Attachment F-2 - This version annotates the changes made available for comment.

ATTACHMENT F-2

California Environmental Protection Agency

AIR RESOURCES BOARD

PROPOSED 15-Day Changes

CALIFORNIA 2026 AND SUBSEQUENT MODEL CRITERIA POLLUTANT EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES

Adopted: [INSERT DATE OF ADOPTION]

[Note: The proposed modifications, referred to as 15-Day Changes, to the originally proposed test procedures are shown below. The originally proposed test procedure language released for a period of at least 45-days on April 12, 2022, is shown in "normal type." The deletions and additions to the originally proposed language that comprise the 15-day Changes that are made public with this Notice and available for comment are shown in ~~strikethrough~~ to indicate deletions and <u>underline</u> to indication additions. The 15-Day Changes are being presented in two versions. This version F-2 also complies with Government Code sections 11346.2, subdivision (a)(3), and 11346.8, subdivision (c). For ease of readability, and to review the 15-Day Changes in an Accessible format, please refer to version F-2.1.

Staff is proposing modifications to limited portions of the original proposal; for some portions of the original proposal for which no modifications are proposed, the text has been omitted and the omission is indicated by "* * * * *".]

Attachment F-2 - This version annotates the changes made available for comment.

NOTE: This document is incorporated by reference in title 13, California Code of Regulations (CCR), section~~s~~ 1961.4(~~f~~c). It contains the majority of the requirements necessary for certification of a passenger car, light-duty truck, or medium-duty vehicle for sale in California, in addition to containing the exhaust emission standards and test procedures for these motor vehicles. However, reference is made in these test procedures to other CARB documents that contain additional requirements necessary to complete an application for certification. These other documents are designed to be used in conjunction with this document. They include:

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CALIFORNIA 2026 AND SUBSEQUENT MODEL CRITERIA POLLUTANT EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES

The provisions of Subparts B, C, S, and ~~S~~T, Part 86, Title 40, Code of Federal Regulations~~,~~ (CFR), as adopted or amended on May 4, 1999 or as last amended on such other date set forth next to the 40 CFR Part 86 section title listed below and the provisions of Part 1065 and 1066, Title 40, CFR, as last amended on the date set forth next to the 40 CFR Part 1065 or 40 CFR Part 1066 section title listed below, and to the extent they pertain to exhaust emission standards and test procedures, are hereby adopted as the "California 2026 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," with the following exceptions and additions.

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

§ 86.1 Incorporation by Reference. October 25, 2016.

A. General Applicability

1. § 86.1801 Applicability.

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

~~Amend~~1.1.1 Delete subparagraph (a~~) as follows~~). Replace with the following:

Except as otherwise indicated, the provisions of this subpart apply to new passenger cars, light-duty trucks, and medium-duty vehicles, including multi-fueled, alternative fueled, hybrid electric, plug-in hybrid

electric, and electric vehicles. 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 of this subpart.

1.1.1.1 Subparagraph (1): [No change.]

1.1.1.2 Delete subparagraph (2). Replace with the following: The provisions of this subpart apply for all medium-duty passenger vehicles and for all other medium-duty vehicles.

1.1.1.3 Delete subparagraph (3). Replace with the following: Incomplete heavy-duty vehicles above 14,000 pounds GVWR and complete vehicles above 14,000 pounds GVWR are subject to the standards and incorporated test procedures in title 13, CCR, section 1956.8.

1.1.1.4 Subparagraph (4): [No change.]

1.1.2 Subparagraph (b): *Relationship to subpart A of this part.* [n/a]

1.1.3 Subparagraph (c): *Clean alternative fuel conversions.* [n/a]

~~Amend~~1.1.4 Delete subparagraph (d~~) as follows~~). Replace with the following:

Small volume manufacturers. Special certification procedures are available for any manufacturer whose projected or actual 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. For manufacturers certifying for the first time in California, model-year production volume shall be based on projected California sales. The small-volume manufacturer's light- and medium-duty vehicle and truck certification procedures are described in 40 CFR § 86.1838, as modified in section Part I, section G.12 of these test procedures.

1.1.5 Subparagraph (e): *You.* [n/a]

1.1.6 Subparagraph (f): *Vehicle.* [No change.]

~~1.1.1 Amend subparagraph (g) *Complete and incomplete vehicles* as follows: A manufacturer must certify any heavy-duty complete Otto-cycle vehicle or complete diesel vehicle of 14,000 pounds Gross Vehicle Weight Rating (GVWR) or less and any medium-duty passenger vehicle in accordance with the medium-duty chassis standards in title 13, CCR,~~

~~section 1961.4. A manufacturer must certify any heavy-duty vehicle of 10,000 pounds GVWR or less, including incomplete Otto-cycle vehicles and incomplete heavy-duty diesel vehicles, in accordance with the LEV IV medium-duty chassis standards in title 13, CCR, section 1961.4. A manufacturer must certify any heavy-duty engine and vehicle of 10,001-14,000 pounds GVWR to the medium-duty engine standards in title 13, CCR, section 1956.8. A manufacturer may request to certify LEV IV heavy-duty complete diesel vehicles of 10,001 – 14,000 pounds GVWR to the chassis standards in title 13, CCR, section 1961.4; heavy-duty engine or heavy-duty vehicle provisions of 40 CFR Part 86 subpart A do not apply to such a vehicle or engine.~~

1.1.7 Subparagraph (g): *Complete and incomplete vehicles.* [No change.]

1.1.8 Subparagraph (h): [No change.]

1.1.9 Subparagraph (i): [No change.]

1.1.10 Subparagraph (j): [n/a]

1.1.11 Subparagraph (k): [n/a]

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3. § 86.1802 Section Numbering; Construction.

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3.3 ~~3.3~~ In cases where the entire CFR section is incorporated by reference with no modifications, the notation "[No change.]" is used. In cases where there are no changes to the CFR language but there are additional California requirements, the notation "[No change.]" is used and the additional California requirements are then noted in a separate subsection with the numbering convention set forth in Part I, section A.3.2, above. For example, Part I, section B.1 incorporates all of the definitions in CFR section 86.1803-01 into these test procedures. Part I, section B.2 establishes additional California definitions for terms that are not included in CFR section 86.1803-01, but are applicable to these test procedures. In addition, Part I, section B.2 redefines terms that are included in CFR section 86.1803-01, if needed, to make the definitions more applicable to California's regulatory requirements.

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3.5 The notation "Delete" means that the section (including all subsections) does not apply. The notation "Delete; Replace with the following" means to delete the text of that section (and delete all subsections) and replace with language provided.

3.6 The notation "Amend as follows" means that the text set forth in these test procedures has been modified from the text that appears in the incorporated section of the CFR, as noted.

B. Definitions, Acronyms and Abbreviations

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2. California Definitions.

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"Attestation" means a statement signed and dated by an individual, who is employed by a manufacturer and authorized to affirm the attested statement on behalf of the manufacturer, certifying under penalty of perjury under the laws of the State of California that the attested statement is true, accurate, and complete.

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C. General Requirements for Certification

1. § 86.1805 Useful Life.

1.1. § 86.1805-17. October 25, 2016. Amend as follows:

* * * * *

~~1.1.2 Amend subparagraph (b) as follows: Delete; Replace with: The full useful life of passenger cars, light-duty trucks, and medium-duty passenger vehicles certified to the greenhouse gas standards in title 13, CCR, section 1961.3 shall be 15 years or 150,000 miles, whichever occurs first.~~1.1.2 Subparagraph (b): [n/a]

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3. § 86.1807 Vehicle Labeling.

3.1 § 86.1807-01. April 28, 2014. Amend as follows:

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3.1.4 Subparagraphs (c)(1)(ii)(A) through (c)(1)(ii)(D): [n/a]

3.1.5 Subparagraphs (c)(1)(iii) through (c)(3): [No change.]

3.1.~~5~~6 Subparagraph (d): Delete and replace with: Incomplete medium-duty vehicles shall have the following statement printed prominently on the label required by paragraph (a)(3)(v) of this section: "This vehicle conforms to California regulations applicable to new 20xx model-year (specify ULEV400, ULEV270, ULEV250, ULEV200, ULEV125, ULEV70, ULEV60, ULEV50, ULEV40, SULEV230, SULEV200, SULEV175, SULEV170, SULEV150, SULEV125, SULEV100, SULEV85, SULEV75, SULEV30, SULEV25, SULEV20, or SULEV15, as applicable) medium-duty vehicles when it does not exceed XXX pounds in curb weight, XXX pounds in gross vehicle weight rating, and XXX square feet in frontal area."

~~3.1.6 Subparagraph (e): [No change.]~~

3.1.6.1 Subparagraphs (d)(1) and (d)(2): [n/a]

3.1.7 Subparagraph (e): [No change.]

3.1.8 Subparagraph (f): [No change.]

3.1.~~8~~9 Subparagraph (g): Add the following: The manufacturer shall obtain approval from the Executive Officer for all emission control label formats and locations prior to use. If the Executive Officer finds that the information on the label is vague or subject to misinterpretation, or that the location does not comply with these specifications, the Executive Officer may require that the label or its location be modified accordingly. Samples of all actual production emission control labels used within a test group shall be submitted to the Executive Officer within thirty days after the start of production. The Executive Officer may approve alternate label locations or may, upon request, waive or modify the label content requirements provided that the intent of these requirements is met. If the Executive Officer finds any motor vehicle or motor vehicle engine manufacturer using emission control labels which are different

from those approved or which do not substantially comply with the readability or durability requirements set forth in these labeling requirements, the Executive Officer may invoke title 13, CCR, section 2109.

3.1.~~9~~10 Subparagraph (h): [n/a]

3.1.11 Subparagraph (i): [No change.]

3.2 California Labeling Requirements.

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

(a) "CA OBD II" or "OBD Exempt".

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

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Any other information necessary to identify the Exhaust Emission Control System.

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

1. § 86.1810-17. February 19, 2015. Amend § 86.1810-17 as follows:
This section applies to model year 2026 and later passenger cars, light-duty trucks, and medium-duty vehicles fueled by gasoline, diesel, methanol, ethanol, natural gas and liquefied petroleum gas fuels. Multi-fueled vehicles (including bi-fueled, dual-fueled and flexible-fueled vehicles~~)~~), including vehicles certifying with carryover data, shall comply with all requirements established ~~for each consumed~~when operating on either fuel (or blend of fuels in the case of flexible-fueled vehicles). This section also applies to hybrid electric vehicles. The standards of this subpart apply to both certification and in-use vehicles unless otherwise indicated.

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1.3 Subparagraph (f) *Altitude Requirements*. [No change~~, except that 50°F standards and SFTP standards shall only apply at low altitude conditions.~~].]

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

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1.7.4 **''Lean-on-cruise'' calibration strategies**. Manufacturers may use ''lean-on-cruise'' strategies subject to the following specifications:

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b. A ''lean-on-cruise'' strategy must not be employed during vehicle operation in normal driving conditions, including A/C usage, unless at least one of the following conditions is met: (i) Such strategies are substantially employed during the FTP, US06, or SC03 duty cycle~~.~~; (ii) Such strategies are demonstrated not to significantly reduce vehicle emission control effectiveness over the operating conditions in which they are employed~~.~~; (iii) Such strategies are demonstrated to be necessary to protect the vehicle occupants, engine, or emission control hardware.

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2. Measurement of Hydrocarbon Emissions.

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2.3 For vehicles certifying to the SFTP standards set forth in title 13, CCR, section 1961.4(~~c)(9),~~d)(3) or (e)(3), as applicable, hydrocarbon emissions shall be measured in accordance with Part B (Determination of NMHC Emissions by Flame Ionization Detection) of the "California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles". For alcohol-fueled vehicles certifying to the standards in title 13, CCR, section 1961.4(~~c)(9),~~d)(3) or (e)(3), as applicable, "Non-Methane Hydrocarbons" shall mean "Organic Material Non-Methane Hydrocarbon Equivalent."

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G. Procedures for Demonstration of Compliance with Emission Standards

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2. § 86.1828 Emission data vehicle selection

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2.2 **50°F Requirements.**

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2.2.2 The same test group shall not be selected in the succeeding two years unless the manufacturer produces fewer than ~~three~~nine test groups. If the manufacturer produces more than three ULEV400, ULEV270, ULEV250, ULEV200, ULEV125, ULEV70, ULEV60, ULEV50, ULEV40, SULEV230, SULEV200, SULEV175, SULEV170, SULEV150, SULEV125, SULEV100, SULEV85, SULEV75, SULEV30, SULEV25, SULEV20, or SULEV15 test groups per model year, the Executive Officer may request 50°F testing of specific test groups. If the manufacturer provides a list of the ULEV400, ULEV270, ULEV250, ULEV200, ULEV125, ULEV70, ULEV60, ULEV50, ULEV40, SULEV230, SULEV200, SULEV175, SULEV170, SULEV150, SULEV125, SULEV100, SULEV85, SULEV75, SULEV30, SULEV25, SULEV20, or SULEV15 test groups that it will certify for a model year and provides a description of the technologies used on each test group (including the information in Part I, section G.2.2.1), the Executive Officer shall select the test groups subject to 50°F testing within a 30 day period after receiving such a list and description. The Executive Officer may revise the test groups selected after the 30 day period if the information provided by the manufacturer does not accurately reflect the test groups actually certified by the manufacturer.

2.3 **LEV IV PM Requirements.**

2.3.1 **Vehicle Selection**. A manufacturer shall select emission data and/or engineering development vehicles each year from PC or LDT test groups and separate emission data and/or engineering development vehicles from MDV test groups according to the requirements in Part I, section G.3.~~5~~4. Within each test group, the vehicle configuration shall be selected which is expected to be worst-case for FTP PM exhaust emission compliance on candidate in-use vehicles.

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

3.1 § 86.1829-15. February 19, 2015. Amend as follows:

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~~3.1.2 Subparagraph (c) Add the following: For Otto-cycle vehicles or hybrid vehicles that use Otto-cycle engines, evidence shall be supplied showing that the air/fuel metering system or secondary air injection system is capable of providing sufficient oxygen to theoretically allow enough oxidation to attain the CO emission standards at barometric pressures equivalent to those expected at altitudes ranging from sea level to an elevation of 6000 feet. For fuel injected vehicles or hybrid electric vehicles that use fuel-injected engines, compliance may be demonstrated upon a showing by the manufacturer that the fuel injection system distributes fuel based on mass air flow, rather than volume flow, and is therefore self-compensating. All submitted test proposals will be evaluated on their acceptability by the Executive Officer. As an alternative to the demonstration described above, a manufacturer may demonstrate compliance by testing California vehicle configurations as part of its federal high altitude certification requirements. Engine families that meet all the applicable California low altitude emission standards when tested at the EPA test elevation are deemed to be in compliance. The SFTP standards, Partial Soak NMOG+NOx exhaust standards, Quick Drive-Away NMOG+NOx standards, and Cold Start US06 NMOG+NOx exhaust emission standards do not apply to testing at high altitude.~~

3.1.2 Subparagraph (c): [No change.]

3.1.3 Subparagraph (d): [Delete; see section Part I, section G.3.~~5~~4 below, except as follows.]

3.1.4 Subparagraph (d)(4): [No change.]

3.1.5 Subparagraph (e): [Delete. (The provisions of this section that pertain to evaporative testing are contained the "California Evaporative Emission Standards and Test Procedures for 2026 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Heavy-Duty Vehicles." The provisions of this section that pertain to refueling testing are contained the "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles.")]

3.1.6 Subparagraph (f): [No change.]

3.1.7 Delete subparagraph (g). Replace with the following: For zero-emission vehicles, manufacturers may provide a statement in the application for certification that vehicles comply with all the requirements of this subpart instead of submitting test data. Tailpipe emissions of regulated pollutants from vehicles powered solely by electricity are deemed to be zero.

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3.3 **Highway Fuel Economy Test.**

The exhaust emissions, including non-methane organic gas emissions, shall be measured from all exhaust emission data vehicles tested in accordance with the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600 Subpart B or 40 CFR § 1066.840, as modified in Part II of these test procedures with the migration provisions of § 600.111-08 introduction). The oxides of nitrogen emissions measured during such tests shall be multiplied by the oxides of nitrogen deterioration factor computed in accordance with 40 CFR § 86.1823 and added to the non-methane organic gas emissions. This sum shall be rounded and compared with the NMOG+NOx certification level, as required in title 13, CCR, sections 1961.4(~~c)(8~~d)(5) and (e)(5). All data obtained pursuant to this paragraph shall be reported in accordance with procedures applicable to other exhaust emission data required pursuant to these procedures. In the event that one or more of the manufacturer's emission data vehicles fail the HWFET standard listed title 13, CCR, sections 1961.4(~~c)(8),~~d)(5) or (e)(5), as applicable, the manufacturer may submit to the Executive Officer engineering data or other evidence showing that the system is capable of complying with the standard. If the Executive Officer finds, on the basis of an engineering evaluation, that the system can comply with the HWFET standard, he or she may accept the information supplied by the manufacturer in lieu of vehicle test data.

3.4 ~~**SC03 Test.**~~

~~Except for medium-duty passenger vehicles, in lieu of testing a medium-duty vehicle for SC03 emissions for certification, the manufacturer may submit to the Executive Officer an attestation that the system complies with the NMOG+NOx and CO standards in title 13, CCR, section 1961.4(c)(9)(F).~~

~~3.5~~ **LEV IV PM Testing Requirements.**

For the 2026 and subsequent model years, a manufacturer must submit test data for test groups certifying to the LEV IV PM standards according to the

following table. Once a test group has been used to meet the requirements of this Part I, section G.3.~~5~~4 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 IV PM standards. For all test groups that are certified to LEV IV 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 IV PM standards.

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

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8. **§ 86.1834 Allowable maintenance.**

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~~8.2 **HEVs.**~~

~~The manufacturer shall equip the vehicle with a maintenance indicator consisting of a light that shall activate automatically by illuminating the first time the minimum performance level is observed for all battery system components. Possible battery system components requiring monitoring are: (i) battery water level; (ii) temperature control; (iii) pressure control; and (iv) other parameters critical for determining battery condition.~~

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H. Certification, Information and Reporting Requirements.

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

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1.3 **SFTP**. For vehicles certified to the SFTP standards in title 13, CCR, section 1961.4(~~c)(9),~~d)(3) or (e)(3), as applicable, full useful life shall mean 15 years or 150,000 miles, whichever occurs first.

1.4 **Demonstration of Vehicle Model Equivalency**.

1.4.1 For the purpose of demonstrating compliance with the requirements in title 13, CCR, section 1961.4(c)(~~15~~5), a California vehicle model is to be treated as equivalent to a federal vehicle model if all of the following characteristics are identical.

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1.4.3 The requirements in Part I, section H.1.4 do not apply in the case of a federally-certified vehicle model that meets the requirements of title 13, CCR, section 1961.4(c)(~~15~~5)(B).

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3. § 86.1843 General information requirements

3.1 § 86.1843-01. April 28, 2014. [No change.]

3.2 **Credit Reporting**.

In order to verify the status of a manufacturer's compliance with the fleet average and phase-in requirements in title 13, CCR, sections 1961.4(d~~)(1) through (d)(6), or the greenhouse gas requirements in title 13, CCR, section 1961.3~~) and (e) for a given model year, and in order to confirm the accrual of credits or debits, each manufacturer shall submit an annual report to the Executive Officer which sets forth the production data used to establish compliance, by no later than March 1 ~~or May 1, respectively,~~ of the calendar year following the close of the model year.

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

4.1 § 86.1844-01. October 25, 2016. Amend as follows:

4.1.1 All NMOG test results and certification levels and all NOx test results and certification levels must be reported as separate values and as NMOG plus NOx values for the purpose of complying with this Part I, section H.4.

4.1.2 § 86.1844-01 (a) through (c): [No change.]

4.1.3 Modify § 86.1844-01(d) as follows:

4.1.3.1 ~~(a)~~ Modify ~~§ 86.1844-01~~subparagraph (d)(7)(i) as follows: For vehicles certified to any LEV IV emission standards, include a comparison of drive-cycle metrics as specified in 40 CFR 1066.425(j) for each drive cycle or test phase, as appropriate.

4.1.3.2 ~~(b)~~ Delete ~~§ 86.1844-01~~subparagraph (d)(9).

4.1.3.3 ~~(c) § 86.1844-01~~Delete subparagraph (d)(11)(iii~~). Delete;);~~ Replace with: For vehicles with spark-ignition engines, describe how AECDs are designed to comply with the requirements of Part I, section D.1.7. Identify which components need protection through enrichment strategies; describe the temperature limitations for those components; and describe how the enrichment strategy corresponds to those temperature limitations.

4.1.3.4 ~~(d)~~ Delete ~~§ 86.1844-01~~subparagraph (d)(15)(ii) and replace it with the following: For vehicles with fuel fired heaters, a manufacturer must include the information specified in Part I, section H.4.4.

4.1.~~3~~4 Modify § 86.1844-01(e) as follows:

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

~~(a)~~4.1.4.1.1 The information required in sections 2037, 2038 and 2039, title 13, CCR.

~~(b)~~4.1.4.1.2 The NMOG/NMHC and/or formaldehyde to NMHC ratios established according to Part I, section I.1.2 of these test procedures.

~~4.1.4 Delete § 86.1844-01(e)(7).~~

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~~4.5 **Greenhouse Gas Reporting Requirements.**~~

~~(a) For the purpose of demonstrating compliance with greenhouse gas requirements in title 13, CCR, section 1961.3, the manufacturer shall provide by May 1 of the calendar year following the close of the model year:~~

~~(i) all data in accordance with the reporting requirements as required under 40 CFR § 86.1865-12; and~~

~~(ii) final combined and individual state volumes of vehicles produced and delivered for sale for each model type and footprint for 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).~~

~~(b) All data submitted in accordance with this Part I, section H.4.5, must be submitted electronically and organized in a format specified by the Executive Officer to clearly demonstrate compliance with California's greenhouse gas exhaust emission requirements in title 13, CCR, section 1961.3.~~4.1.4.2 Delete subparagraph (e)(4) and replace it with the following: Final California vehicle sales volumes for each test group, including each ZEV test group, and evaporative/refueling family combination organized in such a way to verify compliance with any applicable implementation schedules. Final sales are not required until the final update to the Part 2 Application at the end of the model year.

4.1.4.2.1 Subparagraphs (e)(4)(i) and (e)(4)(ii): [No change.]

4.1.4.3 Delete § 86.1844-01(e)(7).

4.1.5 Subparagraphs (f) through (i): [No change.]

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Attachment F-2 - This version annotates the changes made available for comment.

I. In-Use Compliance Requirements and Procedures

1. § 86.1845 Manufacturer in-use verification testing requirements.

1.1. § 86.1845-04. October 25, 2016. Amend as follows:

1.1.1 Table S04-06 - California Small Volume Manufacturers and Small Volume Test Groups

California only test group annual sales[1]	1-1,500	1,501-4,500
Low Mileage	Voluntary	0
High Mileage	Voluntary	2[2]

[1] Total annual production of groups eligible for testing under small volume sampling plan is capped at a maximum of 4,500 California-only production volume per model year, per large volume manufacturer. All other remaining large volume manufacturers' small volume test groups shall meet the requirements in Table S04-07 below.

[2] Particulate emissions must be measured for one vehicle per test group that certifies to the LEV IV particulate standards to demonstrate compliance with the applicable FTP standard. The same vehicle must also be tested to demonstrate compliance with the LEV IV SFTP particulate standard in title 13, CCR, section 1961.4(~~c~~)(9)(B)d)(3)(A)1. or (~~c~~)(9)(E),e)(3)(A)1., as applicable.

1.1.2 Table S04-07 - California Large Volume Manufacturers

California only test groups - annual sales	4,500-15,000	15,001-25,000	>25,000
Low Mileage	2[1]	3[2]	4[2]
High Mileage	4[2]	5[3]	6[3]

[1] Particulate emissions must be measured for one vehicle per test group that certifies to the LEV IV particulate standards to demonstrate compliance with the applicable FTP standard. Each vehicle must also be tested to demonstrate compliance with the LEV IV SFTP particulate standard in title 13, CCR, section 1961.4(~~c~~)(9)(B)d)(3)(A)1. or (~~c~~)(9)(E),e)(3)(A)1., as applicable.

[2] Particulate emissions must be measured for two vehicles per test group that certifies to the LEV IV particulate standards to demonstrate compliance with the applicable FTP standard. Each vehicle must also be tested to demonstrate compliance with the LEV IV SFTP particulate standard in title 13, CCR, section 1961.4(~~c~~)(9)(B)d)(3)(A)1. or (~~c~~)(9)(E),e)(3)(A)1., as applicable.

[3] Particulate emissions must be measured for three vehicles per test group that certifies to the LEV IV particulate standards to demonstrate compliance with the applicable FTP standard. Each vehicle must also be tested to demonstrate compliance

with the LEV IV SFTP particulate standard in section title 13, CCR, section 1961.4(~~c)(9)(B)~~d)(3)(A)1. or (~~c)(9)(E),~~e)(3)(A)1., as applicable.

1.1.3 **High Mileage Testing.** Amend subparagraph (c)(2) of 40 CFR § 86.1845-04 to read as follows: At least one vehicle of each test group certified to the emission standards in title 13, CCR, section 1961.4~~(c)(1~~ (d)(2)(A)1. or (e)(2)(A) must have a minimum odometer mileage of 105,000 miles or 75 percent of full useful life mileage. See 40 CFR § 86.1838-01(c)(2) for small volume manufacturer mileage requirements.

~~1.1.1 **High Altitude Testing.** Amend subparagraph (c)(5)(i) of 40 CFR § 86.1845-04 by adding the following sentence: High altitude testing shall not apply at 50°F. High altitude testing is not required for demonstrating compliance with the Partial Soak NMOG+NOx standards in title 13, CCR, section 1961.4(c)(6), the Quick Drive Away NMOG+NOx standards in title 13, CCR, section 1961.4(c)(7), or the High Power Cold Start US06 standards in title 13, CCR, section 1961.4(c)(10).~~

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1.1.4 **High Altitude Testing.** Subparagraph (c)(5)(i) of 40 CFR § 86.1845-04: [No change.]

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4. California Provisions: Certification and In-Use testing requirements for chassis certified Medium-Duty Vehicles (MDV) with a Gross Combined Weight Rating (GCWR) greater than 14,000 pounds, using the Moving Average Window (MAW).

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4.1. **Test Procedures for Three Binned Moving Average Window (3B-MAW) and Moving Average Window (MAW). Applies to 2027 and subsequent model year diesel and Otto-cycle vehicles.**

* * * * *

4.1.6 At least 50% of non-idle operation during the manufacturer's test shall include ~~towing with a combined vehicle weight~~operation with a minimum of 70% GCWR~~ within ±5%.~~. If a trailer is used to achieve this GCWR, then the trailer must comply with requirements of SAE J2807, Section 4.4.1, Table 1, however the frontal area of the trailer shall not exceed the

manufacturer-specified maximum frontal area for towing. For trailers which exceed 24,000 lbs. (10,886 kg), the minimum trailer frontal area is 75 ft^2 (6.97 m^2)~~, however the frontal area of the trailer shall~~) but must not exceed the manufacturer-specified maximum frontal area for towing.

4.1.6.1 If based on good engineering judgement the manufacturer chooses to use a trailer not meeting the SAE J2807 specifications, ~~then CARB may review~~the manufacturer must provide an explanation for why it is using the trailer it selected in addition to the specifications of the alternate trailer as part of the test plan approval process in Part I, section I.4.3. As part of their review and ~~determine if it may be used~~approval of the test plan per Part I, section I.4.3.3, the Executive Officer shall review and approve the trailer for testing~~. The manufacturer will have to provide supporting~~ upon confirming the manufacturer's explanation and submitted documentation ~~for the alternate trailer~~demonstrate the selected trailer is representative of common usage for the vehicle being tested and that a trailer meeting SAE J2807 specifications is not representative of common usage or is otherwise infeasible to use for testing.

* * * * *

4.1.9 **Valid tests**. ~~Retesting must be conducted if a test is determined to be invalid. A~~ If all the valid test ~~is determined by meeting all of the following~~ conditions~~:~~

in I.4.1.~~2~~9 are not met, the test is invalid, and retesting must be conducted.

4.1.9.1 **Test start**: emissions sampling (NMHC, CO, NOx, PM and CO_2), exhaust flowrate parameters, and sampling of relevant OBD parameters, and ambient temperature and humidity shall commence prior to starting the engine. The coolant temperature shall not exceed 86° F (30° C) at the beginning of the test. If the ambient temperature and the coolant temperature exceeds 86° F (30° C) at the start of the test, the test is void and testing shall be rescheduled. If a manufacturer believes that conditions may be infeasible to meet the cold start requirements (for example, due to ambient temperatures that are too high), the manufacturer may request approval from the Executive Officer to begin the test sampling period without a cold start as part of the test plan approval process described in Part I, section I.4.3.

4.1.~~2~~9.2 This step applies to diesel vehicles: Each bin will be required to have a minimum of 2,400 valid windows. If the 2,400 valid windows in any bin is not achieved, continue with additional testing and if needed testing on additional days to achieve the minimum window requirements for each bin. If testing fulfills the valid window requirements for the low load and the medium/high load bins but does not fulfill the valid window requirements of the idle bin, then the manufacturer may idle the vehicle at the end of the test sampling period for a minimum of forty minutes and a maximum of sixty minutes to satisfy the valid window requirement of the idle bin.

4.1.~~2~~9.3 This step applies to Otto-cycle vehicles: The test will be required to have a minimum of 2,400 valid windows. If 2,400 valid windows are not achieved during the first test sampling period, continue with additional testing and, if needed, testing on additional days to achieve a minimum of 2,400 valid windows.

4.1.~~2~~9.4 For 2027 through 2029 model year vehicles only, the average engine power over the test must be equal to or greater than 10% of the engine's peak power for a valid test. In the event of an invalid test, the manufacturer shall retest the vehicle additional days until a valid test is achieved.

* * * * *

4.3. **Test Plan Approval**.

The manufacturer must send test plans for pre-approval by CARB's Executive Officer a minimum of 30 calendar days prior to testing for each vehicle tested. Test plans, notifications, and communications related to this subsection must be sent to: iuvp@arb.ca.gov

4.3.1 Test plans must include ~~but are not limited to~~ the following vehicle, engine, OBD/MIL, maintenance, and PEMS system information~~ outlined in the following bulleted list~~:

* * * * *

4.3.2 The manufacturer must identify weather or logistical circumstances making the cold start requirements infeasible for the particular test. If a manufacturer believes that conditions may be infeasible to meet the cold start requirements (for example, due to ambient temperatures that are too high or fleet procedures), the manufacturer may request approval from the Executive Officer to begin the test sampling period without a

cold start. The Executive Officer will approve said request if he or she determines that the identified circumstances will not allow the manufacturer to meet the cold start test requirements. In assessing the request, the Executive Officer will reply based on information provided by the manufacturer and his or her engineering judgment.

* * * * *

4.5. **CARB Authority to Test for In-use Compliance.**

4.5.1 The ~~CARB~~ Executive Officer is authorized to conduct ~~I~~in-use ~~C~~compliance testing ~~using the appropriate procedures in title 13, CCR, §1961.4,~~ to identify vehicles that fail to conform to the applicable emission standards in this Part I, section I.4 of the MAW in-use test procedures, and to take corrective action against the manufacturers of such vehicles based on the results of this testing. The Executive Officer may conduct testing under any operating conditions where the emission standards apply as reasonably necessary to confirm compliance with any regulatory provision. Such testing imposes no additional responsibilities on the manufacturer and is undertaken solely by CARB for assessing compliance. Testing by the Executive Officer is not subject to the restrictions imposed on manufacturer self-testing under sections I.4.1.4, I.4.1.6, and I.4.1.9.1.

* * * * *

4.6. **Test group selection and MAW in-use program requirements**

4.6.1 **§ 86.1905 How does this program work?** November 2, 2010. Amend as follows:

4.6.1.1 References to "engines" shall mean "vehicles". References to "engine families" shall mean "test groups". "Phase 1" and "Phase 2" testing shall mean testing required by Part I, section I.4 of these test procedures.

4.6.1.2 Subparagraph (a)

4.6.1.2.1 Delete subparagraph (a)(1). Replace with: The manufacturer must test in-use vehicles from the test groups CARB selects. CARB ~~may~~will select up to 25 percent of the manufacturer's test groups in any calendar year, calculated by dividing the number of test groups the manufacturer certified in the model year corresponding to the calendar year by four and rounding to the nearest whole number. If the manufacturer has only three or fewer test groups, CARB ~~may~~will select one test group per calendar year for testing.

4.6.1 Over any four-year period, CARB will not select more than the average number of test groups that the manufacture has certified over that four-year period (the model year when the selection is made and the preceding three model years), based on rounding the average value to the nearest whole number.

4.6.2 If there is clear evidence of a nonconformity with regard to a test group, CARB may select that test group without counting it as a selected test group under this section. CARB will consult with the manufacturer in reaching a conclusion whether clear evidence of a nonconformity exists for any test group. In general, there is clear evidence of a nonconformity regarding a test group under this section in any of the following cases:

4.6.3.1 The test group was not remedied but is a carry-over from a test group the manufacturer tested under these test procedures and was subsequently remedied based at least in part on the outcomes described in these test procedures.

4.6.3.2 The test group was not remedied but is a carry-over from a test group that was remedied based on a U.S. EPA in-use testing program.

4.6.3 The manufacturer must complete all the required testing and reporting under these sections within 18 months after CARB directs the manufacturer to test a particular test group. CARB will typically select test groups for testing and notify the manufacturer in writing by June 30 of the applicable calendar year. The manufacturer may ask for up to six months longer to complete testing if there is a reasonable basis for needing more time. In very unusual circumstances the manufacturer may request an additional six months to complete testing.

4.6.4 If the manufacturer makes a good faith effort to access enough test vehicles to complete testing requirements under these sections for a test group, but are unable to do so, the manufacturer must ask CARB either to modify the testing requirements for the selected test group or select a different test group.

4.6.5 After the manufacturer completes the in-use testing requirements for a test group that CARB selected for testing in a given calendar year, CARB may select that same test group in a later year to evaluate the test group's compliance closer to the end of its useful life. This would count as an additional test group selection under Part I, section I., except as described in Part I, section I..

4.6.1.2.2 Subparagraph (a)(2): [No change.]

4.6.1.3 Subparagraph (b): [No change.]

4.6.1.4 Subparagraph (c): [n/a]

4.6.1.5 Subparagraphs (d) through (f): [No change.]

~~4.6.1.1~~4.6.1.6 Delete subparagraph (g). Replace with: For any communication related to this Part I, section I.4.6, contact iuvp@arb.ca.gov.

4.7. **MAW Vehicle Selection and Screening**

4.7.1 **§ 86.1908 How must I select and screen my in-use engines?** June 14, 2005. Amend as follows:

4.7.1.1 References to "engines" shall mean "vehicles". References to "engine families" shall mean "test groups".

~~4.7.1.1~~4.7.1.2 Amend subparagraph (a) as follows: Once CARB directs the manufacturer to do testing under these sections, the manufacturer must select test vehicles that meet the following criteria:

4.7.1.2.1 Delete subparagraph (a)(1). Replace with: The vehicles must be representative of the test group. Select vehicles based on relatively high sales, median and higher frontal area/vehicle body size, median to higher tow capable vehicles in the test group.-

4.7.1.2.2 ~~The usage of~~Subparagraphs (a)(2) through (a)(5): [No change.]

~~4.7.1.1~~ Delete subparagraph (a)(6). Replace with the ~~vehicles must be representative of typical usage for the vehicles' particular application.~~

~~4.7.1.2 The vehicles come from at least two independent sources.~~

~~4.7.1.3 The key vehicle/engine systems (e.g., power train, drive train, emission control) have been properly maintained and used.~~

~~4.7.1.4 The vehicles have not been tampered with, rebuilt or undergone major repair that could be expected to affect emissions.~~

~~4.7.1.2.2~~4.7.1.2.3 following: The vehicles have not been misfueled. The use of commercially available diesel and biofuel blends that meet

California's fuel specifications in title 4, CCR, section 4148, will not be considered misfueled.

~~4.7.1.2.3~~4.7.1.2.4 Delete subparagraph (a)(7). Replace with: The ~~vehicles~~engines do not have an illuminated MIL or stored OBD trouble code that ~~leads the manufacturer~~lead you to reject the vehicle from the test program as described in Part~~.~~ I, section I~~..~~.4.8.1.3.1 of these test procedures.

~~4.7.1.2.4~~4.7.1.2.5 Delete subparagraph (a)(8): Replace with: The vehicles are likely to operate for at least three hours (excluding idle) over a complete test sampling period~~.~~, as described in Part I, section I.4.1.4 of these test procedures.

~~4.7.1.2.5~~4.7.1.2.6 Delete subparagraph (a)(9). Replace with: The vehicles have not exceeded the applicable useful life ~~in miles or years. The manufacturer~~, in Part I, section C.1 of these test procedures; you may otherwise not exclude ~~engines~~vehicles from testing based on their age or mileage.

~~4.7.1.5 The vehicle has appropriate space for safe and proper mounting of the PEMS equipment.~~

4.7.1.2.7 Subparagraph (a)(10): [No change.]

~~4.7.1.2~~4.7.1.3 Delete subparagraph (b). Replace with: The manufacturer must keep any records of a vehicle's maintenance and use history obtained from the owner or operator, as required by Part I, section I.4.10 of these test procedures. The manufacturer must report the engine's maintenance and use history and information related to the OBD system, as described in Part I, section I.4.9 of these test procedures.

~~4.7.1 The manufacturer must notify CARB before rejecting a candidate vehicle for reasons other than failing to meet the acceptance criteria of this section. A candidate vehicle is any prospective vehicle identified to potentially fulfill testing requirements under these test procedures. Include reasons for rejecting each vehicle. If an owner declines to participate in the test program, the manufacturer may reject the vehicle without prior notification. Such a rejection must be reported as described in these test procedures. CARB may allow replacing the rejected vehicle with another candidate vehicle to meet testing requirements for the specific test group.~~

~~4.7.2 The manufacturer must report when, how, and why candidate vehicles are rejected, as described in the MAW reporting section.~~

4.7.1.4 Subparagraphs (c) and (d): [No change, except references to § 86.1920 shall mean section Part I, section I.4.9 of these test procedures.]

4.8. **Vehicle Preparation for MAW In-use Testing**

~~4.8.1 Limit maintenance to what is in the owner's manual for vehicles with that amount of service and age. For anything CARB considers an adjustable parameter (see Part I, section G.7), the manufacturer may adjust that parameter only if it is outside of its adjustable range. The manufacturer must then set the adjustable parameter to the mid-point of its adjustable range or the recommended setting, unless CARB approves the request to do otherwise. The manufacturer must receive permission from CARB before adjusting anything not considered to be an adjustable parameter. The manufacturer must keep records of all maintenance and adjustments, as required by these test procedures. The manufacturer must send CARB these records, as described in reporting section for the MAW, unless CARB instructs not to send them.~~

4.8.1 ~~The manufacturer may treat a vehicle with an illuminated MIL or stored trouble code~~**§ 86.1910 How must I prepare and test my in-use engines?** October 25, 2016. Amend as follows:

4.8.1.1 References to "engines" shall mean "vehicles". References to "engine families" shall mean "test groups".

4.8.1.2 Delete subparagraph (a): [No change, except the reference to §§ 86.094-21(b)(1)(ii) and 86.094-22(e) shall mean 40 CFR § 86.1833-01, the reference to § 86.1925 shall mean Part I, section I.4.10 of these test procedures, and the reference to § 86.1920 (b)(3)(x) shall mean Part I, section I.4.9 of these test procedures.]

4.8.1.3 Subparagraph (b). Amend as follows:

4.8.1.3.1 Subparagraphs (b)(1) and (b)(2): [No change, except references to § 86.1920 shall mean Part I, section I.4.9 of these test procedures.]

~~4.8.1.3.1~~4.8.1.3.2 Subparagraph (b)(3). Amend as follows:

~~4.8.2.1 If the length of MIL illumination or trouble code storage is consistent with proper maintenance and use, either test the prospective test vehicle as received or repair the vehicle before testing. If the manufacturer elects to repair the vehicle/engine, but ultimately determines that repairs cannot be completed in a timely manner, the manufacturer may reject the vehicle from the test program and replace it with another vehicle. If the~~

~~manufacturer repairs or rejects the vehicle, the manufacturer must describe the MIL or trouble code information in the report.~~

~~4.8.2.2 If the length of MIL illumination or trouble code storage is inconsistent with proper maintenance and use, either test the prospective test vehicle as received, repair the vehicle before testing, or reject the vehicle from the test program and replace it with another vehicle. If the manufacturer repairs or rejects the vehicle, the manufacturer must describe the MIL or trouble code information in the report.~~

~~4.8.2 If a MIL is illuminated or a trouble code is set during an in-use test, do one of the following:~~

~~4.8.3.1 Stop the test, repair the vehicle, and restart the testing. In this case, only the portion of the full test results without the MIL illuminated or trouble code set would be used in the vehicle-pass determination as described in Part I, section I.4.4. Describe the MIL or trouble code information in the report.~~

~~4.8.3.2 Stop the test, repair the vehicle, and initiate a new test. In this case, only the post-repair test results would be used in the vehicle-pass determination as described in Part I, section I.4.4. Describe the MIL or trouble code information in the report.~~

~~4.8.3.3 If three hours of operation have been accumulated prior to the time a MIL is illuminated or trouble code set, stop the test and use the accumulated test results in the vehicle-pass determination as described in Part I, section I.4.4.~~

~~4.8.3.4 If three hours of operation have not been accumulated prior to the time a MIL is illuminated or trouble code is set, and the manufacturer elects to repair the vehicle/engine, but ultimately determines that repairs cannot be completed in a timely manner, the manufacturer may reject the vehicle from the test program and replace it with another vehicle. If the manufacturer repairs or rejects the vehicle, the manufacturer must describe the MIL or trouble code information in the report.~~

4.8.1.3.2.1 Subparagraphs (b)(3)(i) through (b)(3)(iii). [No change, except references to § 86.1912 shall mean Part I, section I.4.4 of

these test procedures and references to § 86.1920 shall mean Part I, section I.4.9 of these test procedures.]

4.8.1.3.2.2 Subparagraph (b)(3)(iv): [No change, except references to § 86.1920 shall mean Part I, section I.4.9 of these test procedures.]

~~4.8.1.14~~4.8.1.4 Subparagraph (c): Use appropriate fuels for testing, as follows:

4.8.1.4.1 ~~For~~ Delete subparagraph (c)(1). Replace with: For diesel vehicles,~~-~~the manufacturer shall use any commercially available diesel fuel that meets the specifications for No. 2-D S15 in ASTM D 975 (incorporated by reference in 40 CFR § 86.1~~section 86.1),~~), as required in the calendar year that in-use testing occurs. ~~For diesel vehicles, the~~

~~4.8.1.4.14~~4.8.1.4.2 Delete subparagraph (c)(2). Replace with: The manufacturer may ~~alternatively~~ use any commercially available biodiesel fuel blend.

4.8.1.4.3 ~~For Otto cycle~~Delete subparagraph (c)(3). Replace with: For diesel vehicles, the manufacturer may drain a prospective test vehicle's fuel tank(s) and refill the tank(s) with diesel fuel conforming to ASTM D 975 specifications in Part I, section I.4.8.1.4.1 or commercially available biodiesel described in Part I, section I.4.8.1.4.2 of these test procedures. For gasoline vehicles, the manufacturer may drain and refill tank(s) with commercially available fuel described in Part I, section I.4.8.1.4.4 of these test procedures.

~~4.8.1.4.24~~.8.1.4.4 Add the following new requirement for gasoline vehicles: For gasoline vehicles, the manufacturer shall use commercially available fuel that meets the following California fuel specifications:

4.8.1.4.4.1 For conventional gasoline vehicles: California Reformulated Gasoline Phase 3 as indicated in title 13, CCR, ~~section~~ § 2262.

4.8.1.4.4.2 For flex-fueled gasoline vehicles: E-85 Fuel Ethanol as indicated in title 13, CCR, ~~section~~§ 2292.4.

~~4.8.4.1 Any fuel that is added to the fuel tank(s) of a prospective test vehicle, or during an in-use test, must be purchased at a local retail establishment near the site of vehicle procurement or screening, or along the test route. Alternatively, the fuel may be drawn from a central fueling source, provided that the fuel~~

~~used is representative of that which is commercially available in the area where the vehicle is operated.~~

~~4.8.4.2 No post-refinery fuel additives are allowed, except that one or more specific fuel additives may be used during in-use testing if the manufacturer can document that the owner/operator of the prospective test vehicle has a history of normally using the fuel treatment(s), and the fuel additive(s) is not prohibited in the vehicle's owner or operator manual or in the engine manufacturer's published fuel-additive recommendations.~~

4.8.1.4.5 Subparagraph (c)(4) and (c)(5): [No change.]

~~4.8.1.4.3~~4.8.1.4.6 Delete subparagraph (c)(6). Replace with: The manufacturer may take fuel samples from test vehicles to ensure that appropriate fuels were used during in-use testing. If a vehicle fails the vehicle-pass criteria and the manufacturer can show through fuel sample testing that an inappropriate fuel was used during the failed test, that particular test may be voided, and then drain the vehicle's fuel tank(s) and refill the tank(s) with the appropriate fuel~~.~~ described in Part I, section I.4.8.1.4 . The manufacturer must report any fuel tests that are the basis of voiding a test in the report~~.~~ under Part I, section I.4.9 of these test procedures.

4.8.1.5 Subparagraph (d): [Delete; See Part I, sections I.4.1 and I.4.2.]

~~4.8.1.2~~4.8.1.6 Delete subparagraph (e). Replace with: The manufacturer must test the vehicle under conditions reasonably expected to be encountered during normal vehicle operation and use. For the purposes of Part I, section I.4 of these ~~sections~~test procedures, normal operation and use would generally include consideration of the vehicle's normal routes and loads (including auxiliary loads such as air conditioning in the cab), ~~and~~ normal ambient conditions.

~~4.8.3 The manufacturer may ask CARB to waive measurement of a particular emissions if the manufacturer can show that in-use testing for such emissions is not necessary.~~

4.8.1.7 Subparagraphs (f) through (i): [n/a]

4.8.1.8 Subparagraph (j): [No change.]

4.9. **MAW In-use Reporting**

~~4.9.1 Send CARB electronic reports to iuvp@arb.ca.gov. If the manufacturer wants to~~ **§ 86.1920 What in-use** ~~a different format, send CARB a written request with justification.~~

4.9.1 ~~Within 45 days after the end of each calendar quarter, send CARB reports containing the test data from each vehicle for which~~ **testing** ~~was completed during the calendar quarter. Alternatively, the manufacturer may separately send CARB the test data within 30 days after the manufacturer completes testing for a vehicle. If the manufacturer requests it, CARB may allow additional time to send this~~ **information**~~. Once the manufacturer sends CARB information under this section, the manufacturer does not send that information again in later reports. Prepare test reports~~ **must I report to EPA?** October 25, 2016. Amend as follows:

~~4.9.2.1 For each test group, describe how the manufacturer recruited vehicles. Describe how the manufacture used any criteria or thresholds to narrow the search or to screen individual vehicles.~~

~~4.9.2.2 Include a summary of the candidate vehicles rejected and the reasons the manufacturer rejected them, whether the manufacturer base the rejection on the criteria in these test procedures or anything else. If the manufacturer rejected a candidate vehicle due to misfueling, include the results of any fuel sample tests.~~

~~4.9.2.3 For the test vehicle, include the following background information:~~

~~4.9.2.3.1 The CARB test group designation, and the engine's model number, total displacement, and power rating.~~

~~4.9.2.3.2 The date CARB selected the test group for testing.~~

~~4.9.2.3.3 The vehicle's make and model and the year it was built.~~

~~4.9.2.3.4 The vehicle identification number and engine serial number.~~

4.9.1.1 References to "engines" shall mean "vehicles". References to "engine families" shall mean "test groups". References to "EPA" shall mean "CARB".

4.9.1.2 Subparagraph (a): [No change, except replace the address where reports must be sent to with iuvp@arb.ca.gov.]

4.9.1.3 Subparagraph (b). Amend as follows:

4.9.1.3.1 Subparagraph (b)(1): [No change.]

4.9.1.3.2 Subparagraph (b)(2): [No change, except the reference to § 86.1908(a) shall mean Part I, section I.4.7 of these test procedures.]

4.9.1.3.3 Subparagraph (b)(3). Amend as follows:

4.9.1.3.3.1 Subparagraph (b)(3)(i): [No change.]

4.9.1.3.3.2 Subparagraph (b)(3)(ii): [n/a]

4.9.1.3.3.3 Subparagraphs (b)(3)(iii) through (b)(3)(v): [No change.]

~~4.9.1.3.3.1~~4.9.1.3.3.4 Delete subparagraph (b)(3)(vi). Replace with: The vehicle's type or application. Also, identify the type of trailer and weight loading.

~~4.9.2.3.5 The vehicle's maintenance and use history.~~

~~4.9.2.3.6 The known status history of the vehicle's OBD system and any actions the owner or operator took to address OBD trouble codes or MIL illumination over the vehicle's lifetime.~~

~~4.9.2.3.7 Any OBD codes or MIL illumination that occur after the manufacturer accepts the vehicle for in-use testing under this section.~~

~~4.9.2.3.8 Any steps the manufacturer took to maintain, adjust, modify, or repair the vehicle or its engine to prepare for or continue testing, including actions to address OBD trouble codes or MIL illumination. Include any steps taken to drain and refill the vehicle's fuel tank(s) to correct misfueling, and the results of any fuel test conducted to identify misfueling.~~

~~4.9.2.4 For each test, include the following data and measurements:~~

~~4.9.2.4.1. The date and time of testing, and the test number.~~

4.9.1.3.3.5 Subparagraphs (b)(3)(vii) through (b)(3)(x): [No change.]

4.9.1.3.4 Subparagraph (b)(4). Amend as follows:

4.9.1.3.4.1 Subparagraph (b)(4)(i): [No change.]

~~4.9.1.3.4.1~~4.9.1.3.4.2 Delete subparagraph (b)(4)(ii). Replace with: Days of testing, duration of testing, and the total hours of operation.

4.9.1.3.4.3 ~~Route and location of testing. The manufacturer may base this description on~~Subparagraphs (b)(4)(iii): [No change.]

~~4.9.2.4.2.~~ Subparagraph (b)(4)(iv): [No change, except ~~output from a global positioning system.~~

~~4.9.1.3.4.2~~4.9.1.3.4.4 ~~The steps the manufacturer took~~reference to ~~ensure that vehicle operation during testing was consistent with normal operation and use, as described in~~ § 86.1910 (e) shall mean Part I, section I.4.8.1.6 of these test procedures~~.~~.]

~~4.9.2.4.3. Fuel test results, if fuel was tested under these test procedures.~~

~~4.9.2.4.4. The vehicle's mileage at the start of the test. Include the engine's total lifetime hours of operation, if available.~~

~~4.9.2.4.5. Ambient temperature, dewpoint, and atmospheric pressure at the start and finish of each valid window.~~

4.9.1.3.4.5 Subparagraph (b)(4)(v): [No change, except the reference to § 86.1908 or § 86.1910 shall mean Part I, section I.4.7 or section I.4.8 of these test procedures.]

4.9.1.3.4.6 Subparagraphs (b)(4)(vi) and (b)(4)(vii): [No change, except replace the term "NTE event" with "window".]

~~4.9.1.3.4.3~~4.9.1.3.4.7 Delete subparagraph (b)(4)(viii). Replace with: Total number of windows and the number of windows per bin.

~~4.9.1.3.4.4~~4.9.1.3.4.8 Delete subparagraph (b)(4)(ix). Replace with: Describe the method used to determine NMHC as specified in 40 CFR § 1065, subpart J. Report ~~analysis as described in the 3B-MAW and MAW sections~~the results of testing conducted per Part I, section I.4.1 of these test procedures.

~~4.9.2.4.6. Exhaust flow measurements.~~

4.9.1.3.4.9 Subparagraph (b)(4)(x): [No change.]

4.9.1.3.4.10 Subparagraph (b)(4)(xi): [n/a]

~~4.9.1.3.4.5~~4.9.1.3.4.11 Delete subparagraph (b)(4)(xii). Replace with: The manufacturer shall collect at a minimum the following data stream values (if the vehicle is so-equipped) at 1 second intervals (i.e., 1 Hertz) and submit the data in a comma separated value file for each test.

- ~~Ambient temperature.~~

- ~~Ambient pressure.~~
- ~~Ambient humidity.~~
- ~~Altitude.~~
- ~~Emissions of THC, NMHC, CO, CO_2 or O_2, and NO_x (as appropriate). Report results for PM if it was measured in a manner that provides one-hertz test data. Report results for CH_4 if it was measured and used to determine NMHC.~~
- ~~Differential back-pressure of any PEMS attachments to vehicle exhaust.~~
- ~~Exhaust flow~~

4.9.1.3.4.11.1 Subparagraphs (b)(4)(xii)(A) through (b)(4)(xii)(G): [No change.]

~~4.9.1.3.4.11.1~~4.9.1.3.4.11.2 Delete subparagraph (b)(4)(xii)(H). Replace with: Exhaust aftertreatment temperatures

- ~~Engine brake torque.~~
- ~~Intake manifold temperature.~~
- ~~Intake manifold pressure.~~
- ~~Throttle position.~~
- ~~Any parameter sensed or controlled in order to modulate the emission control system~~
- ~~engine speed~~

4.9.1.3.4.11.3 Subparagraph (b)(4)(xii)(I) and (b)(4)(xii)(O): [No change.]

4.9.1.3.4.11.4 Add the following to the list of required data:

- actual engine torque
- reference engine maximum torque
  - ~~engine coolant temperature~~
- engine oil temperature
- fuel rate
- modeled exhaust flow
- intake air/manifold temperature

- air flow rate (from mass air flow sensor)
- fuel injection timing
- EGR mass flow rate
- commanded EGR valve duty cycle/position
- actual EGR valve duty cycle/position
- EGR error between actual and commanded
- boost pressure
- commanded/target boost pressure
- PM filter inlet temperature
- PM filter outlet temperature
- exhaust gas temperature sensor output
- variable geometry turbo position
- corrected NOx sensor output.
- DEF dosing mode
- stability of NOx sensor reading
- engine friction – percent torque
- commanded DEF dosing
- DEF usage for current driving cycle
- DEF dosing rate
- charge air cooler outlet temperature
- SCR intake temperature
- SCR outlet temperature
- modeled actual ammonia storage level on SCR
- target ammonia storage level on SCR
- NOx mass emission rate – engine out
- NOx mass emission rate – tailpipe
- Vehicle speed
- Engine run time
- Hydrocarbon doser flow rate

~~4.9.1.3.4.11.2~~4.9.1.3.4.11.5 For in-use testing, the manufacturer shall additionally collect an OBD scan (i.e., snapshot of data) of all data stream parameters, all service mode data, and all tracked data (i.e., all data required in title 13, CCR~~,~~ sections 1968.~~2g~~2 g(4), g(5), and g(6)) at the beginning of the test sampling period, at any key-off events, and the end of each test sampling period during testing.

4.9.1.3.5 ~~Include~~Subparagraph (b)(5): [n/a]

4.9.1.3.6 Subparagraph (b)(6): Amend as follows:

~~4.9.2.4.12~~Add the following~~ summary information after the manufacturer completes testing with the vehicle:~~

4.9.1.3.6.1 : For vehicles, identify the in-use thresholds for the 3B-MAW and MAW as described in Part I, section I.4.1 of these test procedures.

4.9.1.3.6.2 ~~State whether the vehicle meets the vehicle-pass criteria in~~ Subparagraph (b)(6)(i): [No change, except the reference to § 86.1912(f) shall mean Part I, section I.4.1 of these test procedures~~.~~.]

~~(i) Identify how many vehicles the manufacturer has tested from the applicable test group and how many vehicles still need to be tested.~~

~~(ii) Identify how many vehicles from a test group have passed the vehicle-pass criteria and the number that have failed the vehicle-pass criteria.~~

4.9.1.3.6.3 Subparagraph (b)(6)(ii): [No change.]

4.9.1.3.6.4 Subparagraph (b)(6)(iii): [No change, except the reference to § 86.1912(f) shall mean Part I, section I.4.1 of these test procedures.]

4.9.1.3.6.5 Delete subparagraph (b)(6)(iv). Replace with: If possible, state the outcome of testing for the test group based on the criteria in Part I, section I.4.4 of these test procedures.

4.9.1.4 Subparagraph (c). Amend as follows:

4.9.1.4.1 Subparagraph (c)(1) through (c)(6): [No change, except the reference to § 86.1912 shall mean Part I, section I.4.1 of these test procedures~~.~~.]

~~4.9.2 In the reports under this section, the manufacturer must do all~~Add the following~~:~~

~~4.9.3.1 Include results from all emission testing required under these sections.~~

~~4.9.3.2 Describe if any testing or evaluations were conducted to determine why a vehicle failed the vehicle-pass criteria in these test procedures.~~

~~4.9.3.3 Describe the purpose of any diagnostic procedures conducted.~~

~~4.9.3.4 Describe any instances in which the OBD system illuminated the MIL or set trouble codes. Also describe any approved actions taken to address the trouble codes or MIL.~~

~~4.9.3.5 Describe any instances of misfueling, the approved actions taken to address the problem, and the results of any associated fuel sample testing.~~

~~4.9.3.6 Describe any incomplete or invalid tests that were conducted under these sections.~~

4.9.1.4.2 requirement: For ~~Otto-cycle~~gasoline vehicles, show how enrichment operation was determined and used for data exclusion.

~~4.9.3 Send CARB an electronic notification at iuvp@arb.ca.gov describing any voluntary vehicle/engine emission evaluation testing the manufacturer intends to conduct with portable in-use measurement systems on the same test groups that are being tested under these sections, from the time that test group was selected for in-use testing under these test procedures until the final results of all testing for that test group are reported to CARB under this section.~~

4.9.1.5 Subparagraph (d): [No change, except that electronic notifications must be sent to CARB at iuvp@arb.ca.gov, and the reference to § 86.1905 shall mean Part I, section I.4.6 of these test procedures.]

~~4.9.1.1~~4.9.1.6 Delete subparagraph (e). Replace with: Send CARB an electronic notification at iuvp@arb.ca.gov within 15 days after the manufacturer's initial review of the test data for a selected test group indicates that three vehicles have failed to comply with the vehicle-pass criteria.

~~4.9.4 CARB may ask the manufacturer to send less information in the reports than specified in this section.~~

4.9.1.7 Subparagraph (f): [No change.]

~~4.9.1.2~~4.9.1.8 Delete subparagraph (g). Replace with: CARB may require the manufacturer to send more information to evaluate whether the test group meets the requirements of this part, or to help inform potential decisions concerning testing.

4.10. **MAW In-use Records**

~~4.10.1 Manufacturer must organize and maintain records as described in this section. CARB may review the manufacturer records at any time, so it is important to keep required information readily available.~~

4.10.1 ~~Keep the following paper or electronic records~~**§ 86.1925 What records must I keep?** June 14, 2005. Amend as follows:

4.10.1.1 References to "engines" shall mean "vehicles". References to "engine families" shall mean "test groups". References to "EPA" shall mean "CARB".

4.10.1.2 Subparagraph (a): [No change.]

4.10.1.3 Subparagraph (b). Amend as follows:

~~4.10.2~~ Subparagraph (b)(1): [No change, except the reference to § 86.1920 shall mean Part I, section I.4.9 of ~~in-use testing for five years after completing all the testing required for a test group:~~

4.10.1.3.1 ~~Keep a copy of the reports described in~~ these test procedures~~.~~.]

4.10.1.3.2 ~~Keep any additional records, including forms created, and related~~Subparagraph (b)(2). Amend as follows:

~~4.10.2.1~~ Subparagraph (b)(2)(i): [No change, except the reference to ~~any~~§ 86.1908 shall mean Part I, section I.4.7 of ~~the following:~~

4.10.1.3.2.1 ~~The procurement and vehicle selection process described in~~ these test procedures~~, including the vehicle owner's name, address, phone number, and e-mail address.~~.]

4.10.1.3.2.2 ~~Pre-test maintenance and adjustments to the engine performed under~~ Subparagraph (b)(2)(ii): [No change, except the reference to § 86.1910 shall mean Part I, section I.4.8 of these test procedures~~.~~.]

4.10.1.3.2.3 ~~Test results for all void, incomplete, and voluntary testing described in~~Subparagraph (b)(2)(iii): [No change, except the reference to § 86.1920 shall mean Part I, section I.4.9 of these test procedures.]

~~4.10.1.3.2.3~~4.10.1.3.2.4 Subparagraph (b)(2)(iv): [No change, except the reference to § 86.1912 shall mean Part I, section I.4.1 of these test procedures~~.~~.]

~~4.10.2.1.1 Evaluations to determine why a vehicle failed the vehicle-pass criteria described in these test procedures.~~

4.10.1.3.3 ~~Keep a copy of the relevant calibration results.~~Subparagraph (b)(3): [No change, except delete reference to 40 CFR part 1065.]

Appendices I, II, and III to 40 CFR, Part 86, Subpart S [No change.]

J. Procedural Requirements

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13. § 86.1862-04 Maintenance of records and submittal of information relevant to compliance with fleet ~~-~~average ~~NOx~~ standards. ~~[n/a]~~October 25, 2016.

13.1 Amend subparagraph (a) as follows: *Overview.* This section describes reporting and recordkeeping requirements for all vehicles subject to the emission standards in title 13, CCR, sections 1961.4, 1962.4, and 1976.

13.2 Subparagraph (b): [No change.]

13.3 Amend subparagraph (c) as follows:

13.3.1 Subparagraphs (c)(1) through (c)(3): [No change.]

Delete subparagraph (c)(4). Replace with: Unless a manufacturer reports the data required by this section in the annual production report required under § 86.1844-01(e), a manufacturer must submit an annual report for each model year after production ends for all affected vehicles produced by the manufacturer subject to the provisions of this subpart and no later than March 1 of the calendar year following the given model year. Annual reports must be provided to the California Air Resources Board through the electronic Document Management System available through the website: https://arb.ca.gov/certification-document-management-system

* * * * *

13.3.2 .

13.3.3 Subparagraph (c)(5): [n/a]

13.3.4 Subparagraph (c)(6): [No change, except replace references to "EPA" with references to "the Executive Officer of the California Air Resources Board."]

13.4 Subparagraph (d): [n/a]

* * * * *

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

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B. 40 CFR Part 1066 – Vehicle-Testing Procedures.

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1. Subpart G – Calculations.

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1066.635 NMOG determination. October 25, 2016. ~~[n/a]~~[n/a, except as as noted in "California NMOG Determination," below.]

California NMOG Determination. The provisions of Part ~~II~~I, section D.2 shall apply. A manufacturer may use the conversion factors in section 1066.635 as an alternative to the conversion factors in section Part ~~II~~I, section D.1.7.5~~ as alternatives to those set forth in this section § 1066.635~~.

* * * * *

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

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1066.815 Exhaust emission test procedures for FTP testing. October 25, 2016.

9.1. **Exhaust emission test procedures for Partial Soak FTP testing.**

Amend § 1066.815 as follows:

* * * * *

9.1.4 Amend subparagraph (d) as follows: *Test sequence*. Follow the exhaust emission measurement procedures specified in § 1066.410 through 1066.425, subject to the following exceptions and additional provisions:

* * * * *

9.1.4.3 Amend subparagraph (3) as follows: This completes the procedure for measuring Partial Soak FTP exhaust emissions. ~~The~~To determine compliance with the Partial Soak emission standards, the test sequence ~~outlined~~ in Part II, sections B.9.1.4.1.2 to B.9.1.4.~~3~~1.4 may be repeated to measure Partial Soak FTP exhaust emissions on additional Partial Soak FTP tests.

* * * * *

~~D.~~I. Test Procedures for 2026 and Subsequent Model Hybrid-Electric Vehicles, Except Plug-in Hybrid Electric Vehicles.

This section, Part II, section I, contains the test procedures for 2026 and subsequent model hybrid-electric vehicles, except plug-in hybrid electric vehicles. Plugin hybrid-electric vehicles must be tested in accordance with the "California Test Procedures for 2026 and Subsequent Model Zero-Emission Vehicles and Plug-in Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck, and Medium-Duty Vehicle Classes." A manufacturer of a hybrid vehicle equipped with an energy storage device that is not included in these procedures may request Executive Officer approval to employ an alternative to the SOC Criterion in Part II, section I.5. Executive Officer approval of an SOC Criterion alternative shall be conditioned upon the manufacturer providing supporting data and/or engineering evaluation demonstrating the equivalence of the proposed alternative procedure to the SOC Criterion.

Confirmatory testing and in-use compliance testing for Part II, section I may be performed in any driver-selectable mode to ensure compliance with emission standards.

* * * * *

2. Urban Emission Test Provisions for All Hybrid Electric Vehicles, Except Hybrid Fuel Cell Vehicles and Plug-in Hybrid Electric Vehicles.

* * * * *

~~Confirmatory testing and/or in-use compliance testing may be performed in any driver-selectable mode to ensure compliance with emission standards.~~

* * * * *

2.3. **Urban Dynamometer Test Run, Gaseous and Particulate Emissions for All Hybrid Electric Vehicles, Except** Hybrid Fuel Cell Vehicles **and Plug-in Hybrid Electric Vehicles.**

* * * * *

2.3.14 Amend subparagraph (2)(i): Initiate the hot-start UDDS cycle in the same driver-selectable mode as in Part II, section I.2.3.10 above (9 to 11~~)~~ minutes) after the end of the sample period for the cold-start UDDS cycle.

* * * * *

3. Highway Emission Test Provisions for All Hybrid Electric Vehicles, Except Hybrid Fuel Cell Vehicles and Plug-in Hybrid Electric Vehicles.

* * * * *

3.1. Determination of Highway Emissions for All Hybrid Electric Vehicles, Except Hybrid Fuel Cell Vehicles and Plug-in Hybrid Electric Vehicles**.**

To be conducted pursuant to 40 CFR §1066.840 with the following revisions:

3.1.1 Amend subparagraph (a): Perform the Highway Emission Test immediately following the Urban Emission Test or a previous Highway Emission Test when this is practical. If the Highway Emission Test starts more than 3 hours after the Urban Emission Test (including evaporative emission measurements, if applicable) or a previous Highway Emission Test, operate the vehicle over one UDDS cycle to precondition the vehicle. If driver-selectable modes are available, activate the driver-selectable mode to be tested for the UDDS preconditioning drive. ~~Additional preconditioning UDDS cycles may be approved in advance by the Executive Officer if the need for additional preconditioning is demonstrated by the manufacturer.~~

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4. SFTP Emission Test Provisions for All Hybrid Electric Vehicles, Except Hybrid Fuel Cell Vehicles and Plug-in Hybrid Electric Vehicles.

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4.1. **US06 Emission Test.**

To be conducted pursuant to 40 CFR § 1066.831 with the following revisions:

* * * * *

4.1.6 Amend subparagraph (b)(3)(ii~~): Operate~~) as follows: Delete the following sentence: For our testing, we will generally operate the vehicle ~~one time~~ over ~~one of the driving schedules specified in this paragraph (b)(3)(ii). A particular~~the same preconditioning ~~driving schedule~~cycle that ~~is related to fuel effects on adaptive memory systems may~~will be ~~requested.~~ used

for testing in this section. Add the following sentence: If driver-selectable modes are available, activate the driver-selectable mode to be tested for the preconditioning drive and for the following US06 cycle with emission sampling. ~~Sampling equipment may be exercised, but emissions measured during preconditioning may not be used to determine compliance with applicable emission standards. Choose from the following driving schedules:~~

* * * * *

6. 50°F and 20°F Test Provision for All Hybrid Electric Vehicles, Except Hybrid Fuel Cell Vehicles and Plug-in Hybrid Electric Vehicles.

* * * * *

6.2. One of the following two emission test options must be performed.

(i) A three-phase test that includes phase one as the first 505 seconds of the cold-start UDDS cycle, phase two as the remaining 867 seconds of the cold-start UDDS cycle, a 10 minute key-off soak period, and phase three as the first 505 seconds of the hot-start UDDS cycle. Emission weighting is as follows:

* * * * *

Y_1 = Mass emissions as calculated from phase one of the three phase test, in grams.

Y_2 = Mass emissions as calculated from phase two of the three phase test, in grams.

Y_3 = Mass emissions as calculated from phase three of the three phase test, in grams.

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7. Partial Soak Emission Testing.

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7.5. **Alternative End-of-Test Criteria.**

With approval from the Executive Officer under the procedure in Part II, section I.2.3.18, if the End-of-Test Criteria in subsection Part II, section I.7.4 is not satisfied after the Cold-Start Partial Soak Test, the test may be considered valid if:

* * * * *

7.5.2 The SOC at the end of the Cold-Start Partial Soak Test is higher than the SOC at the beginning of the Cold-Start Partial Soak Test. ~~To submit an approval request, follow the procedure in Part II, section I.2.3.18.~~

7.6. **Option to Conduct Additional Cold-Start Partial Soak Tests.**

~~The~~To determine compliance with the Partial Soak emission standards, the test sequence ~~outlined~~ in ~~subsection~~ Part II, sections I.7.2 to I.7.5 may be repeated to measure exhaust emissions on additional Cold-Start Partial Soak Tests.

* * * * *

8. Quick Drive-Away Emission Testing.

* * * * *

8.2. **Quick Drive-Away Test Run.**

* * * * *

8.2.4 Amend subparagraph (d) as follows: *Test sequence*. Follow the exhaust emission measurement procedures specified in 40 CFR § 1066.410 through § 1066.425, subject to the following exceptions and additional provisions:

8.2.4.1 Amend subparagraph (d)(1) as follows: Take the following steps for the Quick Drive-Away Emission Test:

8.2.4.1.1. Amend subparagraph (d)(1)(i) as follows: Following the 12 to 36 hour soak, initiate the Quick Drive-Away Emission Test in the driver-selectable mode to be tested by operating the vehicle over one Quick Drive-Away UDDS cycle described in ~~subsection~~ Part II, section H.

* * * * *

8.4. **Alternative End-of-Test Criteria.**

With approval from the Executive Officer under the procedure in Part II, section I.2.3.18, if the End-of-Test Criteria in subsection Part II, section I.8.3 is not satisfied after the Quick Drive-Away Emission Test, the test may be considered valid if:

* * * * *

8.4.2 The SOC at the end of the Quick Drive-Away Emission Test is higher than the SOC at the beginning of the Quick Drive-Away Emission Test. ~~To~~

~~submit an approval request, follow the procedure in Part II, section I.2.3.18.~~

* * * * *