# APPENDIX B-1

California Environmental Protection Agency
AIR RESOURCES BOARD

## CALIFORNIA 2015 ~~AND SUBSEQUENT~~THROUGH 2025 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

Adopted: March 22, 2012
Amended: December 6, 2012
Amended: September 2, 2015
Amended: September 28, 2018
Amended: December 19, 2018
Amended: September 9, 2021
Amended: [Insert Date of Amendment]

[Note: This version of the Proposed Regulation Order complies with Government Code section 11346.2 subdivision (a)(3). The proposed amendments are shown in underline to indicate additions and strikethrough to indicate deletions from the existing regulatory text. For ease of readability, CARB has also provided a version of the proposed amendments that can toggle between amendments in strikeout/underline and a "clean" version with amendments incorporated into the regulatory text, which can be found in Appendix B-1.1]



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Date of Release: April 12, 2022
Date of Hearing: June 9, 2022

NOTE: This document is incorporated by reference in sections 1961.2(d), title 13, California Code of Regulations (CCR). It contains the majority of the requirements necessary for certification of a passenger car, light-duty truck, or medium-duty vehicle for sale in California, in addition to containing the exhaust emission standards and test procedures for these motor vehicles. However, reference is made in these test procedures to other ARB documents that contain additional requirements necessary to complete an application for certification. These other documents are designed to be used in conjunction with this document. They include:

1. "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 sections 1960.1(k) and 1961(d), title 13, CCR);

~~2~~2. "California 2026 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" (incorporated by reference in section 1961.4(f), title 13, CCR);

3. "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, title 13, CCR);

~~3~~4. "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 amended September 3, 2015, (incorporated by reference in section 1961.3, title 13, CCR);

5. "California Exhaust Emission Standards and Test Procedures for 2018 through 2025 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, title 13, CCR);

~~4~~6. "California Evaporative Emission Standards and Test Procedures for 2001 through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model ~~Motor Vehicles~~Motorcycles" (incorporated by reference in section 1976(c), title 13, CCR);

~~5~~7. "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" (incorporated by reference in section 1978(b), title 13, CCR);

~~6~~8. OBD II (section 1968, et seq. title 13, CCR, as applicable);

~~7~~9. "California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles" (incorporated by reference in section 1965, title 13, CCR);

~~8~~10. Warranty Requirements (sections 2037 and 2038, title 13, CCR);

~~9~~11. "Specifications for Fill Pipes and Openings of 2015 and Subsequent Motor Vehicle Fuel Tanks" (incorporated by reference in section 2235, title 13, CCR);

~~10~~12. "Guidelines for Certification of 2003 and Subsequent Model-Year Federally Certified Light-Duty Motor Vehicles for Sale in California (incorporated by reference in section 1960.5, title 13, CCR);

~~11~~13. "California Non-Methane Organic Gas Test Procedures for 1993 through 2016 Model Year Vehicles," (incorporated by reference in section 1961.2(d), title 13, CCR);

~~12~~14. "California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles," (incorporated by reference in section 1961.2(d), title 13, CCR);

~~13~~15. "California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels in 2015 and Subsequent Years," (incorporated by reference in section 2317, title 13, CCR).

The section numbering conventions for this document are set forth in Part I, section A.3.

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# CALIFORNIA 2015 ~~AND SUBSEQUENT~~THROUGH 2025 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 provisions of Subparts B, C, and S, Part 86, Title 40, Code of Federal Regulations, as adopted or amended on May 4, 1999 or as last amended on such other date set forth next to the 40 CFR Part 86 section title listed below, and to the extent they pertain to exhaust emission standards and test procedures, are hereby adopted as the "California 2015 ~~and Subsequent~~through 2025 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," with the following exceptions and additions.

## PART I: GENERAL PROVISIONS FOR CERTIFICATION AND IN-USE VERIFICATION OF EMISSIONS

### A. General Applicability

#### 1. §86.1801 Applicability.

1.1 §86.1801-12. October 25, 2016. Amend as follows:

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1.1.7 Amend subparagraph (g) *Complete and incomplete vehicles* as follows:

A manufacturer must certify any heavy-duty complete Otto-cycle vehicle or complete diesel vehicle of 14,000 pounds Gross Vehicle Weight Rating (GVWR) or less and any medium-duty passenger vehicle in accordance with the medium-duty chassis-standards of section E.1 of these test procedures. For the 2015 through 2021 model years, a manufacturer must certify all LEV II heavy-duty engines or vehicles of 14,000 pounds GVWR or less, excluding medium-duty passenger vehicles, to the medium-duty engine standards in title 13, CCR, section 1956.8. For the 2020 ~~and subsequent~~through 2025 model years, a manufacturer must certify any heavy-duty vehicle of 10,000 pounds GVWR or less, including incomplete Otto-cycle vehicles and incomplete heavy-duty diesel vehicles, in accordance with the LEV III medium-duty chassis-standards of section E.1 of these test procedures. A manufacturer must certify any heavy-duty engine and vehicle of 10,001-14,000 pounds GVWR to the medium-duty engine standards in title 13, CCR, section 1956.8. A manufacturer may request to certify LEV II heavy-duty complete diesel vehicles of 14,000 pounds GVWR or

less and LEV III heavy-duty complete diesel vehicles of 10,001 - 14,000 pounds GVWR to the chassis-standards in section E.1 of these test procedures; heavy-duty engine or heavy-duty vehicle provisions of 40 CFR Part 86 subpart A do not apply to such a vehicle or engine.

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## B. Definitions, Acronyms and Abbreviations

### 1. §86.1803 Definitions.

1.1 §86.1803-01. ~~October 25, 2016.~~June 29, 2021. [No change, except as otherwise noted below.]

### 2. California Definitions.

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"**All-Electric Range Test**" means a test sequence used to determine the range of an electric or hybrid electric vehicle without the use of its auxiliary power unit. The All-Electric Range Test is described 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" and the "California Exhaust Emission Standards and Test Procedures for 2018 ~~and Subsequent~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes."

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~~"**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.~~

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"**Zero-emission vehicle**" or "**ZEV**" means any vehicle certified to the zero-emission standards 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" and the "California Exhaust Emission Standards and Test Procedures for 2018 ~~and Subsequent~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes."

**3. §86.1804 Acronyms and Abbreviations.**

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3.2 **California Acronyms and Abbreviations.**

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"PZEV" means any vehicle that receives partial zero-emission vehicle credit, 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/or the "California Exhaust Emission Standards and Test Procedures for 2018 ~~and Subsequent~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes."

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**C. General Requirements for Certification**

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**3. §86.1807 Vehicle Labeling**.

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3.2 **California Labeling Requirements**.

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3.2.2. For all 2015 and subsequent model-year vehicles (except zero-emission vehicles (ZEVs)), the tune-up label shall also contain the following information lettered in the English language in block letters and numerals which shall be of a color that contrasts with the background of the label:

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(b) Identification of the Exhaust Emission Control System, including but not limited to:

* * * * *

Abbreviations used shall be in accordance with the current version of SAE J1930, ~~October 2008~~March 2017, including the above nomenclature ~~unless the~~. The Executive Officer ~~approves~~shall approve upon request use of abbreviations in a more current version of SAE J1930. For components not listed in SAE J1930, the manufacturer shall request Executive Officer approval of the abbreviations to be used for the components. Executive Officer approval shall be ~~based on~~granted upon determining the ~~consistency of the~~proposed abbreviation is consistent with existing terminology used for the component in the applicable industry~~, ability to provide appropriate distinction from~~ and distinguishes other similar components~~, and ability to be deciphered intuitively by users of the label~~.

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## D. §86.1810 General standards; increase in emissions; unsafe conditions; waivers

1. §86.1810-09. October 15, 2012. Amend §86.1810-09 as follows:

This section applies to model year 2015 and 2016 passenger cars, light-duty trucks, and medium-duty vehicles fueled by gasoline, diesel, methanol, ethanol, natural gas and liquefied petroleum gas fuels. Multi-fueled vehicles (including bi-fueled, dual-fueled and flexible-fueled vehicles) shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of flexible-fueled vehicles). This section also applies to hybrid electric vehicles. The standards of this subpart apply to both certification and in-use vehicles unless otherwise indicated.

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1.7 Subparagraph (j) **Evaporative emissions general provisions**. [Delete. (The provisions of this section are contained the "California Evaporative Emission Standards and Test Procedures for 2001 ~~and Subsequent Model Passenger~~through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-~~Duty Vehicles~~Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model Motorcycles.")]

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1.10 Subparagraph (p) Amend as follows: For gasoline and diesel-fueled LEV II and LEV III vehicles, manufacturers may measure non-methane hydrocarbons (NMHC) in lieu of NMOG. The adjustment factors that must be applied to the measured NMHC emission levels before comparing them with the applicable standards are as follows:

1.10.1 *Compliance with the LEV II and LEV III exhaust standards in section E.1.1.1 and E.1.1.2, respectively.*

For LEV II vehicles that are certified using the California Gasoline Fuel Specifications set forth in Part II section 100.3.1.1 or using the federal E0 certification gasoline in 40 CFR §86.113-04(a)(1), manufacturers must either (1) multiply NMHC measurements by an adjustment factor of 1.04 before comparing with the NMOG standard to determine compliance with the standard or (2) calculate the NMHC to NMOG adjustment factor in accordance with 40 CFR §1066.635, as modified by these test procedures, and multiply NMHC measurements by that calculated adjustment factor before comparing with the standard.

For LEV III vehicles and LEV II vehicles that are certified using the California Gasoline Fuel Specifications set forth in Part II, section 100.3.1.2 or using the federal E10 certification gasoline in 40 CFR §1065.710(b) (June 29, 2021), manufacturers must either (1) multiply NMHC measurements by an adjustment factor of 1.10 before adding it to the measured NOx emissions and comparing with the NMOG+NOx standard in section E.1.1.2 or before comparing it to the NMOG standard in section E.1.1.1, as applicable, or (2) calculate the NMHC to NMOG adjustment factor in accordance with 40 CFR §1066.635, as modified by these test procedures, and multiply NMHC measurements by that calculated adjustment factor before comparing with the NMOG+NOx standard in section E.1.1.2 or before comparing it to the NMOG standard in section E.1.1.1, as applicable, to determine compliance with that standard.

For LEV III vehicles and LEV II vehicles that are certified using a gasoline fuel that contains an ethanol content greater than that allowed by the California Gasoline Fuel Specifications set forth in Part II, section 100.3.1.2 and less than or equal to 25 percent ethanol, the adjustment factor that must be used to demonstrate compliance with the NMOG+NOx standard in section E.1.1.2 or the NMOG standard in section E.1.1.1, as applicable, is calculated using the following formula:

Adjustment factor = 1.0302 + 0.0071 x volume percent fuel ethanol
where the value for the "volume percent fuel ethanol" used in this formula is 15 if the gasoline contains 15 percent ethanol, the "volume percent fuel ethanol" used in this formula is 20 if the gasoline contains 20 percent ethanol, etc. Manufacturers must multiply NMHC measurements by this calculated adjustment factor before adding it to the measured NOx emissions and comparing with the NMOG+NOx standard in section E.1.1.2 or the NMOG standard in section E.1.1.1, as applicable, to determine compliance with that standard. Manufacturers may use other factors to adjust NMHC results to more properly represent NMOG results. Such factors must be based upon comparative testing of NMOG and NMHC emissions and be approved in advance by the Executive Officer.

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2. §86.1810-17. February 19, 2015.**~~April 28, 2014.~~** Amend §86.1810-17 as follows:

This section applies to model year 2017 and later passenger cars, light-duty trucks, and medium-duty vehicles fueled by gasoline, diesel, methanol, ethanol, natural gas and liquefied petroleum gas fuels. Multi-fueled vehicles (including bi-fueled, dual-fueled and flexible-fueled vehicles) shall comply with all requirements established for each consumed fuel (or blend of fuels in the case of flexible-fueled vehicles). This section also applies to hybrid electric vehicles. The standards of this subpart apply to both certification and in-use vehicles unless otherwise indicated.

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2.7 **Supplemental FTP General Provisions for California.**

This section D.2.7 applies to all 2017 ~~and subsequent~~through 2025 model test groups, except for those using carryover emissions test data from 2016 and prior model years, which are subject to the requirements in section D.1.6.

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## E. California Exhaust Emission Standards.

Delete 40 CFR §§86.1811 through 86.1819.

**Introduction.** The following section E. contains the exhaust emission standards and phase-in requirements applicable to California passenger cars, light-duty trucks and medium-duty vehicles. A manufacturer must demonstrate compliance with the exhaust standards applicable to specific test groups, and with the composite phase-in requirements applicable to the manufacturer's entire fleet. For model years 2015 and 2016, a manufacturer shall demonstrate compliance with the requirements of sections

E.2.5 and E.3.2 by demonstrating compliance with sections E.2.5 and E.3.2 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."

For the 2015 through 2019 model years, a manufacturer has the option of certifying engines used in incomplete Otto-cycle and incomplete diesel medium-duty vehicles with a gross vehicle weight rating of greater than 8,500 lbs. GVW to the heavy-duty engine standards and test procedures set forth in title 13, CCR, sections 1956.8(c) and (h). For the 2020 ~~and subsequent~~through 2025 model years, a manufacturer has the option of certifying LEV III engines used in incomplete Otto-cycle and incomplete 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, sections 1956.8(c) and (h). All 2020 ~~and subsequent~~through 2025 model 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 E~~.~~ or to the LEV IV chassis standards and test procedures set forth in section E of the "California 2026 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles."

The procedures for meeting the ZEV phase-in requirements and for earning ZEV credits are contained 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" and the "California Exhaust Emission Standards and Test Procedures for 2018 ~~and Subsequent~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes."

**1. Exhaust Emission Standards.**

**1.1 FTP Exhaust Emission Standards for Light- and Medium-Duty Vehicles.**

The exhaust emission standards set forth in this section refer to the exhaust emitted over the driving schedule set forth in title 40, CFR Part 86, Subparts B and C, except as amended in these test procedures.

1.1.1 **LEV II Exhaust Standards.** The following LEV II standards are the maximum exhaust emissions for the intermediate and full useful life from new 2015 through 2019 model year 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, except that for the 2015 through 2019 model years, SULEV exhaust standards shall only apply to vehicles that receive partial zero-emission vehicle credits 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" or the "California Exhaust Emission Standards and Test Procedures for 2018 ~~and Subsequent~~through 2025 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, title 13, CCR. Vehicles that are certified to the particulate standards in section E.1.1.2.1 may not certify to LEV II standards.

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1.1.2 **LEV III Exhaust Standards.** The following standards are the maximum exhaust emissions for the full useful life from new 2015 ~~and subsequent~~through 2025 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 both of the fuels they are designed to use. Before the 2015 model year, a manufacturer that produces vehicles meeting these standards has the option of certifying the vehicles to the standards, in which case the vehicles will be treated as LEV III vehicles for purposes of the fleet-wide phase-in requirements. 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 E.1.1.2 in 2020 ~~and subsequent~~through 2025 model years.

**LEV III Exhaust Mass Emission Standards for New 2015 ~~and Subsequent~~through 2025 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles[3]**

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

| LEV III Exhaust Mass Emission Standards for New 2015 ~~and Subsequent~~through 2025 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles[3] | | | | | | |
|---|---|---|---|---|---|---|
| Vehicle Type | Durability Vehicle Basis (mi) | Vehicle Emission Category[2] | NMOG + Oxides of Nitrogen[4] (g/mi) | Carbon Monoxide (g/mi) | Formaldehyde (mg/mi) | Particulates[1] (g/mi) |
| | | SULEV200 | 0.200 | 3.7 | 6 | 0.06 |

[1] These standards shall apply only to vehicles not included in the phase-in of the particulate standards set forth in Section E.1.1.2.1.

[2] The numeric portion of the category name is the NMOG+NOx value in thousandths of grams per mile.

[3] These standards apply at both low altitude and high altitude except as noted in footnote 4.

[4] 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.

[5] These vehicle emission categories are only applicable for the 2015 through 2021 model years.

[6] 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.

1.1.2.1 **LEV III Particulate Standards.**

1.1.2.1.1 **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 represent the maximum particulate emissions allowed at full useful life~~.~~ at the specified fleet percentages. All vehicles certifying to these particulate standards must certify to the LEV III exhaust emission standards set forth in section E.1.1.2.

| LEV III Particulate Emission Standard Values and Phase-in for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles | | | |
|---|---|---|---|
| **Model Year** | **Maximum % of vehicles certified to a 10 mg/mi standard** | **Minimum % of vehicles certified to a 3 mg/mi standard in MYs 2017-2024, Maximum % of vehicles certified to a 3 mg/mi standard in MY 2025** | **Minimum % of vehicles certified to a 1 mg/mi standard** |
| 2017 | 90 | 10 | 0 |
| 2018 | 80 | 20 | 0 |
| 2019 | 60 | 40 | 0 |
| 2020 | 30 | 70 | 0 |
| 2021 | 0 | 100 | 0 |
| 2022 | 0 | 100 | 0 |

| LEV III Particulate Emission Standard Values and Phase-in for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles | | | |
|---|---|---|---|
| **Model Year** | **Maximum % of vehicles certified to a 10 mg/mi standard** | **Minimum % of vehicles certified to a 3 mg/mi standard in MYs 2017-2024, Maximum % of vehicles certified to a 3 mg/mi standard in MY 2025** | **Minimum % of vehicles certified to a 1 mg/mi standard** |
| 2023 | 0 | 100 | 0 |
| 2024 | 0 | 100 | 0 |
| 2025 | 0 | 75 | 25 |
| ~~2026~~ | | ~~50~~ | ~~50~~ |
| ~~2027~~ | | ~~25~~ | ~~75~~ |
| ~~2028 and subsequent~~ | | ~~0~~ | ~~100~~ |

1.1.2.1.2 **Particulate Standards for Medium-Duty Vehicles Other than Medium-Duty Passenger Vehicles.**

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1.1.2.1.2.2 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 section E.1.1.2.1.2.1 according to the following phase-in schedule. This section E.1.1.2.1.2.2 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 | |
|---|---|
| **Model Year** | **Total % of MDVs certified to the 8 mg/mi PM Standard or to the 10 mg/mi PM Standard, as applicable** |
| 2017 | 10 |
| 2018 | 20 |
| 2019 | 40 |
| 2020 | 70 |
| 2021 ~~and subsequent~~ through 2025 | 100 |

1.1.2.1.3 **Particulate Standards for Small Volume Manufacturers.** In the 2021 through ~~2027~~2025 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~~In the 2021 through 2025 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~~through 2025 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 represent 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 section E.1.1.2.

1.1.2.1.4 **Alternative Phase-in Schedule for Particulate Standards.**

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1.1.2.1.4.2 **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~~the PM emission reductions that are achieved using the alternative phase-in schedule are equivalent to or greater than those that are achieved using the phase-in schedules in section E.1.1.2.1.1 for model years 2024-2025 and title 13, section 1961.4 subsection (c)(2)(A) for model years 2026-2028 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. A manufacturer may add vehicles introduced in the 2024 model year (e.g., the percent of vehicles introduced in 2024 would be multiplied by 4) to the cumulative total. 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.~~

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**1.2 Supplemental Federal Test Procedure ("SFTP") Exhaust Emission Standards for Light- and Medium-Duty Vehicles.**

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1.2.2 **150,000-mile SFTP Exhaust Emission Standards for Light- and Medium-Duty Vehicles.**

1.2.2.1 **SFTP NMOG+NOx and CO Exhaust Emission Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.** Manufacturers shall certify 2015 ~~and subsequent~~through 2025 model year LEVs, ULEVs, and SULEVs in the PC, LDT, and MDPV classes to either the *SFTP NMOG+NOx and CO Stand-Alone Exhaust Emission Standards* set forth in section E.1.2.2.1.1, or in accordance with the *SFTP NMOG+NOx and CO Composite Exhaust Emission Standards and Fleet-Average Requirements* set forth in section E.1.2.2.1.2. 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+NOx composite emission standard applicable to 2015 model vehicles if choosing to comply with the *SFTP NMOG+NOx and CO Composite Exhaust Emission Standards and Fleet-Average Requirements* set forth in subsection E.1.2.2.1.2. 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+NOx and CO emission standards on a 150,000 mile durability basis. Once an emission standard type for NMOG+NOx 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 section E.1.2.2.1.2. 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 section E.1.2.2 shall be subject to the 4,000-mile SFTP NMOG+NOx and CO emission standards set forth in section E.1.2.1.

1.2.2.1.1 **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~~through 2025 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. 2017 ~~and subsequent~~through 2025 model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles) ≤ 6,000 lbs. GVWR as well as 2018 ~~and subsequent~~through 2025 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~~through 2025 Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles**

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

[1] *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.

[2] *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.

1.2.2.1.2 **SFTP NMOG+NOx and CO Composite Exhaust Emission Standards.** For the 2015 ~~and subsequent~~through 2025 model years, a manufacturer 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 ≤ 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. 2017 ~~and subsequent~~through 2025 model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles) ≤ 6,000 lbs. GVWR as well as 2018 ~~and subsequent~~through 2025 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).

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If no vehicles in a test group have air conditioning units, the FTP cycle emission value can be used in place of the SC03 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~~through 2025 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles (g/mi)[1]** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model Year** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025~~+~~** |
| All PCs; LDTs 8,500 lbs. GVWR or less; and MDPVs[3]<br><br>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. | ***Sales-Weighted Fleet Average NMOG+NOx Composite Exhaust Emission Standards***[2, 4,5,6] | | | | | | | | | | |
| | 0.140 | 0.110 | 0.103 | 0.097 | 0.090 | 0.083 | 0.077 | 0.070 | 0.063 | 0.057 | 0.050 |
| | ***CO Composite Exhaust Emission Standard***[7] | | | | | | | | | | |
| | 4.2 | | | | | | | | | | |

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1.2.2.2 **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~~through 2025 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. 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. 2017 ~~and subsequent~~through 2025 model year multi-fueled vehicles (including bi-fueled, dual-fueled and fuel-flexible vehicles) ≤ 6,000 lbs.

GVWR and 2018 ~~and subsequent~~through 2025 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 PM Exhaust Emission Standards for 2017 ~~and Subsequent~~through 2025 Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles**[1]

| *Vehicle Type* | *Test Weight* | *Mileage for Compliance* | *Test Cycle* | *PM*[2] *(mg/mi)* | |
|---|---|---|---|---|---|
| | | | | *2018 and Prior Model Years* | *2019 ~~and Subsequent~~ through 2025 Model Years* |
| All PCs and LDTs through 8,500 lbs GVWR; MDPVs | Loaded vehicle weight | 150,000 | US06 | 10 | 6 |

[1] All PCs, LDTs, and MDPVs certified to LEV III FTP PM emission standards in section E.1.1.2.1 on a 150,000-mile durability basis shall comply with the SFTP PM Exhaust Emission Standards in this table.

[2] *Relaxed Interim Certification Standard.* Manufacturers shall certify test groups to a relaxed interim certification standard of 10 mg/mi for 2018 and prior model years. However, all vehicles certifying to the LEV III PM standard, including those from carryover test groups, shall be subject to the 6 mg/mi US06 PM standard in 2019 ~~and subsequent~~through 2025 model years.

1.2.2.3 **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~~through 2025 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 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. 2018 ~~and subsequent~~through 2025 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 sections E.1.2.2.1 and E.1.2.2.2.

| SFTP NMOG+NOx and CO Composite Exhaust Emission Standards for 2016 ~~and Subsequent~~through 2025 Model ULEVs and SULEVs in the Medium-Duty Vehicle Class | | | | | | |
|---|---|---|---|---|---|---|
| *Vehicle Type* | *Mileage for Compliance* | *HP/GVWR* [2] | *Test Cycle*[3,4,5] | *Vehicle Emission Category*[6] | *Composite Emission Standard*[1] *(g/mi)* | |
| | | | | | *NMOG + NOx* | *Carbon Monoxide* |
| MDVs 8,501 - 10,000 lbs GVWR | 150,000 | ≤ 0.024 | US06 Bag 2, SC03, FTP | ULEV | 0.550 | 22.0 |
| | | | | SULEV | 0.350 | 12.0 |
| | | > 0.024 | Full US06, SC03, FTP | ULEV | 0.800 | 22.0 |
| | | | | SULEV | 0.450 | 12.0 |
| MDVs 10,001-14,000 lbs GVWR | 150,000 | n/a | Hot 1435 UC (Hot 1435 LA92), SC03, FTP | ULEV | 0.550 | 6.0 |
| | | | | SULEV | 0.350 | 4.0 |

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[6] *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 E.1.2.2.3 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 this section E.1.2.2.3 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~~through 2025 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 section E.1.2.2.3, 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 section E.1.2.2.3. 2018 ~~and subsequent~~through 2025 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 section E.1.2.2.3, and those certifying to SULEV230 and SULEV200, including vehicles certifying with carryover data, shall comply with the SFTP SULEV standards set forth in this section E.1.2.2.3.

1.2.2.4 **SFTP PM Exhaust Emission Standards for Medium-Duty Vehicles.** The following standards represent the maximum PM composite emission values for the full useful life of 2017 ~~and subsequent~~through 2025 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. 2018 ~~and subsequent~~through 2025 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 sections E.1.2.2.1 and E.1.2.2.2.

| **SFTP PM Exhaust Emission Standards for 2017 ~~and Subsequent~~through 2025 Model Medium-Duty Vehicles**[1] | | | | | |
|---|---|---|---|---|---|
| *Vehicle Type* | *Test Weight* | *Mileage for Compliance* | *Hp/GVWR*[2] | *Test Cycle*[3,4,5] | *PM (mg/mi)* |
| MDVs 8,501-10,000 lbs GVWR | Adjusted loaded vehicle weight | 150,000 | ≤ 0.024 | US06 Bag 2 | 7 |
| | | | >0.024 | US06 | 10 |
| MDVs 10,001-14,000 lbs GVWR | Adjusted loaded vehicle weight | 150,000 | n/a | Hot 1435 UC (Hot 1435 LA92) | 7 |

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**1.3 NMOG+NOx Standards for Fuel-Flexible, Bi-Fuel and Dual-Fuel Vehicles.**

For fuel-flexible, bi-fuel and dual-fuel PCs, LDTs and MDVs, compliance with the NMOG+NOx 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 may measure NMHC in lieu of NMOG when fuel-flexible, bi-fuel and dual-fuel vehicles are operated on gasoline, subject to the requirements of section D.1., subparagraph (p). 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 E.1.1 above.

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1.3.2 For the 2015 ~~and subsequent~~through 2025 model year LEV III vehicles, a manufacturer must demonstrate compliance with the applicable exhaust mass emission standards for NMOG+NOx, CO, and formaldehyde set forth in the tables in section E.1.1.2 when certifying the vehicle for operation on both gasoline or diesel, as applicable, and on the gaseous or alcohol fuel, as applicable.

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**1.5 Cold CO Standards.**

The following standards are the maximum 50,000 mile cold temperature exhaust carbon monoxide emission levels from new 2015 ~~and subsequent~~through 2025 model-year passenger cars, light-duty trucks, and medium-duty passenger vehicles:

**2015 ~~AND SUBSEQUENT~~THROUGH 2025 MODEL-YEAR COLD TEMPERATURE CARBON MONOXIDE EXHAUST EMISSIONS STANDARDS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES**

(grams per mile)

| Vehicle Type | Carbon Monoxide |
|---|---|
| All PCs, LDTs 0-3750 lbs. LVW | 10.0 |
| LDTs 3751 lbs. LVW - 8500 lbs. GVW; MDPVs 10,000 lbs. GVW and less | 12.5 |

These standards apply to vehicles tested in accordance with 40 CFR Part 86 Subpart C, as modified in Part II, Section B of these test procedures at a nominal temperature of 20°F (-7°C). Natural gas vehicles, diesel-fueled vehicles, and medium-duty vehicles with a gross vehicle weight rating greater than 8,500 lbs. are exempt from these standards.

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**1.7 Requirement to Generate Additional NMOG+NOx Fleet Average Credit.**

A vehicle that is certified to the LEV III standards in section E.1.1.2, 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~~through 2025 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+NOx emission standard value set forth in section E.3.1.1 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).

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**1.11 When a Federally-Certified Vehicle Model is Required in California.**

1.11.1 **Basic Requirement.** Whenever a manufacturer federally-certifies a 2015 ~~or subsequent~~through 2025 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 vehicle emissions 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 Tables S04-1 and S04-2 of 40 CFR section 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 these test procedures.

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**1.12 Emission Requirements for Fuel-Fired Heaters**. Whenever a manufacturer elects to utilize an on-board fuel-fired heater on any passenger car, light-duty truck or medium-duty vehicle, the heater must meet the ULEV125 standards for passenger cars and light-duty trucks less than 8,500 pounds GVW set forth in section E.1.1.2 of these test procedures. 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~~through 2025 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) to determine compliance with the exhaust emission standards in section E.1.1.

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**2. Emission Standards Phase-In Requirements for Manufacturers.**

**2.1 Fleet Average NMOG + NOx Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.**

2.1.1 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 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) | | |
|---|---|---|
| Model Year | Fleet Average NMOG + NOx (g/mi) | |
| | All PCs; LDTs 0-3750 lbs. LVW | LDTs 3751 lbs. LVW - 8500 lbs. GVWR; All MDPVs |
| 2014[1] | 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 |

[1] 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 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." 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.

2.1.1.1 *Pooling Provision.*

a. For each model year, a manufacturer must demonstrate compliance with the fleet average requirements in this section E.2.1.1 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 E.1.1, 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 section E.1.1, and are produced and delivered for sale in California, and any states or the District of Columbia, and all states that have adopted California's exhaust emission standards in section E.1.1 for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

* * * * *

d. When a manufacturer is demonstrating compliance using Option 2 for a given model year, the term "in California" as used in sections E.2.1.2 and E.3.1 means California, and any states or the District of Columbia, and all states that have adopted California's exhaust emission standards in section E.1.1 for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

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2.1.1.2 **PZEVs Anti-Backsliding Requirement**. In the 2018 and subsequentthrough 2025 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.

2.1.2 **Calculation of Fleet Average NMOG + NOx Value**.

2.1.2.1 **Basic Calculation.**

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

| **Model Year** | **Emission Category** | **Emission Standard Value[1] (g/mi)** | |
|---|---|---|---|
| | | **All PCs; LDTs 0-3750 lbs. LVW** | **LDTs 3751-5750 lbs. LVW; All MDPVs** |
| 2015 ~~and subsequent~~through 2025 model year federally-certified vehicles | All | Sum of the full useful life NMOG and NOx Federal Emission Standards to which Vehicle is Certified | Sum of the full useful life NMOG and NOx Federal Emission Standards to which Vehicle is Certified |
| **Model Year** | **Emission Category** | **All PCs; LDTs 0-3750 lbs. LVW** | **LDTs 3751 lbs. LVW - 8500 lbs. GVWR; All MDPVs** |
| 2015 through 2019 model year vehicles certified to the "LEV II" standards in E.1.1.1; 2015 ~~and subsequent~~through 2025 model year vehicles certified to the "LEV III" standards in E.1.1.2 | LEV II LEVs; LEV160s | 0.160 | 0.160 |
| | LEV II ULEVs; LEV125s | 0.125 | 0.125 |
| | ULEV70s | 0.070 | 0.070 |
| | ULEV50s | 0.050 | 0.050 |
| | LEV II SULEVs; SULEV30s | 0.030 | 0.030 |
| | 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 |

[1] For LEV III vehicle test groups that meet the extended emission warranty requirements in section E.1.7, the applicable emission standard value shall be the emission standard value set forth in this table minus 5 mg/mi.

2.1.2.2 **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 section E.1.1.1, 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.

* * * * *

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~~through 2025 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~~through 2025 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 section E.2.1.2.2, the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

2.1.3 **Phase-in Requirements for Small Volume Manufacturers.**

(a) In the 2015 through 2016 model years, a small volume manufacturer shall not exceed a fleet average NMOG+NOx 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 section E.2.1.2. In the 2017 through 2021 model years, a small volume manufacturer shall not exceed a fleet average NMOG+NOx 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 section E.2.1.2. In 2022 ~~and subsequent~~through 2025 model years, a small volume manufacturer shall not exceed a fleet average NMOG+NOx 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 section E.2.1.2. For the 2015 through 2021 model years, a small volume manufacturer may certify its vehicles to the LEV II exhaust standards in section E.1.1.1. All vehicles certified by a small volume manufacturer for the 2022 ~~and subsequent~~through 2025 model years must meet the LEV III exhaust standards in section E.1.1.2.

* * * * *

2.1.4 **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 section C of the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles 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~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," shall be included as LDT1s in the calculation of a fleet average NMOG+NOx value.

**2.2 LEV III Phase-In Requirement for Light-Duty Vehicles and Medium-Duty Passenger Vehicles.**

For the 2015 and 2016 model years, the LEV II SULEV emission standards set forth in section E.1.1.1 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 by reference in section 1961.2, title 13, CCR. Beginning in the 2017 model year, the LEV II SULEV emission standards set forth in section E.1.1.1 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 section E.1.1.2 in 2020 ~~and subsequent~~through 2025 model years. A small volume manufacturer must certify 100 percent of its PC, LDT, and MDPV fleet to the LEV III standards in section E.1.1.2 in 2022 ~~and subsequent~~through 2025 model years.

**2.3 LEV III Phase-In Requirements for Medium-Duty Vehicles Other than Medium-Duty Passenger Vehicles.**

2.3.1 **Requirements 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:

2.3.1.1 LEV III Phase-in Requirements for Medium-Duty Vehicles Certified to Section E.1.1.

| Model Year | Vehicles Certified to Section E.1.1[1] (%) | | | |
|---|---|---|---|---|
| | LEV II LEV; LEV III LEV395 or LEV630 | LEV II ULEV; LEV III ULEV340 or ULEV570 | LEV III ULEV250 or ULEV400 | LEV III SULEV170 or SULEV230 |
| 2015 | 40 | 60 | 0 | 0 |
| 2016 | 20 | 60 | 20 | 0 |
| 2017 | 10 | 50 | 40 | 0 |
| 2018 | 0 | 40 | 50 | 10 |
| 2019 | 0 | 30 | 40 | 30 |
| 2020 | 0 | 20 | 30 | 50 |
| 2021 | 0 | 10 | 20 | 70 |
| 2022 ~~+~~- 2025 | 0 | 0 | 10 | 90 |

[1] 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.

2.3.1.2 LEV III Phase-in Requirements for Incomplete and Diesel Medium-Duty Vehicles Using Engines Certified to Title 13 CCR, Section 1956.8.

| Model Year | Vehicles Certified to title 13 CCR Subsection 1956.8(c)(1)(B) or (h)(2) (%) | Vehicles Certified to title 13 CCR Subsection 1956.8(c)(1)(C) or (h)(7) (%) |
|---|---|---|
| 2015 - 2023 | 100% ULEV | 0 |
| 2024~~+~~ - 2025 | 0 | 100% |

2.3.2 **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~~through 2025 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.

2.3.3 **Alternate Phase-In Schedules for LEV III MDVs.**

2.3.3.1 **Alternate Phase-In Schedules for LEV III MDVs for All Manufacturers.**

2.3.3.1.1 For the 2016 ~~and subsequent~~through 2025 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 8,501 - 10,000 lbs. GVWR | MDVs 10,001-14,000 lbs. 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~~+~~-2025 | 0.178 | 0.247 |

* * * * *

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

| Model Year | Emission Category | Emission Standard Value (g/mi) |
|---|---|---|
| 2016 ~~and subsequent~~through 2025 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 II" standards in E.1.1.1 | All | Sum of the full useful life NMOG and NOx LEV II Emission Standards to which Vehicle is Certified |
| 2016 ~~and subsequent~~through 2025 model year vehicles certified to the "LEV III" standards in E.1.1.2 | All | Full useful life NMOG+NOx LEV III Emission Standards to which Vehicle is Certified |

2.3.3.1.5 **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~~through 2025 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~~through 2025 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 section E.2.3.3.1.5, the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

* * * * *

2.3.3.2 **Alternate Phase-In Schedules for LEV III MDVs Certified to Section E.1.1 for Manufacturers with a Limited Number of Test Groups.** For the 2016 ~~and subsequent~~through 2025 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.

2.3.3.2.1 A manufacturer that produces and delivers for sale in California four medium-duty test groups certified to section E.1.1 may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles instead of section E.2.3.1.1.

| **Model Year** | **Number of Test Groups Certified to Section E.1.1** | | | |
|---|---|---|---|---|
| | LEV II LEV; LEV III LEV395 or LEV630 | LEV II ULEV; LEV III ULEV340 or ULEV570 | LEV III ULEV250 or ULEV400 | LEV III SULEV170 or SULEV230 |
| 2016-2017 | 1 | 2 | 1 | 0 |
| 2018 | 0 | 2 | 2 | 0 |
| 2019 | 0 | 1 | 2 | 1 |
| 2020 | 0 | 1 | 1 | 2 |
| 2021 | 0 | 0 | 1 | 3 |
| 2022+- 2025 | 0 | 0 | 0 | 4 |

2.3.3.2.2 A manufacturer that produces and delivers for sale in California three medium-duty test groups certified to section E.1.1 may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles instead of section E.2.3.1.1.

| Model Year | Number of Test Groups Certified to Section E.1.1 | | | |
|---|---|---|---|---|
| | LEV II LEV; LEV III LEV395 or LEV630 | LEV II ULEV; LEV III ULEV340 or ULEV570 | LEV III ULEV250 or ULEV400 | LEV III SULEV170 or SULEV230 |
| 2016 | 1 | 2 | 0 | 0 |
| 2017 | 0 | 2 | 1 | 0 |
| 2018 | 0 | 1 | 2 | 0 |
| 2019-2020 | 0 | 1 | 1 | 1 |
| 2021 | 0 | 0 | 1 | 2 |
| 2022~~+~~ - 2025 | 0 | 0 | 0 | 3 |

2.3.3.2.3 A manufacturer that produces and delivers for sale in California two medium-duty test groups certified to section E.1.1 may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles instead of section E.2.3.1.1.

| Model Year | Number of Test Groups Certified to Section E.1.1 | | | |
|---|---|---|---|---|
| | LEV II LEV; LEV III LEV395 or LEV630 | LEV II ULEV; LEV III ULEV340 or ULEV570 | LEV III ULEV250 or ULEV400 | LEV III SULEV170 or SULEV230 |
| 2016 | 1 | 1 | 0 | 0 |
| 2017-2019 | 0 | 1 | 1 | 0 |
| 2020-2021 | 0 | 0 | 1 | 1 |
| 2022~~+~~ - 2025 | 0 | 0 | 0 | 2 |

2.3.3.2.4 A manufacturer that produces and delivers for sale in California one medium-duty test group~~s~~ certified to section E.1.1 may comply with the following alternate phase-in schedule for LEV III medium-duty vehicles instead of section E.2.3.1.1.

| Model Year | Number of Test Groups Certified to Section E.1.1 | | | |
|---|---|---|---|---|
| | LEV II LEV; LEV III LEV395 or LEV630 | LEV II ULEV; LEV III ULEV340 or ULEV570 | LEV III ULEV250 or ULEV400 | LEV III SULEV170 or SULEV230 |
| 2016-2018 | 0 | 1 | 0 | 0 |
| 2019-2021 | 0 | 0 | 1 | 0 |
| 2022~~+~~ - 2025 | 0 | 0 | 0 | 1 |

* * * * *

**2.4 Implementation Schedules for SFTP Emission Standards.**

2.4.1 **Phase-In Requirement for PC, LDT, and MDPV Manufacturers**. 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+NOx and CO emission standards.

(a) Under Option 1, ~~beginning with the~~for 2015 through 2025 model years, a manufacturer shall certify its PCs, LDTs, and MDPVs to the SFTP NMOG+NOx and CO emission standards in section E.1.2.2.1.1 when the vehicles are also certifying to a LEV III FTP emission category at 150,000-mile durability.

(b) Under Option 2, for 2015 ~~and subsequent~~through 2025 model years, a manufacturer shall certify its fleet of PCs, LDTs, and MDPVs such that the manufacturer's sales-weighted fleet-average NMOG+NOx composite emission value and each test group's CO composite emission value do not exceed the applicable composite emission standards in effect for that model year in accordance with section E.1.2.2.1.2.

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 section E.1.2.2.2.

2.4.2 **Phase-In Requirements for MDV Manufacturers**. Phase-in for NMOG+NOx and CO emission standards begins with the 2016 model year. For MDVs 8,501-10,000 lbs. GVWR, for each model year, the percentage of MDVs

certified to 150,000-mile SFTP exhaust emission standards shall be equal to or greater than the total percentage certified the FTP ULEV250, ULEV200, SULEV170, and SULEV150 emission categories; of these vehicles, the percentage of MDVs certified to 150,000-mile SFTP SULEV emission standards 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 150,000-mile SFTP exhaust emission standards shall be equal to or greater than the percentage certified to the FTP ULEV400, ULEV270, SULEV230, and SULEV200 emission categories, and the percentage of MDVs certified to 150,000-mile SFTP SULEV exhaust emission standards shall be equal to or greater than the total percentage certified to both the FTP SULEV230 and SULEV200 emission categories.

In addition, 2017 ~~and subsequent~~through 2025 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 section E.1.2.2.4.

2.4.3 **Identifying a Manufacturer's MDV Fleet**. For the 2016 ~~and subsequent~~through 2025 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~~through 2025 model years, a manufacturer that elects to certify engines to the optional medium-duty engine emission standards in title 13, CCR, §1956.8 shall not count those engines in the manufacturer's total production of California-certified medium-duty vehicles for purposes of this subparagraph.

* * * * *

## 3. Calculation of Credits/Debits

### 3.1 Calculation of NMOG+NOx Credits/Debits

#### 3.1.1 Calculation of NMOG+NOx Credits and Debits for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.

3.1.1.1 In 2015 ~~and subsequent~~through 2025 model years, a manufacturer shall calculate its credits or debits using the following equation.

* * * * *

3.1.1.2 In 2015 ~~and subsequent~~through 2025 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~~through 2025 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 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.

3.1.2 **Calculation of NMOG+NOx Credits and Debits for Medium-Duty Vehicles Other than MDPVs.**

* * * * *

3.1.2.1 **Calculation of Vehicle-Equivalent NMOG+NOx Credits for Medium-Duty Vehicles Other than MDPVs.**

3.1.2.1.1 In 2016 ~~and subsequent~~through 2025 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 section E.1 of these test procedures 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:

* * * * *

3.1.2.1.2 The MDV HEV VEC factor is calculated as follows:

* * * * *

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" or the "California Exhaust Emission Standards and Test Procedures for 2018 ~~and Subsequent~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," applicable, except that for the purposes of this section E.3.1.2.2, the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

* * * * *

3.1.2.2 **Calculation of Fleet Average NMOG+NOx Credits and Debits for Medium-Duty Vehicles Other than MDPVs.**

3.1.2.2.1 In 2016 ~~and subsequent~~through 2025 model years, a manufacturer shall calculate its medium-duty vehicle fleet average credits or debits using the following equation.

* * * * *

3.1.2.2.2 In 2016 ~~and subsequent~~through 2025 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~~through 2025 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 section E.3.1.2.2 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 section E.3.1.1.

* * * * *

3.1.3 **Procedure for Offsetting NMOG+NOx Debits.**

3.1.3.1 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 ~~§~~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. A manufacturer demonstrating compliance under Option 2 in section E.2.1.1.1.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~~NMOG+NOx requirements in section E.2.1.1.1.a. The manufacturer must calculate these emission debits separately for California, the District of Columbia, and each individual state using the formula in sections E.3.1.1 and E.3.1.2, 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, 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+NOx 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+NOx emission debits for the model year by the g/mi NMOG+NOx 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.

3.1.3.2 For the 2015 ~~and subsequent~~through 2025 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.

* * * * *

3.2 **Calculation of Greenhouse Gas Credits/Debits.**

Credits and 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.

* * * * *

3.2.4 **Use of Greenhouse Gas Emission Credits to Offset a Manufacturer's ZEV Obligations**.

3.2.4.1 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~~through 2025 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, title 13, CCR.

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## F. Requirements and Procedures for Durability Demonstration

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**2. §86.1821 Evaporative/refueling emission family determination.**

[Delete. (The provisions of this section are set forth in the "California Evaporative Emission Standards and Test Procedures for 2001 ~~and Subsequent Model Passenger~~through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-~~Duty Vehicles~~Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model Motorcycles~~"~~," and "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles.")]

* * * * *

**5. §86.1824 Durability demonstration procedures for evaporative emissions.**

[Delete. (The provisions of this section are set forth in the "California Evaporative Emission Standards and Test Procedures for 2001 ~~and Subsequent Model Passenger~~through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-~~Duty Vehicles~~Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model Motorcycles.")]

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## G. Procedures for Demonstration of Compliance with Emission Standards

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**2. §86.1828 Emission data vehicle selection**

2.1 §86.1828-01. April 28, 2014.~~October 25, 2016.~~ Amend as follows:

* * * * *

**3. §86.1829 Durability data and emission data testing requirements; waivers.**

* * * * *

3.2 §86.1829-15. February 19, 2015. Amend as follows:

* * * * *

3.2.3 Subparagraph (d) [Delete; see G.3.6 below, except as follows.]

3.2.3.1 Subparagraph (d)(4) [No change.]

3.2.4 Subparagraph (e) [Delete. (The provisions of this section that pertain to evaporative testing are contained the "California Evaporative Emission Standards and Test Procedures for 2001 through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model ~~Motor Vehicles~~Motorcycles." The provisions of this section that pertain to refueling testing are contained the "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles.")]

3.2.5 Subparagraph (f) [No change.]

* * * * *

3.6 **LEV III PM Testing Requirements.**

For the 2017 ~~and subsequent~~through 2025 model years, a manufacturer must submit test data for test groups certifying to the LEV III PM standards in section E.1.1.2.1 according to the following table. Once a test group has been used to meet the requirements of this section G.3.6 for a model year, that same test group shall not be selected in the succeeding two model years unless the manufacturer produces fewer than four test groups that are certified to LEV III PM standards. For all test groups that are certified to LEV III PM standards for which test data is not submitted, the manufacturer must, in accordance with good engineering practices, attest that such test groups will comply with the applicable LEV III PM standards.

* * * * *

**8. §86.1834 Allowable maintenance.**

8.1 §86.1834-01. ~~July 13, 2005.~~August 8, 2014. [No change except that the first allowable maintenance interval under subparagraphs (b)(3)(v) and (b)(4)(ii) shall be at the full useful life of the vehicle.]

* * * * *

**12.§86.1838 Small volume manufacturers certification procedures.**

12.1 §86.1838-01. ~~October 25, 2016.~~June 29, 2021. [No change, except that the reference to 15,000 units shall mean 4,500 units in California and the reference to 14,999 units shall mean 4,499 units in California.]

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**H. Certification, Information and Reporting Requirements.**

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**4. §86.1844 Information Requirements: Application for Certification and Submittal of Information Upon Request.**

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4.3 **HEVs.**

For HEVs, the information required 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" and the "California Exhaust Emission Standards and Test Procedures for 2018 ~~and Subsequent~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," must be supplied with the Part I application for certification.

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**I. In-Use Compliance Requirements and Procedures**

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Appendices I, II, and III to ~~§86.1845-01~~ Subpart S [No change.]

**J. Procedural Requirements**

1. §86.1848-10 ~~Certification~~Compliance with emission standards for the purpose of certification. October 25, 2016. Amend as follows:

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6. §86.1853-01 Certification hearings. October 25, 2016. [No change.]

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## PART II: CALIFORNIA EXHAUST AND PARTICULATE EMISSION TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES

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## A. 40 CFR Part 86, Subpart B - Emission Regulations for 1977 and Later Model Year New Light-Duty Vehicles and New Light-Duty Trucks and New Otto-Cycle Complete Heavy-Duty Vehicles; Test Procedures.

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### 100.2 Equipment and Facility Requirements.

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86.111-94 Exhaust gas analytical- system. ~~October 15, 2012~~April 28, 2014.

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### 100.3 Certification Fuel Specifications.

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86.113-04 Fuel Specifications. ~~February 19, 2015~~June 29, 2021.
86.113-15 Fuel Specifications. April 28, 2014.

**100.3.1 California Certification Gasoline Specification.**

100.3.1.1 Certification Gasoline Fuel Specifications for LEV II Light-Duty Vehicles and Medium-Duty Vehicles.

Add the following subparagraph which reads: For light-duty vehicles and medium-duty vehicles certified to the LEV II exhaust emission standards set forth in section E.1.1.1, gasoline having the specifications listed below or gasoline having the specifications listed in section 100.3.1.2 or gasoline having the specifications in 40 CFR §1065.710(b) (~~February 19, 2015~~June 29, 2021) may be used in exhaust and evaporative emission testing as an option to the specifications referred to in §86.113-04(a)(1). If a manufacturer elects to utilize gasoline having the specifications listed below for LEV II vehicles, exhaust emission testing shall be conducted by the manufacturer with gasoline having the specifications listed below, and the Executive Officer shall conduct exhaust emission testing with gasoline having the specifications listed below. If a manufacturer elects to utilize gasoline having the specifications listed in section 100.3.1.2, exhaust emission testing shall be conducted by the manufacturer with gasoline having the specifications listed in section 100.3.1.2, and the Executive Officer shall conduct exhaust emission testing with gasoline having the specifications listed in section 100.3.1.2. If a manufacturer elects to utilize gasoline having the

specifications in 40 CFR §1065.710(b) (~~February 19, 2015~~June 29, 2021), exhaust emission testing shall be conducted by the manufacturer with gasoline having the specifications in 40 CFR §1065.710(b) (~~February 19, 2015~~June 29, 2021), and the Executive Officer shall conduct exhaust emission testing with gasoline having the specifications in section 40 CFR §1065.710(b) (~~February 19, 2015~~June 29, 2021). Use of these fuels for evaporative emission testing shall be required as specified in the "California Evaporative Emission Standards and Test Procedures for 2001 through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model ~~Motor Vehicles~~Motorcycles."

| **California Certification Gasoline Specifications for LEV II Light-Duty Vehicles and Medium-Duty Vehicles** | | |
|---|---|---|
| **Fuel Property**[a] | **Limit** | **Test Method** [b] |
| Octane (R+M)/2 | 91 (min) | D 2699-88, D 2700-88 |
| Sensitivity | 7.5 (min) | D 2699-88, D 2700-88 |
| Lead | 0-0.01g/gal (max); no lead added | §2253.4(c), title 13 CCR |
| Distillation Range: | | §2263, title 13 CCR[c] |
| 10% point | 130-150 °F | |
| 50% point [d] | 200-210 °F | |
| 90% point [e] | 290-300 °F | |
| EP, maximum | 390 °F | |
| Residue | 2.0 vol. % (max) | |
| Sulfur | 30-40 ppm by wt. | §2263, title 13 CCR |
| Phosphorous | 0.005 g/gal (max) | §2253.4(c), title 13 CCR |
| RVP | 6.7-7.0 psi | §2263, title 13 CCR |
| Olefins | 4.0-6.0 vol. % | §2263, title 13 CCR |
| Total Aromatic Hydrocarbons | 22-25 vol. % | §2263, title 13 CCR |
| Benzene | 0.8-1.0 vol. %[f] | §2263, title 13 CCR |
| Multi-substituted Alkyl Aromatic Hydrocarbons | 12-14 vol. %[g] | |
| MTBE | 10.8-11.2 vol. % | §2263, title 13 CCR |
| Additives | Sufficient to meet requirements of §2257, title 13 CCR | |
| Copper Corrosion | No. 1 | D 130-88 |
| Gum, washed | 3.0 mg/100 mL (max) | D 381-86 |
| Oxidation Stability | 1000 minutes (min) | D 525-88 |

| California Certification Gasoline Specifications for LEV II Light-Duty Vehicles and Medium-Duty Vehicles | | |
|---|---|---|
| **Fuel Property[a]** | **Limit** | **Test Method [b]** |
| Specific Gravity | Report [h] | |
| Heat of Combustion | Report [h] | |
| Carbon | Report wt. % [h] | |
| Hydrogen | Report wt. % [h] | |

[a] The gasoline must be blended from typical refinery feedstocks.

[b] ASTM specification unless otherwise noted. A test method other than that specified may be used following a determination by the Executive Officer that the other method produces results equivalent to the results with the specified method.

[c] Although §2263, title 13, CCR refers to the temperatures of the 50 and 90 percent points, this procedure can be extended to the 10 percent and end point temperatures, and to the determination of the residue content.

[d] The range for interlaboratory testing is 195-215° F.

[e] The range for interlaboratory testing is 285-305° F.

[f] The range for interlaboratory testing is 0.7-1.1 percent by volume.

[g] "Detailed Hydrocarbon Analysis of Petroleum Hydrocarbon Distillates, Reformates, and Gasoline by Single Column High Efficiency (Capillary) Column Gas Chromatography," by Neil Johansen, 1992, Boulder, CO.

[h] The fuel producer should report this fuel property to the fuel purchaser. Any generally accepted test method may be used and shall be identified in the report.

100.3.1.2 Certification Gasoline Fuel Specifications for LEV III Light-Duty Vehicles and Medium-Duty Vehicles.

Add the following subparagraph which reads: For all light-duty vehicles and medium-duty vehicles certifying to the LEV III standards in section E.1.1.2, gasoline having the specifications listed below may be used in exhaust emission testing, as an option to the specifications set forth in 40 CFR §1065.710(b) (~~February 19, 2015~~June 29, 2021). If a manufacturer elects to utilize gasoline having the specifications listed below, the Executive Officer shall conduct exhaust emission testing with gasoline having the specifications listed below. If a manufacturer elects to utilize gasoline having the specifications set forth in 40 CFR §1065.710(b) (~~February 19, 2015~~June 29, 2021), the Executive Officer shall conduct exhaust emission testing with gasoline having the specifications set forth in 40 CFR §1065.710(b) (~~February 19, 2015~~June 29, 2021). Use of these fuels for evaporative emission testing shall be required as specified in the "California Evaporative Emission Standards and Test Procedures for 2001 through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model ~~Motor Vehicles~~Motorcycles."

| California Certification Gasoline Specifications for LEV III Light-Duty Vehicles and Medium-Duty Vehicles | | |
|---|---|---|
| **Fuel Property[a]** | **Limit** | **Test Method [b]** |
| Octane (R+M)/2 [c] | 87-88.4;<br>91 (min) | D 2699-88, D 2700-88 |

| California Certification Gasoline Specifications for LEV III Light-Duty Vehicles and Medium-Duty Vehicles | | |
|---|---|---|
| **Fuel Property**[a] | **Limit** | **Test Method** [b] |
| Sensitivity | 7.5 (min) | D 2699-88, D 2700-88 |
| Lead | 0-0.01g/gal (max); no lead added | §2253.4(c), title 13 CCR |
| Distillation Range: | | §2263, title 13 CCR[d] |
| 10% point | 130-150 °F | |
| 50% point | 205-215 °F | |
| 90% point | 310-320 °F | |
| EP, maximum | 390 °F | |
| Residue | 2.0 vol. % (max) | |
| Sulfur | 8-11 ppm by wt. | §2263, title 13 CCR |
| Phosphorous | 0.005 g/gal (max) | §2253.4(c), title 13 CCR |
| RVP | 6.9-7.2 psi | §2263, title 13 CCR |
| Olefins | 4.0-6.0 vol. % | §2263, title 13 CCR |
| Total Aromatic Hydrocarbons | 19.5-22.5 vol. % | §2263, title 13 CCR |
| Benzene | 0.6-0.8 vol. % | §2263, title 13 CCR |
| Multi-substituted Alkyl Aromatic Hydrocarbons | 13-15 vol. %[e] | |
| MTBE | 0.05 vol. % | §2263, title 13 CCR |
| Ethanol | 9.2-10.0 vol. % | §2263, title 13 CCR |
| Total Oxygen | 3.3-3.7 wt. % | §2263, title 13 CCR |
| Additives | Sufficient to meet requirements of §2257, title 13 CCR | |
| Copper Corrosion | No. 1 | D 130-88 |
| Gum, washed | 3.0 mg/100 mL (max) | D 381-86 |
| Oxidation Stability | 1000 minutes (min) | D 525-88 |
| Specific Gravity | Report [f] | |
| Heat of Combustion | Report [f] | |
| Carbon | Report wt. % [f] | |
| Hydrogen | Report wt. % [f] | |

[a] The gasoline must be blended from typical refinery feedstocks.

[b] ASTM specification unless otherwise noted. A test method other than that specified may be used following a determination by the Executive Officer that the other method produces results equivalent to the results with the specified method.

[c] For vehicles/engines that require the use of premium gasoline as part of their warranty, the Octane ((R+M)/2) may be a 91 minimum. All other certification gasoline specifications, as shown in this table, must be met. For all other vehicles/engines, the Octane ((R+M)/2) shall be 87-88.4.

[d] Although §2263, title 13, CCR refers to the temperatures of the 50 and 90 percent points, this procedure can be extended to the 10 percent and end point temperatures, and to the determination of the residue content.

[e] "Detailed Hydrocarbon Analysis of Petroleum Hydrocarbon Distillates, Reformates, and Gasoline by Single Column High Efficiency (Capillary) Column Gas Chromatography," by Neil Johansen, 1992, Boulder, CO.

[f] The fuel producer should report this fuel property to the fuel purchaser. Any generally accepted test method may be used and shall be identified in the report.

**100.3.2 Certification Diesel Fuel Specifications.**

100.3.2.1 Certification Diesel Fuel Specifications for the 2015 ~~and Subsequent~~through 2025 Model Years.

Amend subparagraphs §86.113-94(b)(2) and (b)(3) as follows:

(b)(2) Except as noted below, petroleum fuel for diesel vehicles meeting the specifications referenced in 40 CFR §86.113-94 (b)(2), or substantially equivalent specifications approved by the Executive Officer, shall be used in exhaust emission testing. The grade of petroleum fuel recommended by the engine manufacturer, commercially designated as "Type 2-D" grade diesel, shall be used. The petroleum fuel used in exhaust emission testing may meet the specifications listed below, or substantially equivalent specifications approved by the Executive Officer, as an option to the specifications in 40 CFR §86.113-94 (b)(2). Where a manufacturer elects pursuant to this subparagraph to conduct exhaust emission testing using the specifications of §86.113-94 (b)(2), or the specifications listed below, the Executive Officer shall conduct exhaust emission testing with the diesel fuel meeting the specifications elected by the manufacturer.

| California Certification Diesel Fuel Specifications For the 2015 ~~and Subsequent~~through 2025 Model Years | | |
|---|---|---|
| **Fuel Property** | **Limit** | **Test Method [(a)]** |
| Natural Cetane Number | 47-55 | D 613-86 |
| Distillation Range | | §2282(g)(3), title 13, CCR |
| IBP | 340-420 °F | |
| 10% point | 400-490 °F | |
| 50% point | 470-560 °F | |
| 90% point | 550-610 °F | |
| EP | 580-660 °F | |
| API Gravity | 33-39° | D 287-82 |
| Total Sulfur | 7-15 ppm | §2282(g)(3), title 13, CCR |
| Nitrogen Content | 100-500 ppmw | §2282(g)(3), title 13, CCR |
| Total Aromatic Hydrocarbons | 8-12 vol. % | §2282(g)(3), title 13, CCR |
| Polycyclic Aromatic Hydrocarbons | 1.4 wt. % (max) | §2282(g)(3), title 13, CCR |
| Flashpoint | 130 °F (max) | D 93-80 |
| Viscosity @ 40°F | 2.0-4.1 centistokes | D 445-83 |

[(a)] ASTM specifications unless otherwise noted. A reference to a subsection of §2282, title 13, CCR, means the test method identified in that subsection for the particular property. A test method other than that specified may be used following a determination by the Executive Officer that the other method produces results equivalent to the results of the specified method.

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**100.3.4 Mixtures of Petroleum and Alcohol Fuels for Flexible Fuel Vehicles.**

100.3.4.1 **Exhaust emission test fuel for emission-data and durability-data vehicles.** For Otto-cycle or diesel alcohol vehicles and hybrid electric vehicles which use Otto-cycle or diesel alcohol engines, methanol or ethanol fuel used for exhaust emission testing shall meet the applicable specifications set forth in section 2292.2, title 13, CCR, (Specifications for M-85 Fuel Methanol) or section 2292.4 (Specifications for E-85 Fuel Ethanol) as modified by the following.: E-85 that meets the specifications in 40 CFR §1065.725 (~~April 28, 2014~~December 4, 2020) may be used in exhaust and evaporative emission testing as an option to the E-85 Fuel Ethanol specifications in this subparagraph. If a manufacturer elects to utilize E-85 Fuel Ethanol having the specifications listed below, the Executive Officer shall conduct exhaust emission testing with E-85 Fuel Ethanol having the specifications listed below. If a manufacturer elects to utilize E-85 Fuel Ethanol having the specifications set forth in 40 CFR §1065.725 (~~April 28, 2014~~December 4, 2020), the Executive Officer shall conduct exhaust emission testing with E-85 Fuel Ethanol having the specifications set forth in 40 CFR §1065.725 (~~April 28, 2014~~December 4, 2020).

| Specification | Limit |
|---|---|
| **M-85 Fuel Methanol** | |
| Petroleum fuel meeting the specifications of section 100.3.1.1 | 13-16 vol. percent |
| Reid vapor pressure | 8.0-8.5 psi, using common blending components from the gasoline stream. |
| **E-85 Fuel Ethanol** | |
| Petroleum fuel meeting the specifications of section 100.3.1.1 | 15-21 vol. percent |
| Reid vapor pressure | 8.0-8.5 psi, using common blending components from the gasoline stream. |

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100.3.4.3 **Evaporative emission test fuel for emission-data and durability-data vehicles.** For Otto-cycle or diesel alcohol vehicles and hybrid electric vehicles which use Otto-cycle or diesel alcohol engines, the fuel for evaporative emission testing shall be the gasoline set forth in Part II, Section A.100.3.1.2 of these test procedures. A manufacturer may alternatively demonstrate compliance with the applicable evaporative emission standards using gasoline test fuel meeting the specifications set forth in 40 CFR §1065.710(b) (~~April 28, 2014~~June 29, 2021) if the manufacturer also uses the evaporative emission test procedures set forth in 40 CFR §§86.107-96 through 86.143-96 in place of the test procedures set forth in the

"California Evaporative Emission Standards and Test Procedures for 2001 through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model ~~Motor Vehicles~~Motorcycles." Alternative alcohol-gasoline blends may be used in place of E10 if demonstrated to result in equivalent or higher evaporative emissions, subject to prior approval of the Executive Officer. For refueling testing, the test fuel shall be the fuel specified in the "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles."

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**100.3.8 Identification of New Clean Fuels to be Used in Certification Testing.**

Any person may petition the state board to establish by regulation certification testing specifications for a new clean fuel for which specifications for a new clean fuel are not specifically set forth in 40 CFR §86.113-94, §86.113-04, §86.113-15, or §1065.710~~,~~ (June 29, 2021), as amended herein. Prior to adopting such specifications, the state board shall consider the relative cost-effectiveness of use of the fuel in reducing emissions compared to the use of other fuels. Whenever the state board ~~adopts~~considers adopting specifications for a new clean fuel for certification testing, it shall also ~~establish~~consider under section 2137(b) establishing by regulation specifications for the fuel as it is sold commercially to the public.

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**100.5 Test Procedures and Data Requirements.**

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86.129-00 Road load power, test weight, inertia weight class determination, and fuel temperature profile. ~~October 6, 2000~~June 29, 2021.

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86.130-96 Test sequence; general requirements. ~~April 28, 2014~~June 29, 2021.

**100.5.2 California test sequence; general requirements.**

100.5.2.1 Delete subparagraph (a) of §86.130-96 and replace with:

For purposes of determining conformity with 50°F test requirements, the procedures set forth in Part II, Section D. For all hybrid electric vehicles and all vehicles certifying to running loss and useful life evaporative emission standards, the test sequence specified in "California Evaporative Emission Standards and Test Procedures for 2001 through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model ~~Motor Vehicles~~Motorcycles" as incorporated by reference in section 1976, title 13, CCR shall apply.

* * * * *

86.132-00 Vehicle preconditioning. ~~October 22, 1996~~November 25, 2009.

**100.5.3 California Vehicle Preconditioning Requirements.**

100.5.3.1 Add the following subparagraph: For all hybrid electric vehicles and all 2015 ~~and subsequent~~through 2025 model-year vehicles subject to running loss and useful life evaporative emission standards, the preconditioning sequence for the Federal Test Procedure specified in "California Evaporative Emission Standards and Test Procedures for 2001 through 2025 Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles and 2001 and Subsequent Model ~~Motor Vehicles~~Motorcycles" shall apply. In addition, the preconditioning sequence for the SFTP described in subparagraphs (n) and (o) of paragraph 86.132-00 shall apply.

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86.138-96 Hot soak test. ~~August 23, 1995~~April 30, 2010.

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86.144-94 Calculations; exhaust emissions. ~~July 13, 2005~~September 15, 2011.

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86.159-08 Exhaust emission test procedures for US06 emissions. ~~December 27, 2006~~November 25, 2009.

**100.5.5 California exhaust emission test procedures for Supplemental Federal Test Procedures.**

This section applies to passenger cars, light-duty trucks, and medium-duty vehicles fueled by gasoline, diesel, methanol, ethanol, natural gas and liquefied petroleum gas fuels. This section also applies to hybrid electric vehicles. The procedures of this subpart apply to both certification and in-use vehicles unless otherwise indicated. For model year 2015 and 2016 vehicles, a manufacturer may use either the exhaust emission test procedures in this section or the exhaust emission test procedures set forth in 40 CFR §1066.831 for the US06, US06 Bag 2, and Hot 1435 LA92 test cycles. For 2017 ~~and subsequent~~through 2025 model years, these vehicles shall be subject to the exhaust emission test procedures in 40 CFR §1066.831 for US06, US06 Bag 2, and Hot 1435 LA92 test cycles.

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86.164-08 Supplemental federal test procedure calculations. ~~December 27, 2006~~November 25, 2009.

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**B. 40 CFR Part 86, Subpart C - Emission Regulations for 1994 and Later Model Year Gasoline-Fueled New Light-Duty Vehicles, New Light-Duty Trucks and New Medium-Duty Passenger Vehicles; Cold Temperature Test Procedures.**

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86.213 Fuel specifications. ~~February 19, 2015~~June 29, 2021.

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Appendix I to Part 86 -- ~~Urban~~ Dynamometer Schedules. ~~February 19, 2015~~October 25, 2016.

**C. 40 CFR Part 1066 – Vehicle-Testing Procedures.**

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**1. Subpart A – Applicability and General Provisions.**

1066.1 Applicability. ~~April 28, 2014.~~June 29, 2021. Amend as follows:

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**2. Subpart B – Equipment, Measurement Instruments, Fuel, and Analytical Gas Specifications.**

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1066.135 Linearity verification. ~~October 25, 2016.~~ June 29, 2021.

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**3. Subpart C – Dynamometer Specifications.**

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1066.210 Dynamometers. ~~October 25, 2016~~ June 29, 2021.

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1066.255 Parasitic loss verification. ~~February 19, 2015.~~ June 29, 2021.
1066.260 Parasitic friction compensation evaluation. ~~October 25, 2016.~~ June 29, 2021.

1066.265 Acceleration and deceleration verification. ~~October 25, 2016.~~ June 29, 2021.
1066.270 Unloaded coastdown verification. ~~October 25, 2016.~~ June 29, 2021.
1066.275 Daily dynamometer readiness verification. ~~October 25, 2016~~June 29, 2021.

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**5. Subpart E – Preparing Vehicles and Running an Exhaust Emission Test.**

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1066.420 Test preparation. ~~February 19, 2015.~~ June 29, 2021.

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**6. Subpart F – Hybrids and Electric Vehicles.**

[n/a; All zero-emission vehicles and hybrid electric vehicles must demonstrate compliance with all applicable exhaust emission standards 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~~through 2025 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as applicable.]

**7. Subpart G – Calculations.**

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1066.605 Mass-based and molar-based exhaust emission calculations. ~~October 25, 2016.~~June 29, 2021.

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**8. Subpart H – Cold-Temperature Test Procedures.**

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1066.710 Cold temperature testing procedures for measuring CO and NMHC emissions and determining fuel economy. ~~October 25, 2016.~~June 29, 2021.

**9. Subpart I – Exhaust Emission Test Procedures for Motor Vehicles.**

1066.801 Applicability and general provisions. ~~October 25, 2016.~~June 29, 2021.

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1066.835 Exhaust emission test procedures for SC03 emissions. ~~October 25, 2016.~~June 29, 2021.

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**10. Subpart K – Definitions and Other Reference Material.**

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1066.1005 Symbols, abbreviations, acronyms, and units of measure. ~~October 25, 2016.~~June 29, 2021.

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