., 1.0 g/bhp-hr NO<sub>x</sub> for an additive malfunction criteria of 0.5 g/bhp-hr with a standard of 0.2 g/bhp-hr).

b. For 2010 through 2012 model year medium-duty vehicles certified to an engine dynamometer standard, the “applicable standards” used in section (b)(6)(A)(ii) shall be limited to the emission test cycle and standard (i.e., FTP or SET) determined by the manufacturer to be more stringent and documented as such in the certification application in accordance with title 13, CCR section 1968.2(d)(6.1).

c. For 2007 through 2009 model year vehicles subject to adjustment for infrequent regeneration events in accordance with title 13, CCR section 1968.2(d)(6.2), OBD II emission enforcement testing for monitors using the provisions of title 13, CCR section 1968.2(d)(6.2.3) (baseline-derived adjustment factors instead of malfunction threshold component-specific adjustment factors) shall be limited to using emission test results without the infrequent regeneration event occurring and applying the same baseline-derived adjustment factors used by the manufacturer at the time of certification.

d. For 2013 through 2015 model year medium-duty vehicles, with respect to the NO<sub>x</sub> malfunction criteria for the NO<sub>x</sub> converting catalyst conversion efficiency monitor (title 13, CCR section 1968.2(f)(2.2.2)), reductant delivery performance monitor (title 13, CCR section 1968.2(f)(2.2.3)(A)), and NO<sub>x</sub> sensor monitor (title 13, CCR section 1968.2(f)(5.2.2)(A)), the Executive Officer shall make a finding of nonconformance of the OBD II system if the results of the OBD II emission tests indicate that 50 percent or more of the vehicles in the test sample do not properly illuminate the MIL when emissions exceed an additional 0.2 g/bhp-hr above the NO<sub>x</sub> malfunction criteria defined in title 13, CCR section 1968.2(f)(2.2.2)(A)(ii)c. or 1968.2(f)(5.2.2)(A)(ii)c.

e. For 2013 through 2015 model year medium-duty vehicles, for the PM filter filtering performance monitor (title 13, CCR section 1968.2(f)(9.2.1)), the Executive Officer shall make a finding of nonconformance of the OBD II system if the results of the OBD II emission tests indicate that 50 percent or more of the vehicles in the test sample do not properly illuminate the MIL when emissions exceed 0.05 g/bhp-hr.

(iii) *Final In-Use Thresholds.* For 2009 and subsequent model year vehicles subject to the gasoline/spark-ignited requirements of title 13, CCR section 1968.2(e) and, except as provided in sections (b)(6)(A)(ii)d. and e. above, for 2013 and subsequent model year vehicles subject to the diesel/compression-ignition requirements of title 13, CCR section 1968.2(f), the results of the OBD II emission tests indicate that 50 percent or more of the vehicles in the test sample do not properly illuminate the MIL when the emission malfunction criteria defined in title 13, CCR sections 1968.2(e) or (f) are exceeded.

(B) *OBD II Ratio Testing.*

(i) For monitors specified in sections (b)(6)(B)(i)a. through e. below, the data collected from the vehicles in the test sample indicate either that the average in-use monitor performance ratio for one or more of the monitors in the test sample group is less than 0.100 or that 66.0 percent or more of the

vehicles in the test sample group have an in-use monitor performance ratio of less than 0.100 for the same monitor:

a. monitors on 2004 through 2027 model year vehicles certified to a ratio of 0.100 in accordance with title 13, CCR section 1968.2(d)(3.2.1)(D),

b. monitors specified in title 13, CCR section 1968.2(e) on 2007 through 2012 model year vehicles for the first three model years the monitor is certified to the in-use performance ratio monitoring requirements of title 13, CCR sections 1968.2(d)(3.2.1)(A) through (C),

c. the fuel system air-fuel ratio cylinder imbalance monitor specified in title 13, CCR section 1968.2(e)(6.2.1)(C) on 2015 through 2017 model year vehicles,

d. the secondary exhaust gas sensor monitor specified in title 13, CCR section 1968.2(e)(7.2.2)(C) on 2012 through 2014 model year vehicles, and

e. monitors specified in title 13, CCR section 1968.2(f) on 2013 through 2015 model year vehicles.

(ii) For monitors that are certified to the ratios in title 13, CCR sections 1968.2(d)(3.2.1)(A) through (C) and are not described in sections (b)(6)(B)(i)b. through e. above, the data collected from the vehicles in the test sample indicate either that (1) 66.0 percent or more of the vehicles in the test sample group have an in-use monitor performance ratio less than the required minimum ratio defined in title 13, CCR section 1968.2(d)(3.2.1) for the same monitor, or (2) the average in-use monitor performance ratio for one or more of the monitors in the test sample group is less than:

a. 0.230 for secondary air system monitors and other cold start related monitors utilizing a denominator incremented in accordance with title 13, CCR section 1968.2(d)(4.3.2)(E) (e.g., cold start strategy monitors, etc.);

b. For evaporative system monitors:

1. 0.230 for monitors designed to detect malfunctions identified in title 13, CCR section 1968.2(e)(4.2.2)(C) (i.e., 0.020 inch leak detection);

2. 0.460 for monitors designed to detect malfunctions identified in title 13, CCR section 1968.2(e)(4.2.2)(A) and (B) (i.e., purge flow and 0.040 inch leak detection);

c. 0.297 for catalyst, oxygen sensor, EGR, VVT system, and all other monitors specifically required in section title 13, CCR sections 1968.2(e) and (f) to meet the monitoring condition requirements of title 13, CCR section 1968.2(d)(3.2).

(C) All Other OBD II Testing.



(i) The results of the testing indicate that at least 30 percent of the vehicles in the test sample do not comply with the same requirement of title 13, CCR section 1968.2.

(ii) The results of the testing indicate that at least 30 percent of the vehicles in the test sample do not comply with one or more of the requirements of title 13, CCR section 1968.2 while the engine is running and while in the key on, engine off position such that Inspection and Maintenance or scan tool equipment designed to access the following parameters via the standards referenced in title 13, CCR section 1968.2 cannot obtain valid and correct data for the following parameters:

a. The current readiness status from all on-board computers required to support readiness status in accordance with Society of Automotive Engineers J1979 (SAE J1979) as incorporated by reference in title 13, CCR section 1968.2(g)(1) and section 1968.2(g)(4.1);

b. The current MIL command status while the MIL is commanded off and while the MIL is commanded on in accordance with SAE J1979 and title 13, CCR section 1968.2(g)(4.2), and in accordance with SAE J1979 and title 13, CCR sections 1968.2(d)(2.1.2) during the MIL functional check and, if applicable, title 13, CCR 1968.2(g)(4.1.3) during the MIL readiness status check;

c. The current permanent fault code(s) in accordance with SAE J1979 and section title 13, CCR 1968.2(g)(4.4);

d. The data stream parameters (Mode/Service \$01) for: engine speed (PID \$0C) and OBD requirements to which the vehicle or engine is certified (PID \$1C); and for 2008 and subsequent model year vehicles using the ISO 15765-4 protocol that have not implemented permanent fault codes subject to (b)(6)(C)(ii)c., number of warm-up cycles since codes cleared (PID \$30), distance since codes cleared (PID \$31), and engine run time since codes cleared (PID \$4E); as required in title 13, CCR section 1968.2(g)(4.2) and in accordance with SAE J1979;

e. The CAL ID, CVN, and VIN (Mode \$09 PIDs \$01 through \$06) as required in title 13, CCR sections 1968.2(g)(4.6), (g)(4.7.1), (g)(4.7.3), and (g)(4.8) and in accordance with SAE J1979;

f. The proper identification of all data identified in (b)(6)(C)(ii)a. through (b)(6)(C)(ii)e. as supported or unsupported as required in title 13, CCR section 1968.2(g)(4) and in accordance with SAE J1979 (e.g., Mode/Service \$01, PIDs \$00, \$20, \$40; Mode/Service \$09, PID \$00, etc.); or

g. For vehicles using an alternate connector and communication protocol (e.g., SAE J1939) as provided for in title 13, CCR section 1968.2(g)(7.1), the parameters and data identified in sections (b)(6)(C)(ii)a. through f. in accordance with title 13, CCR section 1968.2(g)(4) and with the specified alternate connector and communication protocol in lieu of in accordance with SAE J1979.

(iii) If the finding of nonconformance under section (b)(6)(C)(i) above concerns vehicles that do not comply with the requirements of title 13, CCR section 1968.2(d)(4) or (5) (e.g., numerators or denominators are not properly being incremented), it shall be presumed that the nonconformance would result in an OBD II ratio enforcement test result that would be subject to an ordered OBD II-related recall in accord with the criterion in section (c)(3)(A)(i). The manufacturer may rebut such a presumption by presenting evidence in accord with section (b)(7)(C)(iii) below that demonstrates to the satisfaction of the Executive Officer that the identified nonconformance would not result in an ordered OBD II-related recall under section (c)(3)(A)(i).

(7) Executive Officer Notification to the Manufacturer Regarding Determination of Nonconformance.

(A) Upon making the determination of nonconformance in section (b)(6) above, the Executive Officer shall notify the manufacturer in writing.

(B) The Executive Officer shall include in the notice:

(i) a description of each group or set of vehicles in the motor vehicle class covered by the determination;

(ii) the factual basis for the determination, including a summary of the test results relied upon for the determination;

(iii) a statement that the Executive Officer shall provide to the manufacturer, upon request and consistent with the California Public Records Act, Government Code section 6250 et seq., all records material to the Executive Officer's determination;

(iv) a provision allowing the manufacturer no less than 90 days from the date of issuance of the notice to provide the Executive Officer with any information contesting the findings set forth in the notice; and

(v) a statement that if a final determination is made that the motor vehicle class is equipped with a nonconforming OBD II system, the manufacturer may be subject to appropriate remedial action, including recall and monetary penalties.

(C) Within the time period set by the Executive Officer in section (b)(7)(B)(iv) and any extensions of time granted under section (b)(7)(H), the manufacturer shall provide the Executive Officer, consistent with paragraphs (i) through (iii) below, with any test results, data, or other information derived from vehicle testing that may rebut or mitigate the results of the ARB testing, including any evidence that a motor vehicle class, if determined to be nonconforming, should be exempted from mandatory recall. (See section (c)(3)(B) below.).

(i) For OBD II emission testing and OBD II ratio testing:

a. The manufacturer may submit evidence to demonstrate that vehicles in the test sample group used by the Executive Officer were inappropriately selected, procured, or tested in support of a request to have vehicles excluded from the test sample group in accordance with section (b)(3)(D)(iv).

b. If the manufacturer elects to conduct additional testing of vehicles in the motor vehicle class and submit the results of such testing to the Executive Officer, the manufacturer shall:

1. Present evidence that it has followed the vehicle procurement and test procedures set forth in sections (b)(3) and (4) above, or

2. If the manufacturer elects to use different procurement and testing procedures, submit a detailed description of the procedures used and evidence that such procedures provide an equivalent level of assurance that the results are representative of the motor vehicle class.

(ii) If the manufacturer objects to the size of the test sample group or the method used to procure vehicles in the test sample group used by the Executive Officer pursuant to section (b)(3)(B)(iii) or (b)(3)(C)(ii), the manufacturer shall set forth what it considers to be the appropriate size and procurement method, the reasons therefore, and test data from vehicles that confirm the manufacturer's position.

(iii) If the manufacturer elects to present evidence to overcome the presumption of nonconformance in section (b)(6)(C)(ii) above, the manufacturer shall demonstrate that the vehicles in the motor vehicle class comply with in-use monitor performance ratio requirements of title 13, CCR section 1968.2(d)(3.2) by presenting:

a. Evidence in accord with the procurement and testing requirements of sections (b)(3) and (4).

b. Any other evidence that provides an equivalent level of proof that vehicles operated in California comply with the in-use monitor performance ratio requirements.

(D) The Executive Officer may, but is not required to, accept any information submitted by a manufacturer pursuant to section (b)(7)(C) above after the time established for submission of such information has passed unless the manufacturer could not have reasonably foreseen the need for providing the information within the time period provided. In determining whether to accept late information, the Executive Officer will consider the lateness of the submission, the manufacturer's reasons for why such information was not timely presented, the materiality of the information to the Executive Officer's final determination, and what effect any delay may have on effective enforcement and the health and welfare of the State.

(E) The requirements of section (b)(7) shall not be construed to abridge the manufacturer's right to assert any privilege or right provided under California law.

(F) After receipt of any information submitted by the manufacturer pursuant to section (b)(7)(C) above, the Executive Officer shall consider all information submitted by the manufacturer and may conduct any additional testing that he or she believes is necessary.

*(G) Final Determination.*

(i) Within 60 days after completing any additional testing that the Executive Officer deemed necessary under section (b)(7)(F) above, the Executive Officer shall notify the manufacturer of his or her final determination regarding the finding of nonconformity of the OBD II system in the motor vehicle class. The determination shall be made after considering all of the information collected and received, including all information that has been received from the manufacturer.

(ii) The notice must include a description of each test group(s), OBD II group(s), or subgroups thereof, that has been determined to have a nonconforming OBD II system and set forth the factual bases for the determination.

(H) *Extensions.* The Executive Officer may for good cause extend the time requirements set forth in section (b)(7). In granting additional time to a manufacturer, the Executive Officer shall consider, among other things, any documentation submitted by the manufacturer regarding the time that it reasonably believes is necessary to conduct its own testing, why such information could not have been more expeditiously presented, and what effect any delay caused by granting the extension may have on effective enforcement and the health and welfare of the State. The Executive Officer shall grant a manufacturer a reasonable extension of time upon the manufacturer demonstrating that despite the exercise of reasonable diligence, the manufacturer has been unable to produce relevant evidence in the time initially provided.

*(c) Remedial Action*

(1) *Voluntary OBD II-Related Recalls.* If a manufacturer initiates a voluntary OBD II-related recall campaign, the manufacturer shall notify the Executive Officer of the recall at least 45 days before owner notification is to begin. The manufacturer shall also submit a voluntary OBD II-related recall plan for approval, as prescribed under section (d)(1) below. A voluntary recall plan shall be deemed approved unless disapproved by the Executive Officer within 30 days after receipt of the recall plan.

*(2) Influenced OBD II-Related Recalls.*

(A) Upon being notified by the Executive Officer, pursuant to section (b)(7)(G), that a motor vehicle class is equipped with a nonconforming OBD II system, the manufacturer may, within 45 days from the date of service of such notification, elect to conduct an influenced OBD II-related recall of all vehicles within the motor vehicle class for the purpose of correcting the nonconforming OBD II systems. Upon such an election, the manufacturer shall submit an influenced OBD II-related recall plan for approval, as prescribed under section (d)(1) below.

(B) If a manufacturer does not elect to conduct an influenced OBD II-related recall under section (c)(2)(A) above, the Executive Officer may order the manufacturer to undertake appropriate remedial action, up to and including the recall and repair of the nonconforming OBD II systems.

(3) *Ordered Remedial Action-Mandatory Recall.*

(A) Except as provided in sections (c)(3)(B) below, the Executive Officer shall order the recall and repair of all vehicles in a motor vehicle class that have been determined to be equipped with a nonconforming OBD II system if enforcement testing conducted pursuant to section (b) above or information received from the manufacturer indicates any of the following:

(i) For monitors on 2007 and subsequent model year vehicles certified to the ratios in title 13, CCR sections 1968.2(d)(3.2.1)(A) through (C) (except monitors specified in sections (b)(6)(B)(i)b. through e.), the average in-use monitor performance ratio for one or more of the major monitors in the test sample group is less than or equal to 33.0 percent of the applicable required minimum ratio established in title 13, CCR section 1968.2(d)(3.2.1) (e.g., if the required ratio is 0.336, less than or equal to a ratio of 0.111) or 66.0 percent or more of the vehicles in the test sample group have an in-use monitor performance ratio of less than or equal to 33.0 percent of the applicable required minimum ratio established in title 13, CCR section 1968.2(d)(3.2.1) for the same major monitor. For monitors specified in sections (b)(6)(B)(i)a. through e., the Executive Officer shall determine the remedial action for nonconformances regarding the in-use monitor performance ratio in accordance with section (c)(4) below.

(ii) Except as provided in section (c)(3)(A)(ii)a. through e. below, when the vehicle is tested on-road and driven so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the OBD II system is unable to detect and illuminate the MIL for a malfunction of a component/system monitored by a major monitor (except for monitors with malfunction criteria that are not tied to emission thresholds such as the evaporative system monitor) prior to emissions exceeding two times the malfunction criteria of title 13, CCR sections 1968.2(e) and (f) (e.g., if the malfunction criteria is 1.75 times the applicable FTP standard, recall would be required when emissions exceed 3.5 times the applicable FTP standard or if the malfunction criteria is the PM standard plus 0.02 g/bhp-hr and the PM standard is 0.01 g/bhp-hr, recall would be required when emissions exceed 0.06 g/bhp-hr).

a. For the first two years that a new major monitor is required in title 13, CCR section 1968.2(e) (e.g., 2006 and 2007 model year for cold start strategy monitoring in title 13, CCR section 1968.2(e)(11)), the Executive Officer shall use three times the malfunction criteria in lieu of two times the malfunction criteria (e.g., if the malfunction criterion is 1.5 times the applicable FTP standard, recall would be required when emissions exceed 4.5 times the applicable FTP standard).

b. Except as provided for gasoline air-fuel ratio cylinder imbalance monitors in section (c)(3)(A)(ii)d. below, for the first three years a vehicle is certified to the Low Emission Vehicle III ULEV70 and ULEV50 standards but no later than the 2019 model year, the Executive Officer shall use 2.5 times the malfunction criteria (e.g., if the malfunction criterion is 2.0 times the

applicable FTP standard, recall would be required when emissions exceed 5.0 times the applicable FTP standard).

c. For the gasoline air-fuel ratio cylinder imbalance monitor (required in title 13, CCR section 1968.2(e)(6.2.1)(C)) on 2015 through 2016 model year non-Low Emission Vehicle III applications, the Executive Officer shall use 8.0 times any of the applicable FTP standards for PC/LDT SULEV II vehicles and 6.0 times any of the applicable FTP standards for all other vehicles in lieu of two times the malfunction criteria.

d. For the gasoline air-fuel ratio cylinder imbalance monitor (required in title 13, CCR section 1968.2(e)(6.2.1)(C)) on 2019 through 2022 model year Low Emission Vehicle III ULEV70, ULEV50, SULEV30, and SULEV20 applications, the Executive Officer shall use 6.0 times any of the applicable FTP NMOG+NO<sub>x</sub> or CO standards for ULEV70 and ULEV50 vehicles and 8.0 times any of the applicable FTP NMOG+NO<sub>x</sub> or CO standards for SULEV30 and SULEV20 vehicles in lieu of two times the NMOG+NO<sub>x</sub> or CO malfunction criteria. The Executive Officer shall use twice the malfunction criteria for PM emissions.

e. For major monitors on 2007 through 2009 model year vehicles certified to the monitoring requirements in title 13, CCR section 1968.2(f) and for the PM filter filtering performance monitor (title 13, CCR section 1968.2(f)(9.2.1)) on 2013 model year medium-duty vehicles, the Executive Officer shall determine the remedial action for nonconformances regarding emission exceedance in accordance with section (c)(4) below in lieu of the criteria in section (c)(3)(ii).

f. For purposes of the emission exceedance determination, carbon monoxide (CO) emissions are not considered.

(iii) For misfire monitors not covered under section (c)(3)(A)(ii) above:

a. Gasoline misfire monitor: The monitor for misfire causing catalyst damage is unable to properly detect and illuminate the MIL for misfire rates that are more than 20 percentage points greater than the misfire rates disclosed by the manufacturer in its certification application as causing catalyst damage (e.g., if the disclosed misfire rate is 12 percent, recall would be required if the misfire rate is greater than 32 percent without proper detection).

b. Gasoline plug-in hybrid electric vehicle misfire monitor: For vehicles certified to the malfunction criteria in title 13, CCR section 1968.2(e)(3.2.3)(A), the misfire monitor is unable to properly detect and illuminate the MIL for misfire rates that are equal to or more than 5 percent. For vehicles certified to the malfunction criteria in title 13, CCR section 1968.2(e)(3.2.3)(B), the criteria under section (c)(3)(A)(ii) shall apply.

c. Diesel misfire monitor: For 2022 and subsequent model year passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard, and for 2019 and subsequent model year medium-duty diesel vehicles (except MDPVs certified to a chassis dynamometer tailpipe emission standard), the misfire monitor is unable to properly detect and

illuminate the MIL for misfire rates that are more than 10 percentage points greater than the misfire malfunction criteria specified in title 13, CCR section 1968.2(f)(3.2.2) (e.g., misfire rate more than 15 percent if the misfire malfunction criteria is 5 percent).

(iv) When the vehicle is tested on-road and driven so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the evaporative system monitor is unable to detect and illuminate the MIL for a cumulative leak or leaks in the evaporative system equivalent to that caused by an orifice with a diameter of at least 1.5 times the diameter of the required orifice in title 13, CCR section 1968.2(e)(4.2.2)(C).

(v) When the vehicle is tested on-road and driven so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the OBD II system cannot detect and illuminate the MIL for a malfunction of a component that effectively disables a major monitor and the major monitor, by being disabled, meets the criteria for recall identified in sections (c)(3)(A)(ii) or (iv) above (e.g. is unable to detect and illuminate the MIL for malfunctions that cause FTP emissions to exceed two times the malfunction criteria).

(vi) For 2013 and subsequent model year medium-duty diesel vehicles (except MDPVs certified to a chassis dynamometer tailpipe emission standard) and 2016 and subsequent model year passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard, when the vehicle is tested on-road and driven so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the PM filter monitor is unable to detect and illuminate the MIL for any of the following:

a. a missing substrate fault in accordance with title 13, CCR section 1968.2(f)(9.2.5); or

b. a malfunction of the PM filter that causes PM emissions to be equal to or greater than the emission level of the engine or vehicle, as measured from an applicable emission test cycle (i.e., FTP or SET), with the PM filter substrate completely removed.

(vii) The motor vehicle class cannot be tested so as to obtain valid test results in accordance with the criteria identified in section (b)(6)(C)(ii) due to the nonconforming OBD II system.

(B) A motor vehicle class shall not be subject to mandatory recall if the Executive Officer determines that any of the following conditions are met, even though a monitor meets a criterion set forth in section (c)(3)(A)(i)-(vi) for mandatory recall:

(i) The OBD II system can still detect and illuminate the MIL for all malfunctions monitored by the nonconforming monitor (e.g., monitor "A" is non-functional but monitor "B" is able to detect all malfunctions of the component(s) monitored by monitor "A").

(ii) The monitor meets the criterion solely due to a failure or deterioration mode of a monitored component or system that could not have been reasonably foreseen to occur by the manufacturer.

(iii) The failure or deterioration of the monitored component or system that cannot be properly detected causes the vehicle to be undriveable (e.g., vehicle stalls continuously or the transmission will not shift out of first gear, etc.) or causes an overt indication such that the driver is certain to respond and have the problem corrected (e.g., illumination of an over-temperature warning light or charging system light that uncorrected will result in an undriveable vehicle, etc.).

(C) A motor vehicle class that is not subject to mandatory recall pursuant to paragraph (B) above may still be subject to remedial action pursuant to section (c)(4) below.

(4) Other Ordered Remedial Action.

(A) If the Executive Officer has determined based upon enforcement testing conducted pursuant to section (b) above or information received from the manufacturer that a motor vehicle class is equipped with a nonconforming OBD II system and the nonconformance does not fall within the provisions of section (c)(3)(A) above, he or she may require the manufacturer to undertake remedial action up to and including recall of the affected motor vehicle class.

(B) In making his or her findings regarding remedial action, the Executive Officer shall consider the capability of the OBD II system to properly function. This determination shall be based upon consideration of all relevant circumstances including, but not limited to, those set forth below.

(i) Whether the manufacturer identified and informed the ARB about the nonconformance(s) or whether the ARB identified the nonconformance(s) prior to being informed by the manufacturer.

(ii) The number of nonconformances.

(iii) If the identified nonconformance(s) is with a major monitor(s), the nature and extent of the nonconformance(s), including:

a. the degree to which the in-use monitor performance ratio(s) is below the required ratio(s) specified in title 13, CCR section 1968.2(d)(3.2.1), and

b. the amount of the emission exceedance(s) over the established malfunction criteria set forth in title 13, CCR sections 1968.2(e) and (f) before a malfunction is detected and the MIL is illuminated.

(iv) If the identified nonconformance(s) is with a non-major monitor the nature and extent of the nonconformance(s), including:

a. the degree to which the in-use monitor performance ratio(s) (where applicable) is below the required ratio(s) specified in title 13, CCR section 1968.2(d)(3.2.1),



b. the degree to which the monitored component must be malfunctioning or exceed the established malfunction criteria set forth in title 13, CCR sections 1968.2(e) and (f) before a malfunction is detected and the MIL is illuminated, and

c. the effect that the nonconformance(s) has on the operation of a major monitor(s).

(v) The impact of the nonconformance on vehicle owners (e.g., cost of future repairs, driveability, etc.) and the ability of the service and repair industry to make effective repairs (e.g., difficulty in accessing fault information, diagnosing the root cause of a failure, etc.).

(vi) The degree to which the identified nonconformance(s) complicates, interferes with, disrupts, or hampers a service technician's ability to follow California I/M testing protocol when performing a California I/M inspection.

(vii) The failure of the data link connector of the motor vehicle class to meet the requirements of title 13, CCR section 1968.2(g)(2).

(viii) The failure of the crankcase ventilation system in a motor vehicle class to comply with the requirements of title 13, CCR sections 1968.2(e)(9) or (f)(10).

(ix) The failure of the cooling system monitor in a motor vehicle class to properly verify that the cooling system reaches the highest enable temperature used for any other monitor when the vehicle is operated in the monitoring conditions disclosed in the manufacturer's certification application, or failure to comply with any requirement in title 13, CCR sections 1968.2(e)(10) or (f)(11).

(x) The estimated frequency that a monitor detects a malfunction and illuminates the MIL when no component malfunction is present (i.e., false MILs).

(xi) The estimated frequency that a monitor fails to detect a malfunction and illuminate the MIL when the monitoring conditions, as set forth in the manufacturer's approved certification application, have been satisfied and a faulty or deteriorated monitored component is present (i.e., false passes).

(xii) Whether the manufacturer submitted false, inaccurate, or incomplete documentation regarding the identified nonconformance at the time of certification pursuant to title 13, CCR section 1968.2(i) and the extent to which the false, inaccurate, or incomplete documentation was material to the granting of certification.

(C) In making the determination, the average tailpipe and evaporative emissions of vehicles within the affected motor vehicle class shall not be considered.

(5) *Assessment of Monetary Penalties.* The Executive Officer may seek penalties pursuant to the applicable provisions of the Health and Safety Code for violations of the requirements of title 13, CCR section 1968.2 or for production vehicles otherwise failing to be equipped with OBD II systems that

have been certified by the ARB. In determining the penalty amounts that the ARB may seek, the Executive Officer shall consider all relevant circumstances including the factors set forth below:

- (A) Whether the manufacturer self-reported the nonconformity or the ARB discovered the nonconformity independent of the manufacturer.
- (B) The nature and degree of the nonconformity and whether the manufacturer should reasonably have discovered the nonconformity and taken corrective action by voluntary OBD II-related recall or running changes during the production year.
- (C) The economic benefits, if any, gained by the manufacturer from not complying with the provisions of title 13, CCR section 1968.2.
- (D) The manufacturer's history of compliance with the OBD II requirements.
- (E) The preventative efforts taken by the manufacturer to avoid noncompliance, including any programs followed by the manufacturer to ensure compliance.
- (F) The manufacturer's efforts to correct the nonconformity once it was identified.
- (G) The innovative nature and magnitude of effort, including the cost of any other proposed remedial action, necessary to correct the nonconformity.
- (H) The deterrent effect of the penalty.
- (I) Whether the manufacturer has failed to provide complete and accurate information required to be submitted at the time of certification pursuant to title 13, CCR section 1968.2(i).
- (J) The nature and degree that OBD II systems on production vehicles differ from the systems that have been certified by the ARB.

(6) *Notice to Manufacturer for an Ordered Remedial Action.*

- (A) The Executive Officer shall immediately notify the manufacturer upon the Executive Officer determining the type of remedial action to be taken.
- (B) For remedial actions other than the assessment of monetary penalties, the notice must:
  - (i) specifically set forth the remedial action that is being ordered,
  - (ii) include a description of the test group(s), OBD II group(s), or subgroup(s) thereof, that has been determined to have a nonconforming OBD II system,
  - (iii) set forth the factual bases for the determination, and

(iv) designate a date at least 45 days from the date of receipt of such notice by which the manufacturer shall submit a plan, pursuant to section (d)(1) below, outlining the remedial action to be undertaken consistent with the Executive Officer's order. Except as provided in section (c)(7)(C) below, all plans shall be submitted to the Chief, Mobile Source Operations Division, 9528 Telstar Avenue, El Monte, California 91731, within the time limit specified in the notice. The Executive Officer may grant the manufacturer an extension of time for good cause.

(C) For cases in which the ARB elects to seek monetary penalties pursuant to authority granted under the Health and Safety Code, the Executive Officer shall issue a notice to the manufacturer that he or she will be filing a complaint in the appropriate administrative or civil court forum seeking penalties against the manufacturer for violations of title 13, CCR section 1968.2. The notice must include a description of the test group(s), OBD II group(s), or subgroup(s) thereof, that have been determined to have a nonconforming OBD II system and set forth the factual bases for the determination.

(7) Availability of Public Hearing to Contest Remedial Actions Other than Determination to Seek Monetary Penalties.

(A) Within 45 days from the date of receipt of the notice that is required under section (c)(6) above, the manufacturer may request a public hearing pursuant to the procedures set forth in title 17, CCR section 60055.1, et seq., to contest the findings of nonconformity, the necessity for, or the scope of any ordered remedial action. Pursuant to those procedures, the Executive Officer has the initial burden of presenting evidence that those parts of the Executive Officer's determination specifically challenged are supported by the facts and applicable law. (Title 17, CCR section 60055.32(d)(1).) Each issue of controversy shall be decided based upon the preponderance of the evidence presented at the hearing. (Title 17, CCR section 60055.32(h).)

(B) Notwithstanding the provisions of title 17, CCR section 60055.17(a)(1), administrative hearings conducted pursuant to a request filed under section (c)(7)(A) above shall be referred to the Office of Administrative Hearings, which shall otherwise follow the procedures established in title 17, CCR section 60055.1 et seq.

(C) If a manufacturer requests a public hearing pursuant to section (c)(7)(A) above and if the Executive Officer's determination of nonconformity is confirmed at the hearing, the manufacturer shall submit the required remedial action plan in accordance with section (d)(1) below within 30 days after receipt of the Board's decision.

(d) *Requirements for Implementing Remedial Actions*

(1) *Remedial Action Plans.*

(A) A manufacturer initiating a remedial action (voluntary, influenced, or ordered), other than payment of monetary penalties, shall develop a remedial action plan that contains the following information, unless otherwise specified:

(i) A description of each test group, OBD II group, or subgroup thereof covered by the remedial action, including the number of vehicles, the engine families, test groups, or subgroups within the identified class(es), the make(s), model(s), and model years of the covered vehicles, and such other information as may be required to identify the covered vehicles.

(ii) A description of the nonconforming OBD II system and, in the case of a recall (whether voluntary, influenced, or ordered), the specific modifications, alterations, repairs, adjustments, or other changes to correct the nonconforming OBD II system, including data and/or engineering evaluation supporting the specific corrections.

(iii) A description of the method that the manufacturer will use to determine the names and addresses of vehicle owners and the manufacturer's method and schedule for notifying the service facilities and vehicle owners of the remedial action.

(iv) A copy of all instructions that the manufacturer will use to notify service facilities about the required remedial action and the specific corrections, if any, that will be required to be made to the nonconforming OBD II systems.

(v) A description of the procedure to be followed by vehicle owners to obtain remedial action for the nonconforming OBD II system. This must include the date, on or after which the owner can have required remedial action performed, the time reasonably necessary to perform the labor to remedy the nonconformity, and the designation of facilities at which the nonconformity can be remedied.

(vi) If some or all of the nonconforming OBD II systems are to be remedied by persons other than dealers or authorized warranty agents of the manufacturer, a description of such class of service agents and what steps, including a copy of all instructions mailed to such service agents, the manufacturer will take to assure that such agents are prepared and equipped to perform the proposed remedial action.

(vii) A copy of the letter of notification to be sent to vehicle owners.

(viii) A proposed schedule for implementing the remedial action, including identified increments of progress towards full implementation.

(ix) A description of the method that the manufacturer will use to assure that an adequate supply of parts will be available to initiate the remedial action campaign on the date set by the manufacturer and that an adequate supply of parts will continue to be available throughout the campaign.

(x) A description and test data of the emission impact, if any, that the proposed remedial action may cause to a representative vehicle from the motor vehicle class to be remedied.

(xi) A description of the impact, if any, and supporting data and/or engineering evaluation, that the proposed remedial action will have on fuel economy, driveability, performance, and safety of the motor vehicle class covered by the remedial action.

(xii) Any other information, reports, or data which the Executive Officer may reasonably determine to be necessary to evaluate the remedial action plan.

*(B) Approval and Implementation of Remedial Action Plans.*

(i) If the Executive Officer finds that the remedial action plan is designed effectively to address the required remedial action and complies with the provisions in section (d)(1)(A) above, he or she shall notify the manufacturer in writing within 30 days of receipt of the plan that the plan has been approved.

(ii) The Executive Officer shall approve a voluntary, influenced, or ordered remedial action plan if the plan contains the information specified in section (d)(1)(A) above and is designed to notify the vehicle owner and implement the remedial action in an expeditious manner.

(iii) In disapproving an ordered remedial action plan, the Executive Officer shall notify the manufacturer in writing of the disapproval and the reasons for the determination. The manufacturer shall resubmit a revised remedial action plan that fully addresses the reasons for the Executive Officer's disapproval within 10 days of receipt of the disapproval notice.

(iv) Upon receipt of the approval notice of the ordered remedial action plan from the Executive Officer, the manufacturer shall, within 45 days of receipt of the notice, begin to notify vehicle owners and implement the remedial action campaign.

(v) If the Executive Officer disapproves a voluntary or influenced remedial action plan, the manufacturer shall either accept the proposed modifications to the plan as suggested by the Executive Officer, resubmit a revised remedial action plan that fully addresses the reasons for the Executive Officer's disapproval within 30 days, or be subject to an Executive Officer order that the manufacturer undertake appropriate remedial action pursuant to section (c)(2)(B) above.

(vi) Upon receipt of the voluntary or influenced remedial action approval notice from the Executive Officer, the manufacturer shall begin to notify vehicle owners and implement the remedial action campaign according to the schedule indicated in the remedial action plan.

*(2) Eligibility for Remedial Action.*

(A) The manufacturer may not condition a vehicle owner's eligibility for remedial action required under section 1968.5 on the proper maintenance or use of the vehicle.

(B) The manufacturer shall not be obligated to repair a component which has been modified or altered such that the remedial action cannot be performed without additional cost.

(3) *Notice to Owners.*

(A) The manufacturer shall notify owners of vehicles in the motor vehicle class covered by the remedial order. The notice must be made by first-class mail or by such other means as approved by the Executive Officer. When necessary, the Executive Officer may require the use of certified mail for ordered remedial actions to assure effective notification.

(B) The manufacturer shall use all reasonable means necessary to locate vehicle owners, including motor vehicle registration lists available from the California Department of Motor Vehicles and commercial sources such as R.L. Polk & Co.

(C) The notice must contain the following:

(i) For ordered remedial actions, a statement: “The California Air Resources Board has determined that your (vehicle or engine) (is or may be) equipped with an improperly functioning on-board emission-related diagnostic system that violates established standards and regulations that were adopted to protect your health and welfare from the dangers of air pollution.”

(ii) For voluntary and influenced remedial actions, a statement: “Your (vehicle or engine) (is or may be) equipped with an improperly functioning on-board emission-related diagnostic system that violates (California or California and Federal) standards and regulations” if applicable as determined by the Executive Officer.

(iii) A statement that the nonconformity of any such vehicles will be remedied at the expense of the manufacturer.

(iv) A statement that eligibility for remedial action may not be denied solely on the basis that the vehicle owner used parts not manufactured by the original equipment vehicle manufacturer, or had repairs performed by outlets other than the vehicle manufacturer's franchised dealers.

(v) Instructions to the vehicle owners on how to obtain remedial action, including instructions on whom to contact (i.e., a description of the facilities where the vehicles should be taken for the remedial action), the first date that a vehicle may be brought in for remedial action, and the time that it will reasonably take to correct the nonconformity.

(vi) The statement: “In order to assure your full protection under the emission warranty provisions, it is recommended that you have your (vehicle or engine) serviced as soon as possible. Failure to do so could be determined as lack of proper maintenance of your (vehicle or engine).”

(vii) A telephone number for vehicle owners to call to report difficulty in obtaining remedial action.

(viii) A card to be used by a vehicle owner in the event the vehicle to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle was sold or transferred.

(ix) If the remedial action involves recall, the notice must also provide:

a. A clear description of the components that will be affected by the remedial action and a general statement of the measures to be taken to correct the nonconformity.

b. A statement that such nonconformity, if not corrected, may cause the vehicle to fail an emission inspection or I/M smog check test.

c. A statement describing the adverse effects, if any, of an uncorrected nonconforming OBD II system on the performance, fuel economy, or durability of the vehicle.

d. A statement that after remedial action has been taken, the manufacturer will have the service facility issue a certificate showing that a vehicle has been corrected under the recall program, and that such a certificate will be required to be provided to the Department of Motor Vehicles as a condition for vehicle registration.

(D) A notice sent pursuant to this section or any other communication sent to vehicle owners or dealers may not contain any statement, expressed or implied, that the OBD II system is compliant or that the OBD II system will not degrade air quality.

(E) The Executive Officer shall inform the manufacturer of any other requirements pertaining to the notification under section (d)(3) which the Executive Officer has determined as reasonable and necessary to assure the effectiveness of the recall campaign.

*(4) Label Indicating that Recall Repairs Have Been Performed.*

(A) If the required remedial action involves recall of a test group(s), OBD II group(s), or subgroup(s) thereof, the manufacturer shall require those who perform inspections and/or recall repairs to affix a label to each vehicle that has been inspected and/or repaired.

(B) The label must be placed in a location approved by the Executive Officer and must be fabricated of a material suitable for such location in which it is installed and which is not readily removable.

(C) The label must contain the remedial action campaign number and a code designating the facility at which the remedial action or inspection to determine the need for remedial action was performed.

*(5) Proof of Performance of Remedial Action Certificate.* If the required remedial action involves a recall, the manufacturer shall provide, through its service agents, to owners of vehicles that have had

the remedial action performed a certificate that confirms that the vehicle has been recalled and that required inspection and/or repairs have been performed. The certificate must be in a format prescribed by the Executive Officer, however, the Executive Officer may not require a format different in any way from the format of the certificate required in title 13, CCR sections 2117 and 2129.

*(6) Record Keeping and Reporting Requirements.*

(A) The manufacturer shall maintain sufficient records to enable the Executive Officer to conduct an analysis of the adequacy of the remedial action.

(B) Unless otherwise specified by the Executive Officer, the manufacturer shall report on the progress of the remedial action campaign by submitting reports for eight consecutive quarters commencing with the quarter immediately after the recall campaign begins. The reports shall be submitted no later than 25 days after the close of each calendar quarter to: Chief, Mobile Source Operations Division, 9528 Telstar Avenue, El Monte, California 91731. For each recall campaign, the quarterly report must contain the following:

(i) The test group and the remedial action campaign number designated by the manufacturer and a brief description of the nature of the campaign.

(ii) The date owner notifications began and date completed.

(iii) The number of vehicles involved in the remedial action campaign.

(iv) The number of vehicles known or estimated to be equipped with the nonconforming OBD II system and an explanation of the means by which this number was determined.

(v) The number of vehicles inspected during the campaign since its inception.

(vi) The number of vehicles found to be affected by the nonconformity during the campaign since its inception.

(vii) The number of vehicles receiving remedial action during the campaign since its inception.

(viii) The number of vehicles determined to be unavailable for inspection or remedial action, during the campaign since its inception, due to exportation, theft, scrapping, or other reasons (specify).

(ix) The number of vehicles, during the campaign since its inception, determined to be ineligible for remedial action under section (d)(2)(B).

(x) An initial list, using the following data elements and designated positions, indicating all vehicles subject to recall that the manufacturer has not been invoiced for, or a subsequent list indicating all vehicles subject to the recall that the manufacturer has been invoiced for since the



previous report. The list must be supplied in a standardized computer format to be specified by the Executive Officer. The data elements must be written in “ASCII” code without a comma separating each element. For example: XTY32A71234E-9456123408-25-91A. The add flag (see below) should reflect the vehicles for which the manufacturer has not been invoiced and the delete flag should reflect changes since the previous report. The Executive Officer may change the frequency of this submittal depending on the needs of enforcement. The Executive Officer may not, however, require a frequency or format for this submittal that is different in any way from the frequency or format determined by the Executive Officer as required for reporting of data in title 13, CCR sections 2119(a)(10) and 2133(a)(10).

<i>Data Elements</i>	<i>Positions</i>
• File Code (designated by DMV)	1
• License Plate Number	2-8
• Last three VIN positions	9-11
• Recall ID Number	12-17
• Mfg. ID Number	18-22
(Mfg. Occupational License Number)	
• Recall Start Date (mmddyyyy)	23-30
• Add or Delete Flag (A/D)	31
• Complete VIN if personalized license plate (File Code “L” or “S”)	32-48

(xi) A copy of any service bulletins issued during the reporting period by the manufacturer to franchised dealerships or other service agents that relate to the nonconforming OBD II system and the remedial action and have not previously been reported to the Executive Officer.

(xii) A copy of all communications transmitted to vehicle owners that relate to the nonconforming OBD II systems and the required remedial action and have not been previously reported to the Executive Officer.

(C) If the manufacturer determines that any of the information submitted to the Executive Officer pursuant to section (d) has changed or is incorrect, the manufacturer shall submit the revised information, with an explanation.

(D) The manufacturer shall maintain in a form suitable for inspection, such as computer information, storage devices, or card files, and shall make available to the Executive Officer or his or her authorized representative upon request, the names and addresses of vehicle owners:

(i) To whom notification was sent;

(ii) Whose vehicles were repaired or inspected under the recall campaign;

(iii) Whose vehicles were determined not to be eligible for remedial action because the vehicles were modified, altered, or unavailable due to exportation, theft, scrapping, or other reason specified in the answer to sections (d)(6)(B)(viii) and (ix).

(E) The information gathered by the manufacturer to compile the reports required by these procedures must be retained for no less than one year beyond the useful life of the vehicles and must be made available to authorized personnel of the ARB upon request.

(F) The filing of any report under the provisions of these procedures must not affect the manufacturer's responsibility to file reports or applications, obtain approval, or give notice under any other provisions of law.

(7) Extension of Time.

Upon request of the manufacturer, the Executive Officer may extend any deadline set forth in section 1968.5(d) upon finding that the manufacturer has demonstrated good cause for the requested extension.

(e) *Penalties for Failing to Comply with the Requirements of Section (d).*

(1) In addition to the penalties that may be assessed by the Executive Officer pursuant to section (c) because of a manufacturer's failure to comply with the requirements of title 13, CCR section 1968.2, a manufacturer may be subject to penalties pursuant to section 43016, Health and Safety Code for failing to comply with the requirements of section (d).

(2) If a manufacturer fails to comply with a voluntary or influenced remedial action plan, the Executive Officer may order remedial action pursuant to section (c) above.

Note: Authority cited: Sections 39010, 39600, 39601, 39602.5, 43000.5, 43013, 43016, 43018, 43100, 43101, 43104, 43105, 43105.5, 43106, 43154, 43211 and 43212, Health and Safety Code; and *Engine Manufacturers Association v. California Air Resources Board* (2014) 231 Cal.App.4th 1022. Reference: Sections 39002, 39003, 39010, 39018, 39021.5, 39024, 39024.5, 39027, 39027.3, 39028, 39029, 39031, 39032, 39032.5, 39033, 39035, 39037.05, 39037.5, 39038, 39039, 39040, 39042, 39042.5, 39046, 39047, 39053, 39054, 39058, 39059, 39060, 39515, 39600, 39601, 39602.5, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211 and 43212, Health and Safety Code.

## HISTORY

1. New section filed 4-21-2003; operative 4-21-2003 pursuant to Government Code section 11343.4 (Register 2003, No. 17).
  2. Amendment filed 11-9-2007; operative 11-9-2007 pursuant to Government Code section 11343.4 (Register 2007, No. 45).
  3. Amendment of subsections (b)(6)(B)(i)a. and (c)(3)(A)(i) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
  4. Amendment of section and Note filed 7-31-2013; operative 7-31-2013 pursuant to Government Code section 11343.4(b)(3) (Register 2013, No. 31).
  5. Amendment of subsection (a)(3) - definitions of "Major Monitor" and "Nonconforming OBD II System," (b)(6)(B)(i)a., (b)(6)(B)(ii) and (c)(3)(A)-(c)(3)(A)(i)-(ii), redesignation and amendment of portion of subsection (c)(3)(A)(ii) as new subsections (c)(3)(A)(ii)a.-f., amendment of subsection (c)(3)(A)(iii), new subsection (c)(3)(A)(iii)b., subsection relettering, amendment of newly designated subsection (c)(3)(A)(iii)c. and subsections (c)(3)(A)(vi), (c)(3)(B) and amendment of Note filed 7-25-2016; operative 7-25-2016 pursuant to Government Code section 11343.4(b)(3) (Register 2016, No. 31).
- This database is current through 5/22/20 Register 2020, No. 21  
13 CCR § 1968.5, 13 CA ADC § 1968.5

**Section 1976. Standards and Test Procedures for Motor Vehicle Fuel  
Evaporative Emissions.**

(a) Fuel evaporative emissions from 1970 through 1977 model passenger cars and light-duty trucks are set forth in Title 40, Code of Federal Regulations, Part 86, Subparts A and C, as it existed on June 20, 1973. These standards are enforced in California pursuant to section 43008 of the Health and Safety Code.

(b)(1)

(1) Evaporative emissions for 1978 and subsequent model gasoline-fueled, 1983 and subsequent model liquified petroleum gas-fueled, and 1993 and subsequent model alcohol-fueled motor vehicles and hybrid electric vehicles subject to exhaust emission standards under this article, except petroleum-fueled diesel vehicles, compressed natural gas-fueled vehicles, hybrid electric vehicles that have sealed fuel systems which can be demonstrated to have no evaporative emissions, and motorcycles, shall not exceed the following standards.

(A) For vehicles identified below, tested in accordance with the test procedure based on the Sealed Housing for Evaporative Determination as set forth in Title 40, Code of Federal Regulations, sections 86.130-78 through 86.143-90 as they existed July 1, 1989, the evaporative emission standards are:

		Hydrocarbons <sup>1</sup>
		Diurnal + Hot Soak (grams/test)
Vehicle Type	Model Year	50K miles
Passenger cars	1978 and 1979	6.0
Light-duty trucks		6.0
Medium-duty vehicles		6.0
Heavy-duty vehicles		6.0
Passenger cars	1980-1994 <sup>2</sup>	2.0
Light-duty trucks		2.0
Medium-duty vehicles		2.0
Heavy-duty vehicles		2.0

<sup>1</sup> Organic Material Hydrocarbon Equivalent, for alcohol-fueled vehicles.

<sup>2</sup> Other than hybrid electric vehicles.

(B) For the vehicles identified below, tested in accordance with the test procedure which includes the running loss test, the hot soak test, and the 72 hour diurnal test, the evaporative emission standards are:

		Hydrocarbons <sup>1</sup>	
		Three-Day Diurnal + Hot Soak (grams/test)	Running Loss (grams/mile)
Vehicle Type	Model Year	Useful Life <sup>2</sup>	Useful Life <sup>2</sup>
Passenger cars	1995 through 2005 <sup>3</sup>	2.0	0.05
Light-duty trucks		2.0	0.05
Medium-duty vehicles (6,001-8,500 lbs. GVWR)			
with fuel tanks < 30 gallons		2.0	0.05
with fuel tanks ≥ 30 gallons		2.5	0.05
(8,501-14,000 lbs. GVWR) <sup>4</sup>		3.0	0.05
Heavy-duty vehicles (over 14,000 lbs. GVWR)		2.0	0.05
Hybrid electric passenger cars	1993 through 2005 <sup>5</sup>	2.0	0.05
Hybrid electric light-duty trucks		2.0	0.05
Hybrid electric medium-duty vehicles		2.0	0.05

<sup>1</sup> Organic Material Hydrocarbon Equivalent, for alcohol-fueled vehicles.

<sup>2</sup> For purposes of this paragraph, “useful life” shall have the same meaning as provided in section 2112, Title 13, California Code of Regulations. Approval of vehicles which are not exhaust emission tested using a chassis dynamometer pursuant to section 1960.1 or 1961, Title 13, California Code of Regulations shall be based on an engineering evaluation of the system and data submitted by the applicant.

<sup>3</sup> The running loss and useful life three-day diurnal plus hot soak evaporative emission standards (hereinafter “running loss and useful life standards”) shall be phased in beginning with the 1995 model year. Each manufacturer, except ultra-small volume and small volume manufacturers, shall certify the specified percent (a) of passenger cars and (b) of light-duty trucks, medium-duty vehicles and heavy-duty vehicles to the running loss and useful life standards according to the following schedule:

[https://govt.westlaw.com/calregs/Link/Document/Blob/Ia2d3c410718f11daa7f7740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=f52c0ae6-5d0d-420e-a55b-b36e5e4269c4&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/Ia2d3c410718f11daa7f7740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=f52c0ae6-5d0d-420e-a55b-b36e5e4269c4&contextData=(sc.Default))

<b><i>Model Year</i></b>	<b><i>Minimum Percentage of Vehicles Certified to Running Loss and Useful Life Standards*</i></b>
<b>1995</b>	<b>10 percent</b>
<b>1996</b>	<b>30 percent</b>
<b>1997</b>	<b>50 percent</b>

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 \*The minimum percentage of motor vehicles of each vehicle type required to be certified to the running loss and useful life standards shall be based on the manufacturer's projected California model-year sales (a) of passenger cars and (b) of light-duty trucks, medium-duty vehicles and heavy-duty vehicles. Optionally, the percentage of motor vehicles can also be based on the manufacturer's projected California model-year sales (a) of passenger cars and light-duty trucks and (b) of medium-duty vehicles and heavy-duty vehicles.

Beginning with the 1998 model year, all motor vehicles subject to the running loss and useful life standards, except those produced by ultra-small volume manufacturers, shall be certified to the specified standards. In the 1999 through 2005 model

years, all motor vehicles subject to the running loss and useful life standards, including those produced by ultra-small volume manufacturers, shall be certified to the specified standards.

All 1995 through 1998 model-year motor vehicles which are not subject to running loss and useful life standards pursuant to the phase-in schedule shall comply with the 50,000-mile standards in effect for 1980 through 1994 model-year vehicles.

<sup>4</sup> For the 1995 model year only, the evaporative emission standards for complete vehicles in this weight range shall be 2.0 grams/test and compliance with the evaporative emission standards shall be based on the SHED conducted in accordance with the procedures set forth in Title 40, Code of Federal Regulations, sections 86.130-78 through 86.143-90 as they existed July 1, 1989. For the 1995 through 2005 model years, the evaporative emission standards for incomplete vehicles in this weight range shall be 2.0 grams/test and compliance with the evaporative emission standards shall be based on the test procedures specified in paragraph 4.g. of the “California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles.”

<sup>5</sup> The running loss and useful life standards for all hybrid electric vehicles shall be effective beginning in the 1993 model year.

(C) For vehicles identified below, tested in accordance with the test procedure which includes the hot soak test and the 48 hour diurnal test, the evaporative emission standards are:

		Hydrocarbons <sup>1</sup>
		Two-Day Diurnal + Hot Soak
		(grams/test)
Vehicle Type	Model Year	Useful Life <sup>2</sup>
Passenger cars	1996 through	2.5
Light-duty trucks	2005 <sup>3</sup>	2.5
Medium-duty vehicles (6,001 - 8,500 lbs. GVWR)		
with fuel tanks < 30 gallons		2.5
with fuel tanks ≥ 30 gallons		3.0
(8,501 - 14,000 lbs. GVWR)		3.5
Heavy-duty vehicles (over 14,000 lbs. GVWR)		4.5
Hybrid electric passenger cars	1996 through	2.5
Hybrid electric light-duty trucks	2005 <sup>3</sup>	2.5
Hybrid electric medium-duty vehicles		2.5

<sup>1</sup> Organic Material Hydrocarbon Equivalent for alcohol-fueled vehicles.

<sup>2</sup> For purposes of this paragraph, “useful life” shall have the same meaning as provided in section 2112, Title 13, California Code of Regulations. Approval of vehicles which are not exhaust emission tested using a chassis dynamometer pursuant to section 1960.1 or 1961, Title 13, California Code of Regulations shall be based on an engineering evaluation of the system and data submitted by the applicant.

<sup>3</sup> The two-day diurnal plus hot soak evaporative emission standards (hereinafter “supplemental standards”) shall be phased-in beginning with the 1996 model year. Those vehicles certified under the running loss and useful life standards for the 1996 through 2005 model years must also be certified under the supplemental standards.

(D) Zero-emission vehicles shall produce zero fuel evaporative emissions under any and all possible operational modes and conditions.

(E) For 2001 through 2014 model year vehicles, the optional zero-fuel evaporative emission standards for the three-day and two-day diurnal-plus-hot-soak tests are 0.35 grams per test for passenger cars, 0.50 grams per test for light-duty trucks 6,000 lbs. GVWR and under, and 0.75 grams per test for light-duty trucks from 6,001 to 8,500 lbs. GVWR, to account for vehicle non-fuel evaporative emissions (resulting from paints, upholstery, tires, and other vehicle sources). Vehicles demonstrating compliance with these evaporative emission standards shall also have zero (0.0) grams of fuel evaporative emissions per test for the three-day and two-day diurnal-plus-hot-soak tests. The “useful life” shall be 15 years or 150,000 miles, whichever occurs first. In lieu of demonstrating compliance with the zero (0.0) grams of fuel evaporative emissions per test over the three-day and two-day diurnal-plus-hot-soak tests, the manufacturer may submit for advance Executive Officer approval a test plan to demonstrate that the vehicle has zero (0.0) grams of fuel evaporative emissions throughout its useful life.

Additionally, in the case of a SULEV vehicle for which a manufacturer is seeking a partial ZEV credit, the manufacturer may prior to certification elect to have measured fuel evaporative emissions reduced by a specified value in all certification and in-use testing of the vehicle as long as measured mass exhaust emissions of NMOG for the vehicle are increased in all certification and in-use testing. The measured fuel evaporative emissions shall be reduced in increments of 0.1 gram per test, and the measured mass exhaust emissions of NMOG from the vehicle shall be increased by a gram per mile factor, to be determined by the Executive Officer, for every 0.1 gram per test by which the measured fuel evaporative emissions are reduced. For the purpose of this calculation, the evaporative emissions shall be measured, in grams per test, to a minimum of three significant figures.

(F) For the 2004 through 2014 model motor vehicles identified below, tested in accordance with the test procedures described in Title 40, Code of Federal Regulations, sections 86.130-78 through 86.143-90 as they existed July 1, 1989 and as modified by the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles” incorporated by reference in section 1976(c), the evaporative emission standards are:

<i>Vehicle Type</i>	<i>Hydrocarbon<sup>1</sup> Standards<sup>2 3 4</sup></i>		
	<i>Running Loss</i>	<i>Three Day Diurnal</i>	<i>Two-Day Diurnal</i>
	<i>(grams per mile)</i>	<i>+ Hot Soak (grams per test)</i>	<i>+ Hot Soak (grams per test)</i>
Passenger cars	0.05	0.50	0.65
Light-duty trucks (under 8,501 lbs. GVWR)			
6,000 lbs. GVWR and under			
6,001 - 8,500 lbs. GVWR	0.05	0.65	0.85
Medium-duty vehicles (8,501 - 14,000 lbs. GVWR)			
Heavy-duty vehicles (over 14,000 lbs. GVWR)	0.05	1.00	1.25

<sup>1</sup> Organic Material Hydrocarbon Equivalent for alcohol-fueled vehicles.

<sup>2</sup> For all vehicles certified to these standards, the “useful life” shall be 15 years or 150,000 miles, whichever first occurs. Approval of vehicles which are not exhaust emission tested using a chassis dynamometer pursuant to section 1960.1 or 1961, title 13, California Code of Regulations shall be based on an engineering evaluation of the system and data submitted by the applicant.

3

(a) These evaporative emission standards shall be phased-in beginning with the 2004 model year. Each manufacturer, except small volume manufacturers, shall certify at a minimum the specified percentage of its vehicle fleet to the evaporative emission standards in this table or the optional zero-evaporative emission standards in section 1976(b)(1)(E) according to the schedule set forth below. For purposes of this paragraph (a), each manufacturer's vehicle fleet consists of the total projected California sales of the manufacturer's gasoline-fueled, liquefied petroleum-fueled and alcohol-fueled passenger cars, light-duty trucks, medium-duty vehicles, and heavy-duty vehicles.

	<i>Minimum Percentage of Vehicles Certified to the Standards in</i>
<i>Model Year</i>	<i>§§1976(b)(1)(F) and (b)(1)(E)</i>
2004	40
2005	80
2006 and subsequent	100

A small volume manufacturer shall certify 100 percent of its 2006 and subsequent model vehicle fleet to the evaporative emission standards in the table or the optional zero-evaporative emission standards in section 1976(b)(1)(E).

All 2004 through 2005 model-year motor vehicles which are not subject to these standards or the standards in section 1976(b)(1)(E) pursuant to the phase-in schedule shall comply with the requirements of sections 1976(b)(1)(B) and (C).

(b) A manufacturer may use an “Alternative or Equivalent Phase-in Schedule” to comply with the phase-in requirements. An “Alternative Phase-in” is one that achieves at least equivalent emission reductions by the end of the last model year of the scheduled phase-in. Model-year emission reductions shall be calculated by multiplying the percent of vehicles (based on the

manufacturer's projected California sales volume of the applicable vehicle fleet) meeting the new requirements per model year by the number of model years implemented prior to and including the last model year of the scheduled phase-in. The "cumulative total" is the summation of the model-year emission reductions (e.g., the three model-year 40/80/100 percent phase-in schedule would be calculated as:  $(40\% * 3 \text{ years}) + (80\% * 2 \text{ years}) + (100\% * 1 \text{ year}) = 380$ ). The required cumulative total for the phase-in of these standards is 380 emission reductions. Any alternative phase-in that results in an equal or larger cumulative total than the required cumulative total by the end of the last model year of the scheduled phase-in shall be considered acceptable by the Executive Officer only if all vehicles subject to the phase-in comply with the respective requirements in the last model year of the required phase-in schedule. A manufacturer shall be allowed to include vehicles introduced before the first model year of the scheduled phase-in (e.g., in the previous example, 10 percent introduced one year before the scheduled phase-in begins would be calculated as:  $(10\% * 4 \text{ years}) = 40$ ) and added to the cumulative total.

(c) These evaporative emission standards do not apply to zero-emission vehicles.

<sup>4</sup> In-use compliance whole vehicle testing shall not begin until the motor vehicle is at least one year from the production date and has accumulated a minimum of 10,000 miles. For vehicles introduced prior to the 2007 model year, in-use compliance standards of 1.75 times the "Three-Day Diurnal + Hot-Soak" and "Two-Day Diurnal + Hot-Soak" gram per test standards shall apply for only the first three model years of an evaporative family certified to a new standard.

(G) For 2015 and subsequent model motor vehicles, the following evaporative emission requirements apply:

1. A manufacturer must certify all vehicles subject to this section to the emission standards specified in either Option 1 or Option 2 below.

a Option 1. The evaporative emissions from 2015 and subsequent model motor vehicles, tested in accordance with the test procedure sequence described in the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," incorporated by reference in section 1976(c), shall not exceed:



<i>Vehicle Type</i>	<i>Hydrocarbon<sup>(1)</sup> Emission Standards<sup>(2)</sup></i>		
	<i>Running Loss (grams per mile)</i>	<i>Three-Day Diurnal + Hot Soak and Two-Day Diurnal + Hot Soak</i>	<i>Whole Vehicle (grams per test)</i>
			<i>Fuel Only<sup>(3)</sup> (grams per test)</i>
Passenger cars	0.05	0.350	0.0
Light-duty trucks 6,000 lbs. GVWR and under	0.05	0.500	0.0
Light-duty trucks 6,001 - 8,500 lbs. GVWR	0.05	0.750	0.0
Medium-duty passenger vehicles	0.05	0.750	0.0
Medium-duty vehicles (8,501 - 14,000 lbs. GVWR)	0.05	0.750	0.0
Heavy-duty vehicles (over 14,000 lbs. GVWR)	0.05	0.750	0.0

<sup>1</sup> Organic Material Hydrocarbon Equivalent for alcohol-fueled vehicles.

<sup>2</sup> For all vehicles certified to these standards, the “useful life” shall be 15 years or 150,000 miles, whichever occurs first. Approval of vehicles that are not exhaust emission tested using a chassis dynamometer pursuant to section 1961, title 13, California Code of Regulations shall be based on an engineering evaluation of the system and data submitted by the applicant.

<sup>3</sup> In lieu of demonstrating compliance with the fuel-only emission standard (0.0 grams per test) over the three-day and two-day diurnal plus hot soak tests, a manufacturer may, with advance Executive Officer approval, demonstrate compliance through an alternate test plan.

b Option 2. The evaporative emissions from 2015 and subsequent model motor vehicles, tested in accordance with the test procedure sequence described in the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” incorporated by reference in section 1976(c), shall not exceed:

Vehicle Type	Hydrocarbon <sup>(1)</sup> Emission Standards <sup>(2)</sup>		
	Running Loss (grams per mile)	Highest Whole Vehicle Diurnal + Hot Soak <sup>(3)(4)(5)</sup> (grams per test)	Canister Bleed <sup>(6)</sup> (grams per test)
Passenger cars; and Light-duty trucks 6,000 lbs. GVWR and under, and 0 - 3,750 lbs. LVW	0.05	0.300	0.020
Light-duty trucks 6,000 lbs. GVWR and under, and 3,751 - 5,750 lbs. LVW	0.05	0.400	0.020
Light-duty trucks 6,001 - 8,500 lbs. GVWR; and Medium-duty passenger vehicles	0.05	0.500	0.020
Medium-duty vehicles (8,501 - 14,000 lbs. GVWR); and Heavy-duty vehicles (over 14,000 lbs. GVWR)	0.05	0.600	0.030

<sup>1</sup> Organic Material Hydrocarbon Equivalent for alcohol-fueled vehicles.

<sup>2</sup> Except as provided below, for all vehicles certified to these standards, the “useful life” shall be 15 years or 150,000 miles, whichever occurs first. For 2016 and previous model vehicles, 2017 and previous model vehicles >6,000 lbs. GVWR, and 2021 and previous model vehicles certified by a small volume manufacturer, the canister bleed standards are certification standards only. Manufacturers are not required to establish deterioration factors for canister bleed emissions. Approval of vehicles that are not exhaust emission tested using a chassis dynamometer pursuant to section 1961, title 13, California Code of Regulations shall be based on an engineering evaluation of the system and data submitted by the applicant.

<sup>3</sup> The manufacturer shall determine compliance by selecting the highest whole vehicle diurnal plus hot soak emission value of the Three-Day Diurnal Plus Hot Soak Test and of the Two-Day Diurnal Plus Hot Soak Test.

<sup>4</sup> Fleet-Average Option for the Highest Whole Vehicle Diurnal Plus Hot Soak Emission Standard Within Each Emission Standard Category. A manufacturer may optionally comply with the highest whole vehicle diurnal plus hot soak emission standards by using fleet-average hydrocarbon emission values. To participate, a manufacturer must utilize the fleet-average option for all of its emission standard categories and calculate a separate fleet-average hydrocarbon emission value for each emission standard category. The emission standard categories are as follows: (1) passenger cars and light-duty trucks 6,000 pounds GVWR and under, and 0 - 3,750 pounds LVW; (2) light-duty trucks 6,000 pounds GVWR and under, and 3,751 - 5,750 pounds LVW; (3) light-duty trucks 6,001 - 8,500 pounds GVWR and medium-duty passenger vehicles; and (4) medium-duty and heavy-duty vehicles. The fleet-average hydrocarbon emission value for each emission standard category shall be calculated as follows:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I65de7404eb5111e1b3e8ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=f52c0ae6-5d0d-420e-a55b-b36e5e4269c4&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I65de7404eb5111e1b3e8ad00d20c6353.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=f52c0ae6-5d0d-420e-a55b-b36e5e4269c4&contextData=(sc.Default))

$$\sum_{i=1}^n [(\text{number of vehicles in the evaporative family})_i \times (\text{family emission limit})_i] +$$

$$\sum_{i=1}^n (\text{number of vehicles in the evaporative family})_i$$

Where

“n” = a manufacturer's total number of Option 2 certification evaporative families within an emission standard category for a given model year;

“number of vehicles in the evaporative family” = the number of vehicles produced and delivered for sale in California in the evaporative family;

“family emission limit” = the numerical value selected by the manufacturer for the evaporative family that serves as the emission standard for the evaporative family with respect to all testing, instead of the emission standard specified in this section 1976 (b)(1)(G)1.b. The family emission limit shall not exceed 0.500 grams per test for passenger cars; 0.650 grams per test for light duty trucks 6,000 pounds GVWR and under; 0.900 grams per test for light-duty trucks 6,001 - 8,500 pounds GVWR; and 1.000 grams for medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles. In addition, the family emission limit shall be set in increments of 0.025 grams per test.

<sup>5</sup> Calculation of Hydrocarbon Credits or Debits for the Fleet-Average Option.

(1) Calculation of Hydrocarbon Credits or Debits. For each emission standard category in the model year, a manufacturer shall calculate the hydrocarbon credits or debits, as follows:

$$[(\text{Applicable Hydrocarbon Emission Standard for the Emission Standard Category}) - (\text{Manufacturer's Fleet-Average Hydrocarbon Emission Value for the Emission Standard Category})] \times (\text{Total Number of Affected Vehicles})$$

where

“Total Number of Affected Vehicles” = the total number of vehicles in the evaporative families participating in the fleet-average option, which are produced and delivered for sale in California, for the emission standard category of the given model year.

A negative number constitutes hydrocarbon debits, and a positive number constitutes hydrocarbon credits accrued by the manufacturer for the given model year. Hydrocarbon credits earned in a given model year shall retain full value through the fifth model year after they are earned. At the beginning of the sixth model year, the hydrocarbon credits will have no value.

(2) Procedure for Offsetting Hydrocarbon Debits. A manufacturer shall offset hydrocarbon debits with hydrocarbon credits for each emission standard category within three model years after the debits have been incurred. If total hydrocarbon debits are not equalized within three model years after they have been incurred, the manufacturer shall be subject to the Health and Safety Code section 43211 civil penalties applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the hydrocarbon debits are not equalized by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's emission standards shall be determined by dividing the total amount of hydrocarbon debits for the model year in the emission standard category by the applicable hydrocarbon emission standard for the model year in which the debits were first incurred.

Additionally, to equalize the hydrocarbon debits that remain at the end of the three model year offset period: (1) hydrocarbon credits may be exchanged between passenger cars and light-duty trucks 6,000 pounds GVWR and under and 0-3,750 pounds LVW, and light-duty trucks 6,000 pounds GVWR and under and 3,751-5,750 pounds LVW and (2) hydrocarbon credits may be exchanged between light-duty trucks 6,001-8,500 pounds GVWR and medium-duty passenger vehicles, and medium-duty vehicles and heavy-duty vehicles.

<sup>6</sup> Vehicle Canister Bleed Emission. Compliance with the canister bleed emission standard shall be determined based on the Bleed Emission Test Procedure described in the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” incorporated by reference in section 1976(c), and demonstrated on a stabilized canister system. Vehicles with a non-integrated refueling canister-only system are exempt from the canister bleed emission standard.

2. *Phase-In Schedule.* For each model year, a manufacturer shall certify, at a minimum, the specified percentage of its vehicle fleet to the evaporative emission standards set forth in section 1976(b)(1)(G)1.a. or section 1976(b)(1)(G)1.b., according to the schedule set forth below. For the purpose of this section 1976(b)(1)(G)2., the manufacturer's vehicle fleet consists of the vehicles produced and delivered for sale by the manufacturer in California that are subject to the emission standards in section 1976(b)(1)(G)1. All 2015 through 2022 model motor vehicles that are not subject to these standards pursuant to the phase-in schedule shall comply with the requirements for 2004 through 2014 model motor vehicles, as described in section 1976(b)(1)(F), or the optional zero-fuel evaporative emission standards for 2001 through 2014 model motor vehicles, as described in section 1976(b)(1)(E).

<i>Model Years</i>	<i>Minimum Percentage of Vehicle Fleet<sup>(1)(2)</sup></i>
2015, 2016, and 2017	Average of vehicles certified to section 1976(b)(1)(E) in model years 2012, 2013, and 2014 <sup>(3)(4)</sup>
2018 and 2019	60
2020 and 2021	80
2022 and subsequent	100

<sup>1</sup> For the 2018 through 2022 model years only, a manufacturer may use an alternate phase-in schedule to comply with the phase-in requirements. An alternate phase-in schedule must achieve equivalent compliance volume by the end of the last model year of the scheduled phase-in (2022). The compliance volume is the number calculated by multiplying the percent of vehicles (based on the vehicles produced and delivered for sale by the manufacturer in California) meeting the new requirements in each model year by the number of years implemented prior to and including the last model year of the scheduled phase-in, then summing these yearly results to determine a cumulative total. The cumulative total of the five year (60/60/80/80/100) scheduled phase-in set forth above is calculated as follows: (60\*5 years) + (60\*4 years) + (80\*3 years) + (80\*2 years) + (100\*1 year) = 1040. Accordingly, the required cumulative total for any alternate phase-in schedule of these emission standards is 1040. The Executive Officer shall consider acceptable any alternate phase-in schedule that results in an equal or larger cumulative total by the end of the last model year of the scheduled phase-in (2022).

<sup>2</sup> Small volume manufacturers are not required to comply with the phase-in schedule set forth in this table. Instead, they shall certify 100 percent of their 2022 and subsequent model year vehicle fleet to the evaporative emission standards set forth in section 1976(b)(1)(G)1.a. or section 1976(b)(1)(G)1.b.

<sup>3</sup> The percentage of vehicle fleet averaged across the 2015, 2016, and 2017 model years shall be used to determine compliance with this requirement.

<sup>4</sup> The minimum percentage required in the 2015, 2016, and 2017 model years is determined by averaging the percentage of vehicles certified to the emission standards in section 1976(b)(1)(E) in each of the manufacturer's 2012, 2013, and 2014 model year vehicle fleets. For the purpose of calculating this average, a manufacturer shall use the percentage of vehicles produced and delivered for sale in California for the 2012, 2013, and 2014 model years. A manufacturer may calculate this average percentage using the projected sales for these model years in lieu of actual sales.

3. *Carry-Over of 2014 Model-Year Evaporative Families Certified to the Zero-Fuel Evaporative Emission Standards.* A manufacturer may carry over 2014 model motor vehicles certified to the zero-fuel (0.0 grams per test) evaporative emission standards set forth in section 1976(b)(1)(E) through the 2019 model year and be considered compliant with the requirements of section 1976(b)(1)(G)1. For all motor vehicles that are certified via this carry-over provision, the emission standards set forth in section 1976(b)(1)(E) shall apply when determining in-use compliance throughout the vehicle's useful

life. If the manufacturer chooses to participate in the fleet-average option for the highest whole vehicle diurnal plus hot soak emission standard, the following family emission limits are assigned to these evaporative families for the calculation of the manufacturer's fleet-average hydrocarbon emission value.

	<i>Highest Whole Vehicle Diurnal + Hot Soak</i>
<i>Vehicle Type</i>	<i>(grams per test)</i>
Passenger cars	0.300
Light-duty trucks 6,000 lbs. GVWR and under, and 0 - 3,750 lbs. LVW	0.300
Light-duty trucks 6,000 lbs. GVWR and under, and 3,751 - 5,750 lbs. LVW	0.400
Light-duty trucks 6,001 - 8,500 lbs. GVWR	0.500

4. Pooling Provision. The following pooling provision applies to the fleet-average option for the Highest Whole Vehicle Diurnal Plus Hot Soak Emission Standard in section 1976(b)(1)(G)1.b. and to the phase-in requirements in section 1976(b)(1)(G)2.

a. For the fleet-average option set forth in section 1976(b)(1)(G)1.b., a manufacturer must demonstrate compliance, for each model year, based on one of two options applicable throughout the model year, either:

Pooling Option 1: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section 1976(b)(1)(G)1.b., and are produced and delivered for sale in California; or

Pooling Option 2: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section 1976(b)(1)(G)1.b., and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's evaporative emission standards set forth in section 1976(b)(1)(G)1. for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

b. For the phase-in requirements in section 1976(b)(1)(G)2., a manufacturer must demonstrate compliance, for each model year, based on one of two options applicable throughout the model year, either:

Pooling Option 1: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California

evaporative emission standards in section 1976(b)(1)(G)1., and are produced and delivered for sale in California; or

Pooling Option 2: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section 1976(b)(1)(G)1., and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's evaporative emission standards set forth in section 1976(b)(1)(G)1. for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

c. A manufacturer that selects Pooling Option 2 must notify the Executive Officer of that selection in writing before the start of the applicable model year or must comply with Pooling Option 1. Once a manufacturer has selected Pooling Option 2, that selection applies unless the manufacturer selects Option 1 and notifies the Executive Officer of that selection in writing before the start of the applicable model year.

d. When a manufacturer is demonstrating compliance using Pooling Option 2 for a given model year, the term “in California” as used in section 1976(b)(1)(G) means California, the District of Columbia, and all states that have adopted California's evaporative emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

e. A manufacturer that selects Pooling Option 2 must provide to the Executive Officer separate values for the number of vehicles in each evaporative family produced and delivered for sale in the District of Columbia and for each individual state within the average.

5. **Optional Certification for 2014 Model Motor Vehicles.** A manufacturer may optionally certify its 2014 model motor vehicles to the evaporative emission standards set forth in section 1976(b)(1)(G)1.

6. *Effective leak diameter standard and procedure.* Manufacturers shall demonstrate that for 2018 and subsequent model vehicles  $\leq$  14,000 lbs. GVWR certifying to the evaporative emission standards set forth in 1976(b)(1)(G), fuel systems do not exceed an effective leak diameter of 0.02 inches when tested in accordance with the test procedure sequence described in the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” incorporated by reference in section 1976(c). This requirement does not apply to 2021 and previous model vehicles certified by a small volume manufacturer. For vehicles with fuel tanks exceeding 25 gallons nominal fuel tank capacity, manufacturers may request approval from the Executive Officer for a leak standard greater than 0.020 inches, up to a maximum value of 0.040 inches.

7. *Auxiliary engines and fuel systems.* For 2017 and subsequent model vehicles  $\leq$  6,000 lbs. GVWR equipped with an auxiliary engine and 2018 and subsequent model vehicles  $>$ 6,000 lbs. GVWR equipped with an auxiliary engine, manufacturers shall demonstrate compliance in accordance with the provisions set forth in the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” incorporated by reference in section

1976(c). These requirements do not apply to 2021 and previous model vehicles certified by a small volume manufacturer.

(b)(2)

(2) Evaporative emissions for gasoline-fueled motorcycles subject to exhaust emission standards under this article shall not exceed:

<i>Motorcycle Class</i>	<i>Model Year</i>	<i>Hydrocarbons (grams per test)</i>
Class I and II (50-279cc)	1983 and 1984	6.0
	1985 and subsequent	2.0
Class III (280cc and larger)	1984 and 1985	6.0
	1986 and subsequent	2.0
Class III (280cc and larger) (Optional Standard for Small- Volume Motorcycle Manufacturers)	1986-1988	6.0

(c) The test procedures for determining compliance with the standards in subsection (b) above applicable to 1978 through 2000 model year vehicles are set forth in “California Evaporative Emission Standards and Test Procedures for 1978-2000 Model Motor Vehicles,” adopted by the state board on April 16, 1975, as last amended August 5, 1999, which is incorporated herein by reference. The test procedures for determining compliance with standards applicable to 2001 and subsequent model year vehicles are set forth in the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” adopted by the state board on August 5, 1999, and as last amended September 2, 2015, which is incorporated herein by reference.

(d) Motorcycle engine families certified to 0.2 grams per test or more below the applicable standards shall be exempted from the state board's “Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks” pursuant to section 2235, Title 13, California Code of Regulations.

(e) Small volume motorcycle manufacturers electing to certify 1986, 1987, or 1988 model-year Class III motorcycles in accordance with the optional 6.0 grams per test evaporative emission standard shall submit, with the certification application, a list of the motorcycle models for which it intends to seek California certification and estimated sales data for such models. In addition, each such manufacturer shall, on or before July 1 of each year in which it certifies motorcycles under the optional standard, submit a report describing its efforts and progress toward meeting the more stringent evaporative emission standards. The report shall also contain a description of the manufacturer's current hydrocarbon evaporative emission control development status, along with supporting test data, and shall summarize future planned development work.

(f) Definitions Specific to this Section.

(1) For purposes of this section, “small volume motorcycle manufacturer” means a manufacturer which sells less than 5,000 new motorcycles per year in California.

(2) For the purposes of this section, “ultra-small volume manufacturer” means any vehicle manufacturer with California sales less than or equal to 300 new vehicles per model year based on the average number of vehicles sold by the manufacturer in the previous three consecutive model years, and “small volume manufacturer” means, for 1978 through 2000 model years, any vehicle manufacturer with California sales less than or equal to 3000 new vehicles per model year based on the average number of vehicles sold by the manufacturer in the previous three consecutive model years. For 2001 and subsequent model motor vehicles, “small volume manufacturer” has the meaning set forth in section 1900(a).

(3) “Non-integrated refueling emission control system” is defined in 40 Code of Federal Regulations §86.1803-01.

(4) “Non-integrated refueling canister-only system” means a subclass of a non-integrated refueling emission control system, where other non-refueling related evaporative emissions from the vehicle are stored in the fuel tank, instead of in a vapor storage unit(s).

Note: Authority cited: Sections 39500, 39600, 39601, 39667, 43013, 43018, 43101, 43104, 43105, 43106 and 43107, Health and Safety Code. Reference: Sections 39002, 39003, 39500, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43204 and 43205, Health and Safety Code.

## HISTORY

1. Amendment filed 4-20-83; effective upon filing pursuant to Government Code section 11346.2(d) (Register 83, No. 17).
2. Amendment filed 12-16-85; effective upon filing pursuant to Government Code section 11346.2(d) (Register 85, No. 51).
3. Amendment of subsections (b) and (c) filed 3-3-88; operative 4-2-88 (Register 88, No. 12).
4. Amendment filed 2-21-90; operative 3-23-90 (Register 90, No. 8).
5. Amendment of subsection (c) filed 6-14-90; effective 7-14-90 (Register 90, No. 33).
6. Amendment filed 12-17-91; operative 1-16-92 (Register 92, No. 12).
7. Amendment of subsection (b)(1) and table, and new subsection (b)(5) filed 11-8-93; operative 12-8-93 (Register 93, No. 46).
8. Editorial correction of printing errors in table and designation of subsections (Register 93, No. 46).
9. Amendment filed 12-15-94; operative 12-15-94 pursuant to Government Code section 11346.2(d) (Register 94, No. 50).
10. Change without regulatory effect amending subsections (b)(1)(B)(4) and (b)(1)(C) filed 3-21-95 pursuant to section 100, title 1, California Code of Regulations (Register 95, No. 12).
11. Amendment of subsection (c) filed 6-19-96; operative 6-19-96 pursuant to Government Code section 11343.4(d) (Register 96, No. 25).
12. New subsection (b)(1)(D) filed 1-3-97; operative 1-3-97 pursuant to Government Code section 11343.4(d) (Register 97, No. 1).
13. Editorial correction restoring inadvertently omitted subsections (b)(1)(D)-(e) (Register 97, No. 7).
14. Editorial correction of subsection (b)(1)(B) note (3) and (b)(1)(C) Table (Register 97, No. 38).
15. Amendment filed 9-16-97; operative 10-16-97 (Register 97, No. 38).
16. Amendment of subsections (b)(1)(B), (b)(1)(C), (c) and (f)(2) and new subsections (b)(1)(E)-(F) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
17. Amendment of incorporated document California Evaporative Emission Standards and Test Procedures for 1978-2000 Model Motor Vehicles and amendment of subsection (c) filed 1-18-2007; operative 2-17-2007 (Register 2007, No. 3).
18. Amendment of subsection (c) and amendment of Note filed 12-5-2007; operative 1-4-2008 (Register 2007, No. 49).
19. Amendment of subsection (c) filed 1-14-2010; operative 2-13-2010 (Register 2010, No. 3).
20. Amendment of subsection (c) filed 11-8-2010; operative 12-8-2010 (Register 2010, No. 46).
21. Amendment of subsections (b)(1)(E)-(F), new subsections (b)(1)(G)-(b)(1)(G)5., amendment of subsections (c) and (f) and new subsections (f)(3)-(4) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
22. Amendment of subsections (b)(1)(G)3. and (c) filed 12-31-2012; operative 12-31-2012 pursuant to Government Code section 11343.4 (Register 2013, No. 1).



23. Amendment of subsections (b)(1)(G)1.b.-(b)(1)(G)3., new subsections (b)(1)(G)6.-7. and amendment of subsection (c) filed 10-8-2015; operative 10-8-2015 pursuant to Government Code section 11343.4(b)(3) (Register 2015, No. 41).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1976, 13 CA ADC § 1976

## **Section 1978. Standards and Test Procedures for Vehicle Refueling Emissions.**

(a)

(1) Vehicle refueling emissions for 1998 and subsequent model gasoline-fueled, alcohol-fueled, diesel-fueled, liquefied petroleum gas-fueled, fuel-flexible, and hybrid electric passenger cars, light-duty trucks, and medium-duty vehicles with a gross vehicle weight rating less than 8501 pounds, 2015 and subsequent model gasoline-fueled, alcohol-fueled, diesel-fueled, liquefied petroleum gas-fueled, fuel-flexible, and hybrid electric medium-duty vehicles with a gross vehicle weight rating between 8,501 and 14,000 pounds, and 2022 and subsequent model gasoline-fueled, alcohol-fueled, diesel-fueled, liquefied petroleum gas-fueled, fuel-flexible, and hybrid electric heavy-duty vehicles with a gross vehicle weight rating greater than 14,000 pounds shall not exceed the following standards. Natural gas-fueled vehicles are exempt from meeting these refueling standards, but the refueling receptacles on natural gas-fueled vehicles must comply with the receptacle provisions of the American National Standards Institute Standard for Compressed Natural Gas Vehicle Fueling Connection Devices, ANSI NGV1-2006, which is incorporated herein by reference. The standards apply equally to certification and in-use vehicles.

Hydrocarbons (for gasoline-fueled, diesel-fueled, and hybrid electric vehicles): 0.20 grams per gallon of fuel dispensed.

Organic Material Hydrocarbon Equivalent (for alcohol-fueled, fuel-flexible, and hybrid electric vehicles): 0.20 grams per gallon of fuel dispensed.

Hydrocarbons (for liquefied petroleum gas-fueled vehicles): 0.15 gram per gallon of fuel dispensed.

(2) Vehicles powered by diesel fuel are not required to conduct testing to demonstrate compliance with the refueling emission standards set forth above, provided that:

(A) The manufacturer can attest that the vehicle meets the 0.20 grams/gallon refueling emission standard; and

(B) The certification requirement described in paragraph (A) is provided in writing and applies for the full useful life of the vehicle, as defined in section 2112.

In addition to the above provisions, the ARB reserves the authority to require testing to enforce compliance and to prevent noncompliance with the refueling emission standard.

Vehicles certified to the refueling emission standard under this provision shall not be counted in the phase-in sales percentage compliance determinations.

(3) Through model year 2014, the manufacturer shall adhere to the following phase-in schedule, as determined by projected vehicle sales throughout the United States, with the exception of small volume manufacturers.

<i>Class of Vehicle</i>	<i>40% Fleet</i>	<i>80% Fleet</i>	<i>100% Fleet</i>
Passenger Cars	1998	1999	2000
Light-Duty Trucks 0-6,000 lbs. GVWR	2001	2002	2003
Light-Duty Trucks/ (6,001-8,500 lbs. GVWR)	2004 Medium-Duty Vehicles	2005	2006

(A) Prior to the 2001 model year, small volume manufacturers are defined for purposes of this section as any vehicle manufacturer with California actual sales less than or equal to 3000 new vehicles per model year based on the average number of vehicles sold by the manufacturer in the previous three consecutive years.

(B) Small volume manufacturers of passenger cars, as defined in subsection (a)(3)(A), are exempt from the implementation schedule in subsection (a)(3) for model year 1998 and 1999. For small volume manufacturers of passenger cars, the standards of subsection (a)(1), and the associated test procedures, shall not apply until model year 2000, when 100 percent compliance with the standards of this section is required. Small volume manufacturers of light-duty trucks and medium-duty vehicles are not exempt from the implementation schedule in subsection (a)(3).

(4) All vehicles subject to the refueling emission standards in section 1978(a)(1) shall demonstrate compliance except incomplete vehicles that are certified as incomplete vehicles for the purposes of evaporative emissions testing as set forth in the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” incorporated by reference in section 1976.

(5) *Carry-Over of 2014 Model Year Families:* 2014 model year motor vehicles certified to the refueling emission standards of section 1978(a)(1) may carry over to the 2015 through 2018 model years and be considered compliant.

(b) The test procedures for determining compliance with standards applicable to 1998 through 2000 gasoline, alcohol, diesel, and hybrid electric passenger cars, light-duty trucks, and medium-duty vehicles are set forth in the “California Refueling Emission Standards and Test Procedures for 1998-2000 Model Year Motor Vehicles,” as amended August 5, 1999, which is incorporated herein by reference. The test procedures for determining compliance with standards applicable to 2001 and subsequent gasoline, alcohol, diesel, and hybrid electric passenger cars, light-duty trucks, and medium-duty vehicles are set forth in the “California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” adopted August 5, 1999, and last amended September 2, 2015, which is incorporated herein by reference.

Note: Authority cited: Sections 39500, 39600, 39601, 39667, 43013, 43018, 43101, 43104, 43105 and 43106, Health and Safety Code. Reference: Sections 39002, 39003, 39500, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43204 and 43205, Health and Safety Code.

## HISTORY

1. New section filed 6-19-96; operative 6-19-96 pursuant to Government Code section 11343.4(d) (Register 96, No. 25).
2. Change without regulatory effect restoring inadvertently omitted subsections (a)(3)(A) and (a)(3)(B) filed 4-28-97 pursuant to section 100, title 1, California Code of Regulations (Register 97, No. 18).
3. Amendment of subsections (a)(2)(B), (a)(3)-(a)(3)(B) and (b) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
4. Amendment of subsections (a)(1) and (b) 11-4-2003; operative 12-4-2003 (Register 2003, No. 45).
5. Amendment of incorporated document *California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles* and amendment of subsection (b) filed 1-18-2007; operative 2-17-2007 (Register 2007, No. 3).
6. Amendment of subsection (b) and amendment of Note filed 12-5-2007; operative 1-4-2008 (Register 2007, No. 49).
7. Amendment of subsection (b) filed 1-14-2010; operative 2-13-2010 (Register 2010, No. 3).
8. Amendment of subsection (b) and amendment of Note filed 11-8-2010; operative 12-8-2010 (Register 2010, No. 46).
9. Amendment of subsections (a)(1) and (a)(3), new subsections (a)(4)-(5) and amendment of subsection (b) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
10. Amendment of subsections (a)(1)-(a)(2)(A), (a)(4) and (b) filed 10-8-2015; operative 10-8-2015 pursuant to Government Code section 11343.4(b)(3) (Register 2015, No. 41).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 1978, 13 CA ADC § 1978

## Article 6. Emission Control System Warranty

### **Section 2035. Purpose, Applicability, and Definitions.**

#### (a) Purpose.

The purpose of this article is to interpret and make specific the statutory emissions warranty set forth in Health and Safety Code sections 43205, and 43205.5 by clarifying the rights and responsibilities of individual motor vehicle and motor vehicle engine owners, motor vehicle and motor vehicle engine manufacturers, and the service industry.

#### (b) Applicability.

This article shall apply to:

- (1) California-certified 1979 and subsequent model motorcycles, passenger cars, light-duty trucks, medium-duty vehicles, and heavy-duty vehicles, registered in California, regardless of their original point of registration; and
- (2) California certified motor vehicle engines used in such vehicles.

#### (c) Definitions.

For the purposes of this article, the following definitions shall apply:

(1) “*Warrantable condition*” means any condition of a vehicle or engine which triggers the responsibility of the manufacturer to take corrective action pursuant to sections 2036, 2037, or 2038.

(2) “*Warranted Part*” means:

(A) In the case of 1979 through 1989 model year passenger cars, light-duty trucks, and medium-duty vehicles, 1979 and later model year motorcycles and heavy-duty vehicles, except those heavy-duty vehicles in subparagraph (c)(2)(D) of this section, and 1990 and subsequent model year passenger cars, light-duty trucks, and medium duty vehicles produced before January 24, 1991, any emission-related part installed on a motor vehicle or motor vehicle engine by the vehicle or engine manufacturer, or installed in a warranty repair, which is included on the “Emissions Warranty Parts List” required by section 2036(f) and approved for the vehicle or engine by the Executive Officer.

(B) In the case of 1990 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles other than those identified in subparagraph (A) of this definition, any part installed on a motor vehicle or motor vehicle engine by the vehicle or engine manufacturer, or installed in a warranty repair, which affects any regulated emission from a motor vehicle or engine which is subject to California emission standards.

(C) In the case of heavy-duty vehicles certified to the GHG emission standards of section 95663, title 71, any part included in 40 CFR 1037.102, as amended October 25, 2016, which is incorporated by reference herein.

(D) In the case of 2022 and subsequent model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2022 and subsequent model year heavy-duty diesel engines certified on only diesel fuel, and the 2022 and subsequent model year heavy-duty diesel engines certified on only diesel fuel in such vehicles, any part:

1. that affects any regulated emission of criteria pollutants from a motor vehicle or motor vehicle engine that is subject to California emission standards, including those parts, at a minimum, that are contained in the “Emissions Warranty Parts List” required by section 2036(f), and

2. that is installed on a motor vehicle or motor vehicle engine by the vehicle or engine manufacturer, or in a warranty repair.

(3) “*Warranty period*” means the period of time and mileage that the vehicle, engine, or part are covered by the warranty provisions.

(4) “*Warranty station*” means a service facility authorized by the vehicle or engine manufacturer to perform warranty repairs. This shall include all of the manufacturer's dealerships which are franchised to service the subject vehicles or engines.

(5) “*Vehicle or engine manufacturer*” means the manufacturer granted certification for a motor vehicle or motor vehicle engine. In the case of motor vehicles for which certification of the exhaust and evaporative emissions control systems is granted to different manufacturers, the warranty responsibility shall be assigned accordingly.

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106, 43204, 43205 and 43205.5, Health and Safety Code.

## HISTORY

1. New section filed 1-16-79; effective thirtieth day thereafter (Register 79, No. 3).
2. Amendment of subsection (c) filed 12-27-83; effective thirtieth day thereafter (Register 83, No. 53).
3. Amendment filed 3-26-85; effective thirtieth day thereafter (Register 85, No. 13).
4. Amendment filed 11-26-90; operative 12-26-90 (Register 91, No. 3).
5. Redesignation of former subsection (b)(a) as subsection (b)(1), redesignation and amendment of subsections (c)(2)(a)-(b) as subsections (c)(2)(A)-(B) and amendment of Note filed 11-9-2007; operative 11-9-2007 pursuant to Government Code section 11343.4 (Register 2007, No. 45).
6. Amendment of subsections (c)(2)(A)-(B) and new subsections (c)(2)(C)-(c)(2)(D)2. filed 6-12-2019; operative 10-1-2019 (Register 2019, No. 24).

This database is current through 2/7/20 Register 2020, No. 6  
13 CCR § 2035, 13 CA ADC § 2035

**Section 2037. Defects Warranty Requirements for 1990 and Subsequent Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Motor Vehicle Engines Used in Such Vehicles.**

(a) Applicability.

This section shall apply to 1990 and subsequent model passenger cars, light-duty trucks, medium-duty vehicles, and motor vehicle engines used in such vehicles. This section shall apply to medium-duty vehicles certified to the GHG emission standards of section 95663, title 17, for GHG emission control components, as set forth in 40 CFR 1037.120, as amended October 25, 2016, incorporated by reference herein. The warranty period shall begin on the date the vehicle is delivered to an ultimate purchaser, or if the vehicle is first placed in service as a “demonstrator” or “company” car prior to delivery, on the date it is first placed in service.

(b) General Emissions Warranty Coverage.

The manufacturer of each motor vehicle or motor vehicle engine shall warrant to the ultimate purchaser and each subsequent purchaser that the vehicle or engine is:

(1) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in chapters 1 and 2, part 5, division 26 of the Health and Safety Code; and

(2) Free from defects in materials and workmanship which cause the failure of a warranted part to be identical in all material respects to the part as described in the vehicle or engine manufacturer's application for certification, including any defect in materials or workmanship which would cause the vehicle's on-board diagnostic malfunction indicator light to illuminate, for a period of three years or 50,000 miles, whichever first occurs; and

(2.1) For GHG emission control components in Phase 2 medium-duty vehicles (2021 and subsequent model years) certified to the GHG emission standards of section 95663, title 17, free from defects in materials and workmanship which cause the failure of a warranted part to be identical in all material respects to the part as described in the vehicle or engine manufacturer's application for certification, for a period of five years or 50,000 miles (except tires), whichever first occurs, and for tires only, a period of two years or 24,000 miles, whichever first occurs.

(3) Free from defects in materials and workmanship which cause the failure of a warranted part described in section (c) below for seven years or 70,000 miles, whichever first occurs. The requirements of this subsection (3) shall not apply to GHG emission control components in Phase 2 medium-duty vehicles certified to the GHG emission standards of section 95663, title 17.

(c) “High-Priced” Warranted Parts.

(1) Each manufacturer shall identify in its application for certification the “high-priced” warranted parts which are:

(A) For 1990 through 2007 model year vehicles: [i] included on the Board's "Emissions Warranty Parts List" as last amended February 22, 1985, incorporated herein by reference, and; [ii] have an individual replacement cost at the time of certification exceeding the cost limit defined in section (c)(3);

(B) For 2008 and subsequent model year vehicles: [i] subject to coverage as a warranted part in section (b)(2) above, and; [ii] have an individual replacement cost at the time of certification exceeding the cost limit defined in section (c)(3).

(2) The replacement cost shall be the retail cost to a vehicle owner and include the cost of the part, labor, and standard diagnosis. The costs shall be those of the highest-cost metropolitan area of California.

(3) The cost limit shall be calculated using the following equation:

$$\text{Cost limit}_n = \$300 \times (\text{CPI}_{n-2} / 118.3)$$

where:

Cost limit<sub>n</sub> is the cost limit for the applicable model year of the vehicle rounded to the nearest ten dollars.  
n is the model year of the new vehicles.

n-2 is the calendar year two years prior to the model year of the new vehicles.

CPI is the annual average nationwide urban consumer price index published by the United States Bureau of Labor Statistics.

(4) The cost limit shall be revised annually by the Executive Officer. The highest-cost metropolitan area in California shall be identified by the Executive Officer for use in this section. If a manufacturer seeks certification of a vehicle before the applicable annual average CPI is available, the cost limit shall be calculated using the average of the monthly nationwide urban CPI figures for the most recent twelve month period for which figures have been published by the United States Bureau of Labor Statistics.

(5) Each manufacturer shall submit to the Executive Officer the documentation used to identify the "high-priced" warranted parts required in this section. The documentation shall include the estimated retail parts costs, labor rates in dollars per hour, and the labor hours necessary to diagnose and replace the parts. The documentation is not required for vehicles certified before January 24, 1991.

(6) The Executive Officer may reject or require modification of the manufacturer's list of "high-priced" warranted parts to ensure that such list includes all emission-related parts whose replacement cost exceeds the cost limit defined in section (c)(3)

(d) Subject to the conditions and exclusions of section (i), the warranty on emission-related parts shall be interpreted as follows:



(1) Any warranted part which is not scheduled for replacement as required maintenance in the written instructions required by section (e) shall be warranted for the applicable warranty period defined in section (b)(2) or (3). If any such part fails during the period of warranty coverage, it shall be repaired or replaced by the vehicle or engine manufacturer according to section (d)(4) below. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

(2) Any warranted part which is scheduled only for regular inspection in the written instructions required by section (e) shall be warranted for the applicable warranty period defined in section (b)(2) or (3). A statement in such written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. Any such part required or replaced under warranty shall be warranted for the remaining warranty period.

(3) Any warranted part which is scheduled for replacement as required maintenance in the written instructions required by section (e) shall be warranted for the period of time or mileage, whichever first occurs, prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part shall be repaired or replaced by the vehicle or engine manufacturer according to section (d)(4) below. Any such part required or replaced under warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

(4) Repair or replacement of any warranted part under the warranty provisions of this article shall be performed at no charge to the vehicle or engine owner at a warranty station, except in the case of an emergency when a warranted part or a warranty station is not reasonably available to the vehicle or engine owner. In an emergency, repairs may be performed at any available service establishment, or by the owner, using any replacement part. The manufacturer shall reimburse the owner for his or her expenses including diagnostic charges for such emergency repair or replacement, not to exceed the manufacturer's suggested retail price for all warranted parts replaced and labor charges based on the manufacturer's recommended time allowance for the warranty repair and the geographically appropriate hourly labor rate. A vehicle or engine owner may reasonably be required to keep receipts and failed parts in order to receive compensation for warranted repairs reimbursable due to an emergency, provided the manufacturer's written instructions required by section (e) advise the owner of this obligation.

(5) Notwithstanding the provisions of subsection (d)(4) above, warranty services or repairs shall be provided at all of a manufacturer's dealerships which are franchised to service the subject vehicles or engines.

(6) The vehicle or engine owner shall not be charged for diagnostic labor which leads to the determination that a warranted part is defective, provided that such diagnostic work is performed at a warranty station.

(7) The vehicle or engine manufacturer shall be liable for damages to other vehicle components proximately caused by a failure under warranty of any warranted part.

(8) Throughout the vehicle or engine's warranty period defined in section (b)(2) and (b)(3), the vehicle or engine manufacturer shall maintain a supply of warranted parts sufficient to meet the expected demand for such parts. The lack of availability of such parts or the incompleteness of repairs within a reasonable time period, not to exceed 30 days from the time the vehicle or engine is initially presented to the warranty station for repair, shall constitute an emergency for purposes of section (d)(4) above.

(9) Any replacement part may be used in the performance of any maintenance or repairs. Any replacement part designated by a manufacturer may be used in warranty repairs provided without charge to the vehicle owner. Such use shall not reduce the warranty obligations of the vehicle or engine manufacturer, except that the vehicle or engine manufacturer shall not be liable under this article for repair or replacement of any replacement part which is not a warranted part (except as provided under section (d)(7) above).

(10) Any add-on or modified part exempted by the Air Resources Board from the prohibitions of Vehicle Code section 27156 may be used on a vehicle or engine. Such use, in and of itself, shall not be grounds for disallowing a warranty claim made in accordance with this article. The vehicle or engine manufacturer shall not be liable under this article to warrant failures of warranted parts caused by the use of such an add-on or modified part.

(11) The Executive Officer may request and, in such case, the vehicle or engine manufacturer shall provide, any documents which describe the manufacturer's warranty procedures or policies.

(e) Each manufacturer shall furnish with each new vehicle or engine, written instructions for the maintenance and use of the vehicle or engine by the owner, and the instructions shall be consistent with this article and applicable regulations in article 2 of this subchapter.

(f) Each manufacturer shall furnish with each new vehicle or engine a list of the "high-priced" warranted parts established by section (c).

(g) Prior to the 2001 model year, each manufacturer shall submit the documents required by sections (c)(5), (e), and (f) with the manufacturer's preliminary application for new vehicle or engine certification for approval by the Executive Officer. For 2001 and subsequent model years, each manufacturer shall submit the documents required by section (c)(5), (e), and (f) with the Part 2 Application for Certification pursuant to the "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in title 13, CCR section 1961(d), or the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in title 13, CCR section 1961.2(d), as applicable. The Executive Officer may reject or require modification of any of the documents required by sections (c), (e), and (f) for, among other reasons, incompleteness and lack of clarity. Approval by the Executive Officer of the documents required by sections (c), (e), and (f) shall be a condition of certification. The Executive Officer shall approve or disapprove the documents required by sections (c), (e), and (f) within 90 days of the date such documents are received from the manufacturer. Any disapproval shall be accompanied by a statement of the reasons thereof. In the event of disapproval, the manufacturer may petition the Board to review the decision of the Executive Officer.

(h) Vehicle Inspection Program.

(1) This section applies to 1990 and subsequent model passenger cars, light-duty trucks, and medium-duty vehicles which fail to pass a smog check inspection pursuant to Health and Safety Code section 44012 after the warranty period of three years or 50,000 miles, whichever occurs first, has expired, but before the warranty period of seven years or 70,000 miles, whichever occurs first, has expired. The provisions of this section shall be contained in the warranty statement required pursuant to title 13, CCR section 2039.

(2) The owner of a vehicle which fails an inspection during the period described in section (h)(1) may choose to have the vehicle repaired at a warranty station.

(A) If the warranty station identifies that the inspection failure was caused by the failure or malfunction of a "high-priced" part defined in section (c), then the vehicle manufacturer shall be liable for expenses involved in detecting and correcting the part failure or malfunction, unless the warranty station demonstrates that the part failure or malfunction was caused by abuse, neglect, or improper maintenance as specified in section (i).

(B) If the warranty station demonstrates that the inspection failure was caused by one or more conditions excluded from warranty coverage pursuant to section (i), the vehicle owner shall be liable for all diagnostic and repair expenses. Such expenses shall not exceed the maximum repair costs permissible under the inspection program.

(C) If the warranty station determines that the inspection failure was caused by one or more defects covered under warranty pursuant to these regulations and in combination with one or more

conditions excluded from warranty coverage pursuant to section (i), then the vehicle owner shall not be charged for the diagnostic and repair costs related to detecting and repairing the warrantable defects.

(3) In the alternative, the owner of a vehicle which fails the inspection may choose to have the vehicle repaired at other than a warranty station. If a warrantable defect is found, the vehicle owner may deliver the vehicle to a warranty station and have the defect corrected free of charge. The vehicle manufacturer shall not be liable for any expenses incurred at a service establishment not authorized to perform warranty repairs, except in the case of an emergency as defined in section (d)(4). If the vehicle owner chooses to have a warrantable defect repaired at other than a warranty station, the upper cost limit pursuant to Health and Safety Code section 44017 shall not apply to the repair.

(i) Exclusions.

The repair or replacement of any warranted part otherwise eligible for warranty coverage under sections (d) and (h) shall be excluded from such warranty coverage if the vehicle or engine manufacturer demonstrates that the vehicle or engine has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for the repair or replacement of the part.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600 and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 43106, 43204, 43205, 44004, 44010, 44011, 44012, 44015, and 44017, Health and Safety Code.

### **HISTORY**

1. New section filed 1-16-79; effective thirtieth day thereafter (Register 79, No. 3).
2. Amendment filed 11-26-90; operative 12-26-90 (Register 91, No. 3).
3. Amendment of section heading, subsection (g) and NOTE filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
4. Amendment filed 11-9-2007; operative 11-9-2007 pursuant to Government Code section 11343.4 (Register 2007, No. 45).
5. Amendment of subsection (g) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
6. Amendment of subsection (a) and amendment of Note filed 12-5-2014; operative 12-5-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 49).
7. Editorial correction of History 6 (Register 2014, No. 50).
8. Amendment of subsection (a), new subsection (b)(2.1) and amendment of subsection (b)(3) filed 2-7-2019; operative 4-1-2019 (Register 2019, No. 6).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2037, 13 CA ADC § 2037

**Section 2038. Performance Warranty Requirements for 1990 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and Motor Vehicle Engines Used in Such Vehicles.**

(a) Applicability.

This section shall apply to 1990 and subsequent model passenger cars, light-duty trucks, and medium-duty vehicles, and motor vehicle engines used in such vehicles required to be inspected under any California statutorily authorized motor vehicle emissions inspection and maintenance program. The warranty period shall begin on the date the vehicle is delivered to an ultimate purchaser, or if the vehicle is first placed in service as a “demonstrator” or “company” car prior to delivery, on the date it is first placed in service.

(b) General Emissions Warranty Coverage.

The manufacturer of each passenger car, light-duty truck, and medium-duty vehicle shall warrant to the ultimate purchaser and each subsequent purchaser that the vehicle or engine:

- (1) Is designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in chapters 1 and 2, part 5, division 26 of the Health and Safety Code; and
- (2) Will, for a period of three years or 50,000 miles, whichever first occurs, pass an inspection established under section 44012 of the Health and Safety Code (“inspection”).

(c) Written Instructions.

- (1) Each vehicle or engine manufacturer shall furnish with each new vehicle or engine, written instructions for the required maintenance and use of this vehicle or engine by the vehicle owner (written instructions), and the written instructions shall be consistent with this article and applicable regulations in article 2 of this subchapter.
- (2) Prior to the 2001 model year, each vehicle or engine manufacturer shall submit the documents required by section (c)(1) with the vehicle or engine manufacturer's preliminary application for new vehicle or engine certification for approval by the Executive Officer.
- (3) For 2001 and subsequent model years, each vehicle or engine manufacturer shall submit the documents required by section (c)(1) with the Part 2 Application for Certification pursuant to the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” incorporated by reference in title 13, CCR section 1961(d), or the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty

Trucks, and Medium-Duty Vehicles,” incorporated by reference in title 13, CCR section 1961.2(d), as applicable.

(4) The Executive Officer may reject or require modification of written instructions for, among other reasons, incompleteness or lack of clarity. Approval by the Executive Officer of the written instructions shall be a condition of certification. The Executive Officer shall approve or disapprove the written instructions within 90 days of the date such documents are received from the vehicle or engine manufacturer. Any disapproval shall be accompanied by a statement of the reasons therefore. In the event of disapproval, the engine or vehicle manufacturer may petition the Board to review the decision of the Executive Officer.

(d) Proper Use and Maintenance.

(1) An emission performance warranty claim may be denied if the vehicle or engine manufacturer demonstrates that the vehicle or engine's failure of the inspection was directly caused by abuse, neglect, or improper maintenance as reflected by a failure to maintain or use the vehicle or engine in accordance with the written instructions.

(2) Except as provided in section (d)(5), a vehicle or engine manufacturer may deny an emission performance warranty claim on the basis of noncompliance with the written instructions only if:

(A) An owner is not able to comply with a request by a manufacturer for evidence pursuant to section (d)(4); or

(B) Notwithstanding the evidence presented pursuant to section (d)(4), the vehicle or engine manufacturer is able to prove that the vehicle failed an inspection because the vehicle was abused, the required maintenance and use was performed in a manner resulting in a component being improperly installed or a component or related parameter being adjusted substantially outside of the vehicle or engine manufacturer's specifications, or maintenance was performed on a vehicle which resulted in the removing or rendering inoperative of any component affecting the vehicle's emissions.

(3) When determining whether an owner has complied with the written instructions, a vehicle or engine manufacturer may require a owner to submit evidence of compliance only with those written instructions for which the vehicle or engine manufacturer has an objective reason for believing:

(A) Were not performed, and;

(B) If not performed, could be the cause of the particular vehicle's failed inspection.

(4) Evidence of compliance with a maintenance instruction may consist of:

(A) A maintenance log book which has been validated at the approximate time or mileage intervals specified in the written instructions by someone who regularly engages in the business of servicing automobiles for the relevant maintenance; or

(B) A repair order, sales receipt, or similar evidence showing that the vehicle has been submitted for scheduled maintenance at the approximate time or mileage intervals specified in the written instructions to someone who regularly engages in the business of servicing automobiles for the purpose of performing the relevant maintenance; or

(C) A statement by the vehicle owner that the maintenance was performed at the approximate time or mileage interval specified in the written instructions using proper replacement parts.

(5) In no case may a vehicle or engine manufacturer deny an emission performance warranty claim on the basis of:

(A) Warranty work or predelivery service performed by any facility authorized by the vehicle or engine manufacturer to perform such work or service; or

(B) Work performed in an emergency situation to rectify an unsafe condition, including an unsafe driveability condition, attributable to the vehicle or engine manufacturer, provided the vehicle owner has taken steps to put the vehicle back in a conforming condition in a timely manner; or

(C) Any cause attributable to the vehicle or engine manufacturer; or

(D) The use of any fuel which is commonly available in the geographical area in which the vehicle or engine is located, unless the written instructions specify that the use of that fuel would adversely affect the emission control devices and systems of the vehicle, and there is commonly available information for the vehicle owner to identify the proper fuel to be used.

(6) The vehicle owner may perform maintenance or have maintenance performed more frequently than required in the written instructions.

(7) Except as specified in section (d)(2)(B) above, failure of the vehicle or engine owner to ensure the performance of such scheduled maintenance or to keep maintenance records shall not, per se, be grounds for disallowing a warranty claim.

(e) Repair, adjustment, or replacement of any part under the warranty provisions of this article shall be performed at no charge to the vehicle or engine owner at a warranty station, except where a warranted part is not available to the vehicle or engine owner within a reasonable time (in no case more than 30 days) after the vehicle or engine is initially presented to the warranty station for repair. In case of such unavailability, repairs may be performed at any available service establishment, or by the owner, using any replacement part. The manufacturer shall reimburse the owner for his or her expenses including diagnostic charges for such repair or replacement, not to exceed the manufacturer's suggested retail price for all warranted parts replaced and labor charges based on the manufacturer's recommended time allowance for the warranty repair and the geographically appropriate hourly labor rate. A vehicle or engine owner may reasonably be required to keep receipts and failed parts in order to receive reimbursement due to such unavailability, provided the manufacturer's written instructions advise the owner of this obligation.

(f) The vehicle or engine manufacturer shall be liable for damages to other vehicle components proximately caused by a failure under warranty of any warranted part.

(g) Any replacement part may be used in the performance of any maintenance or repairs. Any replacement part designated by a vehicle or engine manufacturer may be used in warranty repairs provided without charge to the vehicle owner. Such use shall not reduce the warranty obligations of the vehicle or engine manufacturer, except that the vehicle or engine manufacturer shall not be liable under this article for repair or replacement of any replacement part which is not a warranted part (except as provided under section (d) above).

(h) Any add-on or modified part exempted by the Air Resources Board from the prohibitions of Vehicle Code section 27156 may be used on a vehicle or engine. Such use, in and of itself, shall not be grounds for disallowing a warranty claim made in accordance with this article. The vehicle or engine manufacturer shall not be liable under this article to warrant failures of warranted parts caused by the use of such an add-on or modified part.

(i) Warranty Claim Procedures.

(1) A warranty claim may be submitted by bringing a vehicle to any repair facility authorized by the vehicle or engine manufacturer to service that vehicle.

(2) The manufacturer of each vehicle or engine to which the warranty is applicable shall establish procedures as to the manner in which a claim under the emission performance warranty is to be processed. The procedures shall provide for a final decision and repair of a warrantable condition by the vehicle or engine manufacturer within a reasonable time, not to exceed 30 days from the time at which the vehicle is initially presented for repair, or unless a delay:

(A) is requested by the vehicle owner, or

(B) is caused by an event not attributable to the vehicle or engine manufacturer or the warranty station.



(3) Within the time period specified in section (i)(2), the manufacturer shall provide the owner, in writing, with an explanation as to why the claim is being denied.

(4) Failure to notify a vehicle owner that a warrantable condition does not exist within the required time period of section (i)(2), for reasons other than those provided for in sections (i)(2)(A) and (B), shall result in the vehicle or engine manufacturer being responsible for repairing the vehicle free of charge to the vehicle owner.

(5) The vehicle or engine manufacturer shall incur all costs associated with a determination that an emission performance warranty claim is valid.

(j) Warranty services or repairs shall be provided at all of a vehicle or engine manufacturer's dealerships which are franchised to service the subject vehicles or engines.

(k) The vehicle owner shall not be charged for diagnostic labor which leads to the determination of a warrantable condition provided that such diagnostic work is performed at a warranty station.

(l) Throughout the vehicle or engine's warranty period defined in section (b), the vehicle or engine manufacturer shall maintain a supply of warranted parts sufficient to meet the expected demand for such parts. The lack of availability of such parts or the incompleteness of the repairs within a reasonable time period, not to exceed 30 days from the time the vehicle or engine is initially presented to the warranty station for repair, shall constitute an unavailability of parts for purposes of section (e).

(m) The Executive Officer may request and, in such case, the vehicle or engine manufacturer shall provide, any documents which describe the vehicle or engine manufacturer's warranty procedures or policies.

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106, 43204, 43205, 44004, 44010, 44011, 44012, 44014, and 44015, Health and Safety Code.

### **HISTORY**

1. New section filed 1-16-79; effective thirtieth day thereafter (Register 79, No. 3).
2. Amendment filed 11-26-90; operative 12-26-90 (Register 91, No. 3).
3. Amendment of subsection (m) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
4. Amendment filed 11-9-2007; operative 11-9-2007 pursuant to Government Code section 11343.4 (Register 2007, No. 45).
5. Amendment of subsection (c)(3) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2038, 13 CA ADC § 2038

### **Section 2039. Emissions Control System Warranty Statement.**

(a) Each manufacturer shall furnish a copy of the following statement with each new 1991 and subsequent model vehicle or engine produced after January 24, 1991, using those portions of the statement applicable to the vehicle or engine. This statement shall be included with and preceded the manufacturer's warranty statement required in subsection (b), unless otherwise authorized by the Executive Officer.

#### **CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS**

The California Air Resources Board (and manufacturer's name, optional) is pleased to explain the emission control system warranty on your (year) (vehicle, truck, or motorcycle). In California, new motor vehicles must be designed, built and equipped to meet the State's stringent anti-smog standards. (Manufacturer's name) must warrant the emission control system on your (vehicle, truck, or motorcycle) for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your (vehicle, truck, or motorcycle).

Your emission control system may include parts such as the carburetor or fuel-injection system, the ignition system, catalytic converter, and engine computer. Also included may be hoses, belts, connectors and other emission-related assemblies. Where a warrantable condition exists, (manufacturer's name) will repair your (vehicle, truck, or motorcycle) at no cost to you including diagnosis, parts and labor.

#### **MANUFACTURER'S WARRANTY COVERAGE:**

[For 1990 and subsequent model passenger cars, light-duty trucks, and medium-duty vehicles.]

- For 3 years or 50,000 miles (or a longer period of time or mileage, optional) (whichever first occurs);

1) If your (vehicle or truck) fails a Smog Check inspection, all necessary repairs and adjustments will be made by (manufacturer's name) to ensure that your emission control system **PERFORMANCE WARRANTY**.

2) If any emission-related part on your (vehicle or truck) is defective, the part will be repaired or replaced by (manufacturer's name). This is your short-term emission control system **DEFECTS WARRANTY**.

- For 7 years or 70,000 miles (or a longer period of time or mileage, optional) (Whichever first occurs);

1) If an emission-related part listed in this warranty booklet specially noted with coverage for 7 years or 70,000 miles is defective, the part will be repaired or replaced by (manufacturer's name). This is your long-term emission control system **DEFECTS WARRANTY**.

#### **OWNER'S WARRANTY RESPONSIBILITIES:**

- As the (vehicle, truck, or motorcycle) owner, you are responsible for the performance of the required maintenance listed in your owner's manual. (manufacturer's name) recommends that you retain all receipts covering maintenance on your (car, truck, or motorcycle), but (manufacturer's name) cannot deny

warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

- You are responsible for presenting your (vehicle, truck, or motorcycle) to a (manufacturer's name) dealer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

- As the (vehicle, truck, or motorcycle) owner, you should also be aware that (manufacturer's name) may deny you warranty coverage if your (vehicle, truck, or motorcycle) or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

If you have any questions regarding your warranty rights and responsibilities, you should contact (Insert chosen manufacturer's contact) at 1-XXX-XXXX or the California Air Resource Board at 9528 Telstar Avenue, El Monte, CA 91731.

(b) Commencing with 1980 models sold on or after September 1, 1979, each manufacturer shall furnish with each new vehicle or engine a warranty statement which generally describes the obligations and rights of vehicle or engine manufacturers and owners under this article.

(c) Each manufacturer shall submit the documents required by subsections (a) and (b) with the manufacturer's preliminary application for new vehicle or engine certification for approval by the Executive Officer. The Executive Officer may reject or require modification of the documents to the extent the submitted documents do not satisfy the requirements of subsections (a) and (b). Approval by the Executive Officer of the documents required by subsections (a) and (b) shall be a condition of certification. The Executive Officer shall approve or disapprove the documents required by subsections (a) and (b) within 90 days of the date such documents are received from the manufacturer. Any disapproval shall be accompanied by a statement of the reasons therefore. In the event of disapproval, the manufacturer may petition the Board to review the decision of the Executive Officer.

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106, 43204, 43205, 44004, 44010, 44011, 44012, 44014, and 44015, Health and Safety Code.

### **HISTORY**

1. New section filed 1-16-79; effective thirtieth day thereafter (Register 79, No. 3).
2. Amendment of subsection (a)(1) filed 2-21-79 as procedural and organizational; effective upon filing (Register 79, No. 8).
3. Amendment filed 12-27-83; effective thirtieth day thereafter (Register 83, No. 53).
4. Amendment filed 11-26-90; operative 12-26-90 (Register 91, No. 3).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2039, 13 CA ADC § 2039

### **Section 2040. Vehicle Owner Obligations.**

(a) The owner of any vehicle or engine warranted pursuant to this article shall be responsible for the performance of all required scheduled maintenance specified in the written instructions furnished to the owner pursuant to subsections 2036 (e), 2037(e), and 2038(c)(1). Such maintenance may be performed by the owner, at a service establishment of the owner's choosing, or by a person or persons of the owner's choosing. The owner of a heavy-duty vehicle or heavy-duty engine is not liable during the warranty periods in subsection 2036(c) for the cost of repair or replacement of a warranted part, as defined in subsection 2035(c)(2), that the manufacturer did not schedule for periodic replacement, but that was identified as defective during an inspection per the manufacturer's written instructions furnished to the owner pursuant to subsection 2036(e). Instead, per subsection 2036(d)(2), the vehicle manufacturer is responsible to pay for such repair or replacement.

(b) Except as specified in subsections 2036(j)(1), 2037(i), and 2038(c), failure of the vehicle or engine owner to ensure the performance of such scheduled maintenance or to keep maintenance records shall not, per se, be grounds for disallowing a warranty claim.

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106, 43204, 43205 and 43205.5, Health and Safety Code.

#### **HISTORY**

1. Section 2040 renumbered to section 2045, and new section 2040 filed 1-16-79; effective thirtieth day thereafter (Register 79, No. 3). For history of former section, see Register 77, No. 12.
2. Amendment filed 11-26-90; operative 12-26-90 (Register 91, No. 3).
3. Amendment of subsection (a) filed 6-12-2019; operative 10-1-2019 (Register 2019, No. 24).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2040, 13 CA ADC § 2040

### **Section 2041. Mediation; Finding of Warrantable Condition.**

(a) This section is intended to provide a mechanism for mediating unresolved emissions warranty disputes between vehicle or engine owners and manufacturers or their agents.

(b) A vehicle or engine owner may request that the Executive Officer mediate a warranty claim.

(1) Upon receipt of such a claim the Executive Officer, or the Executive Officers's representative, may make a determination regarding whether the claim is meritorious on its face and, if meritorious, shall notify the appropriate dealer, or vehicle or engine manufacturer of the claim. The party against whom a complaint is made shall be given a reasonable time in which to respond. The Executive Officer may conduct an informal conference, and may request additional information and evidence.

(2) Upon examination of the facts submitted by the parties concerned, the Executive Officer, or the Executive Officers's representative, may find that a warranted part, or a vehicle's nonconformity with any California statutorily authorized motor vehicle emissions inspection and maintenance program, is eligible for warranty coverage pursuant to this article. If such a finding is made, the Executive Officer shall issue a Finding of Warrantable Condition.

(3) The Finding of Warrantable Condition shall include the name of the vehicle owner, vehicle manufacturer and model (including model year, make, car line and body type), vehicle identification number, engine family, odometer reading, date of inspection, identification of the defective part or other warrantable condition and the signature of the person issuing the Finding.

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106, 43204, 43205, and 43205.5, Health and Safety Code.

#### **HISTORY**

1. Section 2041 renumbered to section 2046, and new section 2041 filed 1-16-79; effective thirtieth day thereafter (Register 79, No. 3).
2. Amendment filed 11-26-90; operative 12-26-90 (Register 91, No. 3).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2041, 13 CA ADC § 2041

### **Section 2046. Defective Catalyst.**

Any oxidation catalyst for which service or replacement is scheduled or recommended by the vehicle manufacturer prior to the accumulation of 5 years or 50,000 miles, whichever occurs first, is defective in design, materials, and workmanship within the meaning of Health and Safety Code Sections 39156 and 39157. Any such service or replacement shall be performed free of charge to the vehicle owner.

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106 and 43204, Health and Safety Code.

### **HISTORY**

1. Certificate of Compliance filed 10-31-75 (Register 75, No. 44). 2. Renumbering of Section 2041 to Section 2046 filed 1-16-79; effective thirtieth day thereafter (Register 79, No. 3).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2046, 13 CA ADC § 2046

## Chapter 2. Enforcement of Vehicle Emission Standards and Enforcement Testing

### Article 1. Assembly-Line Testing

#### **Section 2062. Assembly-Line Test Procedures - 1998 and Subsequent Model Years.**

New 1998 through 2000 model-year passenger cars, light-duty trucks, and medium-duty vehicles, subject to certification and manufactured for sale in California, except for zero-emission vehicles and medium-duty vehicles certified according to the optional standards and test procedures of section 1956.8, Title 13, California Code of Regulations, shall be tested in accordance with the “California Assembly-Line Test Procedures for 1998 Through 2000 Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” adopted June 24, 1996, as last amended August 5, 1999, which is incorporated herein by reference. New 2001 and subsequent model-year passenger cars, light-duty trucks, and medium-duty vehicles, subject to certification and manufactured for sale in California, except for zero-emission vehicles and medium-duty vehicles certified according to the optional standards and test procedures of Section 1956.8, Title 13, California Code of Regulations, shall be tested in accordance with the “California Assembly-Line Test Procedures for 2001 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles.” adopted August 5, 1999, which is incorporated herein by reference. These test procedures shall also apply to federally certified light-duty motor vehicles, except as provided in “Guidelines for Certification of 1983 Through 2002 Model-Year Federally Certified Light-Duty Motor Vehicles for sale in California,” adopted July 20, 1982, as last amended July 30, 2002, and the “Guidelines for Certification of 2003 and Subsequent Model-Year Federally Certified Light-Duty Motor Vehicles for sale in California,” adopted July 30, 2002, which are incorporated herein by reference.

Note: Authority cited: Sections 39515, 39600, 39601, 43013, 43018, 43101, 43104 and 43210, Health and Safety Code.  
Reference: Sections 39002, 39003, 39500, 43000, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43204, 43210, 43211 and 43212, Health and Safety Code.

#### **HISTORY**

1. New section filed 9-23-96; operative 10-23-96 (Register 96, No. 39).
2. Amendment of section heading, section and Note filed 7-17-98; operative 8-16-98 (Register 98, No. 29).
3. Amendment filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
4. Amendment filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2062, 13 CA ADC § 2062

## Article 2. Enforcement of New and In-Use Vehicle Standards

### **Section 2109. New Vehicle Recall Provisions.**

(a) When this section is invoked pursuant to other sections of this article or Health and Safety Code Section 43105, the executive officer shall require the manufacturer to submit a plan within 30 calendar days of receipt of the invocation order to bring all vehicles into compliance. The executive officer shall order execution of the plan with such changes and additions as he/she determines to be necessary. The plan may include measures to identify the cause of vehicle noncompliance and to correct noncomplying conditions, correction of vehicles under manufacture, correction of vehicles in the possession or control of the manufacturer and dealers, and correction of vehicles in the possession of consumers (by correction upon service whether or not by warranty, by correction following notification of recall by mail, or by correction following efforts actively to locate and correct all such vehicles). The plan may include the temporary cessation of sales to dealers by the manufacturer and efforts by the manufacturer to prevent the sale of vehicles in possession or control of dealers, until the vehicles are corrected. The executive officer may order any one or more of the foregoing actions, or any other action reasonably necessary to bring all vehicles into compliance.

(b) The plan shall specify the percentage of vehicles subject to recall which must actually be corrected.

If, after good faith efforts, the manufacturer cannot correct the percentage of vehicles specified in the plan by the applicable deadlines, the manufacturer may request the executive officer to modify the percentage of vehicles specified in the plan, setting out in full the good faith efforts of the manufacturer to comply with the original plan, and the reasons it has been unable to comply. The executive officer shall, on the basis of this request, modify the percentage of vehicles which must actually be corrected if he/she finds in writing that the manufacturer has made a good faith effort and has shown good cause for the modification. If the manufacturer so requests, the plan shall specify the maximum incentives (such as a tune-up or specified quantity of gasoline), if any, the manufacturer must offer to vehicle owners to induce them to present their vehicles for repair, as a condition of showing that the manufacturer has made a good faith effort to repair the percentage of vehicles specified in the plan. The plan shall also include a schedule for implementing actions to be taken, including identified increments of progress towards implementation and deadlines for completing each such increment.

(c) If a vehicle is recalled pursuant to this section, the manufacturer shall make all necessary corrections specified in the plan without charge to the registered owner of the vehicle or, at the manufacturer's election, shall reimburse the registered owner for all costs (except incidental and consequential damages) of making such necessary corrections.

The term "all costs" shall not include incidental or consequential damages, except that the manufacturer shall reimburse the registered owner for any damage to the vehicle's emissions control system proximately caused by a defect subject to a recall action under this subsection or an action by a manufacturer taken pursuant to a plan under this subsection.



(d) If the plan ordered by the executive officer pursuant to this subsection includes a recall, the manufacturer may, within 20 calendar days of its receipt of the plan ordered by the executive officer, notify the executive officer of its desire to contest the necessity for or scope of that order. Any such notification shall specify the basis of the manufacturer's objections. Upon receipt of such notification, the executive officer shall stay the recall until the state board affords the manufacturer the opportunity, at a public hearing to be scheduled no less than 30 calendar days and no more than 60 calendar days after receipt of such notification, to present evidence in support of its objections.

A stay of a recall shall not, unless otherwise ordered, stay any other portion of a plan required herein or any other order issued pursuant to this article.

The manufacturer may, within 20 calendar days of its receipt of the plan ordered by the executive officer, request a public hearing of the state board on the necessity for or scope of any other corrective action ordered by the executive officer. Such a hearing shall be held by the state board not less than 30 and no more than 60 calendar days after receipt of the manufacturer's request for such a hearing. The plan ordered by the executive officer shall remain in effect pending such hearing, unless otherwise ordered by the executive officer.

(e) Failure by a manufacturer to carry out all corrective actions or recall actions ordered by the executive officer pursuant to Section 2106 or to subsection (a) of this section according to the schedule included in the plan ordered by the executive officer shall constitute a violation of that order and of Health and Safety Code Section 43105. The executive officer shall extend any deadline in the plan if he/she finds in writing that a manufacturer has shown good cause for such extension.

If the manufacturer fails to correct the percentage of vehicles subject to recall specified in the recall plan issued by the executive officer (including any modifications made by him/her), by the deadline(s) included in that plan, each vehicle included in the number of vehicles by which the manufacturer falls short of such percentage shall constitute a separate violation of the order and of Health and Safety Code Section 43016.

The state board may hold a public hearing to consider whether approval of such vehicles shall be suspended or conditioned. The state board shall hold such a hearing if requested to do so by either the affected manufacturer or the executive officer.

After the hearing, the state board may suspend or condition approval if it finds that the corrective action ordered by the executive officer was reasonable and that the manufacturer failed to comply or to comply within the specified time period.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39500, 43000, 43016, 43100-43102, 43104 and 43106, Health and Safety Code.

### **HISTORY**

1. Amendment filed 4-17-74; effective thirtieth day thereafter (Register 74, No. 16).
2. Amendment filed 2-20-75 as an emergency; effective thirtieth day thereafter (Register 75, No. 8).
3. Amendment filed 5-20-75; effective thirtieth day thereafter (Register 75, No. 21).
4. Amendment filed 10-22-81; effective thirtieth day thereafter (Register 81, No. 43).

5. Amendment of section heading filed 4-18-83; effective thirtieth day thereafter (Register 83, No. 17).
6. Amendment filed 11-30-83; effective thirtieth day thereafter (Register 83, No. 49).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2109, 13 CA ADC § 2109

## Article 2.1. Procedures for In-Use Vehicle Voluntary and Influenced Recalls

### **Section 2111. Applicability.**

(a) These procedures shall apply to:

- (1) California-certified 1982 and subsequent model-year passenger cars, light-duty trucks, medium-duty vehicles, heavy-duty vehicles, motorcycles, and California-certified 1997 and subsequent model-year off-road motorcycles and all-terrain vehicles, and 2007 and subsequent model-year off-road sport vehicles, off-road utility vehicles, and sand cars, including those federally certified vehicles which are sold in California pursuant to Health and Safety Code section 43102,
- (2) California-certified motor vehicle engines used in such vehicles,
- (3) California-certified 2000 and subsequent model-year off-road compression-ignition engines, and
- (4) California-certified 2008 model year spark-ignition sterndrive/inboard marine engines with maximum rated power less than or equal to 373 kilowatts complying with the Option 2 requirements in Section 2442(b)(1) and all California-certified 2009 and subsequent model-year spark-ignition sterndrive/inboard marine engines.

(b) These procedures shall not apply to zero emission vehicles and those vehicles certified under Health and Safety Code section 44201.

(c) The Executive Officer may waive any or all of the requirements of these procedures if he or she determines that the requirement constitutes an unwarranted burden on the manufacturer without a corresponding emission reduction.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Repealer of former section 2111, and renumbering and amendment of text previously incorporated by reference in section 2112 to section 2111 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38.
2. Amendment of subsection (a)(1) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
3. Amendment of subsection (a)(1), new subsection (b), subsection relettering, and amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. § 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.
4. Amendment of subsections (a)(1) and (a)(2) filed 12-28-2000; operative 12-28-2000 pursuant to Government Code section 11343.4(d) (Register 2000, No. 52).
5. Amendment of subsections (a)(2)-(3) and new subsection (a)(4) filed 7-22-2002; operative 8-21-2002 (Register 2002, No. 30).
6. Amendment of subsection (a)(4) filed 11-13-2006; operative 12-13-2006 (Register 2006, No. 46).
7. Amendment of subsection (a)(1) filed 7-16-2007; operative 8-15-2007 (Register 2007, No. 29).
8. Amendment of subsection (a)(1) and amendment of Note filed 12-5-2007; operative 1-4-2008 (Register 2007, No. 49).
9. Amendment of subsection (a)(4) filed 7-17-2009; operative 8-16-2009 (Register 2009, No. 29).
10. Amendment of subsection (a)(1) and amendment of Note filed 11-8-2010; operative 12-8-2010 (Register 2010, No. 46).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2111, 13 CA ADC § 2111

## **Section 2112. Definitions.**

(a) “Capture rate” means the percentage of in-use vehicles subject to recall which must be corrected to bring the class or category of vehicles into compliance. The number of vehicles subject to recall shall be based on the actual number of vehicles in use as verified by the Department of Motor Vehicles registration records, or vehicle or engine registration records compiled and prepared by R. L. Polk and Company or a comparable source at the time a recall is initiated.

(b) “Correlation factor” means a pollutant-specific multiplicative factor calculated by a manufacturer for an engine family or test group which establishes a relationship between chassis exhaust emission data, as determined from the test procedures specified in section 1960.1, 1961, or 1961.2, Title 13, California Code of Regulations, and engine exhaust emission data, as determined from the test procedures specified in section 1956.8, Title 13, California Code of Regulations.

(c) “Days”, when computing any period of time, means normal working days on which a manufacturer is open for business, unless otherwise noted.

(d) “Emission-Related Failure” means a failure of a device, system, or assembly described in the approved application for certification which affects any parameter, specification, or component enumerated in Appendix A to this subchapter 2.5 or listed in the Emission Warranty Parts List pursuant to section 2036, Title 13, California Code of Regulations, except for failures of devices, systems and assemblies which the Executive Officer has deleted from the manufacturer's list of warranted parts pursuant to section 2036 (f), Title 13, California Code of Regulations.

(e) “Emission Warranty Claim” means an adjustment, inspection, repair or replacement of a specific emission-related component for which the vehicle or engine manufacturer is invoiced or solicited by a repairing agent for compensation pursuant to warranty provisions, regardless of whether compensation is actually provided.

(f) “Executive Officer” means the Executive Officer of the Air Resources Board or his or her authorized representative.

(g) “Influenced Emission Recall” means an inspection, repair, adjustment, or modification program initiated and conducted by a manufacturer or its agent or representative as a result of in-use enforcement testing or other evidence of noncompliance provided or required by the Board, to remedy any nonconformity for which direct notification of vehicle or engine owners is necessary.

(h) “Nonconformity” or “noncompliance” exists whenever:

(1) a substantial number of a class or category of vehicles or engines, although properly maintained and used, experience a failure of the same emission-related component within their useful lives which, if uncorrected, results in the vehicles' or engines' failure to meet the applicable standards; or

(2) a class or category of vehicles or engines within their useful lives, although properly maintained and used, on average does not comply with the emission standards prescribed under section 43101 of the Health and Safety Code which are applicable to the model-year of such vehicles or engines.

(i) “Ordered Emission Recall” means an inspection, repair, adjustment, or modification program required by the Board and conducted by the manufacturer or its agent or representative to remedy any nonconformity for which direct notification of vehicle or engine owners is necessary.

(j) “Quarterly reports” refer to the following calendar periods: January 1-March 31, April 1-June 30, July 1-September 30, October 1-December 31.

(k) “Ultimate purchaser” has the same meaning as defined in section 39055.5 of the Health and Safety Code.

(l) “Useful life” means, for the purposes of this article:

(1) For Class I motorcycles and motorcycle engines (50 to 169 cc or 3.1 to 10.4 cu. in.), a period of use of five years or 12,000 kilometers (7,456 miles), whichever first occurs.

(2) For Class II motorcycles and motorcycle engines (170 to 279 cc or 10.4 to 17.1 cu. in.), a period of use of five years or 18,000 kilometers (11,185 miles), whichever first occurs.

(3) For Class III motorcycles and motorcycle engines (280 cc and larger or 17.1 cu. in. and larger), a period of use of five years or 30,000 kilometers (18,641 miles), whichever first occurs.

(4) For 1982 through 1984 model-year diesel heavy-duty vehicles (except medium-duty vehicles), and 1982 through 1984 model-year motor vehicle engines used in such vehicles, a period of use of five years, 100,000 miles, or 3000 hours of operation, whichever first occurs.

(5) For 1982 through 1987 model-year gasoline heavy-duty vehicles (except medium-duty vehicles) certified using the steady-state emission standards and test procedures, and 1982 through 1987 model-year gasoline heavy-duty motor vehicle engines certified using the steady-state emission standards and test procedures, a period of use of five years or 50,000 miles, whichever first occurs.

(6) For 1987 through 2003 model-year gasoline heavy-duty vehicles (except medium-duty vehicles) certified to the transient emission standards and test procedures, and 1987 and subsequent model-year gasoline heavy-duty motor vehicle engines certified using the transient emission standards and test procedures, a period of use of eight years or 110,000 miles, whichever first occurs, except as noted in paragraph (13).

(7) For 1985 through 2003 model-year heavy-duty diesel urban buses, and 1985 through 2003 model-year heavy-duty diesel engines to be used in urban buses, and for 1985 through 2003 model-year diesel heavy-duty vehicles (except medium-duty vehicles), and 1985 through 2003 model-year motor vehicle engines used in such vehicles, a period of use of eight years or 110,000 miles, whichever first

occurs, for diesel light, heavy-duty vehicles; eight years or 185,000 miles, whichever first occurs, for diesel medium, heavy-duty vehicles; and eight years or 290,000 miles, whichever first occurs, for diesel heavy, heavy-duty vehicles, except as provided in paragraphs (11), (14), (15) and (16); or any alternative useful life period approved by the Executive Officer. (The classes of diesel light, medium, and heavy, heavy-duty vehicles are defined in 40 CFR section 86.085-2, as amended November 16, 1983.)

(8) For light-duty and medium-duty vehicles certified under the Optional 100,000 Mile Certification Procedure, and motor vehicle engines used in such vehicles, a period of use of ten years or 100,000 miles, whichever first occurs.

(9) For 2001 through 2019 model year medium-duty low-emission, ultra-low-emission and super-ultra-low-emission vehicles certified to the primary standards in section 1961(a)(1), and motor vehicle engines used in such vehicles, a period of use of ten years or 120,000 miles, whichever occurs first. For 2001 through 2019 medium-duty low-emission, ultra-low-emission and super-ultra-low-emission vehicles certified to the optional 150,000 mile standards in section 1961(a)(1), and motor vehicle engines used in such vehicles, a period of use of fifteen years or 150,000 miles, whichever occurs first. For all other 1995 and subsequent model-year medium-duty vehicles and motor vehicle engines used in such vehicles, and 1992 through 1994 model-year medium-duty low-emission and ultra-low-emission vehicles certified to the standards in Section 1960.1(h)(2), and motor vehicle engines used in such vehicles, a period of use of eleven years or 120,000 miles, whichever occurs first.

(10) For all other light-duty and medium-duty vehicles, and motor vehicle engines used in such vehicles, a period of use of five years or 50,000 miles, whichever first occurs. For those passenger cars, light-duty trucks and medium-duty vehicles certified pursuant to section 1960.1.5, Title 13, California Code of Regulations, the useful life shall be seven years, or 75,000 miles, whichever first occurs; however, the manufacturer's reporting and recall responsibility beyond 5 years or 50,000 miles shall be limited, as provided in section 1960.1.5. For those passenger cars and light-duty trucks certified pursuant to Title 13, California Code of Regulations, section 1960.1 (f) and section 1960.1(g), the useful life shall be ten years or 100,000 miles, whichever first occurs; however, for those vehicles certified under section 1960.1(f), the manufacturer's warranty failure and defects reporting and recall responsibility shall be subject to the conditions and standards specified in section 1960.1 (f).

(11) For 1994 through 2003 model-year heavy heavy-duty diesel urban buses, and 1994 through 2003 model-year heavy heavy-duty diesel engines to be used in urban buses, for the particulate standard, a period of use of ten years or 290,000 miles, whichever first occurs; or any alternative useful life period approved by the Executive Officer.

(12) For 1997 and subsequent model year off-road motorcycles, all-terrain vehicles, and for 2007 and subsequent model year off-road sport vehicles, off-road utility vehicles, sand cars, and engines used in such vehicles, a period of use of five years or 10,000 kilometers (6,250 miles), whichever first occurs.

(13) For 1998 through 2003 model-year gasoline heavy-duty engines, for the NO<sub>x</sub> standard, a period of use of ten years or 110,000 miles, whichever first occurs; or any alternative useful life period approved by the Executive Officer.

(14) For 1998 through 2003 model-year light heavy-duty diesel engines, for the NO<sub>x</sub> standard, a period of use of ten years or 110,000 miles, whichever first occurs; or any alternative useful life period approved by the Executive Officer.

(15) For 1998 through 2003 model-year medium heavy-duty diesel engines, for the NO<sub>x</sub> standard, a period of use of ten years or 185,000 miles, whichever first occurs; or any alternative useful life period approved by the Executive Officer.

(16) For 1998 through 2003 model-year heavy heavy-duty diesel engines, for the NO<sub>x</sub> standard, a period of use of ten years or 290,000 miles, whichever first occurs; or any alternative useful life period approved by the Executive Officer.

(17) For those passenger cars and light-duty trucks certified to the primary standards in section 1961(a)(1), the useful life shall be ten years or 120,000 miles, whichever occurs first. For 2001 and subsequent passenger car and light-duty truck low-emission, ultra-low-emission and super-ultra-low-emission vehicles certified to the optional 150,000 mile standards in section 1961(a)(1), and motor vehicle engines used in such vehicles, a period of use of fifteen years or 150,000 miles, whichever occurs first.

(18) For those passenger cars, light-duty trucks, and medium-duty vehicles certified to the standards in section 1961.2 or 1961.3, the useful life shall be fifteen years or 150,000 miles, whichever occurs first.

(19) For 2004 and subsequent model-year light heavy-duty diesel engines, for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbons emissions standards, a period of use of 10 years or 110,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer.

(19.1) For 2014 through 2020 model-year light heavy-duty diesel engines certified to the Greenhouse Gas emission standards in sections 1956.8(a)(7) and 1956.8(h)(6), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of ten years or 110,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer. For 2021 and subsequent model-year light heavy-duty diesel engines certified to the Greenhouse Gas emission standards in sections 1956.8(a)(7) and 1956.8(h)(6), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of fifteen years or 150,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer.

(20) For 2004 and subsequent model-year medium heavy-duty diesel engines, for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbons emissions standards, a period of use of ten years or 185,000 miles, whichever first occurs; or any alternative useful life period approved by the Executive Officer.

(20.1) For 2014 and subsequent model-year medium heavy-duty diesel engines certified to the Greenhouse Gas emission standards in section 1956.8(a)(7), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of ten years or 185,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer.

(21) For 2004 and subsequent model-year heavy heavy-duty diesel engines, 2004 and subsequent model-year heavy-duty diesel urban buses, 2004 and subsequent model-year heavy-duty diesel engines to be used in urban buses, and 2004 and subsequent model year hybrid-electric urban buses for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbon emissions standards, a period of use of 10 years or 435,000 miles, or 22,000 hours, whichever first occurs, or any alternative useful life period approved by the Executive Officer, except as provided in paragraphs (21)(A) and (21)(B).

(A) The useful life limit of 22,000 hours in paragraph (19) of this definition is effective as a limit to the useful life only when an accurate hours meter is provided by the manufacturer with the engine and only when such hours meter can reasonably be expected to operate properly over the useful life of the engine.

(B) For an individual engine, if the useful life hours limit of 22,000 hours is reached before the engine reaches 10 years or 100,000 miles, the useful life shall become 10 years or 100,000 miles, whichever occurs first, as required under Clean Air Act section 202(d) (42 U.S.C. 7521(d)).

(21.1) For 2014 and subsequent model-year heavy heavy-duty diesel engines certified to the Greenhouse Gas emission standards in section 1956.8(a)(7), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of ten years or 435,000 miles, or 22,000 hours, whichever first occurs, or any alternative useful life period approved by the Executive Officer, except as provided in paragraphs (21)(A) and (21)(B).

(22) For 2004 and subsequent model-year heavy-duty Otto-cycle engines, for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbon emissions standards, a period of use of 10 years or 110,000 miles, whichever first occurs.

(22.1) For 2014 through 2020 model-year heavy-duty Otto-cycle engines certified to the Greenhouse Gas emission standards in sections 1956.8(c)(4) and 1956.8(h)(6), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emissions standards, the useful life shall be a period of use of ten years or 110,000 miles, whichever first occurs. For 2021 and subsequent model-year heavy-duty Otto-cycle engines certified to the Greenhouse Gas emission standards in sections 1956.8(c)(4) and 1956.8(h)(6), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, the useful life shall be a period of use of fifteen years or 150,000 miles, whichever first occurs.

(23) For 2000 and later model year off-road compression-ignition engines, for oxides of nitrogen, hydrocarbon, oxides of nitrogen plus hydrocarbon (when applicable), carbon monoxide, particulate emission standards, and for smoke opacity:



(A) For all engines rated under 19 kilowatts, and for constant-speed engines rated under 37 kilowatts with rated speeds greater than or equal to 3,000 revolutions per minute, a period of use of five years or 3,000 hours of operation, whichever first occurs.

(B) For all other engines rated above 19 kilowatts and under 37 kilowatts, a period of use of seven years or 5,000 hours of operation, whichever first occurs.

(C) For engines rated at or above 37 kilowatts, a period of use of ten years or 8,000 hours of operation, whichever first occurs.

(24)

(A) For California-certified 2008 and subsequent model year spark-ignition sterndrive/inboard marine engines with maximum rated power less than or equal to 373 kilowatts and complying with the Option 2 requirements in Section 2442(b)(1), and for California-certified 2009 and subsequent model-year spark-ignition sterndrive/inboard marine engines with a maximum rated or maximum engine power less than or equal to 485 kilowatts, a period of ten years or 480 hours, a period of ten years or 480 hours, whichever first occurs.

(B) For California-certified 2009 and subsequent model year spark-ignition sterndrive/inboard marine engines greater than 485 kilowatts, a period of one year or 50 hours, whichever first occurs. Manufacturers of spark-ignition sterndrive/inboard marine engines greater than 485 kilowatts may petition the Executive Officer for a approval of a shorter period when appropriate.

(25) For 2014 through 2020 model-year heavy-duty vehicles from 8,501 to 19,500 pounds GVWR, certified to the GHG emission standards of section 95663, title 17, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, as applicable, the useful life shall be ten years or 110,000 miles, whichever first occurs. For 2021 and subsequent model-year heavy-duty vehicles from 8,501 to 19,500 pounds GVWR, certified to the GHG emission standards of section 95663, title 17, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, as applicable, the useful life shall be fifteen years or 150,000 miles, whichever first occurs.

(26) For 2014 through 2020 model-year heavy-duty vehicles above 19,500 pounds and at or below 33,000 pounds GVWR, certified to the GHG emission standards of section 95663, title 17, CCR, for carbon dioxide emission standards, the useful life shall be ten years or 185,000 miles, whichever first occurs. For 2021 and subsequent model-year vocational vehicles above 19,500 pounds GVWR using light or medium heavy-duty diesel engines or above 19,500 pounds GVWR using Otto-cycle engines, and for 2021 and subsequent model-year tractors from 26,001 to 33,000 pounds GVWR, certified to the GHG emission standards of section 95663, title 17, CCR, for carbon dioxide emission standards, the useful life shall be ten years or 185,000 miles, whichever first occurs.

(27) For 2014 through 2020 model-year heavy-duty vehicles above 33,000 pounds GVWR, certified to the GHG emission standards of section 95663, title 17, CCR, for carbon dioxide emissions standards, the useful life shall be ten years or 435,000 miles, whichever first occurs. For 2021 and subsequent

model-year vocational vehicles above 19,500 pounds GVWR using heavy heavy-duty diesel engines, and for 2021 and subsequent model-year tractors over 33,000 pounds GVWR, certified to the GHG emission standards of section 95663, title 17, CCR, for carbon dioxide emission standards, the useful life shall be ten years or 435,000 miles, whichever first occurs.

(28) For 2020 and subsequent model-year trailers, certified to the GHG emission standards of section 95663, title 17, CCR, for carbon dioxide emission standards, the useful life shall be ten years.

(m) “Vehicle or engine manufacturer” means the manufacturer granted certification for a motor vehicle or motor vehicle engine.

(n) “Voluntary Emission Recall” means an inspection, repair, adjustment, or modification program voluntarily initiated and conducted by a manufacturer or its agent or representative to remedy any nonconformity for which direct notification of vehicle or engine owners is necessary.

## Appendix A to Article 2.1

California In-Use Vehicle Emission-Related Recall Procedures, Enforcement Test Procedures, and Failure Reporting Procedures for 1982 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, Heavy-Duty Vehicles and Engines, Motorcycles, 1997 and Subsequent Model-Year Off-Road Motorcycles and All-Terrain Vehicles, 2000 and Subsequent Model-Year Off-Road Compression-Ignition Engines, and 2008 and Subsequent Model-Year Spark-Ignition Sterndrive/Inboard Marine Engines.

### Vehicle and Engine Parameters, Components, and Specifications

I. Passenger Car, Light-Duty Truck, Medium-Duty Vehicle, Motorcycle, and Inboard and Sterndrive Parameters and Specifications.

A. Basic Engine Parameters - Reciprocating Engines.

1. Compression ratio.
2. Cranking compression pressure.
3. Valves (intake and exhaust).
  - a. Head diameter dimension.
  - b. Valve lifter or actuator type and valve lash dimension.
4. Turbocharger calibrations.
5. Camshaft timing.
  - a. Valve opening (degrees BTDC).
  - b. Valve closing (degrees ATDC).
  - c. Valve overlap (inch-degrees).

B. Basic Engine Parameters - Rotary Engines.

1. Intake port(s): Timing and overlap if exposed to the combustion chamber.
2. Exhaust port(s): Timing and overlap if exposed to the combustion chamber.
3. Cranking compression pressure.
4. Compression ratio.

C. Air Inlet System: Temperature control system calibration.

D. Fuel System.

1. General
  - a. Engine idle speed.
  - b. Engine idle mixture.
2. Carburetion.
  - a. Air-fuel flow calibration.
  - b. Transient enrichment system calibration.
  - c. Starting enrichment system calibration.
  - d. Altitude compensation system calibration.
  - e. Hot idle compensation system calibration.
3. Fuel injection.
  - a. Control parameters and calibrations.
  - b. Fuel shutoff system calibration.

- c. Starting enrichment system calibration.
  - d. Transient enrichment system calibration.
  - e. Air-fuel flow calibration.
  - f. Altitude compensation system calibration.
  - g. Operating pressure(s).
  - h. Injector timing calibrations.
- E. Ignition System.
- 1. Control parameters and calibrations.
  - 2. Initial timing setting.
  - 3. Dwell setting.
  - 4. Altitude compensation system calibration.
  - 5. Spark plug voltage.
- F. Engine Cooling System: Thermostat calibration.
- G. Exhaust Emission Control system.
- 1. Air injection system.
    - a. Control parameters and calibrations.
    - b. EGR valve flow calibration.
  - 2. EGR system.
    - a. Control parameters and calibrations.
    - b. EGR valve flow calibration.
  - 3. Catalytic converter system.
    - a. Active surface area.
    - b. Volume of catalyst.
    - c. Conversion efficiency.
    - d. Leaded fuel restrictor or constricted fuel filler neck.
  - 4. Backpressure.
- H. Evaporative Emission Control System.
- 1. Control parameters and calibrations.
  - 2. Fuel tank.
    - a. Pressure and vacuum relief settings.
    - b. Fuel fill pipe and opening specifications (Reference section 2290, Title 13, C.C.R.).
- I. Crankcase Emission Control System.
- 1. Control parameters and calibrations.
  - 2. Valve calibration(s).
- J. Auxiliary Emission Control Devices (AECD).
- 1. Control parameters and calibrations.
  - 2. Component calibration(s).
- K. Emission Control Related Malfunction and Diagnostic Systems.
- 1. On-Board Malfunction and Diagnostic Systems
    - a. Control parameters and calibrations.
    - b. Component calibration(s).
  - 2. Emission Control Related Warning Systems
    - a. Control parameters and calibrations.

- b. Component calibration(s).
  - L. Driveline Parameters.
    - 1. Axle ratio(s).
- II. Heavy-Duty Gasoline Engine Parameters and Specifications.
- A. Basic Engine Parameters.
    - 1. Compression ratio.
    - 2. Cranking compression pressure.
    - 3. Supercharger/turbocharger calibration.
    - 4. Valves (intake and exhaust).
      - a. Head diameter dimension.
      - b. Valve lifter or actuator type and valve lash dimension.
    - 5. Camshaft timing.
      - a. Valve opening (degrees BTDC).
      - b. Valve closing (degrees ATDC).
      - c. Valve overlap (inch-degrees).
  - B. Air Inlet System: Temperature control system calibration.
  - C. Fuel System.
    - 1. General.
      - a. Engine idle speed.
      - b. Engine idle mixture.
    - 2. Carburetion.
      - a. Air-fuel flow calibration.
      - b. Transient enrichment system calibration.
      - c. Starting enrichment system calibration.
      - d. Altitude compensation system calibration.
      - e. Hot idle compensation system calibration.
    - 3. Fuel injection.
      - a. Control parameters and calibrations.
      - b. Fuel shutoff system calibration.
      - c. Starting enrichment system calibration.
      - d. Transient enrichment system calibration.
      - e. Air-fuel flow calibration.
      - f. Altitude compensation system calibration.
      - g. Operating pressure(s).
      - h. Injector timing calibrations.
  - D. Ignition System.
    - 1. Control parameters and calibrations.
    - 2. Initial timing setting.
    - 3. Dwell setting.
    - 4. Altitude compensation system calibration.
    - 5. Spark plug voltage.
  - E. Engine Cooling System: Thermostat calibration.
  - F. Exhaust Emission Control system.

1. Air injection system.
    - a. Control parameters and calibrations.
    - b. Pump flow rate.
  2. EGR system.
    - a. Control parameters and calibrations.
    - b. EGR valve flow calibration.
  3. Catalytic converter system.
    - a. Active surface area.
    - b. Volume of catalyst.
    - c. Conversion efficiency.
    - d. Leaded fuel restrictor or constricted fuel filler neck.
  4. Backpressure.
- G. Evaporative Emission Control System.
1. Control parameters and calibrations.
  2. Fuel tank.
    - a. Pressure and vacuum relief settings.
    - b. Fuel fill pipe and opening specifications (Reference section 2290, Title 13, C.C.R.).
- H. Crankcase Emission Control System.
1. Control parameters and calibrations.
  2. Valve calibration(s).
- I. Auxiliary Emission Control Devices (AECD).
1. Control parameters and calibrations.
  2. Component calibration(s).
- J. Emission Control Related Warning Systems.
1. Control parameters and calibrations.
  2. Component calibration(s).

### III. Heavy-Duty Diesel Engine and Off-Road Compression-Ignition Engine Parameters and Specifications.

- A. Basic Engine Parameters -Four Stroke Cycle Reciprocating Engines.
1. Compression ratio.
  2. Cranking compression pressure.
  3. Supercharger/turbocharger calibration.
  4. Valves (intake and exhaust).
    - a. Head diameter dimension.
    - b. Valve lifter or actuator type and valve lash dimension.
  5. Camshaft timing.
    - a. Valve opening (degrees BTDC).
    - b. Valve closing (degrees ATDC).
    - c. Valve overlap (inch-degrees).
- B. Basic Engine Parameters -Two Stroke Cycle Reciprocating Engine.
- 1-5. Same as section III.A.
  6. Intake port(s): Timing in combustion cycle.

- 7. Exhaust port(s): Timing in combustion cycle.
- C. Air Inlet System: Temperature control system calibration.
  - 1. Temperature control system calibration.
  - 2. Maximum allowable air inlet restriction.
- D. Fuel System.
  - 1. Fuel injection.
    - a. Control parameters and calibrations.
    - b. Transient enrichment system calibration.
    - c. Air-fuel flow calibration.
    - d. Altitude compensation system calibration.
    - e. Operating pressure(s).
    - f. Injector timing calibration.
- E. Exhaust Emission Control System: Maximum allowable backpressure.
- F. Crankcase Emission Control System.
  - 1. Control parameters and calibrations.
  - 2. Valve calibration(s).
- G. Auxiliary Emission Control Device (AECD).
  - 1. Control parameters and calibrations.
  - 2. Component calibration(s).

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39010, 39600, 39601, 43013, 43018, 43101, 43104, 43105 and 43806, Health and Safety Code; and Section 28114, Vehicle Code. Reference: Sections 38501, 38505, 38510, 38560, 39002, 39003, 39010, 39500, 39601, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43202, 43204-43205.5, 43206, 43210, 43211, 43212, 43213 and 43806, Health and Safety Code; and Section 28114, Vehicle Code.

## HISTORY

1. Amendment of text previously incorporated by reference filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of subsection (k)(9) filed 5-22-90; operative 6-21-90 (Register 90, No. 28).
3. Change without regulatory effect amending subsection (c) and adding Appendix A to the Table of Contents below article 2.1, filed 10-16-90 pursuant to section 100, title 1, California Code of Regulations (Register 90, No. 46).
4. Amendment of subsections (b), (c), (d), (e), (f), (g), (h), (i), (j), (k), (l), (m) and (n) filed 8-2-91; operative 9-2-91 (Register 91, No. 49).
5. Amendment of subsection (l) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
6. Amendment of subsection (l)(7) and new subsection (l)(11) filed 5-12-94; operative 6-13-94 (Register 94, No. 19).
7. New subsection (l)(12) and amendment of Appendix filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. § 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.
8. Amendment of subsections (l)(6)-(7) and new subsections (l)(13)-(16) filed 12-14-95; operative 1-13-96 (Register 95, No. 50).
9. Amendment of subsections (l)(6)-(7), (l)(11) and (l)(13)-(16) and new subsections (l)(17)-(l)(20) filed 4-15-99; operative 5-15-99 (Register 99, No. 16).
10. Amendment of subsections (b) and (l)(9), new subsection (l)(17) and subsection relettering filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
11. New subsections (l)(22)-(l)(22)(C), amendment of first paragraph and section III. of Appendix A, and amendment of Note filed 12-28-2000; operative 12-28-2000 pursuant to Government Code section 11343.4(d) (Register 2000, No. 52).
12. New subsection (l)(23) and amendment of first paragraph and heading I. of Appendix filed 7-22-2002; operative 8-21-2002 (Register 2002, No. 30).
13. Amendment of section and Note filed 10-16-2003; operative 11-15-2003 (Register 2003, No. 42).
14. Amendment of subsection (l)(23) and first paragraph of Appendix A to article 2.1 and amendment of Note filed 11-13-2006; operative 12-13-2006 (Register 2006, No. 46).
15. Amendment of subsection (l)(12) filed 7-16-2007; operative 8-15-2007 (Register 2007, No. 29).

16. Amendment of subsection *(l)(20)*, redesignation of former subsections *(l)(20)(i)-(ii)* as new subsections *(l)(20)(A)-(B)*, redesignation and amendment of former subsection *(l)(23)* as new subsections *(l)(23)(A)-(B)* and amendment of Appendix A introductory paragraph and subsection I.F. filed 7-17-2009; operative 8-16-2009 (Register 2009, No. 29).
17. Amendment of subsections (b) and *(l)(9)*, new subsection *(l)(18)* and subsection renumbering filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
18. New subsections *(l)(19.1)*, *(l)(20.1)*, *(l)(21.1)*, *(l)(22.1)* and *(l)(25)-(27)*, amendment of subsection *(l)(21)* and amendment of Note filed 12-5-2014; operative 12-5-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 49).
19. Editorial correction of History 18 (Register 2014, No. 50).
20. Amendment of subsections *(l)(19.1)*, *(l)(20.1)*, *(l)(22.1)* and *(l)(25)-(27)* and new subsection *(l)(28)* filed 2-7-2019; operative 4-1-2019 (Register 2019, No. 6).

This database is current through 2/14/20 Register 2020, No. 7  
13 CCR § 2112, 13 CA ADC § 2112



### **Section 2113. Initiation and Approval of Voluntary and Influenced Emission-Related Recalls.**

(a) When any manufacturer initiates a voluntary emission recall campaign, the manufacturer shall notify the Executive Officer of the recall at least 30 days before owner notification is to begin. The manufacturer shall also submit a voluntary recall plan for approval, as prescribed under Section 2114 of these procedures. A voluntary recall plan shall be deemed approved unless disapproved by the Executive Officer within 20 days after receipt of the recall plan.

(b) When any manufacturer, based on enforcement test results or any other information provided or required by the ARB, proposes to initiate an influenced emission recall campaign, the manufacturer shall submit for approval by the Executive Officer an influenced emission recall plan as prescribed by Section 2114 of these procedures. The plan shall be submitted within 45 days following the receipt of a notification from the ARB that enforcement test results or other information demonstrate a vehicle or an engine noncompliance.

(c) The Executive Officer shall approve the recall plan if the plan contains the information specified in Section 2114 and is designed to notify the vehicle owner and correct the nonconformity in an expeditious manner. Notification of vehicle or engine owners and the implementation of recall repairs shall commence no later than the schedule specified under Section 2114(a)(3) and (4), unless the manufacturer can show good cause for the Executive Officer to extend the deadline.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. Repealer of former Section 2113, and renumbering and amendment of text previously incorporated by reference in Section 2112 to Section 2113 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2113, 13 CA ADC § 2113

### **Section 2114. Voluntary and Influenced Recall Plans.**

(a) The recall plan for both voluntary and influenced recalls shall contain the following information unless otherwise specified:

(1) A description of each class or category of vehicle or engine subject to recall including the number of vehicles or engines to be recalled, the engine family, test group or a subgroup thereof, the model year, the make, the model, and such other information as may be required to identify the vehicles or engines to be recalled.

(2) A description of the nonconformity and the specific modifications, alterations, repairs, adjustments, or other changes to be made to correct the vehicles or engines.

(3) A description of the method by which the manufacturer will determine the names and addresses of vehicle or engine owners and the manufacturer's method and schedule for notifying the service facilities and vehicle or engine owners of the recall.

(4) A description of the procedure to be followed by vehicle or engine owners to obtain correction of the nonconformity. This shall include the date on or after which the owner can have the nonconformity remedied, the time reasonably necessary to perform the labor to remedy the nonconformity, and the designation of facilities at which the nonconformity can be remedied.

(5) If some or all of the nonconforming vehicles or engines are to be remedied by persons other than dealers or authorized warranty agents of the manufacturer, a description of such class of persons.

(6) A copy of the letter of notification to be sent to vehicle or engine owners.

(7) A description of the system by which the manufacturer will assure that an adequate supply of parts will be available to perform the repair under the recall plan, including the date by which an adequate supply of parts will be available to initiate the repair campaign, and the method to be used to assure the supply remains both adequate and responsive to owner demand.

(8) A copy of all necessary instructions to be sent to those persons who are to perform the repair.

(9) A description of the impact of the proposed repairs or adjustments on fuel economy, driveability, performance and safety of each class or category of vehicles or engines to be recalled and a brief summary of the data, technical studies, or engineering evaluations which support these descriptions.

(10) Under an influenced recall, an estimate of the capture rate from the proposed recall derived from actual data and/or manufacturer experience. A 60 percent capture rate shall be assigned for recalls based exclusively on noncompliance as defined in Section 2112(h)(1), above.

(11) Under an influenced recall based on noncompliance as defined in Section 2112(h)(2), above, a description of the impact of the proposed changes on the average emissions from the vehicles or engines to be recalled. The description shall contain the following:

(A) Average noncompliance emission levels.

(B) Average emission reduction per pollutant resulting from the recall repair. These averages shall be verified by the manufacturer by applying the proposed recall repairs to two or more in-use vehicles or engines representing the average noncompliance emission levels. Only those vehicles or engines with baseline-emission levels within 25 percent of the average emission levels of noncomplying pollutant(s) established under the in-use enforcement test program may be used by manufacturers to verify proposed recall repairs. The Executive Officer may allow the use of vehicles or engines exceeding these limits if none which meet the limits can be reasonably procured. In the case of heavy-duty engines, the average emission levels may be verified using laboratory engines, subject to approval by the Executive Officer.

(C) An estimate of the average emission level per pollutant for the class or category of vehicles or engines after repair as corrected by the estimated capture rate. The estimated average emission level shall comply with the applicable emission standard. The Executive Officer may waive the requirement for average emission compliance with the standards provided the emission level per vehicle repaired is reduced to its new-vehicle certification emission level at a minimum capture rate of 60 percent.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2112 to Section 2114 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.
3. Amendment of subsections (a)(1), (a)(10) and (a)(11) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
4. Editorial correction restoring inadvertently omitted subsection (a)(10) (Register 99, No. 45).

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13 CCR § 2114, 13 CA ADC § 2114

### **Section 2115. Eligibility for Repair.**

The manufacturer shall not condition eligibility for repair on the proper maintenance or use of the vehicle except for strong and compelling reasons and with the approval of the Executive Officer; however, the manufacturer shall not be obligated to repair a component which has been removed or altered so that the remedial action cannot be performed without additional cost.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2112 to Section 2115 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2115, 13 CA ADC § 2115

### **Section 2116. Repair Label.**

(a) The manufacturer shall require those who perform the repair to affix a label to each vehicle or engine repaired, or, when required, inspected, under the voluntary or influenced recall plan.

(b) The label shall be placed in a location approved by the Executive Officer and shall be fabricated of a material suitable for such location in which it is installed and which is not readily removable.

(c) The label shall contain the recall campaign number and a code designating the campaign facility at which the repair, or inspection for repair, was performed.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2112 to Section 2116 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2116, 13 CA ADC § 2116

### **Section 2117. Proof of Correction Certificate.**

The manufacturer shall require those who perform the repair to provide the owner for each vehicle or engine repaired with a certificate, in a format prescribed by the Executive Officer, which indicates that the noncomplying vehicle or engine has been corrected under the recall program. This requirement shall become effective and applicable upon the effective date of a recall enforcement program adopted by the Department of Motor Vehicles or another state agency which requires presentation of proof of correction of a recalled vehicle prior to issuance of a smog certificate, registration renewal, or other entitlement to use.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of section and Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2117, 13 CA ADC § 2117

## **Section 2118. Notification.**

The notification of vehicle or engine owners shall contain the following:

- (a) The statement: “Your (vehicle or engine) (is or may be) releasing air pollutants which exceed (California or California and federal) standards,” if applicable as determined by the Executive Officer.
- (b) A statement that the nonconformity of any such vehicles or engines will be remedied at the expense of the manufacturer.
- (c) A statement that such nonconformity if not repaired may cause the vehicle or engine to fail a vehicle inspection or Smog Check test when such tests are required under state law.
- (d) A statement describing the adverse effect, if any, of the uncorrected nonconformity on the performance, fuel economy, or durability of the vehicle or engine.
- (e) After the effective date of the recall enforcement program referred to in Section 2117, a statement that a certificate showing that the vehicle has been repaired under the recall program shall be issued by the service facilities, and that such a certificate will be required as a condition of vehicle registration or operation, as appropriate.
- (f) A card to be used by a vehicle or engine owner in the event the vehicle or engine to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle or engine was sold or transferred.
- (g) The statement: “In order to ensure your full protection under the emission warranty provisions, it is recommended that you have your (vehicle or engine) serviced as soon as possible. Failure to do so could be determined as lack of proper maintenance of your (vehicle or engine).” This statement is not required for off-road motorcycles or all-terrain vehicles.
- (h) A telephone number provided by the manufacturer, which may be used to report difficulty in obtaining recall repairs.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2112 to Section 2118 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17).
2. Amendment of subsection (g) and Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2118, 13 CA ADC § 2118

### **Section 2119. Recordkeeping and Reporting Requirements.**

(a) Unless otherwise specified by the Executive Officer, the manufacturer shall report on the progress of the recall campaign by submitting subsequent reports for six consecutive quarters commencing with the quarter after the recall campaign begins. Such reports shall be submitted no later than 25 days after the close of each calendar quarter to: Chief, Mobile Source Operations Division, 9528 Telestar, El Monte, CA 91731. For each class or category of vehicle or engine subject to the emission recall campaign, the quarterly report shall contain the following:

- (1) Engine family or test group and emission recall campaign number designated by the manufacturer.
- (2) Date owner notification was begun, and date completed.
- (3) Number of vehicles or engines involved in the voluntary or influenced emission recall campaign.
- (4) Number of vehicles or engines known or estimated to be affected by the nonconformity and an explanation of the means by which this number was determined.
- (5) Number of vehicles or engines inspected pursuant to the voluntary or influenced emission recall plan.
- (6) Number of inspected vehicles or engines found to be affected by the nonconformity.
- (7) Number of vehicles or engines receiving repair under the recall plan.
- (8) Number of vehicles or engines determined to be unavailable for inspection or repair under the recall plan due to exportation, theft, scrapping, or for other reasons (specify).
- (9) Number of vehicles or engines determined to be ineligible for recall action due to removed or altered components.
- (10) A listing of the identification numbers of vehicles or engines subject to recall but for whose repair the manufacturer has not been invoiced. This listing shall be supplied in a standardized computer data storage device to be specified by the Executive Officer. The frequency of this submittal may be changed by the Executive Officer depending on the needs of recall enforcement.
- (11) A copy of any service bulletins transmitted to dealers or other authorized repair facilities which relate to the nonconformity to be corrected and which have not previously been reported.
- (12) A copy of all communications transmitted to vehicle or engine owners which relate to the nonconformity and which have not previously been submitted.



(b) If the manufacturer determines that any of the information submitted to the Executive Officer pursuant to (a) above has changed or was incorrect, revised information and an explanatory note shall be submitted. Responses to subsections (a)(5), (6), (7), (8), and (9) above shall be cumulative totals.

(c) The manufacturer shall maintain in a form suitable for inspection, such as computer information storage devices or card files, and shall make available to the Executive Officer or his or her authorized representative upon request, the names and addresses of vehicle or engine owners:

(1) To whom notification was given;

(2) Whose vehicles were repaired or inspected under the recall plan; and

(3) Who were determined not to qualify for such recall action due to removed or altered components.

(d) The information gathered by the manufacturer to compile the reports required by these procedures shall be retained for not less than one year beyond the useful life of the vehicles or engines and shall be made available to authorized personnel of the Air Resources Board upon request.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2112 to Section 2119 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).

Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

3. Amendment of subsections (a) and (a)(1) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2119, 13 CA ADC § 2119

## **Section 2120. Other Requirements Not Waived.**

The filing of any report under the provisions of these procedures shall not affect a manufacturer's responsibility to file reports or applications, obtain approval, or give notice under any other provisions of law.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2112 to Section 2120 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).

Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2120, 13 CA ADC § 2120

## **Section 2121. Penalties.**

Under the influenced recall, failure by a manufacturer to notify the vehicle or engine owners and repair the vehicles or engines in the manner specified in the plan shall constitute a violation of the Executive Officer's order approving the plan and a violation of Health and Safety Code Section 43105.

Notwithstanding the above, no penalty shall be imposed for a manufacturer's failure to meet the estimated capture rate except for an influenced recall when the 60-percent capture rate is required pursuant to Section 2114(a)(10) above, in which case a recall pursuant to Section 2123 below may be ordered if the Executive Officer determines that the manufacturer did not show a good faith effort to achieve the capture rate set forth in the recall plan.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).

Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2121, 13 CA ADC § 2121

## Article 2.2. Procedures for in-Use Vehicle Ordered Recalls

### **Section 2122. General Provisions.**

The provisions regarding applicability of the ordered recall procedures and the definitions shall be the same as those set forth in Title 13, California Code of Regulations, Sections 2111 and 2112.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).  
Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. § 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.
3. Amendment of section and Note filed 12-5-2007; operative 1-4-2008 (Register 2007, No. 49).
4. Amendment of section and Note filed 11-8-2010; operative 12-8-2010 (Register 2010, No. 46).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2122, 13 CA ADC § 2122

## **Section 2123. Initiation and Notification of Ordered Emission-Related Recalls.**

(a) A manufacturer shall be notified whenever the Executive Officer has determined, based on warranty information reports, field information reports, enforcement testing results, or any other information, that a substantial number of a class or category of vehicles or engines produced by that manufacturer, although properly maintained and used, contain a failure in an emission-related component which, if uncorrected, may result in the vehicles' or engines' failure to meet applicable standards over their useful lives; or whenever a class or category of vehicles or engines within their useful lives, on average, do not conform to the standards prescribed pursuant to Section 43101 of the Health and Safety Code as applicable to the model year of such vehicles.

(b) It shall be presumed for purposes of this section that an emission-related failure will result in the exceedance of emission standards unless the manufacturer presents evidence in accordance with the procedures set forth in Title 13, California Code of Regulations, Section 2147 which demonstrates to the satisfaction of the Executive Officer that the failure will not result in exceedance of emission standards over the useful life of the vehicle or engine.

(c) The notification shall include a description of each class or category of vehicles or engines encompassed by the determination of nonconformity, shall set forth the factual basis for the determination and shall designate a date at least 45 days from the date of receipt of such notification by which the manufacturer shall submit a plan to remedy the nonconformity.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2123 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).  
Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2123, 13 CA ADC § 2123

### **Section 2124. Availability of Public Hearing.**

(a) The manufacturer may request a public hearing pursuant to the procedures set forth in Sections 60040 to 60053, Title 17, California Code of Regulations to contest the finding of nonconformity and the necessity for or the scope of any ordered corrective action.

(b) If a manufacturer requests a public hearing pursuant to subsection (a) above, and if the Executive Officer's determination of nonconformity is confirmed at the hearing, the manufacturer shall submit the recall plan required by Section 2125 within 30 days after receipt of the Board's decision.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2124 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).

Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2124, 13 CA ADC § 2124

### Section 2125. Ordered Recall Plan.

(a) Unless a public hearing is requested by the manufacturer, a recall plan shall be submitted to the Chief, Mobile Source Division, 9528 Telstar Avenue, El Monte, CA 91731, within the time limit specified in the notification. The Executive Officer may grant the manufacturer an extension upon good cause shown.

(b) The recall plan shall contain the following:

(1) A description of each class or category of vehicle or engine to be recalled, including the engine family or sub-group thereof, the model-year, the make, the model, and such other information as may be required to identify the vehicles or engines to be recalled.

(2) A description of the nonconformity and the specific modifications, alterations, repairs, corrections, adjustments or other changes to be made to bring the vehicles or engines into conformity including a brief summary of the data and technical studies which support the manufacturer's decision regarding the specific corrections to be made.

(3) A description of the method by which the manufacturer will determine the names and addresses of vehicle or engine owners and the method by which they will be notified.

(4) A description of the procedure to be followed by vehicle or engine owners to obtain correction of the nonconformity including the date on or after which the owner can have the nonconformity remedied, the time reasonably necessary to perform the labor required to correct the nonconformity, and the designation of facilities at which the nonconformity can be remedied. The repair shall be completed within a reasonable time designated by the Executive Officer from the date the owner delivers the vehicle or engine for repair. This requirement becomes applicable on the date designated by the manufacturer as the date on or after which the owner can have the nonconformity remedied.

(5) If some or all of the nonconforming vehicles or engines are to be remedied by persons other than dealers or authorized warranty agents of the manufacturer, a description of such class of persons and a statement indicating that the participating members of the class will be properly equipped to perform such remedial action.

(6) The capture rate required for each class or category of vehicle or engine to be recalled. Under recalls based on exceedance of emission standards, the capture rate shall be calculated using the following formula:

[https://govt.westlaw.com/calregs/Link/Document/Blob/I9fb4196a718f11da92fc740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=6eb0de13-a8a2-4035-8f5d-0e5cce859172&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Link/Document/Blob/I9fb4196a718f11da92fc740042049590.png?targetType=admin-codes&originationContext=document&vr=3.0&rs=cblt1.0&transitionType=DocumentImage&uniqueId=6eb0de13-a8a2-4035-8f5d-0e5cce859172&contextData=(sc.Default))

$$R = \frac{(Ef - Es) \times 100\%}{\Delta}$$

where:

R = capture rate (see section 2112(a), above, for definition).

$\Delta$  = average reduction per vehicle resulting from the recall repair (see subsection (b)(12)(B), below, for determination).

$E_f$  = average noncompliance emission level determined from in-use enforcement testing and other sources.

$E_s$  = emission standard for a particular pollutant.

An 80 percent capture rate shall be required for recalls based exclusively on noncompliance as defined in section 2112(h)(1), above.

(7) The plan may specify the maximum incentives (such as a tune-up or specified quantity of gasoline), if any, the manufacturer will offer to induce vehicle or engine owners to present their vehicles for repair, as evidence that the manufacturer has made a good faith effort to repair the percentage of vehicles or engines specified in the plan. The plan shall include a schedule for implementing actions to be taken including identified increments of progress towards implementation and deadlines for completing each such increment.

(8) A copy of the letter of notification to be sent to vehicle or engine owners.

(9) A description of the system by which the manufacturer will assure that an adequate supply of parts will be available to perform the repair under the recall plan including the date by which an adequate supply of parts will be available to initiate the repair campaign, and the method to be used to assure the supply remains both adequate and responsive to owner demand.

(10) A copy of all necessary instructions to be sent to those persons who are to perform the repair under the recall plan.

(11) A description of the impact of the proposed changes on fuel economy, driveability, performance and safety of each class or category of vehicles or engines to be recalled and a brief summary of the data, technical studies, or engineering evaluations which support these descriptions.

(12) A description of the impact of the proposed changes on the average emissions of the vehicles or engines to be recalled based on noncompliance as defined in section 2112(h)(2), above. The description shall contain the following:

(A) Average noncompliance emission levels.

(B) Average emission reduction or increase per pollutant resulting from the recall repair. These averages shall be verified by the manufacturer by applying the proposed recall repairs to two or more in-use vehicles or engines representing the average noncompliance emission levels. Only those vehicles or engines with baseline emission levels within 25 percent of the average emission levels of noncomplying pollutant(s) established under the in-use enforcement test program may be used by manufacturers to verify proposed recall repairs. The Executive Officer may allow the use of vehicles or engines exceeding these limits if none which meet the limits can be reasonably procured. In the



case of heavy-duty engines, the average emission levels may be verified by using laboratory engines, subject to approval by the Executive Officer.

(C) An estimate of the average emission level per pollutant for a class or category of vehicles or engines after repair as corrected by the required capture rate. The estimated average emission level shall comply with the applicable emission standards. If the average emissions levels achieved by applying the average emission reduction per vehicle or engine after repair and the estimated capture rate, do not achieve compliance with the emissions standards, a manufacturer shall propose other measures to achieve average emissions compliance.

(13) Any other information, reports, or data which the Executive Officer may reasonably determine to be necessary to evaluate the recall plan.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in section 2113 to section 2125 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
  2. Amendment of subsections (b)(6) and (b)(12) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
  3. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).
- Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2125, 13 CA ADC § 2125

### **Section 2126. Approval and Implementation of Recall Plan.**

(a) If the Executive Officer finds that the recall plan is designed effectively to correct the nonconformity and complies with the provisions of Section 2125, he or she will so notify the manufacturer in writing. Upon receipt of the approval notice from the Executive Officer, the manufacturer shall commence implementation of the approved plan. Notification of vehicle or engine owners and the implementation of recall repairs shall commence within 45 days of the receipt of notice unless the manufacturer can show good cause for the Executive Officer to extend the deadline.

(b) If the Executive Officer does not approve the recall plan or the mitigation measures provided in Section 2130 as submitted, the Executive Officer shall order modification of the plan or mitigation measures with such changes and additions as he or she determines to be necessary. The Executive Officer shall notify the manufacturer in writing of the disapproval and the reasons for the disapproval.

(c) The manufacturer may contest the Executive Officer's disapproval by requesting a public hearing pursuant to the procedures set forth in Sections 60040 to 60053, Title 17, California Code of Regulations. As a result of the hearing, the Board may affirm, overturn or modify the Executive Officer's action. In its decision, affirming or modifying, the Board shall specify the date by which the manufacturer shall commence notifying vehicle or engine owners and implementing the required recall repairs.

(d) If no public hearing is requested in accordance with (c) above, the manufacturer shall incorporate the changes and additions required by the Executive Officer and shall commence notifying vehicle or engine owners and implementing the required recall repairs within 60 days of the manufacturer's receipt of the Executive Officer's disapproval.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2126 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2126, 13 CA ADC § 2126

### **Section 2127. Notification of Owners.**

(a) Notification to vehicle or engine owners shall be made by first class mail or by such other means as approved by the Executive Officer provided, that for good cause, the Executive Officer may require the use of certified mail to ensure an effective notification.

(b) The manufacturer shall use all reasonable means necessary to locate vehicle or engine owners provided, that for good cause, the Executive Officer may require the manufacturer to use motor vehicle registration lists available from State or commercial sources to obtain the names and addresses of vehicle or engine owners to ensure effective notification.

(c) The Executive Officer may require subsequent notification by the manufacturer to vehicle or engine owners by first class mail or other reasonable means provided, that for good cause, the Executive Officer may require the use of certified mail to ensure effective notification.

(d) The notification of vehicle or engine owners shall contain the following:

(1) The statement: “the California Air Resources Board has determined that your (vehicle or engine) (is or may be) releasing air pollutants which exceed (California or California and Federal) standards. These standards were established to protect your health and welfare from the dangers of air pollution.”

(2) A statement that the nonconformity of any such vehicles or engines will be remedied at the expense of the manufacturer.

(3) A statement that eligibility may not be denied solely on the basis that the vehicle or engine owner used parts not manufactured by the original equipment vehicle manufacturer, or had repairs performed by outlets other than the vehicle or engine manufacturer's franchised dealers.

(4) A clear description of the components which will be affected by the recall action and a general statement of the measures to be taken to correct the nonconformity.

(5) A statement that such nonconformity, if not repaired, may cause the vehicle or engine to fail an emission inspection or Smog Check test when such tests are required under State law.

(6) A description of the adverse effects, if any, that an uncorrected nonconformity would have on the performance, fuel economy, or driveability of the vehicle or engine or to the function of other engine components.

(7) A description of the procedure which the vehicle or engine owner should follow to obtain correction of the nonconformity including the date on or after which the owner can have the nonconformity remedied, the time reasonably necessary to correct the nonconformity, and a designation of the facilities at which the nonconformity can be remedied.

(8) After the effective date of the recall enforcement program referred to in Section 2117, above, a statement that a certificate showing that the vehicle has been repaired under the recall program shall be

issued by the service facilities and that such a certificate may be required as a condition of vehicle registration or operation, as applicable.

(9) A card to be used by a vehicle or engine owner in the event the vehicle or engine to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle or engine was sold.

(10) The statement: "In order to ensure your full protection under the emission warranty made applicable to your (vehicle or engine) by State or Federal law, and your right to participate in future recalls, it is recommended that you have your (vehicle or engine) serviced as soon as possible. Failure to do so could be determined to be a lack of proper maintenance of your (vehicle or engine)." This statement is not required for off-road motorcycles or all-terrain vehicles.

(11) A telephone number provided by the manufacturer, which may be used to report difficulty in obtaining recall repairs.

(e) The manufacturer shall not condition eligibility for repair on the proper maintenance or use of the vehicle except for strong or compelling reasons and with approval of the Executive Officer; however, the manufacturer shall not be obligated to repair a component which has been removed or altered so that the recall action cannot be performed without additional cost.

(f) No notice sent pursuant to Section 2125(b)(8), above, nor any other communication sent to vehicle or engine owners or dealers shall contain any statement, express or implied, that the nonconformity does not exist or will not degrade air quality.

(g) The manufacturer shall be informed of any other requirements pertaining to the notification under this section which the Executive Officer has determined are reasonable and necessary to ensure the effectiveness of the recall campaign.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

## **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2127 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of subsection (d)(10) and Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2127, 13 CA ADC § 2127

### **Section 2128. Repair Label.**

- (a) The manufacturer shall require those who perform the repair under the recall plan to affix a label to each vehicle or engine repaired or, when required, inspected under the recall plan.
  
- (b) The label shall be placed in a location as approved by the Executive Officer and shall be fabricated of a material suitable for such location and which is not readily removable.
  
- (c) The label shall contain the recall campaign number and a code designating the facility at which the repair, inspection for repair, was performed.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2128 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).  
Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2128, 13 CA ADC § 2128

### **Section 2129. Proof of Correction Certificate.**

The manufacturer shall require those who perform the recall repair to provide the owner of each vehicle or engine repaired with a certificate, through a protocol and in a format prescribed by the Executive Officer, which indicates that the noncomplying vehicle or engine has been corrected under the recall program. This requirement shall become effective and applicable upon the effective date of the recall enforcement program referred to in Section 2117, above.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
  2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).
- Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2129, 13 CA ADC § 2129

### **Section 2130. Capture Rates and Alternative Measures.**

The manufacturer shall comply with the capture rate specified in the recall plan as determined pursuant to Section 2125(b)(6), above, within six consecutive quarters beginning with the quarter in which the notification of vehicle or engine owners was initiated. If, after good faith efforts, the manufacturer cannot correct the percentage of vehicles specified in the plan by the applicable deadlines and cannot take other measures to bring the engine family or test group into compliance with the standards, the manufacturer shall propose mitigation measures to offset the emissions of the unrepaired vehicles within 45 days from the last report filed pursuant to Section 2133(c), below. The Executive Officer shall approve such measures provided that:

- (a) the emission reductions from the recalled and repaired vehicles or engines and the mitigation measures are equivalent to achieving the capture rate; and
- (b) the emission reductions from the mitigation measures are real and verifiable; and
- (c) the mitigation measures are implemented in a timely manner.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).  
Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.
3. Amendment of first paragraph filed 10-28-99; operative 11-27-99 (Register 99, No. 44).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2130, 13 CA ADC § 2130

## **Section 2131. Preliminary Tests.**

The Executive Officer may require the manufacturer to conduct tests on components and vehicles or engines incorporating a proposed correction, repair, or modification reasonably designed and necessary to demonstrate the effectiveness of the correction, repair, or modification.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2131 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2131, 13 CA ADC § 2131



## **Section 2132. Communication with Repair Personnel.**

The manufacturer shall provide to the Executive Officer a copy of all communications which relate to the recall plan directed to dealers and other persons who are to perform the repair. Such copies shall be mailed to the Executive Officer contemporaneously with their transmission to dealers and other persons who are to perform the repair under the recall plan.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2132 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

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13 CCR § 2132, 13 CA ADC § 2132

### **Section 2133. Recordkeeping and Reporting Requirements.**

(a) The manufacturer shall maintain sufficient records to enable the Executive Officer to conduct an analysis of the adequacy of the recall campaign. The records shall include, for each class or category of vehicle or engine, but need not be limited to, the following:

- (1) Engine family involved and recall campaign number as designated by the manufacturer.
- (2) Date owner notification was begun, and date completed.
- (3) Number of vehicles or engines involved in the recall campaign.
- (4) Number of vehicles or engines known or estimated to be affected by the nonconformity.
- (5) Number of vehicles or engines inspected pursuant to the recall plan and found to be affected by the nonconformity.
- (6) Number of inspected vehicles or engines.
- (7) Number of vehicles or engines receiving repair under the recall plan.
- (8) Number of vehicles or engines determined to be unavailable for inspection or repair under the recall plan due to exportation, theft, scrapping, or for other reasons (specify).
- (9) Number of vehicles or engines determined to be ineligible for recall action due to removed or altered components.
- (10) A listing of the identification numbers of vehicles or engines subject to recall but for whose repair the manufacturer has not been invoiced. This listing shall be supplied in a standardized computer data storage device to be specified by the Executive Officer. The frequency of this submittal, as specified in subsection (c) below, may be changed by the Executive Officer depending on the needs of recall enforcement.
- (11) Any service bulletins transmitted to dealers which relate to the nonconformity and which have not previously been submitted.
- (12) All communications transmitted to vehicle or engine owners which relate to the nonconformity and which have not previously been submitted.

(b) If the manufacturer determines that the original responses to subsections (a)(3) and (4) of these procedures are incorrect, revised figures and an explanatory note shall be submitted. Responses to subsections (a)(5), (6), (7), (8), and (9) shall be cumulative totals.

(c) Unless otherwise directed by the Executive Officer, the information specified in subsection (a) of these procedures shall be included in six quarterly reports, beginning with the quarter in which the notification of owners was initiated, or until all nonconforming vehicles or engines involved in the campaign have been remedied, whichever occurs sooner. Such reports shall be submitted no later than 25 days after the close of each calendar quarter.

(d) The manufacturer shall maintain in a form suitable for inspection, such as computer information storage devices or card files, and shall make available to the Executive Officer or his or her authorized representative upon request, lists of the names and addresses of vehicle or engine owners:

(1) To whom notification was given;

(2) Who received remedial repair or inspection under the recall plan; and

(3) Who were denied eligibility for repair due to removed or altered components.

(e) The records and reports required by these procedures shall be retained for not less than one year beyond the useful life of the vehicles or engines involved, or one year beyond the reporting time frame specified in subsection (c) above, whichever is later.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2133 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2133, 13 CA ADC § 2133

## **Section 2134. Penalties.**

Failure by a manufacturer to carry out all recall actions ordered by the Executive Officer pursuant to Sections 2123 through 2133 of these procedures shall constitute a violation of Health and Safety Code Section 43105.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2134 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2134, 13 CA ADC § 2134

## **Section 2135. Extension of Time.**

The Executive Officer may extend any deadline in the plan if he or she finds in writing that a manufacturer has shown good cause for such extension.

Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2113 to Section 2135 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.

2. Amendment of Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4).

Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. s 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2135, 13 CA ADC § 2135

## Article 2.3. In-Use Vehicle Enforcement Test Procedures

### **Section 2139. Testing.**

After the vehicles have been accepted and restorative maintenance, if any, has been performed, the ARB or its designated laboratory shall perform the applicable emission tests pursuant to the following:

(a) For passenger cars and light-duty trucks, in-use compliance emission tests shall be performed pursuant to section 1960.1, 1961, 1961.2, or 1961.3, Title 13, California Code of Regulations, as applicable.

(b) For medium-duty vehicles certified according to the chassis standards and test procedures specified in section 1960.1, 1961, 1961.2, or 1961.3, Title 13, California Code of Regulations and the documents incorporated by reference therein, in-use compliance emission tests shall be performed pursuant to section 1960.1, 1961, 1961.2, or 1961.3, Title 13, California Code of Regulations, as applicable.

For medium-duty vehicles certified according to the GHG emission standards of section 95663, Title 17, California Code of Regulations, and the documents incorporated by reference therein, in-use compliance emission tests shall be performed pursuant to section 95663, Title 17, California Code of Regulations, as applicable.

(c) For medium-duty engines and vehicles certified according to the optional engine test procedures specified in section 1956.8, Title 13, California Code of Regulations and the documents incorporated by reference therein, in-use compliance emission tests shall be performed pursuant to one of the following procedures:

For medium-duty engines and vehicles certified to the Greenhouse Gas emission standards in sections 1956.8(a)(7) and 1956.8(h)(6), Title 13, California Code of Regulations, in-use compliance emission tests shall be performed pursuant to one of the following procedures:

(1) The engines of medium-duty vehicles may be tested pursuant to the engine test procedures specified in section 1956.8, provided that the manufacturer or its designated laboratory conduct procurement and enforcement testing pursuant to Sections 2136 through 2140, Title 13, California Code of Regulation, at the manufacturer's expense.

For manufacturers that have only one engine family or test group, the manufacturer or its designated laboratory that have more than one engine family or test group, the manufacturer or its designated laboratory shall procure no more than fifteen vehicles per engine family or test group. For manufacturers that have more than one engine family or test group, the manufacturer or its designated laboratory shall procure and test at the manufacturer's expense no more than one-third of its engine families or test groups and no more than fifteen vehicles from each engine family or test group. For the purposes of this section, "one-third" of a manufacturer's engine families or test groups shall be determined by dividing the number of distinct engine families or test groups by three, adding 0.5, and truncating the result to the nearest whole number.

The specific engine families or test groups subject to enforcement testing shall be selected by the ARB. The manufacturer or its designated laboratory shall begin the engine procurement process within

10 working days of notification by the ARB and shall complete testing within 100 working days of notification by the ARB. The Executive Officer shall approve the manufacturer's procurement procedures in advance of their use by the manufacturer. The Executive Officer shall approve a manufacturer's procurement procedures if engines are screened according to the criteria specified in section 2137, Title 13, California Code of Regulations and selected randomly from registration records compiled and prepared by R. L. Polk and Company or a comparable source. In addition, no vehicle shall be selected for enforcement testing with mileage less than 60 percent of the useful-life mileage without prior approval from the Executive Officer. The manufacturer shall permit an ARB representative to witness procurement, restorative maintenance, and enforcement testing. The Executive Officer shall have the authority to accept or reject a test engine based upon criteria specified in section 2137. Once an engine has been tested and determined to be in compliance with the current in-use emission standards, no further testing will be performed on subsequent engine families or test groups that carry-over the durability data of the tested engine family or test group.

Notwithstanding the above, if a manufacturer fails to demonstrate compliance with the emission standards after one-third of its engine families or test groups have been tested, additional engine families or test groups shall be tested, by the manufacturer or its designated laboratory, at the manufacturer's expense, until compliance is demonstrated on one-third of the engine families or test groups or all of a manufacturer's engine families or test groups have been tested. In addition, any engine family or test group which has been tested and determined to be in noncompliance shall be retested by the manufacturer each subsequent year until compliance with the applicable emission standards has been demonstrated. Notwithstanding the above, the ARB may conduct engine enforcement testing pursuant to the engine test procedures specified in section 1956.8, at their own expense.

(2) Medium-duty vehicles may be tested according to the chassis test procedures specified in section 1960.1(k), 1961, 1961.2, Title 13, California Code of Regulations or section 95663, Title 17, California Code of Regulations, as applicable, if a manufacturer develops correlation factors which establish the relationship between engine and chassis testing for each engine family or test group and submits these correlation factors within one year after the beginning of production. The correlation factors shall be applied to the measured in-use engine exhaust emission data to determine the in-use engine exhaust emission levels. All correlation factors and supporting data included in a manufacturer's application must be submitted to and approved by the Executive Officer in advance of their use by a manufacturer. Correlation factors intended to apply to a specific engine family or test group shall be applicable for each vehicle model incorporating that specific engine. Manufacturers shall submit test data demonstrating the applicability of the correlation factors for vehicle models comprising a minimum of 80 percent of their engine sales for that specific engine family or test group. The correlation factors for the remaining fleet may be determined through an engineering evaluation based upon a comparison with similar vehicle models. The Executive Officer shall approve a submitted correlation factor if it accurately corresponds to other established empirical and theoretical correlation factors and to emission test data available to the Executive Officer.

A manufacturer may choose to use the results from the chassis in-use testing as a screening test. If an engine family or test group does not demonstrate compliance with any of the applicable in-use engine

standards, as determined from the chassis test data and the applied correlation factors, the manufacturer shall be subject to the requirements and cost of in-use compliance engine testing, as specified in section 2139(c)(1). The manufacturer shall be subject to engine testing for any non-complying engine family or test group for each subsequent year until compliance with the engine emission standards is demonstrated.

Subsequent to approval of the correlation factors, the Executive Officer may make a determination that the original correlation factors are not valid. Such a determination may be based upon in-use emission data, including chassis and engine testing. Upon determination that the correlation factors for a specific engine family or test group are not valid, the manufacturer of the engine family or test group shall be subject to the enforcement testing requirements and costs of in-use compliance engine testing, as specified in section 2139(c)(1).

(3) The manufacturer shall choose one of the procedures specified in subsections (c)(1) through (c)(2). The Executive Officer shall permit the use of alternative test procedures if the Executive Officer determines the alternative test procedure adequately predicts the exhaust emissions from the engine test procedure specified in section 1956.8, Title 13, California Code of Regulations. Such a determination may be based upon correlation with test data from the engine test procedures.

(4) The time limits specified in subsections (c)(1) and (c)(2) may be extended by the Executive Officer if the manufacturer demonstrates that the time limits specified could not be achieved due to reasons beyond the reasonable control of the manufacturer.

(d) For heavy-duty engines and vehicles, in-use compliance emission tests shall be performed pursuant to section 1956.8, Title 13, California Code of Regulations.

For heavy-duty vehicles certified to the GHG emission standards of section 95663, Title 17, California Code of Regulations, in-use compliance emission tests shall be performed pursuant to section 95663, Title 17, California Code of Regulations.

(e) For motorcycles, in-use compliance emission tests shall be performed pursuant to section 1958, Title 13, California Code of Regulations.

(f) For off-road motorcycles and all-terrain vehicles, in-use compliance tests shall be performed pursuant to section 2412, Title 13, California Code of Regulations. The in-use compliance testing shall use the same test procedure utilized for the specific vehicle's original certification testing.

(g) For off-road compression-ignition engines, in-use compliance tests shall be performed pursuant to Section 2423, Title 13, California Code of Regulations. The in-use compliance testing shall use the same test procedure utilized for the specific engine's original certification testing.



(h) For spark-ignition sterndrive/inboard marine engines, in-use compliance tests shall be performed pursuant to section 2442, Title 13, California Code of Regulations. The in-use compliance testing shall use the same test procedure utilized for the specific engine's original certification testing.

(i) For any emission in-use compliance test performed pursuant to subsections (a) through (h), the ARB may waive a specific test for subsequent vehicle samples if results from vehicle samples already tested are deemed sufficient to establish complying emission levels. The ARB shall inform the manufacturer at least 30 days prior to enforcement testing of its vehicles or engines and shall permit a manufacturer representative to observe the enforcement testing.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 39002, 39003, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43105, 43106, 43107, 43204-43205.5 and 43211-43213, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in section 2112 to section 2139 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. New subsections (a), (b), (c), (d), (e) and (f) filed 8- 2-91; operative 9-2-91 (Register 91, No. 49).
3. Amendment of subsection (c)(2) filed 8-30-91; operative 9-30-91 (Register 92, No. 14).
4. New subsection (f), subsection relettering, and amendment of newly designated subsection (g) and Note filed 1-26-95; operative 1-26-95 pursuant to Government Code section 11343.4(d) (Register 95, No. 4). Note: Under section 209(e)(2) of the Federal Clean Air Act (42 U.S.C. § 7543(e)(2)), California is required to receive authorization from the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) prior to enforcing its regulations regarding new off-road vehicles and engines. Accordingly, the Air Resources Board will not seek to enforce the off-highway recreational vehicle regulations until such time as it receives authorization from the U.S. EPA.
5. Amendment of subsections (a), (b), (c)(1) and (c)(2) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).
6. New subsection (g), subsection relettering and amendment of newly designated subsection (h) filed 12-28-2000; operative 12-28-2000 pursuant to Government Code section 11343.4(d) (Register 2000, No. 52).
7. New subsection (h), subsection relettering and amendment of newly designated subsection (i) filed 7-22-2002; operative 8-21-2002 (Register 2002, No. 30).
8. Amendment of subsection (h) filed 7-17-2009; operative 8-16-2009 (Register 2009, No. 29).
9. Amendment of subsections (a)-(b) and (c)(2) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
10. Amendment of subsections (b), (c), (c)(2) and (d) and amendment of Note filed 12-5-2014; operative 12-5-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 49).
11. Editorial correction of History 10 (Register 2014, No. 50).

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13 CCR § 2139, 13 CA ADC § 2139

## Article 2.4. Procedures for Reporting Failure of Emission-Related Components

### **Section 2141. General Provisions.**

- (a) The provisions regarding applicability of the failure reporting procedures and the definitions shall be the same as those set forth in Title 13, California Code of Regulations, Sections 2111 and 2112, except that this Section 2141 does not apply to off-road compression-ignition engines, as defined in Section 2421.
- (b) The requirement to file emission warranty information reports and field information reports for a given class or category of vehicles or engines shall be applicable for the warranty period but not to exceed the useful-life period of the vehicles or engines beginning with the 1990 model-year vehicles or engines.
- (c) The requirement to file an emissions information report for a given class or category of vehicles or engines shall be applicable for the useful-life period of the vehicles or engines.
- (d) In the case of motor vehicles or engines for which certification of the exhaust and evaporative emission control systems is granted to different manufacturers, the information reporting responsibility in subsections (b) and (c) above shall be assigned to the certifying manufacturer.
- (e) For purposes of enforcing or administering any requirement pursuant to this Division 3, Chapter 2, the Executive Officer or an ARB employee or agent upon presentation of credentials, has the right of entry to any premises owned, operated, used, leased, or rented by a person to repair or service any heavy-duty engine or heavy-duty vehicle for which California emissions standards have been adopted and which is situated on the premises for purpose of emission-related maintenance, repair or service. The right-to-entry includes, but is not limited to, verification of manufacturer's warranty reporting and claims through inspecting repair records, records that relate to vehicular or engine emissions, vehicles, and engines, and may require the on-premises securing of samples of emissions from a vehicle or engine at any repair facility.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of subsection (a) filed 12-28-2000; operative 12-28-2000 pursuant to Government Code section 11343.4(d) (Register 2000, No. 52).
3. Amendment of section and Note filed 12-5-2007; operative 1-4-2008 (Register 2007, No. 49).
4. Amendment of subsection (a) and amendment of Note filed 11-8-2010; operative 12-8-2010 (Register 2010, No. 46).
5. New subsection (e) filed 2-7-2019; operative 4-1-2019 (Register 2019, No. 6).

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13 CCR § 2141, 13 CA ADC § 2141

### **Section 2142. Alternative Procedures.**

(a) A vehicle manufacturer may use an alternative procedure to those specified in Sections 2144(a) and 2145(a), provided the Executive Officer has determined that the alternative procedure will produce substantially equivalent results. In making such a determination, the Executive Officer shall consider the capacity of the alternative procedure to:

- (1) ensure early detection of failing components within the useful life of the vehicles or engines;
- (2) track failing components by engine family;
- (3) assure prompt notification of the Executive Officer when a systematically failing component is indicated;
- (4) provide objective, complete and easily monitored data; and
- (5) be audited by the Executive Officer.

(b) If, in order to comply with the requirements of Section 2142(a), 2144(a) or 2145(a), a manufacturer elects to develop a system based upon a sampling of representative California dealerships, such plan must be reviewed and approved by the Executive Officer prior to its implementation.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).

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13 CCR § 2142, 13 CA ADC § 2142

### **Section 2143. Failure Levels Triggering Recall.**

An engine family, test group or a subgroup shall be subject to a recall when the number of failures of a specific emission-related component exceeds the failure level set forth below, unless the Executive Officer determines from the emission information report that a recall is unnecessary pursuant to the criteria set forth in Section 2148(a) and (b). Vehicles or engines in an engine family or test group are subject to recall at the following failure levels: 4 percent or 50 (whichever is greater) for 1990 through 1991 model year vehicles or engines; 3 percent or 50 (whichever is greater) for 1992 through 1993 model-year vehicles or engines; and 2 percent or 50 (whichever is greater) for 1994 and subsequent model-year vehicles or engines. The Executive Officer may extend the applicability of the 4 or 3 percent failure levels if he/she determines that proceeding to the next lower level will create an excessive administrative burden on the ARB or the vehicle manufacturers without a corresponding benefit in the reduction of emissions.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment filed 10-28-99; operative 11-27-99 (Register 99, No. 44).

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13 CCR § 2143, 13 CA ADC § 2143

## **Section 2144. Emission Warranty Information Report.**

(a) A manufacturer shall:

(1) Review warranty claim records for each engine family or test group on a quarterly basis to determine and compile by cumulative total the number of claims made for emission-related components. The data compiled shall be based on all warranty claims, without any prescreening of data as to the validity of the claims. In the case of heavy-duty vehicles or engines, a manufacturer may use nationwide data for monitoring warranty claims of a California-certified engine family or test group which is also certified by the United States Environmental Protection Agency.

(2) Categorize warranty claims for each engine family or test group by the specific emission control component replaced or repaired.

(3) On the basis of data obtained subsequent to the effective date of these regulations, file an emission warranty information report for each quarter when the cumulative number of unscreened warranty claims for a specific emission-related component or repair represent at least one percent or twenty five (whichever is greater) of the vehicles or engines of a California-certified engine family or test group.

(b) The emission warranty information report shall contain the following information in substantially the format outlined below:

(1) The manufacturer's corporate name.

(2) A description of each class or category of California-certified vehicles or engines affected by a warranty replacement or warranty repair of a specific emission-related component, including model year and engine family or test group.

(3) The number and percentage of vehicles or engines in each engine family or test group for which a warranty replacement or warranty repair of a specific emission-related component was identified.

(4) A short description of the specific emission-related component that was replaced or repaired under warranty.

(c) Emission warranty information reports shall be submitted not more than 25 days after the close of a calendar quarter. Subsequent to the filing of an emission warranty information report, a manufacturer shall submit quarterly reports updating the number and percentage of emission-related warranty claims with the most recent information, unless a recall has been implemented. Emission warranty information reports and updates shall be submitted to the Chief, Mobile Source Operations Division, 9528 Telstar Avenue, El Monte, CA 91731.

(d) The records described in Section 2144(a)(1) of these procedures and the records used under the alternative procedure described in Section 2142(a) of these procedures shall be made available to the Executive Officer upon request.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of subsections (a)(1)-(3), (b)(2), (b)(3) and (c) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).

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13 CCR § 2144, 13 CA ADC § 2144

### **Section 2145. Field Information Report.**

(a) On the basis of data obtained and reported pursuant to Section 2144 of these procedures, a manufacturer shall file a field information report not more than 45 days after an emission warranty information report indicates that a cumulative total of unscreened warranty claims for a specific emission-related component is found to exist in excess of the percentage of vehicles specified in Section 2143, unless the manufacturer has committed to perform a recall by notifying the ARB of its intent in writing within the 45-day period. A recall plan must be submitted within 45 days of that notice.

(b) All field information reports shall be submitted to the Chief, Mobile Source Operations Division, 9528 Telstar Avenue, El Monte, CA 91731, and shall contain the following information in substantially the format outlined below:

(1) The manufacturer's corporate name.

(2) A field information report number assigned by the manufacturer which shall be used in all related correspondence.

(3) A description of each class or category of California-certified vehicles or engines affected including make, model, model-year, engine family or test group and such other information as may be required to identify the vehicles or engines affected. The description shall include those engine families or test groups related to the affected engine family or test group through common certification test data allowed under Title 40 Code of Federal Regulations, Section 86.1839-01, as amended January 17, 2006 ("carry-over" and "carry-across" engine families or test groups).

(4) A description of the emission-related component that failed or was replaced or repaired under warranty, the failure and the probable cause of the failure.

(5) The number and percentage of vehicles or engines in each engine family or test group for which a failure of a specific emission-related component was identified.

(6) The total number and percentage of unscreened warranty claims and failures of a specific emission-related component projected to occur during the engine family's or test group's useful life and a description of the method used to project this number.

(7) An estimated date when the failure of a specific emission-related component will reach the levels specified in Section 2143 of these procedures.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. Renumbering and amendment of text previously incorporated by reference in Section 2111 to Section 2145 filed 1-24-90; operative 2-23-90 (Register 90, No. 8). For prior history, see Registers 86, No. 38 and 83, No. 17.
2. Amendment of subsections (b), (b)(3), (b)(5) and (b)(6) filed 10-28-99; operative 11-27-99 (Register 99, No. (44)).
3. Amendment of subsection (b)(3) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2145, 13 CA ADC § 2145



## **Section 2146. Emissions Information Report.**

(a) A manufacturer shall file an emissions information report:

(1) For 1990 and subsequent model-year vehicles or engines, when the failure of a specific emission-related component exceeds the percentages specified in Section 2143 of these procedures. An emissions information report shall not be required sooner than 45 days after the field information report has been submitted to the Executive Officer.

(2) Not more than 45 days after the Executive Officer, with cause, requires such a report. For purposes of this section, "cause" shall be based upon any information in ARB possession which indicates that a failure of significant scope is occurring which might necessitate a recall, including but not limited to the in-use enforcement test results specified in Section 2140(a) above, and information gathered from ARB in-use surveillance activities, Smog Check inspections, and consumer complaints.

(3) For 1982 through 1989 model-year vehicles or engines, not more than 15 days after a specific emission-related defect is determined to exist in twenty-five or more vehicles or engines of the same model year. A defect shall be determined in accordance with procedures established by a manufacturer to identify safety-related defects.

(b) No emissions information report shall be required if a manufacturer has committed to perform a recall by notifying the ARB of its intent in writing after the failure of a specific emission-related component exceeds the percentages specified in Section 2143 of these procedures. A recall plan shall be submitted within 45 days of the manufacturer's notification of intent to perform a recall.

(c) All emissions information reports shall be submitted to the Chief, Mobile Source Operations Division, 9528 Telstar Avenue, El Monte, CA 91731, and shall contain the following information in substantially the format outlined below. For purposes of this section, the term "failure" shall be considered synonymous with the term "defect" for those emissions information reports filed pursuant to subsection (a)(3), above.

(1) The manufacturer's corporate name.

(2) The field information report number from which the failure was first reported, if applicable.

(3) A description of each class or category of California-certified vehicles or engines affected by the failure including make, model, model-year, engine family or test group, and such other information as may be required to identify the vehicles or engines affected.

(4) A description of the emission-related component that failed, the failure and the probable cause of failure.

(5) A description of any driveability problems or impact on other vehicle or engine performance factors such as fuel economy and cold starting likely to result from the failure.

(6) For emissions information reports filed pursuant to Section 2146(a)(1) and (2), a description of how emissions will be affected over the useful life of the vehicles or engines due to the failure.

(7) For emissions information reports filed pursuant to Section 2146(a)(3), an evaluation of the emission impact of the failure and any available emission data which relate to the failure.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of subsections (c) and (c)(3) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2146, 13 CA ADC § 2146

### **Section 2147. Demonstration of Compliance with Emission Standards.**

(a) In order to overcome the presumption of noncompliance set forth in Title 13, California Code of Regulations, Section 2123(b), the average emissions of the vehicles and engines with the failed emission-related component must comply with applicable emission standards. A manufacturer may demonstrate compliance with the emission standards by following the procedures set forth in either subsection (b) or subsection (c) of this section.

(b) A manufacturer may test properly maintained in-use vehicles with the failed emission-related component pursuant to the applicable certification emission tests specified in Title 13, California Code of Regulations, Section 1960.1, 1961, 1961.2, or 1961.3, as applicable, for passenger cars, light-duty trucks, and medium-duty vehicles, Section 1956.8 for heavy-duty engines and vehicles, Section 1958 for motorcycles, and Section 2442 for sterndrive/inboard marine engines, and in Title 17, California Code of Regulations, Section 95663, for heavy-duty vehicles. The emissions shall be projected to the end of the vehicle's or engine's useful life using in-use deterioration factors. The in-use deterioration factors shall be chosen by the manufacturer from among the following:

(1) "Assigned" in-use deterioration factors provided by the ARB on a manufacturer's request and based on ARB in-use testing; or,

(2) deterioration factors generated during certification, provided adjustments are made to account for vehicle aging, customer mileage-accumulation practices, type of failed component, component failure mode, effect of the failure on other emission-control components, commercial fuel and lubricant quality, and any other factor which may affect the vehicle's or engine's operating conditions; or,

(3) subject to approval by the Executive Officer, a manufacturer-generated deterioration factor. The Executive Officer shall approve such deterioration factor if it is based on in-use data generated from certification emission tests performed on properly maintained and used vehicles in accordance with the procedures set forth in Section 1960.1, 1961, or 1961.2 of Title 13 of the California Code of Regulations, as applicable, for passenger cars, light-duty trucks, and medium-duty vehicles; Section 1956.8 of Title 13 of the California Code of Regulations heavy duty vehicles and engines; Section 1958 of Title 13 of the California Code of Regulations for motorcycles; and Section 95663 of Title 17 of the California Code of Regulations, for heavy-duty vehicles, and if the vehicles from which it was derived are representative of the in-use fleet with regard to emissions performance and are equipped with similar emission control technology as vehicles with the failed component.

(c) In lieu of the vehicle or engine emission testing described in subsection (b) above and subject to approval by the Executive Officer, a manufacturer may perform an engineering analysis, laboratory testing or bench testing, when appropriate, to demonstrate the effect of the failure.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of subsections (b) and (b)(3) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).

3. Amendment of subsection (b) filed 7-22-2002; operative 8-21-2002 (Register 2002, No. 30).
4. Amendment of subsection (b) filed 7-17-2009; operative 8-16-2009 (Register 2009, No. 29).
5. Amendment of subsections (b) and (b)(3) filed 8-7-2012; operative 8-7-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
6. Amendment of subsections (b) and (b)(3) and amendment of Note filed 12-5-2014; operative 12-5-2014 pursuant to Government Code section 11343.4(b)(3) (Register 2014, No. 49).
7. Editorial correction of History 6 (Register 2014, No. 50).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2147, 13 CA ADC § 2147

### **Section 2148. Evaluation of Need for Recall.**

(a) Once the emission information report is filed, the Executive Officer shall evaluate the failure to determine whether a recall is necessary. Factors to be considered shall include but are not limited to the following:

- (1) the validity of the data;
- (2) the emission impact of the failure on individual vehicles or engines;
- (3) the possibility of induced tampering due to driveability problems resulting from the failure;
- (4) the effects of the failure on performance, fuel economy, and safety;
- (5) the failure rates and the timing and extent of a remedy if no recall is required; and
- (6) other factors specific to the failure.

(b) Notwithstanding subsection (a) above, a recall shall not be required if the manufacturer submits information with the emissions information report which demonstrates to the satisfaction of the Executive Officer that the failure:

- (1) is limited to an emission-related component on a <-substantial percentage of vehicles and does not represent a pervasive defect in design, application, or execution which is likely to affect a substantial number of such emission-related components during the useful life of the vehicle or engines, and
- (2) is likely to be corrected under the warranty program or other in-use maintenance procedure shortly after the inception of the problem.

(c) If a manufacturer can identify a subgroup of an engine family or test group which is subject to a failure, a recall may be limited to that subgroup with Executive Officer approval.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

#### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).
2. Amendment of subsection (c) filed 10-28-99; operative 11-27-99 (Register 99, No. 44).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2148, 13 CA ADC § 2148

### **Section 2149. Notification and Subsequent Action.**

(a) The Executive Officer shall notify the manufacturer of the evaluation results. If the Executive Officer deems a noncompliance exists, a manufacturer shall have 15 days upon receipt of ARB notification to notify the ARB in writing of its intent to perform a recall. A manufacturer may initiate one of the following recalls:

(1) A voluntary recall if the emissions information report submitted was required pursuant to Section 2146(a)(1) or (a)(3) of these procedures;

(2) An influenced recall if the emissions information report submitted was required pursuant to Section 2146(a)(2) of these procedures.

(b) If no notification to perform a voluntary or influenced recall is submitted by the manufacturer within the 15-day period specified in subsection (a) above, the ARB may initiate further investigation which could lead, respectively, to an influenced or ordered recall of the subject vehicles or engines.

(c) Following notification of noncompliance by the ARB, a manufacturer shall submit within 45 days a recall plan in accordance with Section 2113(a) or (b), Title 13, California Code of Regulations.

Note: Authority cited: Sections 39600, 39601 and 43105, Health and Safety Code. Reference: Sections 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5, 43211-43213 and 43107, Health and Safety Code.

#### **HISTORY**

1. New section filed 1-24-90; operative 2-23-90 (Register 90, No. 8).

This database is current through 2/28/20 Register 2020, No. 9  
13 CCR § 2149, 13 CA ADC § 2149

## Chapter 4.4 Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks (Refs & Annos)

### **Section 2235. Requirements.**

New 1977 through 2014 model-year gasoline-fueled motor vehicles and 1993 through 2014 model-year methanol-fueled passenger cars, light-duty trucks, medium-duty vehicles and heavy-duty vehicles shall not be sold, offered for sale or registered in California unless such vehicles comply with the Air Resources Board's "Specifications for Fill Pipes and Openings of 1977 through 2014 Model Motor Vehicle Fuel Tanks," dated March 19, 1976 as last amended March 22, 2012, which is incorporated by reference herein or, in the case of motorcycles, are exempted pursuant to Chapter 1, Article 2, Section 1976(b). New 2015 and subsequent model-year gasoline and alcohol fueled passenger cars, light trucks, medium-duty vehicles, and heavy-duty vehicles shall not be sold, offered for sale, or registered in California unless such vehicles comply with the "Specifications for Fill Pipes and Openings of 2015 and Subsequent Model Motor Vehicle Fuel Tanks," adopted March 22, 2012 and last amended May 31, 2019, which is incorporated by reference. Motorcycles are exempted pursuant to Chapter 1, Article 2, Section 1976(b).

Note: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104, 43107 and 43835, Health and Safety Code.  
Reference: Sections 39003, 43000, 43013, 43018, 43101, 43104, 43106, 43204 and 43835, Health and Safety Code; and Sections 28111 and 28112, Vehicle Code.

### **HISTORY**

1. Change without regulatory effect renumbering chapter heading and renumbering and amending former section 2290 to section 2235 filed 9-17-91 pursuant to section 100, title 1, California Code of Regulations (Register 92, No. 4).
  2. Amendment filed 8-8-2012; operative 8-8-2012 pursuant to Government Code section 11343.4 (Register 2012, No. 32).
  3. Amendment filed 7-22-2019; operative 10-1-2019 (Register 2019, No. 30).
- This database is current through 5/22/20 Register 2020, No. 21  
13 CCR § 2235, 13 CA ADC § 2235