ATTACHMENT D

Staff's Suggested Modifications to the Original Proposal for LEV III

PRESENTED AT THE JANUARY 26, 2012 HEARING OF THE
AIR RESOURCES BOARD

The following text contains staff's suggested modifications to the originally proposed regulatory text for sections 1961, 1961.2, 1961.3, 1976, 1978, title 13 of the California Code of Regulations; to the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles;" and to the new "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles;" to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles;" to the "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles;" and to the "California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels <u>in 2015 and Subsequent Years</u>." Unless otherwise indicated below, the text of the originally proposed amendments is shown in <u>underline</u> to indicate additions and ~~strikeout~~ to indicate deletions, except that sections 1961.2 and 1961.3 are new sections, shown without underline for easier reading. The modified language now proposed by staff is shown in <u>double underline</u> to indicate additions and ~~double strikeout~~ to indicate deletions. Staff is proposing modifications to limited portions of the original proposal; for some portions for which no modifications are proposed, the text has been omitted and the omission indicated by [No change] or "* * * *."

There are no additional suggested modifications to the originally proposed amendments to sections 1900, 1956.8, 1960.1, 1961.1, 1965, 1968.2, 1968.5, 2037, 2038, 2062, 2112, 2139, 2140, 2145, 2147, 2235, and 2317, title 13, CCR.

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SUGGESTED CHANGES TO PROPOSED REGULATION ORDER

1. Amend title 13, CCR, section 1961 to read as follows:

§ 1961. Exhaust Emission Standards and Test Procedures - 2004 through 2019 ~~and Subsequent~~ Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

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

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(a) *Exhaust Emission Standards.*

(1) *"LEV II" Exhaust Standards*. The following standards are ~~represent~~ the maximum exhaust emissions for the intermediate and full useful life from new 2004 through 2019 ~~and subsequent~~ model-year "LEV II" LEVs, ULEVs, and SULEVs, including fuel-flexible, bi-fuel and dual fuel vehicles when operating on the gaseous or alcohol fuel they are designed to use. ~~:~~ 2015 – 2019 model-year LEV II LEV vehicles may be certified to the NMOG+NOx numerical values for LEV160, LEV395, or LEV630, as applicable, in subsection 1961.2(a)(1) and the corresponding NMOG+NOx numerical values in subsection 1961.2(a)(4), in lieu of the separate NMOG and NOx exhaust emission standards in this subsection (a)(1) and subsection (a)(4); LEV II ULEV vehicles may be certified to the NMOG+NOx numerical values for ULEV125, ULEV340, or ULEV570, as applicable, in subsection 1961.2(a)(1) and the corresponding NMOG+NOx numerical values in subsection 1961.2(a)(4), in lieu of the separate NMOG and NOx exhaust emission standards in this subsection (a)(1) and the corresponding NMOG+NOx numerical values in subsection (a)(4); and LEV II SULEV vehicles may be certified to the NMOG+NOx numerical values for SULEV30, SULEV170, or SULEV230, as applicable, in subsection 1961.2(a)(1) and the corresponding NMOG+NOx numerical values in subsection 1961.2(a)(4), in lieu of the separate NMOG and NOx exhaust emission standards in this subsection (a)(1) and the corresponding NMOG+NOx numerical values in subsection (a)(4).

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

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

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

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

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

FLEET AVERAGE NON-METHANE ORGANIC GAS EXHAUST MASS EMISSION REQUIREMENTS FOR LIGHT-DUTY VEHICLE WEIGHT CLASSES (50,000 mile Durability Vehicle Basis)		
Model Year	*Fleet Average NMOG (grams per mile)*	
	All PCs; LDTs 0-3750 lbs. LVW	*LDTs 3751 lbs. LVW - 8500 lbs. GVW*
2001	0.070	0.098
2002	0.068	0.095
2003	0.062	0.093
2004	0.053	0.085
2005	0.049	0.076
2006	0.046	0.062
2007	0.043	0.055
2008	0.040	0.050
2009	0.038	0.047
2010 through 2014[1] ~~+~~	0.035	0.043

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

* * * *

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

2. Adopt new title 13, CCR, section 1961.2 to read as follows: (Note: the entire text of section 1961.2 set forth below is new language proposed to be added to the California Code of Regulations.)

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

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

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

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

Pooling Provision.

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

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

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

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

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

(a) *Exhaust Emission Standards.*

(1) *"LEV III" Exhaust Standards*. The following standards are the maximum exhaust emissions for the full useful life from new 2015 and subsequent model year "LEV III" passenger cars, light-duty trucks, and medium-duty vehicles, including fuel-flexible, bi-fuel and dual fuel vehicles when operating on the gaseous or alcohol fuel they are designed to use.~~:~~ 2015 – 2019 model-year LEV II LEV vehicles may be certified to the NMOG+NOx numerical values for LEV160, LEV395, or LEV630, as applicable, in this subsection (a)(1) and the corresponding NMOG+NOx numerical values in subsection (a)(4), in lieu of the separate NMOG and NOx exhaust emission standards in subsections 1961(a)(1) and 1961(a)(4); LEV II ULEV vehicles may be certified to the NMOG+NOx numerical values for ULEV125, ULEV340, or ULEV570, as applicable, in this subsection (a)(1) and the corresponding NMOG+NOx numerical values in subsection (a)(4), in lieu of the separate NMOG and NOx exhaust emission standards in subsections 1961(a)(1) and 1961(a)(4); and LEV II SULEV vehicles may be certified to the NMOG+NOx numerical values for SULEV30, SULEV170, or SULEV230, as applicable, in subsection (a)(1) and the corresponding NMOG+NOx numerical values in subsection (a)(4), in lieu of the separate NMOG and NOx exhaust emission standards in subsections 1961(a)(1) and 1961(a)(4). Such vehicles will be treated as LEV II vehicles for purposes of the fleet-wide phase-in requirements.

LEV III Exhaust Mass Emission Standards for New 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles						
Vehicle Type	*Durability Vehicle Basis (mi)*	*Vehicle Emission Category*[2]	*NMOG + Oxides of Nitrogen (g/mi)*	*Carbon Monoxide (g/mi)*	*Formaldehyde (mg/mi)*	*Particulates*[1] *(g/mi)*
All PCs; LDTs 8500 lbs. GVWR or less; MDPVs 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 Vehicles in this category are tested at their adjusted loaded vehicle weight	150,000	LEV395	0.395	6.4	6	0.12
		ULEV340	0.340	3.2	6	0.06
		ULEV250	0.250	2.6	6	0.06
		ULEV200	0.200	2.6	6	0.06
		SULEV170	0.170	1.5	6	0.06
		SULEV150	0.150	1.5	6	0.06
MDVs 10,001-14,000 lbs. GVWR Vehicles in this category are tested at their adjusted loaded vehicle weight	150,000	LEV630	0.630	7.3	6	0.12
		ULEV570	0.570	3.7	6	0.06
		ULEV400	0.400	3.0	6	0.06
		ULEV270	0.270	3.0	6	0.06
		SULEV230	0.230	1.7	6	0.06
		SULEV200	0.200	1.7	6	0.06

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

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

(2) *<u>"LEV III"</u> Particulate Standards.*

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

LEV III Particulate Emission Standard Values and Phase-in for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles		
Model Year	**% of vehicles certified to a 3 mg/mi standard**	**% of vehicles certified to a 1 mg/mi standard**
2017	10	0
2018	20	0
2019	40	0
2020	70	0
2021	100	0
2022	100	0
2023	100	0
2024	100	0
2025	75	25
2026	50	50
2027	25	75
2028 and subsequent	0	100

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

1. Beginning in the 2017 model year, a manufacturer, except a small volume manufacturer, shall certify a percentage of its medium-duty vehicle fleet to the following particulate standards ~~according to the following phase-in schedule~~. These standards are the maximum particulate emissions allowed at full useful life. All vehicles certifying to these particulate standards must certify to the LEV III exhaust emission standards set forth in subsection (a)(1). This subsection (a)(2)(B)1 shall not apply to medium-duty passenger vehicles.

~~LEV III Particulate Emission Standard Values and Phase-in for Medium-Duty Vehicles Other than Medium-Duty Passenger Vehicles~~			
~~Vehicle Type~~	~~Model Year~~	~~% of vehicles certified to a 8 mg/mi standard~~	~~% of vehicles certified to a 10 mg/mi standard~~
~~MDVs 8501 - 10,000 lbs. GVWR, excluding MDPVs~~ ~~Vehicles in this category are tested at their adjusted loaded vehicle weight~~	~~2017~~	~~10~~	~~n/a~~
	~~2018~~	~~20~~	~~n/a~~
	~~2019~~	~~40~~	~~n/a~~
	~~2020~~	~~70~~	~~n/a~~
	~~2021 and subsequent~~	~~100~~	~~n/a~~
~~MDVs 10,001 - 14,000 lbs. GVWR~~ ~~Vehicles in this category are tested at their adjusted loaded vehicle weight~~	~~2017~~	~~n/a~~	~~10~~
	~~2018~~	~~n/a~~	~~20~~
	~~2019~~	~~n/a~~	~~40~~
	~~2020~~	~~n/a~~	~~70~~
	~~2021 and subsequent~~	~~n/a~~	~~100~~

LEV III Particulate Emission Standard Values for Medium-Duty Vehicles, Other than Medium-Duty Passenger Vehicles	
Vehicle Type[1]	Particulates (mg/mi)
MDVs 8501 - 10,000 lbs. GVWR, excluding MDPVs	8
MDVs 10,001 - 14,000 lbs. GVWR	10

[1] Vehicles in these categories are tested at their adjusted loaded vehicle weight.

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

LEV III Particulate Emission Standard Phase-in for Medium-Duty Vehicles, Other than Medium-Duty Passenger Vehicles	
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	100

* * * *

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

(A) *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 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 subsection (a)(7)(A)1, or in accordance with the *SFTP NMOG+NOx and CO Composite Exhaust Emission Standards and Fleet-Average Requirements* set forth in subsection (a)(7)(A)2. A manufacturer may also certify 2014 model LEVs, ULEVs, or SULEVs in the PC, LDT, or MDPV classes to LEV III SFTP standards, in which case, the manufacturer shall be subject to the LEV III SFTP emission standards and requirements, including the sales-weighted fleet-average NMOG+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 (a)(7)(A)2. The manufacturer shall notify the Executive Officer of its selected emission standard type in the Application for Certification of the first test group certifying to SFTP NMOG+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 subsection (a)(7)(A)2. The manufacturer may not change its selection until the 2026 model year. Test groups not certifying to the 150,000-mile SFTP NMOG+NOx and CO emission standards pursuant to this subsection (a)(7)(A) shall be subject to the 4,000-mile SFTP NMOG+NOx and CO emission standards set forth in subsection 1960.1(r).

1. *SFTP NMOG+NOx and CO Exhaust Stand-Alone Emission Standards*. The following standards are the maximum SFTP NMOG+NOx and CO exhaust emissions through full useful life from 2015 and subsequent model-year LEV III LEVs, ULEVs, and SULEVs when operating on the same ~~any~~ gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles, SFTP

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compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2.

SFTP NMOG+NOx and CO Stand-Alone Exhaust Emission Standards for 2015 and Subsequent Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles						
Vehicle Type	*Durability Vehicle Basis (mi)*	*Vehicle Emission Category*[1]	US06 Test *(g/mi)*		*SC03 Test (g/mi)*	
			NMHC + NOx	*CO*	*NMHC + NOx*	*CO*
All PCs; LDTs 0- 8,500 lbs. GVWR; and MDPVs 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.

2. *SFTP NMOG+NOx and CO Composite Exhaust Emission Standards*. For the 2015 and subsequent model years, a manufacturer selecting this option must certify LEV II and LEV III LEVs, ULEVs, and SULEVs, such that the manufacturer's sales-weighted fleet-average NMOG+NOx composite emission value, does not exceed the applicable NMOG+NOx composite emission standard set forth in the following table. In addition, the CO composite emission value of any LEV III test group shall not exceed the CO composite emission standard set forth in the following table. SFTP compliance shall be demonstrated using the same gaseous or liquid fuel used for FTP certification. In the case of fuel-flexible vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2.

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

Composite Emission Value = 0.28 x US06 + 0.37 x SC03 + 0.35 x FTP [Eq. 1]

where "US06" = the test group's NMOG+NOx or CO emission value, as applicable, determined through the US06 test;
"SC03" = the test group's NMOG+NOx or CO emission value, as applicable, determined through the SC03 test; and
"FTP" = the test group's NMOG+NOx or CO emission value, as applicable, determined through the FTP test.

If no vehicles in a test group have air conditioning units, the FTP cycle emission value can be used in place of the SC03 cycle emission value in Equation 1. To determine compliance with the SFTP NMOG+NOx composite emission standard applicable to the model year, manufacturers shall use a sales-weighted fleet average of the NMOG+NOx composite emission values of every applicable test group. The sales-weighted fleet average shall be calculated using a combination of carry-over and new certification SFTP composite emission values (converted to NMOG+NOx, as applicable). LEV II test groups will use their emission values in the fleet average calculation but will not be considered LEV III test groups. Compliance with the CO composite emission standard cannot be demonstrated through fleet averaging. The NMOG+NOx sales-weighted fleet-average composite emission value for the fleet and the CO composite emission value for each test group shall not exceed:

SFTP NMOG+NOx and CO Composite Emission Standards for 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles (g/mi) [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]	***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
Vehicles in this category are tested at their loaded vehicle weight (curb weight plus 300 pounds).	***CO Composite Exhaust Emission Standard***[7]										
	4.2										

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

[2] *Determining NMOG+NOx Composite Emission Values of LEV II Test Groups.* For ~~carry-over~~ test groups certified to LEV II FTP emission standards, SFTP emission values shall be converted to NMOG+NOx and projected out to 120,000 miles or 150,000 miles (depending on LEV II FTP certification) using deterioration factors or aged components.~~,~~ NMHC emission values for the US06 and SC03 test cycles shall be converted to NMOG emission values by multiplying by a factor of 1.03. In lieu of deriving a deterioration factor specific to SFTP test cycles, carry-over test groups may use the applicable deterioration factor from the FTP cycle in order to determine the carry-over composite emission values for the purpose of the NMOG+NOx sales-weighted fleet-average calculation. If an SFTP full-useful life emission value is used to comply with SFTP 4k standards, that value may be used in the sales-weighted fleet-average without applying an additional deterioration factor.

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

[4] Test groups shall certify to bins in increments of 0.010 g/mi. Beginning with the 2018 model year, vehicles may not certify to bin values above a maximum of 0.180 g/mi.

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

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

where "n" = a manufacturer's total number of PC, LDT, and, if applicable, MDPV certification bins, in a given model year including carry-over certification bins, certifying to SFTP composite emission standards in that model year;

"number of vehicles in the test group" = the number of vehicles produced and delivered for sale in California in the certification test group; and

"Composite Value of Bin" = the numerical value selected by the manufacturer for the certification bin that serves as the emission standard for the vehicles in the test group with respect to all testing for test groups certifying to SFTP on a 150,000-mile durability basis, and the SFTP carry-over composite emission value, as described in footnote 7 of this table, for carry-over LEV II test groups.

[6] *Calculation of Fleet Average Total NMOG+NOx Credits or Debits.* A manufacturer shall calculate the total NMOG+NOx credits or debits, as follows:

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

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

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

[7] *Calculating the CO composite emission value.* Composite emission values for CO shall be calculated in accordance with Equation 1 above. Unlike the NMOG+NOx composite emission standards, manufacturers would not be able to meet the proposed CO composite emission standard through fleet

averaging: each individual test group must comply with the standard. Test groups certified to 4,000-mile SFTP emission standards are not subject to this CO emission standard.

(B) *SFTP PM Exhaust Emission Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.* The following standards are the maximum PM exhaust emissions through the full useful life from 2017 and subsequent model-year LEV III LEVs, ULEVs, and SULEVs in the PC, LDT, and MDPV classes when operating on ~~any~~ the same gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2. Manufacturers must certify LEVs, ULEVs, and SULEVs in the PC, LDT, and MDPV classes, which are certifying to LEV III FTP PM emission standards in subsection (a)(2) on a 150,000-mile durability basis, to the *SFTP PM Exhaust Emission Standards* set forth in this subsection (a)(7)(B).

SFTP PM Exhaust Emission Standards for 2017 and Subsequent Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles[1]

Vehicle Type	*Test Weight*	*Mileage for Compliance*	*Test Cycle*	*PM (mg/mi)*
All PCs; LDTs 0-6,000 lbs GVWR	Loaded vehicle weight	150,000	US06	10~~.0~~
LDTs 6,001-8,500 lbs GVWR; MDPVs	Loaded vehicle weight	150,000	US06	20~~.0~~

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

(C) *SFTP ~~II~~ NMOG+NOx and CO Exhaust Emission Standards for Medium-Duty Vehicles.* The following standards are the maximum NMOG+NOx and CO composite emission values for full useful life of 2016 and subsequent model-year medium-duty LEV III ULEVs and SULEVs from 8,501 through 14,000 pounds GVWR when operating on ~~any~~ the same gaseous or liquid fuel they use for FTP certification. In the case of flex-fueled vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2. The following composite emission standards do not apply to MDPVs subject to the emission standards presented in subsections (a)(7)(A) and (a)(7)(B).

SFTP NMOG+NOx and CO Composite Exhaust Emission Standards for 2016 and Subsequent Model ULEVs and SULEVs in the Medium-Duty Vehicle Class						
Vehicle Type	*Mileage for Compliance*	*HP/GVWR*[2]	*Test Cycle*[3,4,5]	*Vehicle Emission Category*[5~~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

[1] Manufacturers shall use Equation 1 in subsection (a)(7)(A)2 to calculate SFTP Composite Emission Values for each test group subject to the emission standards in this table. For MDVs 10,001-14,000 lbs. GVWR, the emission results from the UC test shall be used in place of results from the US06 test.

[2] *Power to Weight Ratio.* If all vehicles in a test group have a power to weight ratio at or below a threshold of 0.024, they may opt to run the US06 Bag 2 in lieu of the full US06 cycle. The cutoff is determined by using a ratio of the engine's maximum rated horsepower, as established by the engine manufacturer in the vehicle's Application for Certification, to the vehicle's GVWR in pounds and does not include any horsepower contributed by electric motors in the case of hybrid electric or plug-in hybrid electric vehicles. Manufacturers may opt to test to the full cycle regardless of the calculated ratio; in such case, manufacturers shall meet the emission standards applicable to vehicles with power-to-weight ratios greater than 0.024.

[3] *Test Weight*. Medium-duty vehicles are tested at their adjusted loaded vehicle weight (average of curb weight and GVWR).

[4] *Road Speed Fan.* Manufacturers have the option to use a road speed modulated fan as specified in § 86.107–96(d)(1) instead of a fixed speed fan for MDV SFTP testing.

[5] If a manufacturer provides an engineering evaluation for a test group showing that SC03 emissions are equivalent to or lower than FTP emissions, the FTP emission value may be used in place of the SC03 emission value when determining the composite emission value for that test group.

[5~~6~~] *Vehicle Emission Categories.* For MDVs 8,501-10,000 lbs. GVWR, for each model year, the percentage of MDVs certified to an SFTP emission category set forth in this section 1961.2 shall be equal to or greater than the total percentage certified to the FTP ULEV250, ULEV200, SULEV170, and SULEV150 emission categories; of these vehicles, the percentage of MDVs certified to an SFTP SULEV emission category shall be equal to or greater than the total percentage certified to both the FTP SULEV170 and SULEV150 emission categories. For MDVs 10,001-14,000 lbs. GVWR, for each model year, the percentage of MDVs certified to an SFTP emission category set forth in this section 1961.2 shall be equal to or greater than the total percentage certified to the FTP ULEV400, ULEV270, SULEV230, and SULEV200 emission categories; of these vehicles, the percentage of MDVs certified to an SFTP SULEV emission category shall be equal to or greater than the total percentage certified to both the FTP SULEV230 and SULEV200 emission categories.

(D) *SFTP PM Exhaust Emission Standards for Medium-Duty Vehicles.* The following standards are the maximum PM composite emission values for the full useful life of 2017 and subsequent model-year LEV III LEVs, ULEVs, and SULEVs when operating on ~~any~~ the same gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2. The following composite emission standards do not apply to MDPVs subject to the emission standards set forth in subsections (a)(7)(A) and (a)(7)(B).

SFTP PM Exhaust Emission Standards for 2017 and Subsequent Model Medium-Duty Vehicles[1]					
Vehicle Type	*Test Weight*	*Mileage for Compliance*	*Hp/GVWR*[2]	*Test Cycle*[3,4]	*PM (mg/mi)*
MDVs 8,501-10,000 lbs GVWR	Adjusted loaded vehicle weight	150,000	≤ 0.024	US06 Bag 2	7~~.0~~
			>0.024	US06	10~~.0~~
MDVs 10,001-14,000 lbs GVWR	Adjusted loaded vehicle weight	150,000	n/a	Hot 1435 UC (Hot 1435 LA92)	7~~.0~~

[1] Except for MDPVs subject to the emission standards set forth in subsection (a)(7)(B), MDVs certified to 150,000-mile FTP PM emission standards in subsection (a)(2) shall comply with the SFTP PM Exhaust Emission Standards in this table.

[2] *Power to Weight Ratio.* If all vehicles in a test group have a power to weight ratio at or below a threshold of 0.024, they may opt to run the US06 Bag 2 in lieu of the full US06 cycle. The cutoff is determined by using a ratio of the engine's horsepower to the vehicle's GVWR in pounds and does not include any horsepower contributed by electric motors in the case of hybrid electric or plug-in hybrid electric vehicles. Manufacturers may opt to test to the full cycle regardless of the calculated ratio; in such case, manufacturers shall meet the emission standards applicable to vehicles with power-to-weight ratios greater than 0.024.

[3] *Road Speed Fan.* Manufacturers have the option to use a road speed modulated fan as specified in § 86.107–96(d)(1) instead of a fixed speed fan for MDV SFTP testing.

[4] Manufacturers shall use Equation 1 above to calculate SFTP Composite PM Emission Values for each test group subject to the emission standards in this table. For MDVs 8,501-10,000 lbs. GVWR certifying to the US06 Bag 2 PM emission standard, the emission results from the US06 Bag 2 test shall be used in place of results from the full US06 test. For MDVs 10,001-14,000 lbs. GVWR, the emission results from the UC test shall be used in place of results from the US06 test.

(8) *Interim In-Use Compliance Standards*.

(A) *LEV III NMOG+NOx Interim In-Use Compliance Standards.* The following interim in-use compliance standards shall apply for the first two model years that a test group is certified to the LEV III standards.

1. *NMOG+NOx Interim In-Use Compliance Standards for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.* For the 2015 through 2019 model years, these standards shall apply.

Emission Category	Durability Vehicle Basis (miles)	LEV III PCs, LDTs, and MDPVs
		NMOG + NOx (g/mi)
LEV160	150,000	n/a
ULEV125	150,000	n/a
ULEV70	150,000	0.~~100~~098
ULEV50	150,000	0.070
SULEV30	150,000	0.04~~0~~2[1]
SULEV20	150,000	0.0~~30~~28[1]

[1]not applicable to test groups that receive PZEV credits

* * * *

(C) SFTP *Interim In-Use Compliance Standards.*

* * * *

2. Test groups certified prior to the 202~~0~~1 model year will be allowed an in-use compliance standard for PM for the first five model years that they are certified to the SFTP PM standard.

* * * *

(10) *Requirement to Generate a Partial ZEV Allowance.* For the 2015 through 2017 model years, a manufacturer that certifies to the LEV III SULEV30 or the LEV III SULEV20 standards ~~shall~~ may also generate a partial ZEV allocation according to the criteria set forth in section C.3 of the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes."

* * * *

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

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

(A) The fleet average non-methane organic gas plus oxides of nitrogen exhaust mass emission values from the passenger cars, light-duty trucks, and medium-duty passenger vehicles that are produced and delivered for sale in California each model year by a manufacturer other than a small volume manufacturer shall not exceed:

FLEET AVERAGE NON-METHANE ORGANIC GAS PLUS OXIDES OF NITROGEN EXHAUST MASS EMISSION REQUIREMENTS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY PASSENGER VEHICLES (150,000 mile Durability Vehicle Basis)		
Model Year	*Fleet Average NMOG + NOx (grams per mile)*	
	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 subsection 1961(a)(b)(1)(A). A manufacturer must either comply with the NMOG+NOx fleet average requirements for both its PC/LDT1 fleet and its LDT2/MDPV fleet or comply with the NMOG fleet average requirements for both its PC/LDT1 fleet and its LDT2/MDPV fleet. A manufacturer must calculate its fleet average NMOG+NOx values using the applicable full useful standards.

1. ~~*Pooling Provision.*~~

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

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

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

~~b. A manufacturer that selects compliance Option 2 must notify the Executive Officer of that selection in writing prior to the start of the applicable model year or must comply with Option 1.~~

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

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

2. *PZEV Anti-Backsliding Requirement*. In the 2018 and subsequent model years, a manufacturer must produce and deliver for sale in California a minimum percentage of its passenger car and light-duty truck fleet that certifies to SULEV30 and SULEV20 standards. This minimum percentage must be equal to the average percentage of PZEVs produced and deliver for sale in California for that manufacturer ~~based~~ for the 2015 through 2017 model year. ~~For the 2018 model year, a~~ A manufacturer may calculate this average percentage using the projected sales for these ~~2017~~ model years in lieu of actual sales.

(B) *Calculation of Fleet Average NMOG + NOx Value.*

1. *Basic Calculation.*

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

$$(\Sigma\ [\text{Number of vehicles in a test group excluding off-vehicle charge capable hybrid electric vehicles} \times \text{applicable emission standard}] +$$
$$\Sigma\ [\text{Number of off-vehicle charge capable hybrid electric vehicles in a test group} \times \text{HEV NMOG+NOx contribution factor}]) \div$$

Total Number of PCs plus LDT1s Produced and Delivered for sale in California, Including ZEVs and HEVs

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

(Σ [Number of vehicles in a test group <u>excluding off-vehicle charge capable hybrid electric vehicles</u> x applicable emission standard] +
Σ [Number of <u>off-vehicle charge capable</u> hybrid electric vehicles in a test group x HEV NMOG factor]) ÷
Total Number of LDT2s plus MDPVs Produced and Delivered for sale in California, Including ZEVs and HEVs

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

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 model year federally-certified vehicles ~~(AB 965 vehicles only)~~[2]	All	Sum of the NMOG and NOx Federal Emission Standards to which Vehicle is Certified	Sum of the 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 subsection 1961(a)(1); 2015 and subsequent model year vehicles certified to the "LEV III" standards in subsection 1961.2(a)(1)	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 subsection (a)(9), the applicable emission standard value shall be the emission standard value set forth in this table minus 5 mg/mi.

~~[2] "AB 965 vehicles" are those certified in accordance with the "Guidelines for Certification of 2003 and Subsequent Model-Year Federally Certified Light-Duty Motor Vehicles for Sale in California," incorporated by reference in section 2062.~~

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:

LEV160 HEV Contribution Factor = 0.160 - [(Zero-emission VMT Allowance) x 0.035]
ULEV125 HEV Contribution Factor = 0.125 - [(Zero-emission VMT Allowance) x 0.055]
ULEV70 HEV Contribution Factor = 0.070 - [(Zero-emission VMT Allowance) x 0.020]
ULEV50 HEV Contribution Factor = 0.050 - [(Zero-emission VMT Allowance) x 0.020]
SULEV30 HEV Contribution Factor = 0.030 - [(Zero-emission VMT Allowance) x 0.010]
SULEV20 HEV Contribution Factor = 0.020 - [(Zero-emission VMT Allowance) x 0.020]

Where the Zero-emission VMT Allowance for 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" and the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as applicable, except that for the purposes of this subsection (b)(1)(B)2, the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0. This subsection (b)(1)(B)2 shall only apply to off-vehicle charge capable HEVs certified to the LEV III standards set forth in subsection (a)(1).

~~3. *Federally Certified Vehicles.* A vehicle certified to the federal standards for a federal exhaust emissions bin in accordance with section H.1 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" shall use the sum of the corresponding LEV II NMOG and NOx emission category value set forth in subsection (b)(1)(B)1.c for the fleet average calculation. If a vehicle is certified to 150,000 mile standards for a federal exhaust emission bin and the corresponding California NMOG+NOx emission category is a LEV III category, it may use the emission standard value for that LEV III category as set forth in subsection (b)(1)(B)1.c.~~

* * * *

(3) *LEV III Phase-In Requirements for Medium-Duty Vehicles, Other than Medium-Duty Passenger Vehicles*.

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

Model Year	*Vehicles Certified to §1961.2(a)(1) (%)*				*Vehicles Certified to §1956.8(c) or (h) (%)*
	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	ULEV
2015	40	60	0	0	100
2016	20	60	20	0	100
2017	10	50	40	0	100
2018	0	40	50	10	100
2019	0	30	40	30	100
2020	0	20	30	50	100
2021	0	10	20	70	100
2022 +	0	0	10	90	100

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(c) *Calculation of NMOG + NOx Credits/Debits*

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

(A) In ~~2015~~2016 and subsequent model years, a manufacturer that produces and delivers for sale in California MDVs, other than MDPVs, in excess of the equivalent requirements for LEV III vehicles certified to the exhaust emission standards set forth in subsection (a)(1), shall receive "Vehicle-Equivalent Credits" (or "VECs") calculated in accordance with the following equation, where the term "produced" means produced and delivered for sale in California:

{~~[~~(1.2) x [(No. of ULEV340s and ULEV570s Produced excluding HEVs) +
(No. of ULEV340 HEVs x HEV VEC factor for ULEV340s) +
(No. of ULEV570 HEVs x HEV VEC factor for ULEV570s)] –
(Equivalent No. of ULEV340s and ULEV570s Required to be Produced)} +

{[(1.4) x [(No. of ULEV250s and ULEV400s Produced excluding HEVs) +
(No. of ULEV250 HEVs x HEV VEC factor for ULEV250s) +
(No. of ULEV400 HEVs x HEV VEC factor for ULEV400s)] -
[(1.4) x (Equivalent No. of ULEV250s and ULEV270s Required to be Produced)]} +

{[(1.5) x [(No. of ULEV200s and ULEV270s Produced excluding HEVs) +
(No. of ULEV200 HEVs x HEV VEC factor for ULEV200s) +
(No. of ULEV270 HEVs x HEV VEC factor for ULEV270s)] -
[(1.5) x (Equivalent No. of ULEV200s and ULEV270s Required to be Produced)]} +

{[(1.6) x [(No. of SULEV170s and SULEV230s Produced excluding HEVs) +
(No. of SULEV170 HEVs x HEV VEC factor for SULEV170s) +
(No. of SULEV230 HEVs x HEV VEC factor for SULEV230s)] -
[(1.6) x [(Equivalent No. of SULEV170s and SULEV230s Required to be
Produced)]} +

{[(1.7) x [(No. of SULEV150s and SULEV200s Produced excluding HEVs) +
(No. of SULEV150 HEVs x HEV VEC factor for SULEV150s) +
(No. of SULEV200 HEVs x HEV VEC factor for SULEV200s)] -
[(1.7) x [(Equivalent No. of SULEV150s and SULEV200s Required to be
Produced)]} +

[(2.0) x (No. of ZEVs Certified and Produced as MDVs)].

(B) *MDV HEV VEC factor.* The MDV HEV VEC factor is calculated as follows:

For ULEV340s: $1+\left[\frac{(ULEV340\ standard-ULEV250\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV340\ standard}\right]$;

For ULEV250s: $1+\left[\frac{(ULEV250\ standard-ULEV200\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV250\ standard}\right]$;

For ULEV200s: $1+\left[\frac{(ULEV200\ standard-SULEV170\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV3200\ standard}\right]$;

For SULEV170s: $1+\left[\frac{(SULEV170\ standard-SULEV150\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV170\ standard}\right]$;

For SULEV150s: $1+\left[\frac{(SULEV150\ standard-ZEV\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV150\ standard}\right]$;

For ULEV570s: $1+\left[\frac{(ULEV570\ standard-ULEV400\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV570\ standard}\right]$;

For ULEV400s: $1+\left[\frac{(ULEV400\ standard-ULEV270\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV400\ standard}\right]$;

For ULEV270s: $1+\left[\frac{(ULEV270\ standard-SULEV230\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV270\ standard}\right]$;

For SULEV230s: $1+\left[\frac{(SULEV230\ standard-SULEV200\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV230\ standard}\right]$

For SULEV200s: $1+\left[\frac{(SULEV200\ standard-ZEV\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV200\ standard}\right]$

where "Zero-emission VMT Allowance" for an HEV is determined in accordance with section C of the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.1, or the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.2, as applicable, except that for the purposes of this subsection (c)(2)(B), the maximum allowable Zero-emission VMT Allowance that may be used in these equations is 1.0.

* * * *

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

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

3. Adopt new title 13, CCR, section 1961.3 to read as follows: (Note: the entire text of section 1961.3 set forth below is new language proposed to be added to the California Code of Regulations.)

§ 1961.3. Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2017 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

* * * *

(a) *Greenhouse Gas Emission Requirements.*

* * * *

(5) *Calculation of Fleet Average Carbon Dioxide Value.*

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

Option 1: the total number of passenger cars, light-duty trucks, and medium-duty passenger vehicles that are certified to the California exhaust emission standards in section 1961.3, and are produced and delivered for sale in California; or

Option 2: the total number of passenger cars, light-duty trucks, and medium-duty passenger vehicles that are certified to the California exhaust emission standards in this section 1961.3, and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

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

2. When a manufacturer is demonstrating compliance using Option 2 for a given model year, the term "in California" as used in section 1961.3 means California, the District of Columbia, and all states that have adopted

California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

3. A manufacturer that selects compliance Option 2 must provide to the Executive Officer separate values for the number of vehicles in each model type and footprint value produced and delivered for sale in the District of Columbia and for each individual state within the average and the City CO_2 Value and Highway CO_2 exhaust emission values that apply to each model type and footprint value.

* * * *

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

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4. Amend title 13, CCR, section 1976 to read as follows:

§ 1976. Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions.

* * * *

(b)(1) Evaporative emissions for 1978 and subsequent model gasoline-fueled, 1983 and subsequent model liquefied petroleum gas-fueled, and 1993 and subsequent model alcohol-fueled motor vehicles and hybrid electric vehicles subject to exhaust emission standards under this article, except petroleum-fueled diesel vehicles, compressed natural gas-fueled vehicles, hybrid electric vehicles that have sealed fuel systems which can be demonstrated to have no evaporative emissions, and motorcycles, shall not exceed the following standards:

* * * *

(G) For 2015 and subsequent model motor vehicles, the following evaporative emission requirements apply:

* * * *

1. A manufacturer must certify all vehicles subject to this section to the emission standards specified in either Option 1 or Option 2 below.

* * * *

b. *Option 2*. The evaporative emissions from 2015 and subsequent model motor vehicles, tested in accordance with the test procedure sequence described in the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," incorporated by reference in section 1976(c), shall not exceed:

* * * *

[5] *Calculation of Hydrocarbon Credits or Debits for the Fleet-Average Option*.

(1) *Calculation of Hydrocarbon Credits or Debits*. For each emission standard category in the model year, a manufacturer shall calculate the hydrocarbon credits or debits, as follows:

[(Applicable Hydrocarbon Emission Standard for the Emission Standard Category) – (Manufacturer's Fleet-Average Hydrocarbon Emission Value for the Emission Standard Category)] X (Total Number of Affected Vehicles)

where "Total Number of Affected Vehicles" = the total number of vehicles in the evaporative families participating in the fleet-average option, which are produced and delivered for sale in California, for the emission standard category of the given model year.

A negative number constitutes hydrocarbon debits, and a positive number constitutes hydrocarbon credits accrued by the manufacturer for the given model year. Hydrocarbon credits earned in a given

model year shall retain full value through the fifth model year after they are earned. At the beginning of the sixth model year, the hydrocarbon credits will have no value.

(2) *Procedure for Offsetting Hydrocarbon Debits*. A manufacturer shall offset hydrocarbon debits with hydrocarbon credits for each emission standard category within three model years after the debits have been incurred. If total hydrocarbon debits are not equalized within three model years after they have been incurred, the manufacturer shall be subject to the Health and Safety Code section 43211 civil penalties applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the hydrocarbon debits are not equalized by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's emission standards shall be determined by dividing the total amount of hydrocarbon debits for the model year in the emission standard category by the applicable hydrocarbon emission standard for the model year in which the debits were first incurred.

Additionally, ~~a manufacturer may use the excess hydrocarbon credits from the emission standard categories of (1) passenger cars and light-duty trucks 6,000 pounds GVWR and under, and 0 - 3,750 pounds LVW and (2) light-duty trucks 6,000 pounds GVWR and under, and 3,751 – 5,750 pounds LVW to equalize the hydrocarbon debits that remain at the end of the three model year offset period of any emission standard category.~~ to equalize the hydrocarbon debits that remain at the end of the three model year offset period: (1) hydrocarbon credits may be exchanged between passenger cars and light-duty trucks 6,000 pounds GVWR and under and 0-3,750 pounds LVW, and light-duty trucks 6,000 pounds GVWR and under and 3,751-5,750 pounds LVW and (2) hydrocarbon credits may be exchanged between light-duty trucks 6,001-8,500 pounds GVWR and medium-duty passenger vehicles, and medium-duty vehicles and heavy-duty vehicles.

[6] *Vehicle Canister Bleed Emission*. Compliance with the canister bleed emission standard shall be determined based on the Bleed Emission Test Procedure described in the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," incorporated by reference in section 1976(c), and demonstrated on a stabilized canister system. Vehicles with a non-integrated refueling canister-only system are exempt from the canister bleed emission standard.

2. *Phase-In Schedule*. For each model year, a manufacturer shall certify, at a minimum, the specified percentage of its vehicle fleet to the evaporative emission standards set forth in section 1976(b)(1)(G)1.a. or section 1976(b)(1)(G)1.b., according to the schedule set forth below. For the purpose of this section 1976(b)(1)(G)2., the manufacturer's vehicle fleet consists of the vehicles produced and delivered for sale by the manufacturer in California that are subject to the emission standards in section 1976(b)(1)(G)1. All 2015 through 2022 model motor vehicles that are not subject to these standards pursuant to the phase-in schedule shall comply with the requirements for 2004 through 2014 model motor vehicles, as described in section 1976(b)(1)(F).

Model Years	*Minimum Percentage of Vehicle Fleet* [(1)(2)]
2015, 2016, and 2017	Average of vehicles certified to section 1976(b)(1)(E) in model years 2012, 2013, and 2014[(3)(4)]
2018 and 2019	60
2020 and 2021	80
2022 and subsequent	100

1 For the 2018 through 2022 model years only, a manufacturer may use an alternate phase-in schedule to comply with the phase-in requirements. An alternate phase-in schedule must achieve equivalent compliance volume by the end of the last model year of the scheduled phase-in (2022). The compliance volume is the number calculated by multiplying the percent of vehicles (based on the manufacturer's projected sales volume of all vehicles) meeting the new requirements in each model year by the number of years implemented prior to and including the last model year of the scheduled phase-in, then summing these yearly results to determine a cumulative total. The cumulative total of the five year (60/60/80/80/100) scheduled phase-in set forth above is calculated as follows: (60*5 years) + (60*4 years) + (80*3 years) + (80*2 years) + (100*1 year) = 1040. Accordingly, the required cumulative total for any alternate phase-in schedule of these emission standards is 1040. The Executive Officer shall consider acceptable any alternate phase-in schedule that results in an equal or larger cumulative total by the end of the last model year of the scheduled phase-in (2022).

2 Small volume manufacturers are not required to comply with the phase-in schedule set forth in this table. Instead, they shall certify 100 percent of their 2022 and subsequent model year vehicle fleet to the evaporative emission standards set forth in section 1976(b)(1)(G)1.a. or section 1976(b)(1)(G)1.b.

3 The percentage of vehicle fleet averaged across the 2015, 2016, and 2017 model years shall be used to determine compliance with this requirement.

~~3~~4 The minimum percentage required in the 2015, 2016, and 2017 model years is determined by averaging the percentage of vehicles certified to the emission standards in section 1976(b)(1)(E) in each of the manufacturer's 2012, 2013, and 2014 model year vehicle fleets. For the purpose of calculating this average, a manufacturer shall use the percentage of vehicles produced and delivered for sale in California for the 2012, ~~and~~ 2013, and 2014 model years~~, and the percentage of projected sales in California for the 2014 model year.~~. A manufacturer may calculate this average percentage using the projected sales for these model years in lieu of actual sales.

3. *Carry-Over of 2014 Model-Year Evaporative Families Certified to the Zero-Fuel Evaporative Emission Standards*. A manufacturer may carry over 2014 model motor vehicles certified to the zero-fuel (0.0 grams per test) evaporative emission standards set forth in section 1976(b)(1)(E) through the 2018 model year and be considered compliant with the requirements of section 1976(b)(1)(G)1. If the manufacturer chooses to participate in the fleet-average option for the highest whole vehicle diurnal plus hot soak emission standard, the following family emission limits are assigned to these evaporative families for the calculation of the manufacturer's fleet-average hydrocarbon emission value.

Vehicle Type	*Highest Whole Vehicle Diurnal + Hot Soak (grams per test)*
Passenger cars	0.300
Light-duty trucks 6,000 lbs. GVWR and under, and 0 - 3,750 lbs. LVW	0.300
Light-duty trucks 6,000 lbs. GVWR and under, and 3,751 – 5,750 lbs. LVW	0.400
Light-duty trucks 6,001 - 8,500 lbs. GVWR	0.500

4. *Pooling Provision*. The following pooling provision applies to the fleet-average option for the Highest Whole Vehicle Diurnal Plus Hot Soak Emission Standard in section 1976(b)(1)(G)1.b. and to the phase-in requirements in section 1976(b)(1)(G)2.

a. For the fleet-average option set forth in section 1976(b)(1)(G)1.b., a manufacturer must demonstrate compliance, for each model year, based on one of two options applicable throughout the model year, either:

Pooling Option 1: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section 1976(b)(1)(G)1.b., and are produced and delivered for sale in California; or

Pooling Option 2: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section 1976(b)(1)(G)1.b., and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's evaporative emission standards set forth in section 1976(b)(1)(G)1. for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

b. For the phase-in requirements in section 1976(b)(1)(G)2., a manufacturer must demonstrate compliance, for each model year, based on one of two options applicable throughout the model year, either:

Pooling Option 1: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section 1976(b)(1)(G)1., and are produced and delivered for sale in California; or

Pooling Option 2: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section 1976(b)(1)(G)1., and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's evaporative emission standards set forth in section 1976(b)(1)(G)1. for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

c. A manufacturer that selects Pooling Option 2 must notify the Executive Officer of that selection in writing prior to the start of the applicable model year if the manufacturer had not selected the Pooling Option 2 for the previous model year, or must comply with Pooling Option 1.

d. When a manufacturer is demonstrating compliance using Pooling Option 2 for a given model year, the term "in California" as used in section 1976(b)(1)(G) means California, the District of Columbia, and all states that have adopted California's evaporative emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

e. A manufacturer that selects Pooling Option 2 must provide to the Executive Officer separate values for the number of vehicles in each evaporative family produced and delivered for sale in the District of Columbia and for each individual state within the average and the emission standard category and family emission limit value to which each evaporative family certifies. A manufacturer must group data submitted in accordance with this subsection (b)(1)(G)4 for the District of Columbia in a single document. For each individual state within the average, a manufacturer must group data submitted in accordance with this subsection (b)(1)(G)4 so that all data applicable to a specific state is contained in a single document.

5. Optional Certification for 2014 Model Motor Vehicles. A manufacturer may optionally certify its 2014 model motor vehicles to the evaporative emission standards set forth in section 1976(b)(1)(G)1.

* * * *

Note: Authority cited: Sections 39500, 39600, 39601, 39667, 43013, 43018, 43101, 43104, 43105, 43106 and 43107, Health and Safety Code. Reference: Sections 39002, 39003, 39500, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43204 and 43205 Health and Safety Code.

5. Amend title 13, CCR, section 1978 to read as follows:

§1978. Standards and Test Procedures for Vehicle Refueling Emissions.

* * * *

(4) Beginning with model year 2015, all vehicles subject to the refueling emission standards in section 1978(a)(1) shall demonstrate compliance except incomplete vehicles of 14,000 pounds gross vehicle weight rating or less that are ~~optionally certified to complete heavy-duty vehicle standards under the provisions of 40 CFR §86.1801-01(c)(2)~~certified as incomplete vehicles for the purposes of evaporative emissions testing as set forth in the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," incorporated by reference in section 1976.

* * * *

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

California Environmental Protection Agency
AIR RESOURCES BOARD

PROPOSED 15-DAY MODIFICATIONS

CALIFORNIA 2001 THROUGH 2014 MODEL CRITERIA POLLUTANT EXHAUST EMISSION STANDARDS AND TEST PROCEDURES AND ~~FOR~~ 2009 THROUGH 2016 ~~AND SUBSEQUENT~~ MODEL GREENHOUSE GAS EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES

Adopted:	August 5, 1999
Amended:	December 27, 2000
Amended:	July 30, 2002
Amended:	September 5, 2003 (corrected February 20, 2004)
Amended:	May 28, 2004
Amended:	August 4, 2005
Amended:	June 22, 2006
Amended:	October 17, 2007
Amended:	May 2, 2008
Amended:	December 2, 2009
Amended:	February 22, 2010
Amended:	March 29, 2010
Amended:	September 27, 2010
Amended:	[INSERT DATE OF AMENDMENT]

Note: The following text contains staff's suggested modifications to these test procedures as originally proposed December 7, 2011. The proposed amendments to this document are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions compared to the test procedures as last amended September 27, 2010. Modifications to the originally proposed language made available in connection with this "15-Day Notice" are shown in double underline to indicate additions and ~~double strikeout~~ to indicate deletions compared to the test procedures as proposed December 7, 2011. Staff is proposing modifications to limited portions of the original proposal; for some portions where no modifications are proposed the text has been omitted and the omission indicated by "* * * *."

* * * *

Amend "CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 2001 AND SUBSEQUENT MODEL PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES, " as incorporated by reference in Title 13, California Code of Regulations, Section 1961(d) to read:

* * * *

CALIFORNIA 2001 THROUGH 2014 MODEL CRITERIA POLLUTANT EXHAUST EMISSION STANDARDS AND TEST PROCEDURES AND ~~FOR~~ 2009 THROUGH 2016 ~~AND SUBSEQUENT~~ MODEL GREENHOUSE GAS EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES

* * * *

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

* * * *

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

* * * *

2. Supplemental FTP General Provisions for California.

2.1 Amend 40 CFR §86.1810-01(i) as follows:

* * * *

2.1.2 ~~Subparagraph (4) [No change.]~~ Delete subparagraph (4); replace with: The SFTP standards apply to PCs and LDTs certified on alternative fuels. The standards also apply to the gasoline and diesel fuel operation of fuel-flexible PCs and LDTs, and dual-fuel PCs and LDTs.

* * * *

2.1.4 Delete subparagraph (6); replace with: **Air to Fuel Ratio Requirement.** With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions ("tip-in" or "tip-out" conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque) with a tolerance of ~~six~~ three percent of the fuel consumption. The emission control system shall remain in the operating mode producing the best balance of HC, CO, and NOx catalyst efficiency (e.g.

closed loop/stoichiometric operation on 3-way catalyst systems) under all conditions, except when required for engine component temperature protection, driver power request, start enrichment requirements, fuel shut-off situations (decelerations, rev limiter, torque management, etc.), or certain component malfunctions preventing safe closed-loop operation. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

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E. California Exhaust Emission Standards.

* * * *

2. Emission Standards Phase-In Requirements for Manufacturers

2.1 Fleet Average NMOG Requirements for Passenger Cars and Light-Duty Trucks.

2.1.1 The fleet average non-methane organic gas exhaust mass emission values from the passenger cars and light-duty trucks produced and delivered for sale in California each model year by a manufacturer other than a small volume manufacturer or an independent low volume manufacturer shall not exceed:

FLEET AVERAGE NON-METHANE ORGANIC GAS EXHAUST MASS EMISSION REQUIREMENTS FOR LIGHT-DUTY VEHICLE WEIGHT CLASSES (50,000 mile Durability Vehicle Basis)		
Model Year	Fleet Average NMOG (g/mi)	
	All PCs; LDTs 0-3750 lbs. LVW	LDTs 3751 lbs. LVW - 8500 lbs. GVWR
2001	0.070	0.098
2002	0.068	0.095
2003	0.062	0.093
2004	0.053	0.085
2005	0.049	0.076
2006	0.046	0.062
2007	0.043	0.055
2008	0.040	0.050
2009	0.038	0.047
2010-2014[1] ~~+~~	0.035	0.043

[1] For the 2014 model year only, a manufacturer may comply with the fleet average NMOG+NOx values in the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," in lieu of complying with the NMOG fleet average values in this table. A manufacturer must either comply with the NMOG+NOx fleet average requirements for both its PC/LDT1 fleet and its LDT2/MDPV fleet or comply with the NMOG fleet average requirements for both its PC/LDT1 fleet and its LDT2/MDPV fleet. A manufacturer must calculate its fleet average NMOG+NOx values using the applicable full useful standards.

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California Environmental Protection Agency
AIR RESOURCES BOARD

PROPOSED 15-DAY MODIFICATIONS

CALIFORNIA 2015 AND SUBSEQUENT MODEL CRITERIA POLLUTANT EXHAUST EMISSION STANDARDS AND TEST PROCEDURES AND 2017 AND SUBSEQUENT MODEL GREENHOUSE GAS EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES

Adopted: [INSERT DATE OF ADOPTION]

NOTE: The following text contains staff's suggested modifications to these test procedures as originally proposed December 7, 2011. Modifications to the originally proposed language made available in connection with this "15-Day Notice" are shown in <u>double underline</u> to indicate additions and ~~double strikeout~~ to indicate deletions compared to the test procedures as proposed December 7, 2011. Staff is proposing modifications to limited portions of the original proposal; for some portions where no modifications are proposed the text has been omitted and the omission indicated by "* * * *" or [No change].

Amend "CALIFORNIA 2015 AND SUBSEQUENT MODEL CRITERIA POLLUTANT EXHAUST EMISSION STANDARDS AND TEST PROCEDURES AND 2017 AND SUBSEQUENT MODEL GREENHOUSE GAS EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES," as incorporated by reference in Title 13, California Code of Regulations, Section 1961.2(d) to read:

* * * *

CALIFORNIA 2015 AND SUBSEQUENT MODEL CRITERIA POLLUTANT EXHAUST EMISSION STANDARDS AND TEST PROCEDURES AND 2017 AND SUBSEQUENT MODEL GREENHOUSE GAS EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES

* * * *

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

* * * *

B. Definitions, Acronyms and Abbreviations

* * * *

2. California Definitions.

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"**Small volume manufacturer**" means any manufacturer whose projected or combined California sales of passenger cars, light-duty trucks, medium-duty vehicles, heavy-duty vehicles and heavy-duty engines in its product line are fewer than 4,500 units based on the average number of vehicles sold for the three previous consecutive model years for which a manufacturer seeks certification. A manufacturer's California sales shall consist of all vehicles or engines produced by the manufacturer and delivered for sale in California, except that vehicles or engines produced by the manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as California sales of the marketing manufacturer.

For the 2015 through 2017 model years, the annual sales from different firms shall be aggregated in the following situations: (1) vehicles produced by two or more firms, one of which is 10% or greater part owned by another; or (2) vehicles produced by any two or more firms if a third party has equity ownership of 10% or more in each of the firms; or (3) vehicles produced by two or more firms having a common corporate officer(s) who is (are) responsible for the overall direction of the companies; or (4) vehicles imported or distributed by any firms

where the vehicles are manufactured by the same entity and the importer or distributor is an authorized agent of the entity.

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

* * * *

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

* * * *

2. Supplemental FTP General Provisions for California.

2.1 Amend 40 CFR §86.1810-09(i) as follows:

2.1.1 Delete subparagraphs (1) through (3) [The implementation schedules for SFTP are set forth in section E.2.4 of these test procedures.]

2.1.2 Delete subparagraph (4); replace with: The SFTP standards set forth in section E.1.2 of these test procedures apply to PCs, LDTs, and MDVs certified on alternative fuels. The standards also apply to the gasoline and diesel fuel operation of fuel-flexible PCs, LDTs, and MDVs, and dual-fuel PCs, LDTs, and MDVs.

2.1.3 Subparagraph (5) [No change.]

2.1.4 Delete subparagraph (6); replace with: **Air to Fuel Ratio Requirement.** With the exception of cold-start conditions, warm-up conditions and rapid-throttle motion conditions ("tip-in" or "tip-out" conditions), the air to fuel ratio shall not be richer at any time than, for a given engine operating condition (e.g., engine speed, manifold pressure, coolant temperature, air charge temperature, and any other parameters), the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of ~~three~~ six percent of the fuel consumption. The emission control system shall remain in the operating mode producing the best balance of HC, CO, and NOx catalyst efficiency (e.g. closed loop/stoichiometric operation on 3-way catalyst systems) under all conditions, except when required for engine component temperature protection, driver power request, start enrichment requirements, fuel shut-off situations (decelerations, rev limiter, torque management, etc.), or certain component malfunctions preventing safe closed-loop operation. The Executive Officer may approve a manufacturer's request for approval to use additional enrichment in subsequent testing if the manufacturer demonstrates that additional enrichment is needed to protect the vehicle, occupants, engine, or emission control hardware.

2.1.5 Delete subparagraph (7); replace with: **Single Roll Electric Dynamometer Requirement.** For all vehicles certified to the SFTP standards, a single-roll electric dynamometer or a dynamometer that produces equivalent results, as set forth in 40 CFR §86.108-00, must be used for all types of emission testing to determine compliance with the applicable emission standards.

2.1.6 Delete subparagraph (8); ~~replace with: **Small Volume Provisions.** Small volume manufacturers of PCs, LDTs, and MDVs shall certify 100% of their PC, LDT, and MDV fleet in 2022 and subsequent model years under the 150,000-mile SFTP requirements in section E.1.2.2.~~

2.1.7 Subparagraphs (9) through (12) [No change.]

2.1.8 Subparagraph (13) [No change, except that references to Tier 2 and non-Tier 2 vehicles shall mean California LEV II and LEV III vehicles and references to NMHC+NOx shall mean NMOG+NOx.]

2.1.9 Subparagraph (14); references to Tier 2 and non-Tier 2 vehicles shall mean California LEV II and LEV III vehicles.

Add the following sentence: The above provisions shall not apply to vehicles powered by "lean-burn" engines or Diesel-cycle engines. A "lean-burn" engine is defined as an Otto-cycle engine designed to run at an air-fuel ratio significantly greater than stoichiometry during the large majority of its operation.

2.2 For gasoline and diesel-fueled LEV II and LEV III vehicles, manufacturers may measure non-methane hydrocarbons (NMHC) in lieu of NMOG. Manufacturers shall multiply NMHC measurements by an adjustment factor of 1.03 before adding it to the measured NOx emissions and comparing with the NMOG+NOx standard to determine compliance with that standard.

E. California Exhaust Emission Standards.

* * * *

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, 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 ~~2004~~ 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 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.

2015 – 2019 model-year LEV II LEV vehicles may be certified to the NMOG+NOx numerical values for LEV160, LEV395, or LEV630, as applicable, in section E.1.1.2 and the corresponding NMOG+NOx numerical values in section E.1.4.2, in lieu of the separate NMOG and NOx exhaust emission standards in this section E.1.1.1 and the corresponding NMOG+NOx numerical values in section E.1.4.1; LEV II ULEV vehicles may be certified to the NMOG+NOx numerical values for ULEV125, ULEV340, or ULEV570, as applicable, in section E.1.1.2 and the corresponding NMOG+NOx numerical values in section E.1.4.2, in lieu of the separate NMOG and NOx exhaust emission standards in this section E.1.1.1 and the corresponding NMOG+NOx numerical values in section E.1.4.1; and LEV II SULEV vehicles may be certified to the NMOG+NOx numerical values for SULEV30, SULEV170, or SULEV230, as applicable, in section E.1.1.2 and the corresponding NMOG+NOx numerical values in section E.1.4.2, in lieu of the separate NMOG and NOx exhaust emission standards in this section E.1.1.1 and the corresponding NMOG+NOx numerical values in section E.1.4.1.

LEV II Exhaust Mass Emission Standards for New ~~2004~~ 2015 Through 2019 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicle

Vehicle Type	Durability Vehicle Basis (mi)	Vehicle Emission Category	NMOG (g/mi)	Carbon Monoxide (g/mi)	Oxides of Nitrogen (g/mi)	Formaldehyde (mg/mi)	Particulates (g/mi)
All PCs; LDTs 8,500 lbs. GVWR or less Vehicles in this category are tested at their loaded vehicle weight.	50,000	LEV	0.075	3.4	0.05	15	n/a
		LEV, Option 1	0.075	3.4	0.07	15	n/a
		ULEV	0.040	1.7	0.05	8	n/a
	120,000	LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	0.090	4.2	0.10	18	0.01
		ULEV	0.055	2.1	0.07	11	0.01
		SULEV	0.010	1.0	0.02	4	0.01
	150,000 (optional)	LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	0.090	4.2	0.10	18	0.01
		ULEV	0.055	2.1	0.07	11	0.01
		SULEV	0.010	1.0	0.02	4	0.01
MDVs 8,501 - 10,000 lbs. GVWR Vehicles in this category are tested at their adjusted loaded vehicle weight.	120,000	LEV	0.195	6.4	0.2	32	0.12
		ULEV	0.143	6.4	0.2	16	0.06
		SULEV	0.100	3.2	0.1	8	0.06
	150,000 (Optional)	LEV	0.195	6.4	0.2	32	0.12
		ULEV	0.143	6.4	0.2	16	0.06
		SULEV	0.100	3.2	0.1	8	0.06

Vehicle Type	Durability Vehicle Basis (mi)	Vehicle Emission Category	NMOG (g/mi)	Carbon Monoxide (g/mi)	Oxides of Nitrogen (g/mi)	Formaldehyde (mg/mi)	Particulates (g/mi)
MDVs 10,001-14,000 lbs. GVWR Vehicles in this category are tested at their adjusted loaded vehicle weight.	120,000	LEV	0.230	7.3	0.4	40	0.12
		ULEV	0.167	7.3	0.4	21	0.06
		SULEV	0.117	3.7	0.2	10	0.06
	150,000 (Optional)	LEV	0.230	7.3	0.4	40	0.12
		ULEV	0.167	7.3	0.4	21	0.06
		SULEV	0.117	3.7	0.2	10	0.06

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

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

1.1.2.1.2.1 Beginning in the 2017 model year, a manufacturer, except a small volume manufacturer, shall certify a percentage of its medium-duty vehicle fleet to the following particulate standards ~~according to the following phase-in schedule~~. 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. This section E.1.1.2.1.2.1 shall not apply to medium-duty passenger vehicles.

~~LEV III Particulate Emission Standard Values and Phase-in for Medium-Duty Vehicles Other than Medium-Duty Passenger Vehicles~~			
~~Vehicle Type~~	~~Model Year~~	~~% of vehicles certified to a 8 mg/mi standard~~	~~% of vehicles certified to a 10 mg/mi standard~~
~~MDVs 8501 - 10,000 lbs. GVWR, excluding MDPVs~~ ~~Vehicles in this category are tested at their adjusted loaded vehicle weight~~	~~2017~~	~~10~~	~~n/a~~
	~~2018~~	~~20~~	~~n/a~~
	~~2019~~	~~40~~	~~n/a~~
	~~2020~~	~~70~~	~~n/a~~
	~~2021 and subsequent~~	~~100~~	~~n/a~~
~~MDVs 10,001 - 14,000 lbs. GVWR~~ ~~Vehicles in this category are tested at their adjusted loaded vehicle weight~~	~~2017~~	~~n/a~~	~~10~~
	~~2018~~	~~n/a~~	~~20~~
	~~2019~~	~~n/a~~	~~40~~
	~~2020~~	~~n/a~~	~~70~~
	~~2021 and subsequent~~	~~n/a~~	~~100~~

LEV III Particulate Emission Standard Values for Medium-Duty Vehicles, Other than Medium-Duty Passenger Vehicles	
Vehicle Type[1]	Particulates (mg/mi)
MDVs 8501 - 10,000 lbs. GVWR, excluding MDPVs	8
MDVs 10,001 - 14,000 lbs. GVWR	10

[1] Vehicles in these categories are tested at their adjusted loaded vehicle weight.

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	100

* * * *

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 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 model-year LEV III LEVs, ULEVs, and SULEVs when operating on ~~any~~ the same gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2.

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

Vehicle Type	*Durability Vehicle Basis (mi)*	*Vehicle Emission Category*[1]	*US06 Test (g/mi)*		*SC03 Test (g/mi)*	
			NM~~HC~~OG + NOx	*CO*	*NM~~HC~~OG + NOx*	*CO*
All PCs; LDTs 0- 8,500 lbs. GVWR; and MDPVs 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 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. In the case of fuel-flexible vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2.

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

Composite Emission Value = 0.28 x US06 + 0.37 x SC03 + 0.35 x FTP [Eq. 1]

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

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

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

If no vehicles in a test group have air conditioning units, the FTP cycle emission value can be used in place of the SC03 value in Equation 1. To determine compliance with the SFTP NMOG+NOx composite emission standard applicable to the model year, manufacturers shall use a sales-weighted fleet average of the NMOG+NOx composite emission values of every applicable test group. The sales-weighted fleet average shall be calculated using a combination of carry-over and new certification SFTP composite emission values (converted to NMOG+NOx, as applicable). LEV II test groups will use their emission values in the fleet average calculation but will not be considered LEV III test groups. Compliance with the CO composite emission standard cannot be demonstrated through fleet averaging. The NMOG+NOx sales-weighted fleet-average composite emission value for the fleet and the CO composite emission value for each test group shall not exceed:

SFTP NMOG+NOx and CO Composite Emission Standards for 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles (g/mi) [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]	***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
Vehicles in this category are tested at their loaded vehicle weight (curb weight plus 300 pounds).	***CO Composite Exhaust Emission Standard*** [7]										
	4.2										

[1] *Mileage for Compliance.* All test groups certifying to LEV III FTP emission standards on a 150,000-mile durability basis shall also certify to the SFTP on a 150,000-mile durability basis, as tested in accordance with these test procedures.

[2] *Determining NMOG+NOx Composite Emission Values of LEV II Test Groups.* For ~~carry-over~~ test groups certified to LEV II FTP emission standards, SFTP emission values shall be converted to NMOG+NOx and projected out to 120,000 miles or 150,000 miles (depending on LEV II FTP certification) using deterioration factors or aged components.~~,~~ NMHC emission values for the US06 and SC03 test cycles shall be converted to NMOG emission values by multiplying by a factor of 1.03. In lieu of deriving a deterioration factor specific to SFTP test cycles, carry-over test groups may use the applicable deterioration factor from the FTP cycle in order to determine the carry-over composite emission values for the purpose of the NMOG+NOx sales-weighted fleet-average calculation. If an SFTP full-useful life emission value is used to comply with SFTP 4k standards, that value may be used in the sales-weighted fleet-average without applying an additional deterioration factor.

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

[4] Test groups shall certify to bins in increments of 0.010 g/mi. Beginning with the 2018 model year, vehicles may not certify to bin values above a maximum of 0.180 g/mi.

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

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

where "n" = a manufacturer's total number of PC, LDT, and, if applicable, MDPV certification bins, in a given model year including carry-over certification bins, certifying to SFTP composite emission standards in that model year;

"number of vehicles in the test group" = the number of vehicles produced and delivered for sale in California in the certification test group; and

"Composite Value of Bin" = the numerical value selected by the manufacturer for the certification bin that serves as the emission standard for the vehicles in the test group with respect to all testing for test groups certifying to SFTP on a 150,000-mile durability basis, and the SFTP carry-over composite emission value, as described in footnote 7 of this table, for carry-over LEV II test groups.

[6] *Calculation of Fleet Average Total NMOG+NOx Credits or Debits.* A manufacturer shall calculate the total NMOG+NOx credits or debits, as follows:

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

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

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

[7] *Calculating the CO composite emission value.* Composite emission values for CO shall be calculated in accordance with Equation 1 above. Unlike the NMOG+NOx composite emission standards, manufacturers would not be able to meet the proposed CO composite emission standard through fleet averaging: each individual test group must comply with the standard. Test groups certified to 4,000-mile SFTP emission standards are not subject to this CO emission standard.

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 model-year LEV III LEVs, ULEVs, and SULEVs in the PC, LDT, and MDPV classes when operating on ~~any~~ the same gaseous or liquid fuel they use for FTP certification. In the case of flex-fueled vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2.

SFTP PM Exhaust Emission Standards for 2017 and Subsequent Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles[1]

Vehicle Type	*Test Weight*	*Mileage for Compliance*	*Test Cycle*	*PM (mg/mi)*
All PCs; LDTs 0-6,000 lbs GVWR	Loaded vehicle weight	150,000	US06	10~~.0~~
LDTs 6,001-8,500 lbs GVWR; MDPVs	Loaded vehicle weight	150,000	US06	20~~.0~~

[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.

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 model-year medium-duty LEV III ULEVs and SULEVs from 8,501 through 14,000 pounds GVWR

when operating on ~~any~~ the same gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles, SFTP compliance shall be demonstrated using the LEV III certification gasoline specified in Part II, Section A.100.3.1.2. 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 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*[~~5~~ 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

[1] Manufacturers shall use Equation 1 in subsection E.1.2.2.1.2 to calculate SFTP Composite Emission Values for each test group subject to the emission standards in this table. For MDVs 10,001-14,000 lbs. GVWR, the emission results from the UC test shall be used in place of results from the US06 test.

[2] *Power to Weight Ratio.* If all vehicles in a test group have a power to weight ratio at or below a threshold of 0.024, they may opt to run the US06 Bag 2 in lieu of the full US06 cycle. The cutoff is determined by using a ratio of the engine's maximum rated horsepower, as established by the engine manufacturer in the vehicle's Application for Certification, to the vehicle's GVWR in pounds and does not include any horsepower contributed by electric motors in the case of hybrid electric or plug-in hybrid electric vehicles. Manufacturers may opt to test to the full cycle regardless of the calculated ratio; in such case, manufacturers shall meet the emission standards applicable to vehicles with power-to-weight ratios greater than 0.024.

[3] *Test Weight*. Medium-duty vehicles are tested at their adjusted loaded vehicle weight (average of curb weight and GVWR).

[4] *Road Speed Fan.* Manufacturers have the option to use a road speed modulated fan as specified in § 86.107–96(d)(1) instead of a fixed speed fan for MDV SFTP testing.

[5] If a manufacturer provides an engineering evaluation for a test group showing that SC03 emissions will be equivalent to or lower than FTP emissions, the FTP emission value may be used in place of the SC03 emission value when determining the composite emission value for that test group.

[~~5~~6] *Vehicle Emission Categories.* For MDVs 8,501-10,000 lbs. GVWR, 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.

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 model-year LEV III LEVs, ULEVs, and SULEVs when operating on ~~any~~ the same gaseous or liquid fuel they use for FTP certification. In the case of fuel-flexible vehicles, SFTP compliance shall be demonstrated using the LEV

III certification gasoline specified in Part II, Section A.100.3.1.2. 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 Model Medium-Duty Vehicles[1]

Vehicle Type	*Test Weight*	*Mileage for Compliance*	*Hp/GVWR*[2]	*Test Cycle*[3,4]	*PM (mg/mi)*
MDVs 8,501-10,000 lbs GVWR	Adjusted loaded vehicle weight	150,000	≤ 0.024	US06 Bag 2	7~~.0~~
			>0.024	US06	10~~.0~~
MDVs 10,001-14,000 lbs GVWR	Adjusted loaded vehicle weight	150,000	n/a	Hot 1435 UC (Hot 1435 LA92)	7~~.0~~

[1] Except for MDPVs subject to the emission standards set forth in section E.1.2.2.2, MDVs certified to 150,000-mile FTP PM emission standards in section E.1.1.2 shall comply with the SFTP PM Exhaust Emission Standards in this table.

[2] *Power to Weight Ratio.* If all vehicles in a test group have a power to weight ratio at or below a threshold of 0.024, they may opt to run the US06 Bag 2 in lieu of the full US06 cycle. The cutoff is determined by using a ratio of the engine's horsepower to the vehicle's GVWR in pounds and does not include any horsepower contributed by electric motors in the case of hybrid electric or plug-in hybrid electric vehicles. Manufacturers may opt to test to the full cycle regardless of the calculated ratio; in such case, manufacturers shall meet the emission standards applicable to vehicles with power-to-weight ratios greater than 0.024.

[3] *Road Speed Fan.* Manufacturers have the option to use a road speed modulated fan as specified in § 86.107–96(d)(1) instead of a fixed speed fan for MDV SFTP testing.

[4] Manufacturers shall use Equation 1 above to calculate SFTP Composite PM Emission Values for each test group subject to the emission standards in this table. For MDVs 8,501-10,000 lbs. GVWR certifying to the US06 Bag 2 PM emission standard, the emission results from the US06 Bag 2 test shall be used in place of results from the full US06 test. For MDVs 10,001-14,000 lbs. GVWR, the emission results from the UC test shall be used in place of results from the US06 test.

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1.8 Requirement to Generate a Partial ZEV Allowance.

For the 2015 through 2017 model years, a manufacturer that certifies to the 150,000 mile LEV II SULEV standards, the LEV III SULEV30, or the LEV III SULEV20 standards ~~shall~~ may also generate a partial ZEV allocation according to the criteria set forth in section C.3 of the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes."

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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/MDPV fleet. A manufacturer must calculate its fleet average NMOG+NOx values using the applicable full useful 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, 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).

b. If a manufacturer selects Option 2, that manufacturer must also demonstrate compliance with sections E.1.1.2.1, E.2.3, and E.2.4 based on Option 2.

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

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

2.1.1.2 **PZEVs Anti-Backsliding Requirement**. In the 2018 and subsequent model years, a manufacturer must produce and deliver for sale in California a minimum percentage of its passenger car and light-duty truck fleet that certifies to SULEV30 and SULEV20 standards. This minimum percentage must be equal to the average percentage of PZEVs produced and deliver for sale in California for that manufacturer ~~based~~ for the 2015 through 2017 model year. ~~For the 2018 model year, a~~ A manufacturer may calculate this average percentage using the projected sales for these ~~2017~~ model years in lieu of actual sales.

Date of Release: January 26, 2012; Proposed 15-day Changes
Date of Hearing: January 26, 2012

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

2.1.2.1 **Basic Calculation.**

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

(Σ [Number of vehicles in a test group <u>excluding off-vehicle charge capable hybrid electric vehicles</u> x applicable emission standard] +
Σ [Number of off-vehicle charge capable hybrid electric vehicles in a test group x HEV NMOG+NOx contribution factor]) ÷
Total Number of PCs plus LDT1s Produced and Delivered for sale in California, Including ZEVs and HEVs

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

(Σ [Number of vehicles in a test group <u>excluding off-vehicle charge capable hybrid electric vehicles</u> x applicable emission standard] +
Σ [Number of off-vehicle charge capable hybrid electric vehicles in a test group x HEV NMOG+NOx contribution factor]) ÷
Total Number of LDT2s plus MDPVs Produced and Delivered for sale in California, Including ZEVs and HEVs

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

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 <u>and subsequent model year federally-certified vehicles</u> ~~(AB 965 vehicles only)~~[2]	All	Sum of the NMOG and NOx Federal Emission Standards to which Vehicle is Certified	Sum of the 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 model year vehicles	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

certified to the "LEV III" standards in E.1.1.2	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] "AB 965 vehicles" are those certified in accordance with the "Guidelines for Certification of 2003 and Subsequent Model-Year Federally Certified Light-Duty Motor Vehicles for Sale in California," incorporated by reference in section 2062.~~

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:

LEV160 HEV Contribution Factor = 0.160 - [(Zero-emission VMT Allowance) x 0.035]
ULEV125 HEV Contribution Factor = 0.125 - [(Zero-emission VMT Allowance) x 0.055]
ULEV70 HEV Contribution Factor = 0.070 - [(Zero-emission VMT Allowance) x 0.020]
ULEV50 HEV Contribution Factor = 0.050 - [(Zero-emission VMT Allowance) x 0.020]
SULEV30 HEV Contribution Factor = 0.030 - [(Zero-emission VMT Allowance) x 0.010]
SULEV20 HEV Contribution Factor = 0.020 - [(Zero-emission VMT Allowance) x 0.020]

where the Zero-emission VMT Allowance for 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" and the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes~~,~~," as applicable, except that 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. This section E.2.1.2.2 shall only apply to off-vehicle charge capable HEVs certified to the LEV III standards set forth in section E.1.1.2.

~~2.1.2.3 **Federally-Certified Vehicles.** A vehicle certified to the standards for a federal exhaust emissions bin in accordance with section H.1 of these test procedures shall use the sum of the corresponding LEV II NMOG and NOx emission category value set forth in section E.2.1.2.1(c) of these test procedures for the fleet average calculation.~~

~~If a vehicle is certified to 150,000 mile standards for a federal exhaust emission bin and the corresponding California NMOG+NOx emission category is a LEV III category, it may use the emission standard value for that LEV III category as set forth in the section E.2.1.2 table.~~

* * * *

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

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

Model Year	**Vehicles Certified to Section E.1.1 (%)**				**Vehicles Certified to title 13 CCR Section 1956.8(c) or (h) (%)**
	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	ULEV
2015	40	60	0	0	100
2016	20	60	20	0	100
2017	10	50	40	0	100
2018	0	40	50	10	100
2019	0	30	40	30	100
2020	0	20	30	50	100
2021	0	10	20	70	100
2022 +	0	0	10	90	100

* * * *

2.5 Greenhouse Gas Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.

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2.5.5 *Calculation of Fleet Average Carbon Dioxide Value.*

* * * *

2.5.5.4 For each model year, a manufacturer must demonstrate compliance with the fleet average requirements in section E.2.5 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.2.5, 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.2.5, and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

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

2. When a manufacturer is demonstrating compliance using Option 2 for a given model year, the term "in California" as used in sections E.2.5 and E.3.2 means California, the District of Columbia, and all states that have adopted California's greenhouse gas emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

3. A manufacturer that selects compliance Option 2 must provide to the Executive Officer separate values for the number of vehicles in each model type and footprint value produced and delivered for sale in the District of Columbia and for each individual state within the average and the City CO_2 Value and Highway CO_2 exhaust emission values that apply to each model type and footprint value.

* * * *

3. Calculation of Credits/Debits

3.1 Calculation of NMOG+NOx Credits/Debits

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

3.1.2.1 In ~~2015~~ 2016 and subsequent model years, a manufacturer that produces and delivers for sale in California MDVs, other than MDPVs, in excess of the equivalent requirements for LEV III vehicles certified to the exhaust emission standards set forth in 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:

{~~[~~(1.2) x [(No. of ULEV340s and ULEV570s Produced excluding HEVs) +
(No. of ULEV340 HEVs x HEV VEC factor for ULEV340s) +
(No. of ULEV570 HEVs x HEV VEC factor for ULEV570s)] –
(Equivalent No. of ULEV340s and ULEV570s Required to be Produced)} +

{~~[~~(1.4) x [(No. of ULEV250s and ULEV400s Produced excluding HEVs) +
(No. of ULEV250 HEVs x HEV VEC factor for ULEV250s) +
(No. of ULEV400 HEVs x HEV VEC factor for ULEV400s)] -
[(1.4) x (Equivalent No. of ULEV250s and ULEV270s Required to be Produced)]} +

{~~[~~(1.5) x [(No. of ULEV200s and ULEV270s Produced excluding HEVs) +
(No. of ULEV200 HEVs x HEV VEC factor for ULEV200s) +
(No. of ULEV270 HEVs x HEV VEC factor for ULEV270s)] -
[(1.5) x (Equivalent No. of ULEV200s and ULEV270s Required to be Produced)]} +

{~~[~~(1.6) x [(No. of SULEV170s and SULEV230s Produced excluding HEVs) +
(No. of SULEV170 HEVs x HEV VEC factor for SULEV170s) +
(No. of SULEV230 HEVs x HEV VEC factor for SULEV230s)] -
[(1.6) x [(Equivalent No. of SULEV170s and SULEV230s Required to be Produced)]} +

{~~[~~(1.7) x [(No. of SULEV150s and SULEV200s Produced excluding HEVs) +
(No. of SULEV150 HEVs x HEV VEC factor for SULEV150s) +
(No. of SULEV200 HEVs x HEV VEC factor for SULEV200s)] -
[(1.7) x [(Equivalent No. of SULEV150s and SULEV200s Required to be Produced)]} +

[(2.0) x (No. of ZEVs Certified and Produced as MDVs)].

3.1.2.2 The MDV HEV VEC factor is calculated as follows:

For ULEV340s: $1+\left[\frac{(ULEV340\ standard-ULEV250\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV340\ standard}\right]$;

For ULEV250s: $1+\left[\frac{(ULEV250\ standard-ULEV200\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV250\ standard}\right]$;

For ULEV200s: $1+\left[\frac{(ULEV200\ standard-SULEV170\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV3200\ standard}\right]$;

For SULEV170s: $1+\left[\frac{(SULEV170\ standard-SULEV150\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV170\ standard}\right]$;

For SULEV150s: $1+\left[\frac{(SULEV150\ standard-ZEV\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV150\ standard}\right]$;

For ULEV570s: $1+\left[\frac{(ULEV570\ standard-ULEV400\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV570\ standard}\right]$;

For ULEV400s: $1+\left[\frac{(ULEV400\ standard-ULEV270\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV400\ standard}\right]$;

For ULEV270s: $1+\left[\frac{(ULEV270\ standard-SULEV230\ standard)\times Zero-emission\ VMT\ Allowance}{ULEV270\ standard}\right]$;

For SULEV230s: $1+\left[\frac{(SULEV230\ standard-SULEV200\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV230\ standard}\right]$

For SULEV200s: $1+\left[\frac{(SULEV200\ standard-ZEV\ standard)\times Zero-emission\ VMT\ Allowance}{SULEV200\ standard}\right]$

where "Zero-emission VMT Allowance" for an HEV is determined in accordance with section C of the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes" or the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as applicable, 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..

* * * *

4.3 **SFTP Interim In-Use Compliance Emission Standards.**

* * * *

4.3.2 Test groups certified prior to the 202~~0~~1 model year will be allowed an in-use compliance standard for PM for the first five model years that they are certified to the SFTP PM standard.

(a) For light-duty vehicle test groups and medium-duty passenger vehicle test groups certifying to SFTP PM exhaust emission standards in section E.1.2.2.2, in-use compliance emission standards for PM shall be 5.0 mg/mi higher than the applicable certification standard.

(b) For medium-duty vehicle test groups certifying to SFTP PM Exhaust Emission Standards in section E.1.2.2.4, in-use compliance emission standards for PM shall be 5.0 mg/mi higher than the applicable certification standard.

5. Severability. Each provision of these standards and test procedures is severable, and in the event that any provision of these standards and test procedures is held to be invalid, the remainder of the standards and test procedures remains in full force and effect.

* * * *

G. Procedures for Demonstration of Compliance with Emission Standards

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

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3.5 LEV III PM Testing Requirements.

For the 2017 and subsequent 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.3.5 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.

Number of Test Groups Certified to LEV III PM Standards	Number of Test Groups That Must Be Tested to Demonstrate Compliance with LEV III PM Standards
1 or 2	All test groups certifying to LEV III PM standards
3	2
4 or more	25% of test groups certifying to LEV III PM standards

* * * *

H. Certification, Information and Reporting Requirements.

1. §86.1841 Compliance with emission standards for the purpose of certification

* * * *

1.4 **Certification of a Federal Vehicle in California.** Whenever a manufacturer federally-certifies a 2015 or subsequent model-year passenger car, light-duty truck or medium-duty vehicle model to the standards for a particular emissions bin that are more stringent than the standards for an applicable California 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. A California vehicle model is to be treated as equivalent to a federal vehicle model if all of the following characteristics are identical:

(a) Vehicle make and model;
(b) Cylinder block configuration (e.g., L-6, V-8);
(c) Displacement;
(d) Combustion cycle;
(e) Transmission class;
(f) Aspiration method (e.g., naturally aspirated, turbocharged); and
(g) Fuel (e.g., gasoline, natural gas, methanol).

The comparative stringency of the standards for the federal exhaust emissions bin and for the California vehicle emissions category shall be based on a comparison of the sum of the 150,000 mile federal standards to the LEV III NMOG+NOx standards.

* * * *

1.4.6 The tune up label shall meet the federal requirements applicable to such a vehicle with an additional sentence which reads: "This vehicle conforms to federal regulations and is certified for sale in California." The value used in the ~~smog index label~~ California Environmental Performance Label shall be the California emission category to which the vehicle was deemed certified for fleet average NMOG purposes.

* * * *

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

4.1 §86.1844-01. September 15, 2011. Amend as follows:

* * * *

4.1.3 Add the following requirements to §86.1844-01(e):

(a) The information required in sections 2037, 2038 and 2039, title 13, CCR.

(b) The NMOG/NMHC and/or formaldehyde to NMHC ratios established according to section I.1.~~4~~2 of these test procedures.

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

* * * *

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.

* * * *

100.3 Certification Fuel Specifications.

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100.3.1 California Certification Gasoline Specification.

* * * *

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 shall be used in exhaust emission testing, and the Executive Officer shall conduct exhaust emission testing with gasoline having the specifications listed below. Use of this fuel for evaporative emission testing shall be required as specified in the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles."

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 [(~~i~~c)]	87-88.4; 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)~~d]
10% point	130-150 ^{o}F	
50% point [~~(d)~~]	205-215 ^{o}F	
90% point [~~(e)~~]	310-320 ^{o}F	
EP, maximum	390 ^{o}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. %[~~(f)~~]	§2263, title 13 CCR
Multi-substituted Alkyl Aromatic Hydrocarbons	13-15 vol. %[~~(g)~~e]	
MTBE	0.05 vol. %	§2263, title 13 CCR
Ethanol	9.8-10.2 vol. %	
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 [~~(h)~~f]	
Heat of Combustion	Report [~~(h)~~f]	
Carbon	Report wt. % [~~(h)~~f]	
Hydrogen	Report wt. % [~~(h)~~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.

[~~(i)~~c] For vehicles/engines that require the use of premium gasoline as part of their warranty, the Octane ((R+M)/2) ~~shall~~ 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.

(c~~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.

~~(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~~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.

(h~~i~~) 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.

* * * *

100.3.4 Mixtures of Petroleum and Alcohol Fuels for Flexible Fuel Vehicles. Amend §86.113-94(d) as follows:

* * * *

3. Add the following subparagraphs. **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 blend of methanol or ethanol fuel used for evaporative 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) and gasoline meeting the specifications of Part II, Section A.100.3.1.1 of these test procedures such that the final blend is composed of either 35 volume percent methanol (± 1.0 volume percent of total blend) for methanol-fueled vehicles or 10 volume percent ethanol (± 1.0 volume percent of total blend) for ethanol-fueled vehicles.~~ Alternative alcohol-gasoline blends may be used in place of ~~M35 or~~ E10 if demonstrated to result in equivalent or higher evaporative emissions, subject to prior approval of the Executive Officer.

Additive requirements. Fuel additives and ignition improvers intended for use in alcohol test fuels shall be subject to the approval of the Executive Officer. In order for such approval to be granted, a manufacturer must demonstrate that emissions will not be adversely affected by the use of the fuel additive or ignition improver.

* * * *

100.5.5 California exhaust emission test procedures for US06 emissions.

100.5.5.1 Delete subparagraph (b)(9) of §86.159-08 and replace with:

During dynamometer operation, a fixed speed cooling fan or a road speed modulated fan as specified in §86.107–96(d)(1) may be used. The fan shall be positioned so as to direct cooling air to the vehicle in an appropriate manner. The engine compartment cover shall remain open if a fixed speed cooling fan is used and closed if a road speed modulated fan is used. In the case of vehicles with front engine compartments, the fan shall be squarely positioned within 24 inches (61 centimeters) of the vehicle. In the case of vehicles with rear engine compartments (or if special designs make the above impractical), the cooling fan shall be placed in a position to provide sufficient air to maintain vehicle cooling.

The Executive Officer may approve modified cooling configurations or additional cooling if necessary to satisfactorily perform the test. In approving requests for additional or modified cooling, the Executive Officer will consider such items as actual road cooling data and whether such additional cooling is needed to provide a representative test.

100.5.5.~~1~~2 Hot 1435 **LA92 (Hot 1435 Unified Cycle) Test Procedure.** Amend §86.159-08 as follows: Add the following sentence to §86.159-08: The NMOG, CO, NOx, and formaldehyde emissions shall be measured according to the US06 Test Procedure as set forth in Subpart B, 40 CFR 86.159-08 with the following modifications:

1. Replace all references to "US06" with "Hot 1435 Unified Cycle." Where §86.159-08 references another section of 40 CFR part 86, replace all mention of "US06" with "Hot 1435 Unified Cycle" in referenced sections.

2. Amend 40 CFR 86.159-08 as follows:

2.1 Delete Paragraph (a); replace with: **Overview.**

The dynamometer operation consists of a single test starting from second 0 and ending at second 1435 in the driving schedule shown in Part II, Section ~~E~~G. This cycle will herein be referred to as "Hot 1435 Unified Cycle." The vehicle is preconditioned in accordance with the instructions in this section to bring it up to a warmed-up, stabilized condition. This preconditioning is followed by a 1 to 2 minute idle period that proceeds directly into the Hot 1435 Unified Cycle driving schedule during which continuous proportional samples of gaseous emissions are collected for analysis.

2.2 Paragraph (b)

2.2.1 Subparagraphs (1) through (8) [No change.]

2.2.2 Delete subparagraph (9); replace with: **Dynamometer activities.**

During dynamometer operation, a fixed speed cooling fan or a road speed modulated fan as specified in §86.107–96(d)(1) may be used. The fan shall be positioned so as to direct cooling air to the vehicle in an appropriate manner. ~~with t~~The engine compartment cover shall remain open if a fixed speed cooling fan is used and closed if a road speed modulated fan is used. In the case of vehicles with front engine compartments, the fan shall be squarely positioned within 24 inches (61 centimeters) of the vehicle. In the case of vehicles with rear engine compartments (or if special designs make the above impractical), the cooling fan shall be placed in a position to provide sufficient air to maintain vehicle cooling. The Executive Officer may approve modified cooling configurations or additional cooling if necessary to satisfactorily perform the test. In approving requests for additional or modified cooling, the Executive Officer will consider such items as actual road cooling data and whether such additional cooling is needed to provide a representative test.

2.3 Paragraph (c) through (f) [No change.]

100.5.5.~~2~~3 **US06 Bag 2 Test Procedure.**

Amend §86.159-08 as follows: Add the following sentence: The NMOG, CO, NOx, and formaldehyde emissions shall be measured according to the US06 Test Procedure as set forth in Subpart B, 40 CFR §86.159-08 with the following modifications:

1. Replace all references to "US06" with "US06 Bag 2." Where §86.159-08 references another section of 40 CFR part 86, replace all mention of "US06" with "US06 Bag 2" in referenced sections.

2. Amend 40 CFR 86.159-08 as follows:

2.1 Delete Paragraph (a); replace with: **Overview.**

The dynamometer operation consists of a single, 365 second test starting as shown in Part II, Section F. This cycle will herein be referred to as "US06 Bag 2." The vehicle is preconditioned in accordance with the instructions in this section to bring it up to a warmed-up, stabilized condition. This preconditioning is followed by a 1 to 2 minute idle period that proceeds directly into the US06 Bag 2 driving schedule during which continuous proportional samples of gaseous emissions are collected for analysis.

2.2 Paragraph (b)

2.2.1 Subparagraphs (1) through (8) [No change.]

2.2.2 Delete subparagraph (9); replace with: **Dynamometer activities.**

During dynamometer operation, a fixed speed cooling fan or a road speed modulated fan as specified in § 86.107–96(d)(1) may be used. The fan shall be positioned so as to direct cooling air to the vehicle in an appropriate manner. ~~with t~~The engine compartment cover shall remain open if a fixed speed cooling fan is used and closed if a road speed modulated fan is used. In the case of vehicles with front engine compartments, the fan shall be squarely positioned within 24 inches (61 centimeters) of the vehicle. In the case of vehicles with rear engine compartments (or if special designs make the above impractical), the cooling fan shall be placed in a position to provide sufficient air to maintain vehicle cooling. The Executive Officer may approve modified cooling configurations or additional cooling if necessary to satisfactorily perform the test. In approving requests for additional or modified cooling, the Executive Officer will consider such items as actual road cooling data and whether such additional cooling is needed to provide a representative test.

2.3 Paragraph (c) through (f) [No change.]

* * * *

G. Hot 1435 Unified Cycle Driving Schedule.

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Hot 1435 Unified Test Cycle
(Speed vs Time Sequence)

Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)
1	0	74	12.3	147	20	220	0	293	0	366	45.3	439	60.3	512	28
2	0	75	8.1	148	23	221	0	294	0	367	46.5	440	60.3	513	26.5
3	0	76	6.1	149	25.7	222	0	295	0	368	48	441	60.3	514	24.2
4	0	77	9.6	150	28	223	0	296	0	369	48.8	442	59.5	515	22.7
5	0	78	12.7	151	30.7	224	0	297	0	370	49.5	443	58.8	516	20.4
6	0	79	15.7	152	32.6	225	0	298	0	371	49.9	444	59.1	517	17.7
7	0	80	18	153	34.2	226	0	299	0	372	49.9	445	58.8	518	15.7
8	0	81	20.4	154	35.3	227	0	300	0	373	49.9	446	58.8	519	13.1
9	0	82	21.9	155	36.9	228	0	301	0	374	49.5	447	58.8	520	10.8
10	0	83	23.4	156	36.9	229	0	302	0	375	49.5	448	58.4	521	8.4
11	0	84	23.8	157	37.2	230	0	303	0	376	48.8	449	58	522	7.3
12	0	85	24.6	158	37.6	231	0	304	0	377	48.8	450	58	523	5
13	0	86	25	159	37.6	232	0	305	0	378	48.8	451	58	524	3.8
14	0	87	26.1	160	37.6	233	0	306	0	379	48.4	452	58.4	525	3.5
15	0	88	26.1	161	37.2	234	0	307	0	380	48.8	453	59.1	526	1.9
16	0	89	26.9	162	37.2	235	0	308	0	381	49.5	454	59.5	527	0.8
17	0	90	26.9	163	36.9	236	0	309	0	382	50.3	455	59.9	528	0
18	0	91	26.9	164	36.5	237	0	310	0	383	50.7	456	59.9	529	0
19	0	92	26.5	165	36.5	238	1.5	311	0	384	51.8	457	60.3	530	0
20	0	93	25.7	166	34.9	239	5	312	0	385	52.6	458	61.1	531	0.8
21	1.2	94	21.9	167	33.4	240	8.8	313	0.4	386	53.4	459	61.1	532	1.9
22	4.2	95	16.5	168	31.9	241	11.5	314	2.7	387	54.1	460	61.1	533	3.8
23	7.3	96	10	169	29.2	242	14.2	315	7.3	388	55.3	461	61.4	534	6.9
24	8.8	97	4.6	170	25	243	15.4	316	11.5	389	55.3	462	61.4	535	9.6
25	10.8	98	1.5	171	25	244	16.1	317	15.4	390	56.1	463	61.1	536	11.1
26	12.3	99	0.4	172	26.1	245	16.1	318	18.4	391	56.4	464	60.7	537	11.1
27	13.1	100	0	173	27.6	246	16.9	319	20.7	392	56.4	465	59.9	538	10.4
28	12.3	101	0	174	29.2	247	16.5	320	24.2	393	56.4	466	59.1	539	8.8
29	12.3	102	0	175	31.1	248	16.9	321	26.9	394	57.2	467	59.1	540	9.2
30	11.5	103	0	176	32.3	249	18	322	29.6	395	56.8	468	59.1	541	10
31	11.5	104	0	177	34.2	250	19.2	323	31.1	396	57.6	469	59.9	542	10.4
32	11.1	105	0	178	34.9	251	20.4	324	32.6	397	57.6	470	59.5	543	10.4
33	11.1	106	0	179	35.7	252	20.4	325	33.8	398	57.6	471	59.9	544	5.4
34	11.1	107	0	180	36.5	253	21.1	326	34.9	399	58	472	58.8	545	1.9
35	13.1	108	0.4	181	36.9	254	21.1	327	36.9	400	58	473	58	546	0
36	15	109	1.2	182	36.9	255	22.3	328	39.2	401	58.4	474	57.6	547	0
37	16.9	110	1.9	183	37.2	256	23	329	41.1	402	58.4	475	56.8	548	0
38	16.9	111	3.8	184	37.6	257	23.8	330	43	403	58.8	476	56.1	549	0
39	16.1	112	7.7	185	37.2	258	24.2	331	43.8	404	59.1	477	55.3	550	0
40	15.7	113	11.5	186	37.6	259	24.6	332	44.5	405	58.8	478	54.1	551	0
41	15.4	114	14.6	187	38	260	25	333	45.3	406	58.8	479	52.6	552	0
42	15	115	18	188	38.4	261	25.7	334	45.3	407	58	480	49.2	553	0
43	13.8	116	21.5	189	39.2	262	25.7	335	44.9	408	58	481	46.1	554	0
44	10.8	117	25	190	39.6	263	26.5	336	44.5	409	57.6	482	43	555	0
45	8.4	118	28.4	191	39.9	264	27.6	337	43.8	410	57.6	483	37.2	556	0
46	6.1	119	30.7	192	40.7	265	28.4	338	43.4	411	57.6	484	29.6	557	0
47	4.2	120	31.9	193	40.3	266	29.2	339	42.6	412	57.6	485	21.5	558	0
48	3.5	121	32.3	194	41.1	267	30.3	340	41.9	413	57.6	486	16.5	559	0
49	3.5	122	32.3	195	41.1	268	31.1	341	41.5	414	59.1	487	15.7	560	0
50	1.5	123	31.9	196	40.7	269	31.1	342	40.7	415	59.5	488	18.4	561	0
51	0	124	30.3	197	31.9	270	30.7	343	40.3	416	59.9	489	21.5	562	0
52	0	125	28	198	23.9	271	31.1	344	41.1	417	60.3	490	25	563	0
53	0	126	24.2	199	15.9	272	29.6	345	41.5	418	60.3	491	27.3	564	0
54	0	127	20	200	7.9	273	29.2	346	42.6	419	61.1	492	29.2	565	0
55	0	128	16.1	201	2.7	274	29.2	347	43.4	420	60.3	493	30.7	566	0
56	0	129	11.5	202	0.4	275	28.8	348	44.2	421	59.9	494	31.5	567	0
57	0	130	8.1	203	0.4	276	28	349	44.9	422	59.5	495	31.1	568	0
58	0	131	5	204	2.7	277	23	350	45.7	423	59.1	496	31.1	569	0
59	0	132	3.5	205	3.8	278	21.1	351	46.5	424	59.1	497	30.3	570	0
60	0	133	1.9	206	3.8	279	21.5	352	46.8	425	59.5	498	30	571	0
61	0	134	0	207	1.5	280	20.7	353	47.2	426	59.5	499	30	572	0.4
62	0	135	0	208	0	281	20.7	354	48	427	59.5	500	29.6	573	1.5
63	1.2	136	0	209	0	282	19.6	355	47.6	428	59.9	501	30	574	3.5
64	3.5	137	0	210	0	283	16.5	356	48.4	429	60.3	502	28.8	575	6.1
65	7.7	138	0	211	0	284	13.1	357	48	430	60.7	503	28.8	576	10.4
66	11.1	139	0	212	0	285	9.6	358	47.2	431	60.7	504	28	577	14.2
67	13.8	140	0	213	0	286	7.3	359	46.1	432	61.4	505	28.4	578	16.9
68	16.5	141	0	214	0	287	3.8	360	45.7	433	61.8	506	28	579	19.2
69	18.4	142	0	215	0	288	0.8	361	44.9	434	61.8	507	28.4	580	20
70	20.4	143	1.5	216	0	289	0	362	44.2	435	61.8	508	28.4	581	21.5
71	20.7	144	6.9	217	0	290	0	363	43.8	436	61.8	509	28.8	582	23.4
72	19.6	145	12.7	218	0	291	0	364	44.5	437	61.1	510	28.4	583	24.6
73	17.3	146	16.5	219	0	292	0	365	44.9	438	60.7	511	28.4	584	24.2

Hot 1435 Unified Test Cycle

(Speed vs Time Sequence)

Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)
585	20	658	33	731	4.2	804	20.4	877	62.2	950	16.5	1023	0.4	1096	9.6
586	16.9	659	34.2	732	1.2	805	18.8	878	62.2	951	15	1024	2.7	1097	8.8
587	13.4	660	34.6	733	0	806	17.3	879	62.6	952	11.9	1025	6.1	1098	10.8
588	13.4	661	35.3	734	0	807	15	880	63.7	953	9.6	1026	9.2	1099	12.7
589	15.7	662	36.1	735	0	808	13.1	881	64.5	954	8.4	1027	11.5	1100	14.2
590	18.4	663	36.1	736	0	809	9.2	882	64.9	955	5.8	1028	14.2	1101	14.6
591	21.1	664	36.9	737	0	810	6.9	883	66	956	1.2	1029	16.1	1102	13.1
592	23.4	665	36.9	738	0	811	4.6	884	66	957	0	1030	18	1103	11.1
593	25.3	666	37.6	739	0	812	4.6	885	66.8	958	0	1031	20	1104	11.1
594	27.6	667	37.6	740	0	813	4.6	886	66.4	959	0	1032	21.5	1105	11.1
595	28.8	668	38.4	741	0	814	4.2	887	66.8	960	1.2	1033	23	1106	13.1
596	30.3	669	38	742	0	815	5.4	888	67.2	961	3.1	1034	24.2	1107	15.7
597	30.7	670	37.6	743	0	816	4.6	889	66.4	962	5	1035	25	1108	18.4
598	31.5	671	37.6	744	0	817	3.5	890	66.4	963	8.4	1036	25.7	1109	20.7
599	31.1	672	37.2	745	0	818	2.3	891	66	964	11.5	1037	26.9	1110	23.8
600	31.1	673	36.9	746	0	819	2.3	892	65.7	965	14.6	1038	27.6	1111	25.7
601	30.3	674	36.1	747	0	820	1.9	893	65.7	966	16.9	1039	27.6	1112	28
602	30.3	675	35.7	748	0	821	3.1	894	66.4	967	18.8	1040	28.4	1113	30
603	30.3	676	36.1	749	0	822	6.1	895	66	968	21.1	1041	29.2	1114	31.1
604	30.7	677	35.7	750	0	823	4.6	896	65.7	969	23.8	1042	29.2	1115	32.3
605	31.1	678	35.7	751	0	824	2.7	897	65.3	970	26.5	1043	30	1116	34.2
606	32.3	679	35.7	752	0	825	2.3	898	65.3	971	28	1044	29.6	1117	35.7
607	32.6	680	36.1	753	0	826	2.3	899	64.5	972	29.6	1045	29.6	1118	36.9
608	32.6	681	36.1	754	0	827	3.1	900	64.5	973	30.7	1046	28.8	1119	38.8
609	32.6	682	35.7	755	0	828	4.2	901	64.1	974	32.6	1047	28	1120	40.3
610	31.1	683	35.7	756	0	829	3.5	902	63.7	975	34.2	1048	23.8	1121	41.5
611	26.9	684	34.9	757	0	830	3.8	903	63.7	976	35.3	1049	18.8	1122	42.2
612	22.3	685	34.6	758	0	831	4.2	904	63.7	977	36.1	1050	11.9	1123	43
613	18	686	34.2	759	0	832	3.5	905	64.5	978	36.9	1051	6.1	1124	43.8
614	13.8	687	33.8	760	0	833	3.5	906	64.5	979	38	1052	1.5	1125	43.8
615	9.6	688	33.4	761	0	834	3.5	907	64.9	980	38	1053	1.5	1126	43.4
616	4.6	689	33	762	0	835	4.6	908	64.5	981	38	1054	4.2	1127	43
617	6.1	690	30.3	763	1.5	836	5.8	909	64.1	982	38	1055	8.1	1128	42.2
618	10	691	29.2	764	5.4	837	3.5	910	64.9	983	38	1056	10.4	1129	41.9
619	14.2	692	28.4	765	9.2	838	0.8	911	65.3	984	37.2	1057	13.1	1130	41.5
620	17.3	693	25	766	11.5	839	3.5	912	65.3	985	36.9	1058	15.4	1131	41.9
621	20	694	21.1	767	14.6	840	3.8	913	65.3	986	36.1	1059	18	1132	41.9
622	21.5	695	16.9	768	17.3	841	2.3	914	64.1	987	35.7	1060	20.4	1133	41.9
623	22.3	696	13.4	769	19.2	842	0	915	63.4	988	34.9	1061	23	1134	42.2
624	22.3	697	13.1	770	21.1	843	1.2	916	63	989	34.9	1062	25.3	1135	42.6
625	22.3	698	12.3	771	20.7	844	6.9	917	63.4	990	33.8	1063	27.3	1136	42.6
626	22.3	699	12.7	772	20.7	845	13.8	918	64.1	991	31.5	1064	28.8	1137	42.6
627	23	700	15.7	773	19.6	846	18.8	919	64.9	992	28.8	1065	30.3	1138	42.6
628	23	701	19.2	774	18.4	847	23.8	920	65.3	993	25.7	1066	31.1	1139	42.6
629	22.7	702	22.3	775	16.9	848	27.3	921	64.5	994	24.6	1067	32.3	1140	42.6
630	22.3	703	24.6	776	16.9	849	30.7	922	64.1	995	23.4	1068	31.9	1141	42.6
631	21.9	704	25.7	777	16.5	850	33.8	923	63.4	996	22.3	1069	32.3	1142	42.2
632	22.7	705	26.5	778	16.9	851	37.6	924	63.7	997	21.5	1070	31.9	1143	43
633	23.8	706	26.5	779	16.9	852	40.7	925	63.4	998	20	1071	31.1	1144	43.4
634	25	707	26.9	780	16.9	853	43.8	926	63.4	999	20	1072	28.8	1145	43
635	25.3	708	27.3	781	17.3	854	46.1	927	63.4	1000	19.2	1073	25	1146	42.6
636	25.7	709	27.3	782	19.2	855	48	928	63.4	1001	19.2	1074	22.7	1147	41.9
637	26.5	710	27.6	783	20.4	856	49.5	929	63.7	1002	18	1075	18.8	1148	40.7
638	26.9	711	28.4	784	21.1	857	51.5	930	64.5	1003	11.9	1076	15.4	1149	36.9
639	27.3	712	28.8	785	22.3	858	53	931	65.3	1004	6.9	1077	13.4	1150	32.6
640	28	713	28.8	786	22.3	859	54.5	932	64.9	1005	2.7	1078	11.9	1151	28
641	29.2	714	29.2	787	22.7	860	55.7	933	63.7	1006	0.8	1079	8.8	1152	23.4
642	30	715	28.8	788	22.3	861	56.8	934	63	1007	0.4	1080	5	1153	18.4
643	30	716	28.8	789	22.7	862	58	935	59.9	1008	0	1081	1.9	1154	14.6
644	29.6	717	28	790	22.3	863	59.1	936	55.3	1009	0	1082	2.3	1155	12.3
645	29.6	718	28	791	23.8	864	60.3	937	50.7	1010	0	1083	2.7	1156	9.2
646	28.8	719	27.6	792	25.7	865	61.1	938	49.2	1011	0	1084	3.5	1157	5.8
647	28.4	720	26.5	793	27.6	866	61.8	939	48	1012	0	1085	6.5	1158	1.9
648	28	721	24.6	794	29.6	867	61.8	940	46.1	1013	0	1086	10.8	1159	0.4
649	27.3	722	20.7	795	30	868	61.8	941	44.2	1014	0	1087	13.8	1160	0
650	25.7	723	16.5	796	29.2	869	61.8	942	41.1	1015	0	1088	16.1	1161	0

Date of Release: January 26, 2012; Proposed 15-day Changes
Date of Hearing: January 26, 2012

651	24.6	724	15	797	27.6	870	62.6	943	39.9	1016	0	1089	18.4	1162	0
652	25	725	14.2	798	25	871	63.4	944	36.1	1017	0	1090	20.4	1163	0
653	26.5	726	14.2	799	23.8	872	63	945	32.6	1018	0	1091	21.9	1164	0
654	28	727	13.8	800	23.4	873	63	946	29.2	1019	0	1092	21.9	1165	0.4
655	29.6	728	13.8	801	24.2	874	62.6	947	24.6	1020	0	1093	20.7	1166	4.2
656	30.7	729	11.9	802	23.4	875	61.8	948	20.7	1021	0	1094	17.3	1167	9.2
657	32.3	730	8.4	803	23	876	61.8	949	19.2	1022	0	1095	13.1	1168	11.9

Hot 1435 Unified Test Cycle
(Speed vs Time Sequence)

Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)	Time (sec.)	Speed (mph)
1169	14.2	1240	3.5	1311	40.7	1382	2.7								
1170	15.7	1241	10.4	1312	40.3	1383	2.3								
1171	15	1242	15.4	1313	39.6	1384	1.5								
1172	14.2	1243	17.3	1314	39.2	1385	1.2								
1173	13.4	1244	17.3	1315	38.8	1386	0								
1174	13.8	1245	18.4	1316	38	1387	1.2								
1175	14.6	1246	21.5	1317	37.6	1388	4.2								
1176	14.6	1247	24.6	1318	37.2	1389	7.3								
1177	14.2	1248	27.3	1319	36.5	1390	8.8								
1178	16.1	1249	30	1320	34.6	1391	10.8								
1179	15.7	1250	31.5	1321	31.5	1392	12.3								
1180	15.7	1251	31.9	1322	29.6	1393	13.1								
1181	14.6	1252	32.6	1323	29.2	1394	12.3								
1182	13.1	1253	33.4	1324	28.8	1395	12.3								
1183	10	1254	34.9	1325	28.8	1396	11.5								
1184	7.3	1255	36.5	1326	28	1397	11.5								
1185	3.5	1256	37.6	1327	28	1398	11.1								
1186	0.8	1257	39.2	1328	28.4	1399	11.1								
1187	0	1258	40.3	1329	29.6	1400	11.1								
1188	0	1259	40.7	1330	30	1401	13.1								
1189	0	1260	41.1	1331	30.3	1402	15								
1190	0	1261	40.7	1332	29.2	1403	16.9								
1191	0.4	1262	40.7	1333	26.5	1404	16.9								
1192	2.7	1263	40.7	1334	25.3	1405	16.1								
1193	7.3	1264	41.5	1335	25	1406	15.7								
1194	11.5	1265	42.6	1336	24.6	1407	15.4								
1195	15.4	1266	43	1337	24.6	1408	15								
1196	19.2	1267	44.5	1338	25.3	1409	13.8								
1197	21.9	1268	45.3	1339	26.1	1410	10.8								
1198	23.8	1269	45.3	1340	27.3	1411	8.4								
1199	25	1270	44.9	1341	28.4	1412	6.1								
1200	26.1	1271	43.4	1342	29.2	1413	4.2								
1201	27.3	1272	40.3	1343	29.2	1414	3.5								
1202	28.8	1273	38	1344	29.6	1415	3.5								
1203	30	1274	36.1	1345	30	1416	1.5								
1204	29.6	1275	36.5	1346	31.1	1417	0								
1205	29.6	1276	38	1347	32.6	1418	0								
1206	28.8	1277	39.2	1348	33.8	1419	0								
1207	26.1	1278	40.7	1349	34.6	1420	0								
1208	22.3	1279	42.2	1350	34.9	1421	0								
1209	19.2	1280	43.4	1351	34.6	1422	0								
1210	16.5	1281	44.9	1352	34.9	1423	0								
1211	12.7	1282	45.7	1353	34.6	1424	0								
1212	9.6	1283	46.1	1354	34.9	1425	0								
1213	6.9	1284	46.8	1355	34.9	1426	0								
1214	4.2	1285	46.5	1356	34.9	1427	0								
1215	2.3	1286	46.5	1357	34.2	1428	0								
1216	0.8	1287	46.5	1358	33.8	1429	0								
1217	0	1288	46.1	1359	32.6	1430	0								
1218	0	1289	46.1	1360	31.5	1431	0								
1219	0	1290	46.1	1361	30	1432	0								
1220	0	1291	46.8	1362	28.8	1433	0								
1221	0	1292	47.6	1363	27.3	1434	0								
1222	0	1293	48	1364	23.8	1435	0								
1223	0	1294	48.4	1365	23										
1224	0	1295	48	1366	23										
1225	0	1296	48	1367	22.3										
1226	0	1297	47.2	1368	20.4										
1227	0	1298	46.5	1369	18.8										
1228	0	1299	46.8	1370	17.7										
1229	0	1300	47.2	1371	16.1										

Date of Release: January 26, 2012; Proposed 15-day Changes
Date of Hearing: January 26, 2012

1230	0	1301	48.4	1372	14.6					
1231	0	1302	48.4	1373	12.7					
1232	0	1303	48.8	1374	11.1					
1233	0	1304	48.4	1375	9.2					
1234	0	1305	47.6	1376	8.8					
1235	0	1306	46.5	1377	7.3					
1236	0	1307	44.2	1378	6.1					
1237	0	1308	42.2	1379	5					
1238	0	1309	41.5	1380	4.2					
1239	0	1310	41.1	1381	3.5					

State of California
AIR RESOURCES BOARD

PROPOSED 15-DAY MODIFICATIONS

CALIFORNIA EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES FOR 2001 AND SUBSEQUENT MODEL MOTOR VEHICLES

Adopted: August 5, 1999
Amended: June 22, 2006
Amended: October 17, 2007
Amended: December 2, 2009
Amended: September 27, 2010
Amended: _____

Note: The following text contains staff's suggested modifications to these test procedures as originally proposed December 7, 2011. The originally proposed amendments to this document are shown in underline to indicate additions and strikeout to indicate deletions compared to the test procedures as last amended September 27, 2010. Modifications to the originally proposed language made available in connection with this "15-Day Notice" are shown in double underline to indicate additions and ~~double strikeout~~ to indicate deletions compared to the test procedures as proposed December 7, 2011. Staff is proposing modifications to limited portions of the original proposal; for some portions where no modifications are proposed the text has been omitted and the omission indicated by "* * * *."

Date of Release: January 26, 2012; Proposed 15-day Changes
Date of Hearing: January 26, 2012

Amend “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” as incorporated by reference in Title 13, California Code of Regulations, Section 1976(c) to read:

* * * *

CALIFORNIA EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES FOR 2001 AND SUBSEQUENT MODEL MOTOR VEHICLES

The provisions of Title 40, Code of Federal Regulations (CFR), Part 86, Subparts A and B (as adopted or amended as of July 1, 1989); Subpart S (as adopted or amended on May 4, 1999); and, such sections of these Subparts as last amended on such other date set forth next to the 40 CFR Part 86 section title listed below, insofar as those subparts pertain to evaporative emission standards and test procedures, are hereby adopted as the “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Years,” with the following exceptions and additions:

GENERAL CERTIFICATION REQUIREMENTS FOR EVAPORATIVE EMISSIONS

* * * *

E. Emission Standards

1. Evaporative Emission Standards for 2001 and Subsequent Model Year Vehicles Other Than Motorcycles.

* * * *

(e) For 2015 and subsequent model motor vehicles, the following evaporative emission requirements apply:

(i) A manufacturer must certify all vehicles subject to this section to the emission standards specified in either Option 1 or Option 2 below.

* * * *

(B) Option 2. The total hydrocarbon evaporative emissions from 2015 and subsequent model motor vehicles, tested in accordance with the test procedure sequence set forth in Part III, shall not exceed:

* * * *

(3) Calculation of Hydrocarbon Credits or Debits for the Fleet-Average Option.

(A) Calculation of Hydrocarbon Credits or Debits. For each emission standard category in the model year, a manufacturer shall calculate the hydrocarbon credits or debits, as follows:

[(Applicable Hydrocarbon Emission Standard for the Emission Standard Category) – (Manufacturer's Fleet-Average Hydrocarbon Emission Value for the Emission Standard Category)] X (Total Number of Affected Vehicles)

where "Total Number of Affected Vehicles" = the total number of vehicles in the evaporative families participating in the fleet-average option, which are produced and delivered for sale in California, for the emission standard category of the given model year.

A negative number constitutes hydrocarbon debits, and a positive number constitutes hydrocarbon credits accrued by the manufacturer for the given model year. Hydrocarbon credits earned in a given model year shall retain full value through the fifth model year after they are earned. At the beginning of the sixth model year, the hydrocarbon credits will have no value.

(B) Procedure for Offsetting Hydrocarbon Debits. A manufacturer shall offset hydrocarbon debits with hydrocarbon credits for each emission standard category within three model years after the debits have been incurred. If total hydrocarbon debits are not equalized within three model years after they have been incurred, the manufacturer shall be subject to the Health and Safety Code section 43211 civil penalties applicable to a manufacturer which sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the hydrocarbon debits are not equalized by the end of the specified time period. For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's emission standards shall be determined by dividing the total amount of hydrocarbon debits for the model year in the emission standard category by the applicable hydrocarbon emission standard for the model year in which the debits were first incurred.

Additionally, ~~a manufacturer may use the excess hydrocarbon credits from the emission standard categories of (1) passenger cars and light-duty trucks 6,000 pounds GVWR and under, and 0 - 3,750 pounds LVW and (2) light-duty trucks 6,000 pounds GVWR and under, and 3,751 – 5,750 pounds LVW to equalize the hydrocarbon debits that remain at the end of the three model year offset period of any emission standard category.~~ to equalize the hydrocarbon debits that remain at the end of the three model year offset period: (1) hydrocarbon credits may be exchanged between passenger cars and light-duty trucks 6,000 pounds GVWR and under and 0-3,750 pounds LVW, and light-duty trucks 6,000 pounds GVWR and under and 3,751-5,750 pounds LVW and (2) hydrocarbon credits may be exchanged between light-duty trucks 6,001-8,500 pounds GVWR and medium-duty passenger vehicles, and medium-duty vehicles and heavy-duty vehicles.

(4) Vehicle Canister Bleed Emission. Compliance with the canister bleed emission standard shall be determined based on the Bleed Emission Test Procedure described in section III.D.12. of these procedures and demonstrated on a stabilized canister system. Vehicles with a non-integrated refueling canister-only system are exempt from the canister bleed emission standard.

(ii) Phase-In Schedule. For each model year, a manufacturer shall certify, at a minimum, the specified percentage of its vehicle fleet to the evaporative emission standards set forth in section I.E.1.(e)(i), according to the implementation schedule set forth below. For the purpose of this section I.E.1.(e)(ii), the manufacturer's vehicle fleet consists of the vehicles produced and delivered for sale by the manufacturer in California that are subject to the emission standards in section I.E.1.(e)(i). All 2015 through 2022 model motor vehicles that are not subject to these standards pursuant to the phase-in schedule shall comply with the requirements for 2004 through 2014 model motor vehicles, as described in section I.E.1.(d).

Model Years	*Minimum Percentage of Vehicle Fleet*[(1)(2)]
2015, 2016, and 2017	Average of vehicles certified to section I.E.1.(c) in model years 2012, 2013, and 2014[(3)(4)]
2018 and 2019	60
2020 and 2021	80
2022 and subsequent	100

(1) For the 2018 through 2022 model years only, a manufacturer may use an alternate phase-in schedule to comply with the phase-in requirements. An alternate phase-in schedule must achieve equivalent compliance volume by the end of the last model year of the scheduled phase-in (2022). The compliance volume is the number calculated by multiplying the percent of vehicles (based on the manufacturer's projected sales volume of all vehicles) meeting the new requirements in each model year by the number of years implemented prior to and including the last model year of the scheduled phase-in, then summing these yearly results to determine a cumulative total. The cumulative total of the five year (60/60/80/80/100) scheduled phase-in set forth above is calculated as follows: (60*5 years) + (60*4 years) + (80*3 years) + (80*2 years) + (100*1 year) = 1040. Accordingly, the required cumulative total for any alternate phase-in schedule of these emission standards is 1040. The Executive Officer shall consider acceptable any alternate phase-in schedule that results in an equal or larger cumulative total by the end of the last model year of the scheduled phase-in (2022).

(2) Small volume manufacturers are not required to comply with the phase-in schedule set forth in this table. Instead, they shall certify 100 percent of their

2022 and subsequent model year vehicle fleet to the evaporative emission standards set forth in section I.E.1.(e)(i)(A) or section I.E.1.(e)(i)(B).

(3) The percentage of vehicle fleet averaged across the 2015, 2016, and 2017 model years shall be used to determine compliance with this requirement.

~~(3)~~ (4) The minimum percentage required in the 2015, 2016, and 2017 model years is determined by averaging the percentage of vehicles certified to the emission standards in section I.E.1.(c) in each of the manufacturer's 2012, 2013, and 2014 model motor vehicle fleets. For the purpose of calculating this average, a manufacturer shall use the percentage of vehicles produced and delivered for sale in California for the 2012, ~~and~~ 2013, and 2014 model years~~, and the percentage of projected sales in California for the 2014 model year~~. A manufacturer may calculate this average percentage using the projected sales for these model years in lieu of actual sales.

(iii) Carry-Over of 2014 Model-Year Evaporative Families Certified to the Zero-Fuel Evaporative Emission Standards. A manufacturer may carry over 2014 model motor vehicles certified to the zero-fuel (0.0 grams per test) evaporative emission standards set forth in section I.E.1.(c) through the 2018 model year and be considered compliant with the requirements of section I.E.1.(e). If the manufacturer chooses to participate in the fleet-average option for the highest whole vehicle diurnal plus hot soak emission standard, the following family emission limits are assigned to these evaporative families for the calculation of the manufacturer's fleet-average hydrocarbon emission value.

Vehicle Type	Highest Whole Vehicle Diurnal + Hot Soak (grams per test)
Passenger Cars	0.300
Light-Duty Trucks 6,000 lbs. GVWR and under, and 0 - 3,750 lbs. LVW	0.300
Light-Duty Trucks 6,000 lbs. GVWR and under, and 3,751 – 5,750 lbs. LVW	0.400
Light-Duty Trucks 6,001 - 8,500 lbs. GVWR	0.500

(iv) Pooling Provision. The following pooling provision applies to the fleet-average option for the Highest Whole Vehicle Diurnal Plus Hot Soak Emission Standard in section I.E.1.(e)(i)(B). and to the phase-in requirements in section I.E.1.(e)(iii).

(A) For the fleet-average option set forth in section I.E.1.(e)(i)(B), a manufacturer must demonstrate compliance, for each model year, based on one of two options applicable throughout the model year, either:

Pooling Option 1: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section I.E.1.(e)(i)(B), and are produced and delivered for sale in California; or

Pooling Option 2: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section I.E.1.(e)(i)(B), and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's evaporative emission standards set forth in section I.E.1.(e)(i) for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

(B) For the phase-in requirements in section I.E.1.(e)(iii), a manufacturer must demonstrate compliance, for each model year, based on one of two options applicable throughout the model year, either:

Pooling Option 1: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section I.E.1.(e)(i), and are produced and delivered for sale in California; or

Pooling Option 2: the total number of passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles, and heavy-duty vehicles that are certified to the California evaporative emission standards in section I.E.1.(e)(i), and are produced and delivered for sale in California, the District of Columbia, and all states that have adopted California's evaporative emission standards set forth in section I.E.1.(e)(i) for that model year pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

(C) A manufacturer that selects Pooling Option 2 must notify the Executive Officer of that selection in writing prior to the start of the applicable model year if the manufacturer had not selected the Pooling Option 2 for the previous model year, or must comply with Pooling Option 1.

(D) When a manufacturer is demonstrating compliance using Pooling Option 2 for a given model year, the term "in California" as used in section I.E.1.(e) means California, the District of Columbia, and all states that have adopted California's evaporative emission standards for that model year pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

(E) A manufacturer that selects Pooling Option 2 must provide to the Executive Officer separate values for the number of vehicles in each evaporative family produced and delivered for sale in the District of Columbia and for each individual state within the average and the emission standard category and family emission limit value to which each evaporative family certifies. A manufacturer must group data submitted in accordance with this subsection I.E.1.(e)(iv) for the District of Columbia in a single document. For each individual state within the average, a manufacturer must group data submitted in accordance with this subsection I.E.1.(e)(iv) so that all data applicable to a specific state is contained in a single document.

(v) Optional Certification for 2014 Model Motor Vehicles. A manufacturer may optionally certify its 2014 model motor vehicles to the evaporative emission standards set forth in section I.E.1.(e)(i), using the test fuel specified in section III.F.2.

* * * *

PART III. EVAPORATIVE EMISSION TEST PROCEDURES FOR LIGHT- AND MEDIUM-DUTY VEHICLES

* * * *

D. Test Procedure

The test sequence described in 40 CFR §86.130 through §86.140 shall be performed with the following modifications:

1. General Requirements

1.0. The following language shall be applicable in lieu of 40 CFR §86.130-78:

1.1. The test sequence shown in Figure 2 (Figure 3A or 3B for hybrid electric vehicles) describes the steps encountered as the vehicle undergoes the three-day diurnal sequence and the supplemental two-day diurnal sequence to determine conformity with the standards set forth. Methanol measurements may be omitted when methanol-fueled vehicles will not be tested in the evaporative enclosure. Ethanol shall be accounted for via measurement or mass adjustment factor, using the methods described in this test procedure, for vehicles tested with the gasoline set forth in part II, section A.100.3.1.2. of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles." Ambient temperature levels encountered by the test vehicle throughout the entire duration of this test sequence shall not be less than 68^{o}F nor more than 86^{o}F, unless otherwise specified. The temperatures monitored during testing shall be representative of those experienced by the test vehicle. The test vehicle shall be approximately level during all phases of the test sequence to prevent abnormal fuel distribution. The temperature tolerance of a soak period may be waived for up to 10 minutes to allow purging of the enclosure or transporting the vehicle into the enclosure.

* * * *

10. Diurnal Breathing Loss Test

10.1. A three-day diurnal test shall be performed in a variable temperature enclosure, described in section III.A.1. of this test procedure. The test consists of three 24-hour cycles. For purposes of this diurnal breathing loss test, all references to methanol shall be applicable to alcohol, unless specific instructions for ethanol are noted.

* * * *

10.15. The two-day diurnal test shall be performed in an enclosure, described in section III.A.1. of this test procedure. The test consists of two 24-hour diurnals. The test procedure shall be conducted according to 40 CFR §86.133-90, revised by sections III.D.10.3.1. through III.D.10.3.14., except that only two consecutive 24-hour diurnals shall be performed. For the purposes of this diurnal breathing loss test, all references to methanol shall be applicable to alcohol, unless specific instructions for ethanol are noted.

* * * *

11. Calculations: Evaporative Emissions

11.0. Revise 40 CFR §86.143-90 as follows:

11.1. Revise subparagraph (a) to read: The calculation of the net hydrocarbon plus ethanol (or methanol) mass change in the enclosure is used to determine the diurnal, hot soak, and running loss mass emissions. If the emissions also include alcohol components other than methanol and ethanol ~~and other alcohol components~~, the manufacturer shall determine an appropriate calculation(s) which reflect characteristics of the alcohol component similar to the equations below, subject to the Executive Officer approval. The mass changes are calculated from initial and final hydrocarbon~~,~~ and ~~m~~ethanol concentrations in ppm carbon, initial and final enclosure ambient temperatures, initial and final barometric pressures, and net enclosure volume using the ~~following~~ equations of this section III.D.11.~~:~~ Diurnal, hot soak, and running loss mass emissions for methanol-fueled vehicles shall be conducted according to 40 CFR §86.143-96, as amended August 23, 1995.

11.2. Revise subparagraph (a)(1) to read:

~~Methanol calculations shall be conducted according to 40 CFR §86.143-96(b)(1)(i), as amended March 24, 1993.~~

For ethanol in an enclosure:

$$M_{C2H5OH} = (V_n - 50) \times \left[\frac{(C_{S1f} \times AV_{1f}) + (C_{S2f} \times AV_{2f})}{V_{Ef}}\right] - \left[\frac{(C_{S1i} \times AV_{1i}) + (C_{S2i} \times AV_{2i})}{V_{Ei}}\right] + (M_{C2H5OHout} - M_{C2H5OHin})$$

where: M_{C2H5OH} is the ethanol mass emissions (µg)

V_n is the enclosure nominal volume. (ft^3)

$_S$ is the GC concentration of sample (µg/ml)
AV is the volume of absorbing reagent in impinger (ml)

V_E is the volume of sample withdrawn (ft^3). Sample volumes must be corrected for differences in temperature to be consistent with determination of V_n, prior to being used in the equation.

i = initial sample

f = final sample

1 is the first impinger

2 is the second impinger

$M_{C2H5OH, out}$ is the mass of ethanol exiting the enclosure from the beginning of the cycle to the end of the cycle; this only applies to diurnal testing in fixed-volume enclosures (µg); For variable-volume enclosures, $M_{C2H5OH, out}$ is zero

$M_{C2H5OH, in}$ is the mass of ethanol entering the enclosure from the beginning of the cycle to the end of the cycle; this only applies to diurnal testing in fixed-volume enclosures (µg); For variable-volume enclosures, $M_{C2H5OH, in}$ is zero

The enclosure ethanol mass (M_{C2H5OH}) determined from the equation above goes into the equations of subsequent sections to calculate the total mass emissions, where $M_{C2H5OHhs}$ is the ethanol mass emissions from the hot soak test, $M_{C2H5OHdi}$ is the ethanol mass emissions from the diurnal test, and $M_{C2H5OHrl(n)}$ is the ethanol mass emissions from the running loss test for phase n of the test. For diurnal testing, this calculation shall be made for each 24-hour diurnal period.

11.3. Revise subparagraph (a)(2) to read:

11.3.1. For hydrocarbons in an enclosure:

(a) ~~Hot soak HC mass.~~ Hot soak and diurnal testing in an enclosure: For fixed volume enclosures, the ~~hot soak~~ enclosure hydrocarbon mass is determined as:

$$M_{HC\text{~~hs~~}} = [2.97x (V_n - 50) x10^{-4} x \{P_f (C_{HCe2} - rC_{C2H5\text{~~3~~}OHe2})/T_f - P_i (C_{HCe1} - rC_{C2H5\text{~~3~~}OHe1})/T_i\}] + M_{HC, out} - M_{HC, in}$$

where:

$M_{HC\text{~~hs~~}}$ is the ~~hot soak~~ HC mass emissions (grams)

V_n is the enclosure nominal volume ~~if the running loss enclosure is used or the enclosure volume at 105°F if the diurnal enclosure is used~~. (ft^3)

P_i is the initial barometric pressure (inches Hg)

P_f is the final barometric pressure (inches Hg)

C_{HCe2} is the final enclosure hydrocarbon concentration including FID response to ~~m~~ethanol in the sample (ppm C)

C_{HCe1} is the initial enclosure hydrocarbon concentration including FID response to ~~m~~ethanol in the sample (ppm C)

$C_{C2H5OHe2}$ is the final ~~m~~ethanol concentration ~~calculated according to §86.143-90 (a)(2)(iii)~~ (ppm C equivalent).

$$= \frac{2.088 \times 10^{-3} \times T_f}{P_f \times V_E} \times \left[\left(C_{S1f} \times AV_{1f}\right) + \left(C_{S2f} \times AV_{2f}\right)\right]$$

$C_{C2H5OHe1}$ is the initial ~~m~~ethanol concentration ~~calculated according to §86.143-90 (a)(2)(iii)~~ (ppm C equivalent)

$$= \frac{2.088 \times 10^{-3} \times T_i}{P_i \times V_E} \times \left[\left(C_{S1i} \times AV_{1i}\right) + \left(C_{S2i} \times AV_{2i}\right)\right]$$

r is the FID response factor to ~~m~~ethanol

T_i is the initial enclosure temperature (^oR)

T_f is the final enclosure temperature (^oR)

V_E is the volume of sample withdrawn (ft^3). Sample volumes must be corrected for differences in temperature to be consistent with determination of $V_{n,}$ prior to being used in the equation.

C_S is the GC concentration of sample (µg/ml)

AV is the Volume of absorbing reagent in impinger (ml)

1 is the first impinger

2 is the second impinger

i = initial sample

f = final sample

$M_{HC, out}$ is the mass of hydrocarbon exiting the enclosure from the beginning of the cycle to the end of the cycle; this only applies to diurnal testing in fixed-volume enclosures (grams)

$M_{HC, in}$ is the mass of hydrocarbon entering the enclosure from the beginning of the cycle to the end of the cycle; this only applies to diurnal testing in fixed-volume enclosures (grams)

For vehicles tested in an enclosure with the gasoline set forth in part II, section A.100.3.1.2. of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" only, measured ethanol values can be omitted so long as the resultant M_{HC} is multiplied by 1.08. If this option is used, then all terms accounting for ethanol in the applicable equations of this section III.D.11 shall equal zero.

The enclosure HC mass (M_{HC}) determined from the equation above goes into the equations of subsequent sections to calculate the total mass emissions, where M_{HChs} is the HC mass emissions from the hot soak test, M_{HCdi} is the HC mass emissions from the diurnal test, and $M_{HCrl(n)}$ is the HC mass emissions from the running loss test for phase n of the test if the enclosure method is used for running loss testing. For diurnal testing, this calculation shall be made for each 24-hour diurnal period.

For variable volume enclosures, calculate the ~~hot soak~~ enclosure HC mass ($M_{HC~~hs~~}$) according to the equation used above except that P_f and T_f shall equal P_i and T_i and $M_{HC, out}$ and $M_{HC, in}$ shall equal zero.

(b) Running loss ~~HC~~ mass.

The running loss HC mass per distance traveled is defined as:

$$M_{HCrlt} = (M_{HCrl(1)} + M_{HCrl(2)} + M_{HCrl~~(3)~~})/(D_{rl(1)} + D_{rl(2)} + D_{rl(3)})$$

where: M_{HCrlt} is the total running loss HC mass per distance traveled (grams HC per mile)

$M_{HCrl(n)}$ is the running loss HC mass for phase n of the test (grams HC)

$D_{rl(n)}$ is the actual distance traveled over the driving cycle for phase n of the test (miles)

The running loss ethanol mass per distance traveled is defined as:

$M_{C2H5OHrlt} = (M_{C2H5OHrl(1)} + M_{C2H5OHrl(2)} + M_{C2H5OHrl(3)})/(D_{rl(1)} + D_{rl(2)} + D_{rl(3)})$

where: $M_{C2H5OHrlt}$ is the total running loss ethanol mass per distance traveled (grams ethanol per mile)

$M_{C2H5OHrl(n)}$ is the running loss ethanol mass for phase n of the test (grams ethanol)

For the point-source method:

Hydrocarbon emissions:

$M_{HCrl(n)} = (C_{HCs(n)} - C_{HCa(n)}) \times 16.88 \times V_{mix} \times 10^{-6}$

where: $C_{HCs(n)}$ is the sample bag HC concentration for phase n of the test (ppm C)

$C_{HCa(n)}$ is the background bag concentration for phase n of the test (ppm C)

16.88 is the density of pure vapor at 68°F (grams/ft^3)

V_{mix} is the total dilute CVS volume (std. ft^3)

and: V_{mix} is calculated per 40 CFR §86.144-90

~~Me~~Ethanol emissions:

$M_{C2H5OHrl(n)} = (C_{C2H5OHs(n)} - C_{C2H5OHa(n)}) \times$ ~~37.74~~ 54.25 $\times V_{mix}$

where: $C_{C2H5OHs(n)}$ is the sample bag ~~m~~ethanol concentration for phase n of the test (ppm C equivalent)

$C_{C2H5OHs(n)}$ is the background bag concentration for phase n of the test (ppm C equivalent)

~~37.71~~ 54.25 is the density of pure vapor at 68°F (grams/ft^3)

V_{mix} is the total dilute CVS volume (std. ft^3)

and: V_{mix} is calculated per 40 CFR §86.144-90

For the enclosure method:

$M_{HCrl(n)}$ is the running loss HC mass for phase n of the test (grams HC) and shall be determined by the ~~same~~ method ~~as the hot soak hydrocarbon mass emissions determination~~ specified in section III.D.11.3.1.(a).

~~(c) Diurnal mass. For fixed volume enclosures, the HC mass for each of the three diurnals is defined for an enclosure as:~~

~~$M_{HCd} = [2.97x(V - 50)x10^{-4}x\{P_f(C_{HCe2} - rC_{CH3OHe2})/T_f - P_i(C_{HCe1} - rC_{CH3OHe1})/T_i\}]$~~
~~$+ M_{HC, out} - M_{HC, in}$~~

~~where: M_{HCd} is the diurnal HC mass emissions (grams)~~

~~V is the enclosure volume at 65° F (ft^3)~~

~~P_i is the initial barometric pressure (inches Hg)~~

~~P_f is the final barometric pressure (inches Hg)~~

~~C_{HCe2} is the final enclosure hydrocarbon concentration including FID response to methanol in the sample (ppm C)~~

~~C_{HCe1} is the initial enclosure hydrocarbon concentration including FID response to methanol in the sample (ppm C)~~

~~$C_{CH3OHe2}$ is the final methanol concentration calculated according to 40 CFR §86.143-90 (a)(2)(iii)~~

~~$C_{CH3OHe1}$ is the initial methanol concentration calculated according to 40 CFR §86.143-90 (a)(2)(iii)~~

~~r is the FID response factor to methanol~~

~~T_i is the initial enclosure temperature (°R)~~

~~T_f is the final enclosure temperature (°R)~~

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~~$M_{HC, out}$ is the mass of hydrocarbon exiting the enclosure from the beginning of the cycle to the end of the cycle (grams)~~

~~$M_{HC, in}$ is the mass of hydrocarbon entering the enclosure from the beginning of the cycle to the end of the cycle (grams)~~

~~For variable volume enclosures, calculate the HC mass for each of the three diurnals (M_{HCd}) according to the equation used above except that P_f and T_f shall equal P_i and T_i and $M_{HC, out}$ and $M_{HC, in}$ shall equal zero.~~

11.3.2. Revise subparagraph (a)(3) to read:

The total mass emissions shall be adjusted as follows:

(1) $M_{hs} = M_{HChs} + (\text{~~14.2284/32.042~~ } \underline{28.44/46.07}) \times 10^{-6}$ $M_{C\underline{2}H\underline{5}\text{~~3~~}OHhs}$

(2) $M_{di} = M_{HCdi} + (\text{~~14.3594/32.042~~ } \underline{28.66/46.07}) \times 10^{-6}$ $M_{C\underline{2}H\underline{5}\text{~~3~~}OHdi}$

(3) $M_{rl} = M_{HCrlt} + (\text{~~14.2284/32.042~~ } \underline{28.44/46.07}) \times 10^{-6}$ $M_{C\underline{2}H\underline{5}\text{~~3~~}OHrlt}$

11.3.3. Revise subparagraph (b) to read: The final evaporative emission test results reported shall be computed by summing the adjusted evaporative emission result determined for the hot soak test (M_{hs}) and the highest 24-hour result determined for the diurnal breathing loss test (M_{di}). The final reported result for the running loss test shall be the adjusted emission result (M_{rl}), expressed on a grams per mile basis.

12. Bleed Emission Test Procedure (BETP)

12.1. Carbon Canister System Stabilization. The carbon canister system shall be stabilized to a 4,000-mile test condition using one of the following methods:

12.1.1. Stabilization on a vehicle. The canister system shall be installed on a representative vehicle, and the vehicle shall be driven for 4,000 miles using ~~California certification fuel~~ the gasoline set forth in part II., section A.100.3.1.2. of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles." The last part of this drive shall consist of an Urban Dynamometer Driving Schedule (UDDS), specified in appendix I of 40 CFR §86.

12.1.2. Carbon Canister System Purge/Load Cycling with Fuel Vapor. The carbon canister system shall be cycle aged no less than 10 cycles using ~~California certification fuel~~ the gasoline referenced in section III.D.12.1.1 by loading the canister

system to 2-gram breakthrough with either a mixture of fuel vapor and nitrogen (50 ± 15 percent fuel vapor by volume) or a mixture of fuel vapor and air (50 ± 15 percent fuel vapor by volume), at a fuel vapor fill rate of 40 to 80 grams per hour. Each loading is followed by purging the canister system with 300 canister bed volume exchanges at 0.8 cfm.

12.1.3. Alternative Carbon Canister System Purge/Load Cycling with Fuel Vapor. The carbon canister system shall be aged no less than 10 cycles using ~~California certification fuel~~ the gasoline referenced in section III.D.12.1.1 by loading and purging the carbon canister system with a method approved in advance by the Executive Officer. The alternative method shall be demonstrated to yield test results equivalent to or more stringent than, those resulting from the use of the method set forth in section III.D.12.1.1 or III.D.12.1.2.

12.2. Fuel Tank Drain/Fill and Soak. A fuel tank that represents the worst case as determined by engineering evaluation shall be drained and filled to 40 percent with ~~California certification fuel~~ the gasoline referenced in section III.D.12.1.1. The tank shall be soaked for a minimum of 6 hours to a maximum of 72 hours at 65 ± 3°F. The canister system load (section III.D.12.3) and soak (section III.D.12.4) can be performed in series or in parallel with the 6 to 72 hour fuel tank soak.

* * * *

F. Fuel Specifications

1. For 2001 through 2014 model motor vehicles, the ~~Evaporative~~ evaporative emission test fuel shall be the fuel specified for exhaust emission testing ~~as specified~~ in part II. section A.100.3. of the "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and ~~for 2001 and Subsequent~~ 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," except as provided in section III.G. of these test procedures.

2. All ~~2015~~ 2014 through 2019 model gasoline-fueled motor vehicles certifying to evaporative emission standards set forth in the section I.E.1.(e) (except those vehicles produced by a small volume manufacturer, as noted below, and those vehicles belonging to carry-over families allowed per section I.E.1.(e)(iii)) shall be tested for evaporative emissions on the gasoline set forth in part II., section A.100.3.1.2. of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles~~"~~." All ~~2015~~ 2014 through 2019 model gasoline-fueled motor vehicles not certifying to evaporative emission standards set forth in the section I.E.1.(e) that are not tested using this gasoline shall ~~may~~ conduct evaporative emission testing with ~~use~~ the test fuel specified in section III.F.1.

All 2020 and subsequent model gasoline-fueled motor vehicles (except those vehicles produced by a small volume manufacturer, as noted below) shall be tested for ~~both exhaust and~~ evaporative emissions on the gasoline set forth in part II., section

A.100.3.1.2. of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles”; evaporative emission testing by the Executive Officer will be performed using said test fuel ~~for both exhaust and evaporative emission testing~~.

A small volume manufacturer shall certify all 2022 and subsequent model motor vehicles to ~~both exhaust and~~the evaporative emission requirements using the gasoline ~~specified for exhaust emission testing described~~ set forth in part II., section A.100.3.1.2. of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles”; evaporative emission testing by the Executive Officer will be performed using said test fuel ~~for both exhaust and evaporative emission testing~~. All 2015 to 2021 model motor vehicles produced by a small volume manufacturer that are not tested using this gasoline shall conduct evaporative emission testing with ~~use~~ the test fuel in section III.F.1.

3. For 2015 and subsequent model motor vehicles other than gasoline-fueled vehicles, the evaporative emission test fuel shall be the applicable fuel specified for ~~exhaust~~ evaporative emission testing in part II. section A.100.3.3 – A.100.3.6 of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles.”

* * * *

State of California
AIR RESOURCES BOARD

PROPOSED 15-DAY MODIFICATIONS

CALIFORNIA REFUELING EMISSION STANDARDS AND TEST PROCEDURES FOR 2001 AND SUBSEQUENT MODEL MOTOR VEHICLES

Adopted: August 5, 1999
Amended: September 5, 2003
Amended: June 22, 2006
Amended: October 17, 2007
Amended: December 2, 2009
Amended: September 27, 2010
Amended: [INSERT DATE OF AMENDMENT]

Note: Proposed amendments to this document are shown in underline to indicate additions and ~~strikeouts~~ to indicate deletions compared to the test procedures as last amended September 27, 2010. Modifications to the originally proposed language made available in connection with this "15-Day Notice" are shown in double underline to indicate additions and ~~double strikeout~~ to indicate deletions compared to the test procedures as proposed December 7, 2011. Staff is proposing modifications to limited portions of the original proposal; for some portions where no modifications

are proposed the text has been omitted and the omission indicated by "* * * *."

Amend "CALIFORNIA REFUELING EMISSION STANDARDS AND TEST PROCEDURES FOR 2001 AND SUBSEQUENT MODEL MOTOR VEHICLES" as incorporated by reference in Title 13, California Code of Regulations, Section 1978 to read:

* * * *

Subpart S Requirements

I. General Certification Requirements for Refueling Emissions

A. Applicability

1. These refueling standards and test procedures are applicable to all new 2001 and subsequent model gasoline-fueled, alcohol-fueled, diesel-fueled, liquefied petroleum gas-fueled, natural gas-fueled, and hybrid electric passenger cars (including 2012 and subsequent model-year off-vehicle charge capable hybrid electric vehicles), light-duty trucks and medium-duty vehicles with a gross vehicle weight rating of less than 8,501 lbs., and to all new complete 2015 and subsequent model gasoline-fueled, alcohol-fueled, diesel-fueled, liquefied petroleum gas-fueled, natural gas-fueled, and hybrid electric (including 2012 and subsequent model-year off-vehicle charge capable hybrid electric vehicles) medium-duty vehicles with a gross vehicle weight rating of 8,501 through 14,000 lbs. A manufacturer may elect to certify 2009 through 2011 model-year off-vehicle charge capable hybrid electric vehicles using these provisions. In cases where a provision applies only to a certain vehicle group based on its model year, vehicle class, motor fuel, engine type, or other distinguishing characteristics, the limited applicability is cited in the appropriate section or paragraph.

* * * *

F. Emission Standards

* * * *

2. The maximum refueling emissions for 2001 and subsequent model passenger cars, light-duty trucks and medium-duty vehicles with a gross vehicle weight rating less than 8,501 lbs., and 2015 and subsequent model complete

medium-duty vehicles with a gross vehicle weight rating 8,501 through 14,000 lbs. for the full useful life are:

* * * *

2.3. Incomplete vehicles of 14,000 pounds gross vehicle weight rating or less that are certified as incomplete vehicles for the purposes of evaporative emissions testing as set forth in the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," ~~optionally certified to complete heavy duty vehicle standards under the provisions of §86.1801–01(c)(2)~~ are not required to demonstrate compliance with the refueling emission standards set forth in 2.1.

* * * *

State of California
California Environmental Protection Agency
AIR RESOURCES BOARD
Stationary Source Division

PROPOSED 15-DAY MODIFICATIONS

CALIFORNIA TEST PROCEDURES FOR EVALUATING SUBSTITUTE FUELS AND NEW CLEAN FUELS IN 2015 AND SUBSEQUENT YEARS

Adopted: [INSERT DATE OF ADOPTION]

Note: Although this is a newly proposed document, changes to this document compared to the current "California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels" are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions compared to the test procedures as adopted November 2, 1993. The following text contains staff's suggested modifications to these test procedures as originally proposed December 7, 2011. Modifications to the originally proposed language made available in connection with this "15-Day Notice" are shown in double underline to indicate additions and double ~~strikeout~~ to indicate deletions compared to the test procedures as proposed December 7, 2011. Staff is proposing modifications to limited portions of the original proposal; for some portions where no modifications are proposed the text has been omitted and the omission indicated by "* * * *" or [No change].

Amend “CALIFORNIA TEST PROCEDURES FOR EVALUATING SUBSTITUTE FUELS AND NEW CLEAN FUELS IN 2015 AND SUBSEQUENT YEARS,” as incorporated by reference in Title 13, California Code of Regulations, Section 2317 to read:

* * * *

CALIFORNIA TEST PROCEDURES FOR EVALUATING SUBSTITUTE FUELS AND NEW CLEAN FUELS IN 2015 AND SUBSEQUENT YEARS

* * * *

XI. *Demonstration Regarding Durability*

* * * *

E. The plan referred to in XI.D may include, but is not limited, to the following:
   -- emission testing
   -- 150,000-mile durability testing with emission tests every 5,000 miles
   -- bench tests, including immersion tests and vapor tests for a variety of automotive materials and components
   -- recommendations on statistical tests to be applied to data

* * * *

Summary of Proposed 15-day Changes Presented at the January 26, 2012 Board Hearing

Summary of 15-Day Changes to Proposed Regulation Order

Modifications to §1961. Exhaust Emission Standards and Test Procedures - 2004 through 2019 ~~and Subsequent~~ Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

Subsection (a)(1) This subsection has been revised to allow 2015-2019 MY LEV II vehicles to certify to combined NMOG+NOx standards instead of separate NMOG and NOx standards.

Subsection (b)(1)(A) This subsection has been revised to allow manufacturers to meet an NMOG+NOx fleet average standard rather than an NMOG fleet average standard for the 2014 model year.

Modifications to §1961.2. Exhaust Emission Standards and Test Procedures - 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

The introduction to this section was modified to allow the Pooling Provision to apply to this entire section, rather than to just the fleet average.

Subsection (a)(1) This subsection has been revised to allow 2015-2019 MY LEV II vehicles to certify to combined NMOG+NOx standards instead of separate NMOG and NOx standards.

Subsection (a)(2) The title of this subsection has been modified.

Subsection (a)(2)(B) This subsection has been modified to allow manufacturers to meet the phase-in requirements for the LEV III medium-duty vehicle particulate standards based on a percentage of the combined sales of medium-duty vehicles weighing 8,501 to 10,000 pounds GVWR and medium-duty vehicles weighing 10,001 to 14,000 pounds GVWR, rather than separate percentages for the two weight classes.

Subsection (a)(7)(A) This subsection has been modified to allow early compliance with 150,000-mile SFTP standards for model year 2014 vehicles. It has also been modified to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline.

Subsection (a)(7)(A)(2) This subsection has been modified to clarify how to project full useful life emission values for vehicles continuing to certify to LEV II SFTP emission standards during the LEV III SFTP phase-in period ("carry-over" test groups). It has also been modified to allow the use of full useful life SFTP values in lieu of projections if such values are used to certify to the 4,000-mile emission standards.

Subsection (a)(7)(B) This subsection has been modified to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline. It has also been modified to reduce the significant figures of the SFTP PM emission standards.

Subsection (a)(7)(C) This subsection has been modified to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline. Also, the naming convention for the UC cycle has been changed to "Hot 1435 UC," to clarify that the required test cycle is a modified UC cycle. In addition, the subsection was modified to clarify how to determine horsepower for the purposes of the MDV standards and to allow manufacturers to use FTP emissions values in place of SC03 emissions values in the composite emission equation.

Subsection (a)(7)(D) This subsection has been modified to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline. It has also been modified to reduce the significant figures of the SFTP PM emission standards. Also, the naming convention for the UC cycle has been changed to "Hot 1435 UC," to clarify that the required test cycle is a modified UC cycle.

Subsection (a)(8)(A)1 Three of the values in the table have been corrected to align them with the proposed values set forth in the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles."

Subsection (a)(8)(C)(2) This subsection has been modified to allow interim in-use SFTP emission standards for new certifications through the 2020 model year.

Subsection (a)(10) The word "shall" has been changed to "may" to make it clear that vehicles that certify to the LEV III SULEV30 or the LEV III SULEV20 standard are not required to generate partial ZEV credits.

Subsection (b)(1)(A) NMOG+NOx fleet average standards have need added to the table for the 2014 model year, to provide an alternative to the NMOG fleet average standards in section 1961.

Subsection (b)(1)(A)1 Text from this subsection has been moved to the Introduction to this section to show that it applies to the entire section. Clarifying language has also been added.

Subsection (b)(1)(A)2 This subsection has been modified to allow manufacturers to use projected sales data rather than actual sales data to determine the minimum number of SULEV30 and SULEV20 vehicles they must produce in the 2018 and subsequent model years.

Subsection (b)(1)(B)1.a An error in the formula has been corrected.

Subsection (b)(1)(B)1.b Errors in the formula have been corrected.

Subsection (b)(1)(B)1.c The table has been modified to allow vehicles certified to federal standards to be included in the fleet average NMOG+NOx calculation based on the actual standards to which they certify. Also, values have been added to the table for LEV II LEV ULEV medium-duty vehicles.

Subsection (b)(1)(B)2 This subsection has been amended to correct an error in the Zero-emission VMT Allowance values that may be used in the calculations.

Subsection (b)(1)(B)3 This subsection has been deleted, because it is no longer needed, due to the modifications to subsection (b)(1)(B)1.c.

Subsection (b)(3)(A) Unnecessary text has been removed.

Subsection (c)(2)(A) The year of applicability for this section has been corrected to align it with the year that the LEV III regulations will apply to medium-duty vehicles. Also, errors in the formulas have been corrected.

Subsection (c)(2)(B) This subsection has been amended to correct an error in the Zero-emission VMT Allowance values that may be used in the calculations.

Subsection (f) This new subsection adds a severability provision to section 1961.2.

Modifications to §1961.3. Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2017 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

Subsection (a)(5)(D)1 This subsection has been modified to eliminate the requirement that a manufacturer that elects to pool its emissions report that selection to ARB prior to the start of each model year to which that selection applies.

Subsection (a)(5)(D)3 This subsection has been modified to add clarifying language.

Modifications to §1976. Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions.

Subsection (b)(1)(G)1.b This subsection has been modified to revise the provisions for trading evaporative emission fleet-average credits among certain vehicle categories.

Subsection (b)(1)(G)2 This subsection has been modified to allow manufacturers to use projected sales data rather than actual sales data to determine the minimum number of vehicles they must produce in the 2015-2017 model years that meet the proposed evaporative emission standards. This subsection has also been modified to base compliance for this requirement upon the average number of vehicles produced over the 2015-2017 time period in lieu of a year-by-year requirement.

Subsection (b)(1)(G)4 This subsection has been revised to modify the pooling compliance option concerning states that adopt California's evaporative emission standards pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507) to specifically set forth required submittal information and to reduce the Executive Officer notification requirement.

Subsection (b)(1)(G)5 This subsection has been revised to allow optional early compliance in the 2014 model year with the proposed evaporative emission standards.

Modifications to §1978. Standards and Test Procedures for Vehicle Refueling Emissions.

Revise exemption for incomplete medium-duty vehicles.

It has been suggested that all incomplete vehicles, rather than just a subset of incomplete vehicles, be exempted from the refueling requirements given the added complexity that testing refueling on incomplete vehicles entails. Staff agrees and proposes a modification to reflect this.

Summary of 15-Day Changes to "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"
Presented at the January 26, 2012 Board Hearing

Part I. Subpart E

Subsection 2.1.1 This subsection has been revised to allow manufacturers to meet an NMOG+NOx fleet average standard rather than an NMOG fleet average standard for the 2014 model year.

Summary of 15-Day Changes to "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles"
Presented at the January 26, 2012 Board Hearing

Part I. Subpart D

Subsection D.2.1.4 This subsection has been revised to require the air to fuel ratio to not be richer than the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of six percent of the fuel consumption.

Subsection D.2.1.6 This subsection has been revised to remove Small Volume Provisions specific to SFTP.

Subsection D.2.2 This subsection has been revised to specify a conversion factor of 1.03 to convert NMHC emission values to NMOG emission values for the purpose of determining SFTP compliance.

Part I. Subpart E

Subsection E.1.1.1 This subsection has been revised to allow 2015-2019 MY LEV II vehicles to certify to combined NMOG+NOx standards instead of separate NMOG and NOx standards.

Subsection E.1.1.2.1 The title of this subsection has been modified.

Subsection E.1.1.2.1.2 This subsection has been modified to allow manufacturers to meet the phase-in requirements for the LEV III medium-duty vehicle particulate standards based on a percentage of the combined sales of medium-duty vehicles weighing 8,501 to 10,000 pounds GVWR and medium-duty vehicles weighing 10,001 to 14,000 pounds GVWR, rather than separate percentages for the two weight classes.

Subsection E.1.2.2.1 This subsection has been revised to allow early compliance with 150,000-mile SFTP standards for model year 2014 vehicles.

Subsection E.1.2.2.1.1 This subsection has been revised to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline for SFTP certification. The table has been corrected to specify that the standards are NMOG-based standards and not NMHC-based standards.

Subsection E.1.2.2.1.2 This subsection has been revised to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline for SFTP certification.

Subsection E.1.2.2.1.2 Footnote 2 of the table has been revised to clarify how to project full useful life emission values for vehicles continuing to certify to LEV II during the LEV III phase-in period ("carry-over" test groups). It has also been modified to allow the use of full useful life SFTP values in lieu of projections if such values are used to certify to the 4,000-mile emission standards.

Subsection E.1.2.2.2 This subsection has been revised to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline for SFTP certification. It has also been modified to reduce the significant figures of the SFTP PM emission standards.

Subsection E.1.2.2.3 This subsection has been revised to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline for SFTP certification. Also, the naming convention for the UC cycle has been changed to "Hot 1435 UC," to clarify that the required test cycle is a modified UC cycle. In addition, the subsection was modified to clarify how to determine horsepower for the purposes of the MDV standards and to allow manufacturers to use FTP emissions values in place of SC03 emissions values in the composite emission equation.

Subsection E.1.2.2.4 This subsection has been revised to require LEV III flex-fueled vehicles to test only on LEV III certification gasoline for SFTP

certification. Also, the naming convention for the UC cycle has been changed to “Hot 1435 UC,” to clarify that the required test cycle is a modified UC cycle. In addition, the subsection was modified to clarify how to determine horsepower for the purposes of the MDV standards and to allow manufacturers to use FTP emissions values in place of SC03 emissions values in the composite emission equation.

Subsection E.1.8 The word “shall” has been changed to “may” to make it clear that vehicles that certify to the LEV III SULEV30 or the LEV III SULEV20 standard are not required to generate partial ZEV credits.

Subsection E.2.1.1 NMOG+NOx fleet average standards have need added to the table for the 2014 model year, to provide an alternative to the NMOG fleet average standards 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.**”**

Subsection E.2.1.1.1 Text has been added to this subsection to extent the pooling provision to other sections of these test procedures that address the phase-in of LEV III standards.

Subsection E.2.1.1.2 This subsection has been modified to allow manufacturers to use projected sales data rather than actual sales data to determine the minimum number of SULEV30 and SULEV20 vehicles they must produce in the 2018 and subsequent model years.

Subsection E.2.1.2.1(a) and (b) Errors in the formulas have been corrected.

Subsection E.2.1.2.1(c) The table has been modified to allow vehicles certified to federal standards to be included in the fleet average NMOG+NOx calculation based on the actual standards to which they certify. Also, values have been added to the table for LEV II LEV ULEV medium-duty vehicles.

Subsection E.2.1.2.2 This subsection has been amended to correct an error in the Zero-emission VMT Allowance values that may be used in the calculations.

Subsection E.2.1.2.3 This subsection has been deleted, because it is no longer needed, due to the modifications to subsection E.2.1.2.2.

Subsection E.2.3.1(a) Unnecessary text has been removed.

Subsection E.2.5.5.4.1 This subsection has been modified to eliminate the requirement that a manufacturer that elects to pool its emissions report that selection to ARB prior to the start of each model year to which that selection applies.

Subsection E.2.5.5.4.3 This subsection has been modified to add clarifying language.

Subsection E.3.1.2.1 The year of applicability for this section has been corrected to align it with the year that the LEV III regulations will apply to medium-duty vehicles. Also, errors in the formulas have been corrected.

Subsection E.3.1.2.2 This subsection has been amended to correct an error in the Zero-emission VMT Allowance values that may be used in the calculations.

Subsection E.4.3.1 This subsection has been revised to allow interim in-use SFTP emission standards for new certifications through the 2020 model year.

Part I. Subpart G

Subsection G.3.5 Testing requirements for demonstration of compliance with the LEV III PM standards have been added.

Part I. Subpart H

Subsection H.1.4.6 This subsection was revised to reference the correct title of the applicable document.

Part II. Subpart A

Subsection 100.3.1.2 Errors in the footnotes in the table have been corrected.

Subsection 100.3.4 This subsection has been revised to require the use of the proposed test fuel containing ten percent ethanol for evaporative emission testing of flex fuel vehicles.

Subsection 100.5.5.1 This subsection has been revised to allow use of a road-speed modulated fan in place of a fixed speed fan on the US06 cycle.

Subsection 100.5.5.2 This subsection has been revised to define the “Hot 1435 Unified Cycle” test. Subsection 100.5.5.2.2.2 has been revised to

specify that the engine compartment shall remain closed if a road-speed modulated fan is used.

Subsection 100.5.5.3.2.2.2 This subsection has been revised to specify that the engine compartment shall remain closed if a road-speed modulated fan is used.

Part II. Subpart G

This section has been added to specify the speed vs. time sequence for the Hot 1435 Unified Cycle Driving Schedule.

Summary of 15-Day Changes to "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles"

Presented at the January 26, 2012, Board Hearing

Part I. Subpart E

Subsection 1.(e)(i)(B) This subsection has been modified to revise the provisions for trading evaporative emission fleet-average credits among certain vehicle categories.

Subsection 1.(e)(ii) This subsection has been modified to allow manufacturers to use projected sales data rather than actual sales data to determine the minimum number of vehicles they must produce in the 2015-2017 model years that meet the proposed evaporative emission standards. This subsection has also been modified to base compliance for this requirement upon the average number of vehicles produced over the 2015-2017 time period in lieu of a year-by-year requirement.

Subsection 1.(e)(iv) This subsection has been modified to add a provision for the pooling compliance option concerning states that adopt California's evaporative emission standards pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

Subsections 1.(e)(v) This subsection has been revised to allow optional early compliance in the 2014 model year with the proposed evaporative emission standards.

Part III. Subpart D

Subsections 1.1, 10.1, 10.15, and 11 These subsections have been revised to provide equations and instructions for evaporative testing with the proposed certification test fuel containing ten percent ethanol.

Subsection 11.3.1 This subsection has been revised to add an optional hydrocarbon mass adjustment factor for ethanol in lieu of directly measuring ethanol emissions.

Subsection 12 This subsection has been modified to allow air to be mixed with fuel vapor for canister stabilization in the bleed emission test procedure and to specifically set forth a requirement to use the proposed ethanol-containing certification fuel for this test.

Part III. Subpart F

Subsection 2 This subsection has been revised to require the use of the new certification fuel containing ten percent ethanol for vehicles that comply with the proposed evaporative emission standards in the 2014 model year and to clarify the proposed evaporative emission test fuel requirement and implementation date for gasoline-fueled vehicles.

Subsection 3 This subsection has been revised to clarify the evaporative emission test fuel requirement for alternative-fueled vehicles.

Summary of 15-Day Changes to "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" Presented at the January 26, 2012 Board Hearing

Subpart S, Subsections I.A.1, I.F.2, and I.F.2.3 It has been suggested that all incomplete vehicles, rather than just a subset of incomplete vehicles, be exempted from the refueling requirements given the added complexity that testing refueling on incomplete vehicles entails. Staff agrees and proposes these modifications to reflect this change.

Summary of 15-Day Changes to "California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels <u>in 2015 and Subsequent Years</u>" Presented at the January 26, 2012 Board Hearing

Subsection XI.E This subsection has been revised to align the durability demonstration requirements with those required under the LEV III regulations.