

Appendix A-1

Proposed Amendments to Title 13 Regulation Order

[Note: This version of the proposed amendments to Title 13 California Code of Regulations (CCR) sections 1956.8, 1965, 1968.2, 1968.5, 1971.1, 1971.5, 2035, 2036, 2037, 2038, 2039, 2112, 2116, 2117, 2118, 2127, 2128, 2129, 2139, 2139.5, 2140, 2143, 2148, 2169.2, 2169.3, 2169.4, and 2485 complies with Government Code section 11346.2 subdivision (a)(3). The existing regulatory language is shown in “normal type.” The proposed amendments subject to comment in this rulemaking are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions from the existing regulatory text. [Bracketed bold text] is placeholder text for these amendment’s approval date. Vertical lines in the left margins are to flag where changes are proposed for ease of reference and are not part of the proposed amendments. The proposed amendments are being presented in two versions. For ease of readability, and to review the proposed amendments in an Accessible format that can toggle between amendments in strikeout/underline and a “clean” version with amendments incorporated into the regulatory text, please refer to the Word version of this Proposed Regulation Order.

Chapter 1. Motor Vehicle Pollution Control Devices

- Section 1956.8. Exhaust Emissions Standards and Test Procedures - 1985 ~~and Subsequent~~through 2026 Model Heavy-Duty Engines and Vehicles, 2021 and Subsequent Model Zero-Emission Powertrains, and 2022 ~~and Subsequent~~through 2026 Model Heavy-Duty Hybrid Powertrains.
- Section 1965. Emission Control, Smog Index, and Environmental Performance Labels - 1979 and Subsequent Model-Year Motor Vehicles.
- Section 1968.2. Malfunction and Diagnostic System Requirements--2004 and Subsequent Model Year Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles and Engines.
- Section 1968.5. Enforcement of Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines.
- Section 1971.1. On-Board Diagnostic System Requirements--2010 and Subsequent Model-Year Heavy-Duty Engines.
- Section 1971.5. Enforcement of Malfunction and Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy Duty Engines.
- Section 2035. Purpose, Applicability, and Definitions.
- Section 2036. Defects Warranty Requirements for 1979 Through 1989 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles; 1979 and Subsequent Model Motorcycles and Heavy-Duty Vehicles; and Motor Vehicle Engines Used in Such Vehicles; and 2020 and Subsequent Model Year Trailers.
- Section 2037. Defects Warranty Requirements for 1990 and Subsequent Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Motor Vehicle Engines Used in Such Vehicles.
- Section 2038. Performance Warranty Requirements for 1990 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and Motor Vehicle Engines Used in Such Vehicles.
- Section 2039. Emissions Control System Warranty Statement.

Chapter 2. Enforcement of Vehicle Emission Standards and Surveillance Testing

Section 2112.	Definitions.
Section 2116.	Repair Label.
Section 2117.	Proof of Correction Certificate.
Section 2118.	Notification.
Section 2127.	Notification of Owners.
Section 2128.	Repair Label.
Section 2129.	Proof of Correction Certificate.
Section 2139.	Testing.
Section 2139.5.	CARB Authority to Test for Heavy-Duty In-Use Compliance.
Section 2140.	Notification and Use of Test Results.
Section 2143.	Failure Levels Triggering Recall and Corrective Action.
Section 2148.	Evaluation of Need for Recall.
Section 2169.2.	Notification of Owners.
Section 2169.3.	Repair Label.
Section 2169.4.	Proof of Correction Certificate.

Chapter 10. Mobile Source Operational Controls

Section 2485	Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling
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Proposed Regulation Order

Amendments to
Title 13, California Code of Regulations

Amend sections 1956.8, 1965, 1968.2, 1968.5, 1971.1, 1971.5, 2035, 2036, 2037, 2038, 2039, 2112, 2116, 2117, 2118, 2127, 2128, 2129, 2139, 2139.5, 2140, 2143, 2148, 2169.2, 2169.3, 2169.4, and 2485 of title 13, California Code of Regulations.

Note: Subsections for which no changes are proposed in this rulemaking are indicated with “* * * *”. “[INSERT DATE OF AMENDMENT]” is not actual proposed language but is a placeholder for a date that is to be determined upon the amendment’s approval by the California Air Resources Board.

§ 1956.8. Exhaust Emissions Standards and Test Procedures - 1985 and Subsequent through 2026 Model Heavy-Duty Engines and Vehicles, 2021 and Subsequent Model Zero-Emission Powertrains, and 2022 and Subsequent through 2026 Model Heavy-Duty Hybrid Powertrains.

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(a)(2)(C)1. Except as provided in subsection (a)(2)(C)2 and (a)(2)(F) below, the exhaust emissions from new 2024 through 2026 model heavy-duty diesel engines, urban bus engines, heavy-duty natural gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, and heavy-duty methanol-fueled diesel engines, in all cases engines used in heavy-duty vehicles over 14,000 pounds GVWR, shall not exceed:

**Exhaust Emission Standards for 2024 through 2026 Model
Light Heavy-Duty Engines, Medium Heavy-Duty Engines and
Heavy Heavy-Duty Engines
(g/bhp-hr)**

Test Procedure	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Particulates
FTP cycle	0.050	0.14	15.5	0.005
RMC cycle	0.050	0.14	15.5	0.005
Low-load cycle	0.200	0.14	15.5	0.005

2. 2024 through 2026 model year heavy-duty diesel engines rated at or greater than 525 bhp maximum power as defined in 40 CFR § 1065.510, as amended March 10, 2021 (Pre-publication), incorporated by reference herein.

a. In lieu of compliance with the requirements specified in subsection (a)(2)(C)1 above, a manufacturer may elect to certify a heavy-duty engine family or families rated at or above 525 bhp by:

- submitting the federal engine family certification approval (e.g., federal certificate of conformity) for the applicable engine family or families and complying with all federal requirements for heavy-duty engines,
- demonstrating compliance with the Heavy-Duty Diesel Engine Idling Requirements for that model year as provided in subsection (a)(6) below, and
- providing emission warranty requirements for that model year as specified in 13 CCR section 2036.

b. A manufacturer is only eligible to utilize this option if it meets the criteria identified in subsections (a)(2)(C)2.b.i to ii below.

- The manufacturer must have certified and sold heavy-duty diesel engines rated at or above 525 bhp maximum power in California for either the 2018 or 2019 model year.

ii. The maximum number of heavy-duty diesel engines covered by engine families certified under this provision that a manufacturer may sell in California in each applicable model year under this provision must not exceed 1.10 times that manufacturer's 2018 or 2019 model year California sales volume of engines rated at or above 525 bhp, whichever is greater.

3. *Legacy Engine Option.* For 2024, 2025, and 2026 model year heavy-duty diesel engine families rated below 525 bhp maximum power as defined in 40 CFR § 1065.510, as amended March 10, 2021 (Pre-publication), incorporated by reference herein, a manufacturer may elect to certify a heavy-duty diesel engine family or families with $0.100 < \text{FTP NO}_x \text{ FEL} \leq 0.20 \text{ g/bhp-hr}$, and $0.005 < \text{FTP PM FEL} \leq 0.01 \text{ g/bhp-hr}$ if it meets the criteria set forth below in subparagraphs a. and b. below:

a. The engine family meets the applicable regulatory requirements specified in title 13, CCR, section 1956.8 with the following allowances:

i. The low-load cycle emission standards in title 13, CCR, section 1956.8(a)(2)(C)1 would not be applicable.

ii. In lieu of meeting the requirements specified in subparagraph § 86.1370.B.6 of the "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles," as incorporated by reference in title 13, CCR, section 1956.8(b), the engine family must comply with the requirements for a 2023 model year engine family, as set forth in subparagraphs § 86.1370.A through § 86.1370.B.5 of the "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles," as incorporated by reference in title 13, CCR, section 1956.8(b).

iii. In lieu of meeting the requirements specified in subparagraph § 86.004-26.B of the "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles," as incorporated by reference in title 13, CCR, section 1956.8(b), the engine family must comply with the requirements for a 2023 model year engine family, as set forth in subparagraph § 86.004-26.A of the "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles," as incorporated by reference in title 13, CCR, section 1956.8(b).

iv. Comply with the heavy-duty OBD requirements specified in title 13, CCR, sections 1971.1 and 1971.5 applicable to a 2023 model year engine family.

b. A manufacturer is only eligible to utilize this option if it meets all of the criteria identified in subparagraphs i through vi below.

i. The manufacturer must certify the engine family subject to the averaging, trading, and banking provisions in section § 86.xxx-15.B.3 of the “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent Model~~ through 2026 Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b).

ii. The maximum family emission limit for the engine family must not exceed the specified values in section § 86.xxx-15.B.3.(i) of the “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b).

iii. *Procedure to Offset Deficit Balance.* The manufacturer must offset its model year NOx and PM deficit balance generated by legacy engines by using credits from the heavy-duty zero-emission averaging set described in section § 86.xxx-15.B.3.(j) of the “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b).

1. *Credits from the Same Averaging Set.* If a sufficient quantity of heavy-duty zero-emission NOx or PM credits are not available, or are only available for a cost exceeding \$4,000 (for enough NOx or PM credits to offset one medium heavy-duty legacy engine), the manufacturer may submit a plan for Executive Officer approval to use credits from the same averaging set described in section § 86.xxx-15.B.3.(a) of the “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b), to offset any remaining model year deficit balance generated by legacy engines. The plan must include information describing the manufacturer’s attempts to purchase heavy-duty zero-emission NOx or PM credits from all manufacturers who have certified heavy-duty zero-emission vehicles or powertrains with CARB and that the manufacturer was denied a fair market offer to purchase such credits (i.e., such credits were only available at a cost exceeding \$4,000 for enough NOx or PM credits to offset one medium heavy-duty legacy engine). The Executive Officer will base his or her determination upon the information included in the plan and the exercise of good engineering judgment that the information substantiates that sufficient heavy-duty zero-emission NOx or PM credits were not available or were only available at a cost exceeding \$4,000 (for enough NOx or PM credits to offset one medium heavy-duty legacy engine).

2. *Carryover to the 2026 Model Year.* If credits from the same averaging set are not available, the manufacturer may carryover the NOx or PM deficit balance generated by legacy engines until the end of the 2026 model year, provided the manufacturer offsets the remaining legacy engine generated deficit balance times 1.25 with credits from the heavy-duty zero-emission averaging set or the same averaging set described in section § 86.xxx-15.B.3.(a) of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b) by the end of the 2026 model year. For example, if the deficit carried over from the 2025 model year to the 2026 model year is 1 Mg, the manufacturer would need to offset the deficit with 1.25 Mg by the end of the 2026 model year.

3. *Projects Targeted at California Disadvantaged Communities.* If at the end of the 2026 model year, a sufficient quantity of heavy-duty zero-emission NOx or PM credits are not available for the manufacturer to offset the remaining legacy engine generated deficit balance times 1.25, the manufacturer must take all the actions in A. to C. below for the remaining NOx or PM balance. For example, if the deficit balance is 1 Mg NOx, the manufacturer would need to offset the deficit balance with 1.25 Mg NOx.

As an option, the manufacturer may utilize this provision in the 2024 and 2025 model years if a sufficient quantity of heavy-duty zero-emission NOx or PM credits are not available for the manufacturer to offset the remaining legacy engine generated deficit balance times 1.25. For example, if the deficit balance is 1 Mg NOx, the manufacturer would need to offset the deficit balance with 1.25 Mg NOx.

A. Provide documentation to the Executive Officer substantiating that the manufacturer has attempted to purchase heavy-duty NOx or PM credits from all manufacturers with such credits and was denied a fair market offer; i.e., exceeding \$4,000 for enough NOx or PM credits to offset one medium heavy-duty legacy engine.

B. Submit a plan for Executive Officer approval for projects targeted at California disadvantaged communities and that are sufficient to offset the excess emissions within five years. The plan must include project descriptions and budgets and a demonstration that the projects will achieve reductions required. The Executive Officer will base his or her determination upon the documentation provided by the manufacturer and the exercise of good engineering judgment that the plan would benefit disadvantaged communities, and would fully offset the excess emissions due to the credit deficit balance within five

years. The manufacturer may submit contingency plans to be assessed and approved on the same standard as set forth in this subsection.

C. At the end of the five-year period, submit information documenting that the excess emissions have been offset. Failure to do so means that legacy engines would be subject to the provisions of § 86.004-15.A.(b)(5) of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b).

4. *Carryover to the 2025 Model Year.* The manufacturer may carry over the NOx or PM deficit balance generated by legacy engines from the 2024 model year to the 2025 model year, provided the manufacturer offsets the deficit balance with credits from the heavy-duty zero-emission averaging set. For example, if the deficit balance carried over from the 2024 model year to the 2025 model year is 1 Mg, the manufacturer would need to offset the deficit with 1 Mg of heavy-duty zero-emission averaging set credits by the end of the 2025 model year.

iv. *Legacy Engine Sales Limits.* A manufacturer may choose Option 1 or, if eligible, Option 2, and must remain in the same chosen option for model years 2024, 2025, and 2026. Option 2 is only available to a certifying manufacturer if it certifies medium heavy-duty diesel engines in addition to certifying products in another heavy-duty diesel primary intended service class for model years 2024 and 2025. For example, a manufacturer is eligible to use this option if it certifies both medium heavy-duty diesel engines and heavy heavy-duty diesel engines in the 2024 and 2025 model years. For both Options 1 and 2, the legacy engine sales limits in subsections 1 and 2 below are based on the total actual California sales of heavy-duty diesel engines, which is the combined total of all light heavy-duty (including medium-duty engines), medium heavy-duty, and heavy heavy-duty diesel engines that are sold in California.

1. *Option 1.* For each certifying heavy-duty diesel engine manufacturer, the total California sales volume of legacy engines certified under this provision may not exceed 45 percent of the manufacturer’s total actual California sales of heavy-duty diesel engines for 2024 model year, and 25 percent of the manufacturer’s total actual California sales of heavy-duty diesel engines for 2025 model year, and 10 percent of the manufacturer’s total actual California sales of heavy-duty diesel engines for 2026 model year. For example, a manufacturer that sells a total of 1,000 heavy-duty diesel engines in California in 2024 model year would be allowed to sell up to 450 heavy-duty diesel legacy engines for that model year in California.

If a manufacturer exceeds the legacy engine sales limits in Option 1 for a given model year, the maximum percentage exceeding the allowable sales limits without being considered non-compliant in engine sales is 1 percent above a given legacy engine sales limit. The excess NOx and PM emissions from this percentage of heavy-duty legacy engines exceeding the allowable legacy engine sales limits must be offset at 4 times the deficit balance. For example, if the deficit balance of the percentage above a given legacy engine sales limit is 1 Mg NOx, the manufacturer would need to offset the deficit with 4 Mg NOx. All legacy engine sales above the legacy engine sales limits in Option 1 plus the 1 percent sales exceedance will be considered non-compliant engine sales. For example, if at the end of 2024 model year, a manufacturer using Option 1 determines that it has sold 1,000 heavy-duty diesel engines in California of which 500 are legacy engines, then the manufacturer must offset the deficit from 450 legacy engines at the normal rate (as used in subsection (a)(2)(C)3.b.iii. Procedure to Offset Deficit Balance) plus the deficit from 10 legacy engines (i.e., 1,000 engines x 1 percent) at 4 times the normal rate. The remaining 40 legacy engines would be considered non-compliant.

2. *Option 2.* The following requirements apply to each eligible certifying heavy-duty diesel engine manufacturer using Option 2.

A. The total California sales volume of medium heavy-duty diesel legacy engines under this provision may not exceed 60 percent of the manufacturer's total actual California sales of heavy-duty diesel engines for 2024 model year, and 60 percent of the manufacturer's total actual California sales of heavy-duty diesel engines for 2025 model year. No legacy engine sales are allowed in 2026 model year. For example, a manufacturer that sells a total of 1,000 heavy-duty diesel engines in California in 2024 model year would be allowed to sell up to 600 medium heavy-duty diesel legacy engines for that model year in California.

B. The total combined California sales volume of light heavy-duty and heavy heavy-duty diesel legacy engines certified under this provision may not exceed 15 percent of the manufacturer's total actual California sales of heavy-duty diesel engines for 2024 model year and 8 percent of the manufacturer's total actual California sales of heavy-duty diesel engines for 2025 model year. No legacy engine sales are allowed in 2026 model year. For example, a manufacturer that sells a total of 1,000 heavy-duty diesel engines in California in 2024 model year may sell up to 150 light heavy-duty and heavy heavy-duty diesel legacy engines combined for that model year in California.

C. If a manufacturer exceeds the legacy engine sales limits in Option 2 for 2024 or 2025 model years, the maximum percentage exceeding the allowable sales limits without being considered non-compliant is 5 percent for medium heavy-duty diesel engines and 1 percent for the combined light heavy-duty and heavy heavy-duty diesel engines above a given legacy engine sales limit. The excess NOx and PM emissions from these percentages of heavy-duty legacy engines exceeding the allowable legacy engine sales limits must be offset at 4 times the deficit balance. For example, if the deficit balance of the percentage above a given legacy engine sales limit is 1 Mg NOx, the manufacturer would need to offset the deficit with 4 Mg NOx. All legacy engine sales above the legacy engine sales limits in Option 2 plus the allowed percent sales exceedance will be considered non-compliant engine sales. For example, if at the end of 2024 model year, a manufacturer using Option 2 determines that it has sold 1,000 heavy-duty diesel engines in California of which 660 are medium heavy-duty diesel legacy engines and 150 are the combined light heavy-duty and heavy heavy-duty diesel legacy engines, then the manufacturer must offset the deficit from 600 medium heavy-duty diesel legacy engines and 150 light heavy-duty and heavy heavy-duty diesel engines at the normal rate plus the deficit from 50 medium heavy-duty diesel legacy engines (i.e., 1,000 engines x 5 percent) at 4 times the normal rate. The remaining 10 medium heavy-duty diesel legacy engines would be considered non-compliant.

v. NOx and PM deficits generated by legacy engines are subject to the provisions of § 86.004-15.A.(b)(5) of the “California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b).

vi. In order to certify legacy engines in a particular model year, a manufacturer must also certify one or more heavy-duty diesel engine families subject to the standards in title 13, CCR, section 1956.8(a)(2)(C)1 in the same model year. For the 2024 model year, a manufacturer may certify legacy engine families prior to certifying at least one engine family subject to the standards in title 13, CCR, section 1956.8(a)(2)(C)1. Failure to certify a 2024 model year engine family to the standards in title 13, CCR, section 1956.8(a)(2)(C)1 will result in the revocation of all 2024 model year Executive Orders issued for legacy engine families under this provision ab initio.

~~(D) Except as provided in subsection (a)(2)(F) below, the exhaust emissions from new 2027 and subsequent model heavy-duty diesel engines, urban bus engines, heavy-duty natural gas-fueled and liquefied petroleum gas-fueled engines derived from diesel-cycle engines, and heavy-duty methanol-fueled diesel engines, in all cases engines used in heavy-duty vehicles over 14,000 pounds GVWR, shall not exceed:~~

**Exhaust Emission Standards for 2027 and Subsequent Model
Light Heavy-Duty Engines, and Medium Heavy-Duty Engines
(g/bhp-hr)**

Test Procedure	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Particulates
FTP cycle	0.020	0.14	15.5	0.005
RMC cycle	0.020	0.14	15.5	0.005
Low-load cycle	0.050	0.14	15.5	0.005

**Exhaust Emission Standards for 2027 Through 2030 Model
Heavy Heavy-Duty Engines
(g/bhp-hr)**

Test Procedure	Intermediate Useful Life Oxides of Nitrogen	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Particulates
FTP cycle	0.020	0.035	0.14	15.5	0.005
RMC cycle	0.020	0.035	0.14	15.5	0.005
Low-load cycle	0.050	0.090	0.14	15.5	0.005

**Exhaust Emission Standards for 2031 and Subsequent Model
Heavy Heavy-Duty Engines
(g/bhp-hr)**

Test Procedure	Intermediate Useful Life Oxides of Nitrogen	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Particulates
FTP cycle	0.020	0.040	0.14	15.5	0.005
RMC cycle	0.020	0.040	0.14	15.5	0.005
Low-load cycle	0.050	0.100	0.14	15.5	0.005

~~(E) The exhaust emissions from new 2024 and subsequent~~

(D) The exhaust emissions from new 2024 through 2026 model heavy-duty diesel engines, urban bus engines, heavy-duty natural gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, and heavy-duty methanol-fueled diesel engines, in all cases engines used in heavy-duty vehicles over 14,000 pounds GVWR, certified to optional low NOx exhaust emission standards shall not exceed:

**Optional Low NOx Exhaust Emission Standards for 2024 and Subsequentthrough
2026 Model Heavy-Duty Diesel Engines
(g/bhp-hr) ^A**

Model Year	Test Procedure	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Particulates
2024-2026	FTP and RMC cycles / Low-load cycle	0.020/0.080 or 0.010/0.040	0.14	15.5	0.005
2027 and subsequent	FTP and RMC cycles / Low-load cycle	0.010/0.025	0.14	15.5	0.005

^A A manufacturer may not include an engine family certified to the optional NOx emission standard in the federal or California ABT programs for NOx but may include it for particulates.

(FE) Transit Agency Diesel-Fueled Bus and Engine Exemption Request

For ~~2022 and subsequent~~ through 2026 model diesel-fueled medium heavy-duty or heavy heavy-duty engines used in urban buses, the Executive Officer will approve a Transit Agency Diesel-Fueled Bus and Engine Exemption Request made by a transit agency that meets each of the conditions and requirements in subparagraphs 1 and 2 below. If granted, an exemption request will allow a transit agency to purchase, rent, or lease exempt buses, contract for service with bus service providers to operate exempt buses, or re-power buses with engines that are certified to both the federal emission standards for 2010 ~~and later~~ through 2026 model year diesel-fueled medium heavy-duty or heavy heavy-duty engines and vehicles, as set forth in title 40, Code of Federal Regulations, section 86.007-11, as last amended October 25, 2016, and the Greenhouse Gas Emissions and Fuel Economy Standards for Medium- and Heavy-Duty Engines and Vehicles – Phase 2 requirements promulgated at 81 Fed. Reg. 73,478 (October 25, 2016).

1. Conditions

- a. The transit agency is subject to the Innovative Clean Transit Regulations, California Code of Regulations, title 13, section 2023, et seq.
- b. The transit agency has fulfilled the reporting requirements of the Innovative Clean Transit Regulations specified in California Code of Regulations, title 13, section 2023.8 in the year of submitting the Transit Agency Diesel-Fueled Bus and Engine Exemption Request.
- c. The transit agency has purchased the required number of zero-emission buses in the immediately preceding year, as required by title 13, CCR, section 2023.1, or has been granted an exemption from the purchase of zero-emission bus(es) as specified in section 2023.4.
- d. If the transit agency has bus(es) fueled with compressed natural gas (CNG) in their fleet, the Transit Agency Diesel-Fueled Bus and Engine Exemption Request must include a statement with a supporting explanation from the transit agency that it is cost prohibitive for the transit agency to procure CNG-fueled bus(es) or to fuel and support additional CNG-fueled bus(es) from any established fueling facility to which the transit agency has authority or agreement to access. If the transit agency has authority or agreement to access an established CNG fueling facility, the transit agency must also

submit documentation that contains information about the fueling capacity of its established CNG fueling facility and how the transit agency has fully utilized this fueling capacity.

- e. If the transit agency has previously received an Executive Exemption Approval Letter from the Executive Officer as described in title 13, CCR, section 1956.8(a)(2)(~~FE~~)3, the transit agency must complete the reporting requirements of section 1956.8(a)(2)(~~FE~~)5.

2. Requirements and Procedures

- a. The transit agency must submit its Transit Agency Diesel-Fueled Bus and Engine Exemption Request to CARB's Executive Officer.
- b. The Transit Agency Diesel-Fueled Bus and Engine Exemption Request must be submitted by May 1st of the first calendar year in which the exemption is requested.
- c. The Transit Agency Diesel-Fueled Bus and Engine Exemption Request must identify the number of exempt buses needed for each bus type, and for each bus type how many exempt buses are planned to operate outside of NOx exempt areas.
- d. If the transit agency requests to apply the exemption request to an existing contract, the Transit Agency Diesel-Fueled Bus and Engine Exemption Request must include a copy of the contract.
- e. The Transit Agency Diesel-Fueled Bus and Engine Exemption Request must identify the number of exempt buses or re-powered buses that the transit agency requests for each calendar year within the triennial period of the Transit Agency Diesel-Fueled Bus and Engine Exemption Request, where the year the request is submitted is counted as the first calendar year. The requested number of exempted engines or buses for each calendar year must demonstrate compliance with the Innovative Clean Transit regulations' zero-emission bus purchase requirements under title 13, CCR, section 2023.1, including any approved purchase exemption request under section 2023.4.
- f. At the submission of the Transit Agency Diesel-Fueled Bus and Engine Exemption Request, if any of the requested exempt buses cannot be replaced with zero-emission buses within the triennial period of the Transit Agency Diesel-Fueled Bus and Engine Exemption Request, even if state incentive funding can offset the entire incremental cost of zero-emission bus purchase, the Transit Agency Diesel-Fueled Bus and Engine Exemption Request must include the number of the exempt buses that cannot be replaced with zero-emission buses and an explanation of which reason, under title 13, CCR, section 2023.4(c), prevents the transit agency from purchasing zero-emission buses and must also provide the supporting documentation required in 2023.4(c).

- 3. The Executive Officer will issue an Executive Exemption Approval Letter if all foregoing conditions and requirements in subparagraphs 1 and 2 above are met. The Executive Exemption Approval Letter will allow a triennial quota for the purchase, rent, lease, contract for service, or re-power of exempt buses or

engines. The triennial quota expires at the end of the third calendar year of the triennial period.

4. If the Transit Agency Diesel-Fueled Bus and Engine Exemption Request is approved by the Executive Officer, the transit agency may proceed with engine repower or exempt bus purchase, lease, rental, or contract for service. In the instance where new exempt engines and buses will be purchased or manufactured under the contract, the Executive Exemption Approval Letter will allow the bus and engine manufacturers to sell exempt engines to and manufacture exempt buses for the transit agency that has obtained the exemption. The transit agency must notify all parties involved of the approval and provide a copy of the issued Transit Agency Diesel-Fueled Bus and Engine Exemption Approval Letter to the engine and bus dealer(s), bus manufacturer(s), and engine manufacturer(s) involved with delivering the exempt buses or engines to the transit agency.
5. The transit agency must report the following information for the prior calendar year to the Executive Officer annually by March 31. The required information pertains to buses/engines delivered in the prior calendar year.
 - a. A copy of engine or bus purchase order, or purchase contract, as identified in title 13 CCR section 2023(b)(7) with the date of purchase or a lease, rental, or contract for service agreement;
 - b. A copy of the certificate of conformity issued under 40 CFR section 86.007-30, as amended October 25, 2016, incorporated by reference herein, for each engine family and the model year included in the purchase or a lease, rental, or service contract agreement;
 - c. The number of exempt engines and buses delivered to the transit agency or transit service contractor and what bus type(s) were delivered;
 - d. For each exempt engine and bus, provide the engine make, model and engine serial number (ESN), and vehicle identification number (VIN); and
 - e. Documentation of dates of delivery and in service.
6. If any of the requirements, conditions, or criteria of title 13, CCR, sections 1956.8(a)(2)(FE)1.c. and 2. are not met after approval was granted, the Executive Officer shall revoke the Executive Exemption Approval Letter. A transit agency may request a hearing to review the Executive Officer's revocation of its Executive Exemption Approval Letter pursuant to the procedures set forth in title 17, CCR, section 60055.1 et. seq.

(3) Formaldehyde exhaust emissions from new 1993 ~~and subsequent~~through 2026 model methanol-fueled diesel engines, shall not exceed:

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

1996 and subsequent through 2026	0.05
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(4) An engine family whose design allows engine operation in either of two distinct alternative fueling modes, where each fueling mode is characterized by use of one fuel or a combination of two fuels and by significantly different emission levels under each mode, may certify to a different NO_x or NO_x plus NMHC (as applicable depending on model year) standard for each fueling mode, provided it meets the following requirements:

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

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

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

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

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

(5) No crankcase emissions shall be discharged directly into the ambient atmosphere from any new 2007 or later through 2026 model year diesel heavy-duty diesel engine, with the following exception: heavy-duty diesel engines equipped with turbochargers, pumps, blowers, or superchargers for air induction may discharge crankcase emissions to the ambient atmosphere if the emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. Manufacturers using this exception must manufacture the engines so that all crankcase emissions can be routed into a dilution tunnel (or other sampling system approved in advance by the Executive Officer), and must account for deterioration in crankcase emissions when determining exhaust deterioration factors. For the purpose of section 1956.8(a)(2), crankcase emissions that are routed to the exhaust upstream of exhaust aftertreatment during all operation are not considered to be "discharged directly into the ambient atmosphere."

(6) Heavy-Duty Diesel Engine Idling Requirements.

Except as provided in subsection (6)(B) below, the requirements in this subsection apply to 2008 through 2023 model diesel engines used in heavy-duty vehicles over 14,000 pounds GVWR, and 2024 ~~and subsequent~~through 2026 model diesel engines used in medium-duty vehicles from 10,001 to 14,000 pounds GVWR and heavy-duty vehicles over 14,000 pounds GVWR. Manufacturers may meet the requirements of this subsection by either demonstrating compliance with the Engine Shutdown System requirements of subsection (6)(A), below or the optional NOx Idling Emission Standard specified in subsection (6)(C), below.

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

1. Requirements. Except as provided in subsections (a)(6)(B) and (a)(6)(C), all new 2008 ~~and subsequent~~through 2026 model-year heavy-duty diesel engines shall be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to "neutral" or "park", and the parking brake is engaged. If the parking brake is not engaged, then the engine shutdown system shall shut down the engine after 900 seconds of continuous idling operation once the vehicle is stopped and the transmission is set to "neutral" or "park." The engine shutdown system must be tamper-resistant and non-programmable. A warning signal, such as a light or sound indicator inside the vehicle cabin, may be used to alert the driver 30 seconds prior to engine shutdown. The engine shutdown system must be capable of allowing the driver to reset the engine shutdown system timer by momentarily changing the position of the accelerator, brake, or clutch pedal, or other mechanism within 30 seconds prior to engine shutdown. Once reset, the engine shutdown system shall restart the engine shutdown sequence described in this paragraph above, and shall continue to do so until the engine shuts down or the vehicle is driven.

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

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

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

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

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

c. If an exhaust emission control device is regenerating, and keeping the engine running is necessary to prevent aftertreatment or engine damage, the engine

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

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

(B) Exempt Vehicles.

1. 2008 through 2023 model heavy-duty diesel engines to be used in buses as defined in California Vehicle Code sections 233, 612, and 642, school buses as defined in California Vehicle Code section 545, recreational vehicles as defined in Health and Safety Code section 18010, medium duty vehicles as defined in section 1900(b)(13) of title 13, California Code of Regulations (CCR), military tactical vehicles as defined in section 1905 of title 13, CCR, authorized emergency vehicles as defined in California Vehicle Code section 165, armored cars, as defined in California Vehicle Code section 115, and workover rigs, as defined in section 2449 of title 13, CCR are exempted from these requirements.

2. 2024 and subsequent through 2026 model heavy-duty engines to be used in military tactical vehicles as defined in title 13, CCR, section 1905 and authorized emergency vehicles as defined in California Vehicle Code § 165 are exempted from these requirements.

(C) Optional NOx idling emission standard.

1. Emission standard.

a. In lieu of the engine shutdown system requirements specified in subsection (a)(6)(A) above, an engine manufacturer may elect to certify its new 2008 through 2023 model-year heavy-duty diesel engines and 2024 through 2026 model year heavy-duty diesel engines subject to the provisions specified in subsection (a)(2)(C)2 and 2024 through 2026 model year heavy-duty diesel engines subject to the provisions specified in subsection (a)(2)(C)(3) above, to an optional NOx idling emission standard of 30 grams per hour.

b. Except as provided in subsection (a)(6)(C)1.a above, in lieu of the engine shutdown system requirements specified in subsection (a)(6)(A) above, an engine manufacturer may elect to certify its new 2024 and ~~subsequent~~through 2026 model year heavy-duty diesel engines to the following optional NOx idling emission standards. The optional NOx idling emissions shall not exceed:

**Optional NOx Idling Emission Standards for 2024 and ~~Subsequent~~through 2026
Model Diesel Engines Used in Medium-Duty Vehicles from 10,001 to 14,000 GVWR
and Diesel Engines Used in Heavy-Duty Vehicles Greater than 14,000 Pounds
GVWR**

(grams per hour)

Model Year	Oxides of Nitrogen
2024 – 2026	10
2027 and subsequent	5

2. Compliance Determination:

a. Compliance with these optional standards will be determined based on testing conducted pursuant to the supplemental NOx idling test cycle and procedures specified in section 86.1360-2007.B.4 of the “California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in subsection (b). The manufacturer may request an alternative test procedure if the technology used cannot be demonstrated using the procedures in section 86.1360-2007.B.4, subject to advance approval of the Executive Officer.

b. A manufacturer certifying to the optional NOx idling standard must not increase emissions of CO, PM, or NMHC, determined by comparing results from the supplemental NOx idling test cycle and procedures specified in section 86.1360-2007.B.4 of the referenced “California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~through 2026 Model Heavy-Duty Diesel Engines and Vehicles” to emission results from the idle mode of the supplemental steady state test cycle or emission results from idle portions of the transient test cycle for heavy duty diesel engines, respectively specified in sections 86.1360-2007 and 86.1327-98 of the referenced “California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~through 2026 Model Heavy-Duty Diesel Engines and Vehicles.” With advance Executive Officer approval, a manufacturer may use other methods of ensuring that emissions of CO, PM, and NMHC are not adversely affected in meeting the optional NOx requirement. Also, manufacturers shall state in their application for

certification that meeting the optional NOx idling requirement will not adversely affect the associated emissions of CO, PM and NMHC.

c. An engine manufacturer certifying its engine to the optional NOx idling emission standard must also produce a vehicle label, as defined in subsection 35.B.4 of the “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in subsection (b).

(D) **Optional Alternatives to Main Engine Idling.** All new 2008 ~~and subsequent~~ through 2026 model year heavy duty diesel engines may also be equipped with idling emission reduction devices that comply with the compliance requirements specified in title 13, CCR, section 2485(c)(3).

(7) Greenhouse Gas Emission Standards for new 2014 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines, Heavy-Duty Natural Gas-Fueled and Liquefied-Petroleum-Gas-Fueled Engines Derived from Diesel-Cycle Engines, and Heavy-Duty Methanol- Fueled Diesel Engines.

(A) The CO₂ emissions from new 2014 ~~and subsequent~~ through 2026 model heavy-duty diesel engines, heavy-duty natural gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, and heavy-duty methanol-fueled diesel engines, except in all cases engines used in medium-duty vehicles, shall not exceed:

CO₂ Emission Standards for 2014 and ~~Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines ^{A, B, C, D}
(in g/hp-hr)

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

^A *Family Certification Levels.* A Family Certification Level (FCL) must be specified for each engine family, which may not be less than the certified emission level for the engine family. The Family Emission Limit (FEL) for the engine family is equal to the FCL multiplied by 1.03. The FCL serves as the CO₂ emission standard for the engine family with respect to certification and confirmatory testing instead of the standards specified in this subsection (a)(7)(A). The FEL serves as the emission standard for the engine family with respect to all other testing.

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

^C *Alternate Phase-in Emission Standards.* Alternate phase-in emission standards may be used in lieu of the required CO₂ emission standards in the table above. To qualify for these alternate phase-in emission standards, the manufacturer must begin certifying all of its model year 2013 diesel engines within a given primary intended service class to the applicable alternate emission standards of this footnote (c) and continue through model year 2016. This means that once a manufacturer chooses to certify a primary intended service class to the alternate emission standards of this footnote (c), it is not allowed to opt out of these standards. Engines certified to these alternate emission standards are not eligible for early credits. Note that these alternate emission standards for 2016 and later are the same as the otherwise applicable required emission standards for model year 2017 and later.

Alternate Phase-in CO₂ Emission Standards (in g/hp-hr)

Model Years	Light heavy-duty – vocational	Medium heavy-duty-- vocational	Heavy heavy-duty – vocational	Medium heavy-duty -- tractor	Heavy heavy-duty - tractor
2013-2015	618	618	577	512	485
2016	576	576	555	487	460

^D *Alternate Emission Standards Based on 2011 Model Year Engines.* For model years 2014 through 2016, heavy-duty diesel engines may be certified to these alternate emission standards based on 2011 model year engines, if they are not part of an averaging set in which a balance of banked credits remain. These alternate standards are determined from the measured emission rate of the test engine of the applicable baseline 2011 engine family(ies) as described in the “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel-Engines and Vehicles,” as incorporated by reference in section (b). The alternate CO₂ standard for light and medium heavy-duty vocational-certified engines is equal to the baseline 2011 emission rate multiplied by 0.975. The alternative CO₂ standard for tractor-certified engines and all other heavy heavy-duty engines is equal to the baseline 2011 emission rate multiplied by 0.970.

^E *Optional Low-CO₂ Emission Standards.* Heavy-duty diesel engines certified to these Optional Low-CO₂ Emission Standards must also comply with the applicable methane and nitrous oxide emission standards set forth in subsections (a)(7)(B) and (a)(7)(C), respectively. In addition, engines certified to these Optional Low-CO₂ Emission Standards and participating in the Innovative Technology Regulation set forth in sections 2208 and 2208.1 are not eligible to participate in the averaging, banking, and trading program, or to generate credits for certification.

(B) The methane (CH₄) emissions from new 2014 ~~and subsequent~~ through 2026 model heavy-duty diesel engines, heavy-duty natural gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, and heavy-duty methanol-fueled diesel engines, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr.

(C) The nitrous oxide (N₂O) emissions from new 2014 ~~and subsequent~~ through 2026 model heavy-duty diesel engines, heavy-duty natural gas-fueled and liquefied-petroleum-gas-fueled engines derived from diesel-cycle engines, and heavy-duty methanol-fueled diesel engines, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr.

(8) Zero-Emission Powertrain Certification Standards. Model Year (MY) 2021 and subsequent MY all-electric and hydrogen fuel-cell powertrains used in heavy-duty vehicles (over 14,000 pounds gross vehicle weight rating) and incomplete medium-duty vehicles (from 8,501 through 14,000 pounds gross vehicle weight rating) may be certified in accordance with the "California Standards and Test Procedures for New 2021 and Subsequent Model Heavy-Duty Zero-Emission Powertrains," last amended March 19, 2025, which is hereby incorporated by reference herein. Powertrains certified using these procedures shall be deemed to have exhaust emissions of zero for any criteria pollutant or greenhouse gas.

(9) The exhaust emissions from new 2022 ~~and subsequent~~ through 2026 model optionally certified heavy-duty diesel hybrid powertrains used in heavy-duty vehicles over 14,000 pounds GVWR shall not exceed the emission standards in 13 CCR section 1956.8.

The exhaust emission standards from new 2022 ~~and subsequent~~ through 2026 model optionally certified diesel hybrid powertrains used in incomplete vehicles from 10,001 to 14,000 pounds GVWR shall not exceed the emission standards in 13 CCR section 1956.8.

(b) *Test Procedures*. The test procedures for determining compliance with standards applicable to 1985 ~~and subsequent~~ through 2026 model heavy-duty diesel engines and vehicles and 2022 ~~and subsequent~~ through 2026 model diesel hybrid powertrains, and the requirements for participating in the averaging, banking and trading programs, are set forth in the "California Exhaust Emission Standards and Test Procedures for 1985 through 2003 Model Heavy-Duty Diesel-Engines and Vehicles," adopted April 8, 1985, as last amended December 12, 2002, the "California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel-Engines and Vehicles," adopted December 12, 2002, as last amended ~~December 28, 2023,~~ **[INSERT DATE OF AMENDMENT]**, and the "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric and Other Hybrid Vehicles in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002, as last amended October 21, 2014, which are incorporated by reference herein.

* * * *

(c)(1)(B) The exhaust emissions from new 2005 through 2023 model heavy-duty Otto-cycle engines, except for Otto-cycle medium- and heavy-duty engines subject to the alternative standards in 40 CFR §86.005-10(f), shall not exceed:

California Emission Standards for 2005 through 2023 Model Heavy-Duty Otto-Cycle Engines ^A
(in g/bhp-hr)

<i>Model Year</i>	<i>Emission Category</i>	<i>NMHC + NOx</i>	<i>NMHC</i>	<i>NOx</i>	<i>CO^G</i>	<i>HCHO</i>	<i>PM</i>
Standards for Heavy-Duty Otto-Cycle Engines Used in 2005 through 2019 Model Incomplete Medium-Duty Vehicles 8,501 to 10,000 pounds GVW^B and 2005 through 2023 Model Incomplete Medium-Duty Vehicles 10,001 to 14,000 pounds GVW^C							
2005 through 2007	ULEV	1.0 ^{D,F}	n/a	n/a	14.4	0.05	n/a
	SULEV	0.5	n/a	n/a	7.2	0.025	n/a
2008-2023	ULEV	n/a	0.14 ^F	0.20 ^F	14.4	0.01	0.01
	SULEV	n/a	0.07 ^F	0.10 ^F	7.2	0.005	0.005
Standards for Heavy-Duty Otto-Cycle Engines Used In Heavy-Duty Vehicles Over 14,000 pounds GVW							
2005 through 2007	n/a	1.0 ^{D,F}	n/a	n/a	37.1	0.05 ^E	n/a
2008-2023	n/a	n/a	0.14 ^F	0.20 ^F	14.4	0.01	0.01
2015-2021 ^{H,I}	Optional	n/a	0.14	0.10, 0.05, or 0.02	14.4	0.01	0.01
2022-2023 ^{H,I}	Optional	n/a	0.14	0.10, 0.05, 0.02, or 0.01	14.4	0.01	0.01

^A These standards apply to petroleum-fueled, alcohol-fueled, liquefied petroleum gas-fueled and natural gas-fueled Otto-cycle engines.

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

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

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

^E This standard only applies to methanol-fueled Otto-cycle engines.

^F A manufacturer may elect to include any or all of its medium- and heavy-duty Otto-cycle engine families in any or all of the emissions ABT programs for HDEs, within the restrictions described in section I.15 of the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Years through 2026 Model Heavy-Duty Otto-Cycle Engines," incorporated by reference in section 1956.8(d). For engine families certified to the Option 1 or 2 federal standards, the FEL must not exceed 1.5 g/bhp-hr. If a manufacturer elects to include engine families certified to the 2005 through 2023 model year standards, the NOx plus NMHC FEL must not exceed 1.0 g/bhp-hr. For engine families certified to the 2008 through 2023 model year standards, the FEL is the same as set forth in 40 CFR 86.008-10(a)(1).

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

^H Optional Low NOx emission standards. A manufacturer may choose to offer an engine that is 50%, 75%, or 90% (or 95% for 2022 and 2023 model year engines) below the current 0.20 g/bhp-hr NOx emission standards for heavy duty engines. A manufacturer may not include an engine family certified to the optional NOx emission standards in the ABT programs for NOx but may include it for NMHC.

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

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

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

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

(c)(1)(C) The exhaust emissions from 2024 and subsequent through 2026 model Otto-cycle heavy-duty engines, including engines used in incomplete medium-duty vehicles from 10,001-14,000 pounds GVWR, shall not exceed:

Exhaust Emission Standards for 2024 and Subsequent through 2026 Model Otto-Cycle Heavy-Duty Engines and Otto-Cycle Engines Used in Incomplete Medium-Duty Vehicles from 10,001-14,000 Pounds GVWR (g/bhp-hr)^A

Test Procedure	Model Year	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Formaldehyde	Particulates
FTP cycle	2024 - 2026	0.050	0.14	14.4	0.01	0.005
FTP Cycle	2027 and Subsequent	0.020	0.14	14.4	0.01	0.005

^A manufacturer of engines used in incomplete medium-duty vehicles from 10,001-14,000 pounds GVWR may choose to comply with these standards as an alternative to the primary emission standards and test procedures for complete vehicles specified in section 1961.2 or 1961.4, title 13, CCR. A manufacturer that chooses to comply with these optional heavy-duty engine standards and test procedures shall specify, in the Part I application for certification, an in-use compliance test procedure, as provided in section 2139(c), title 13, CCR. An engine certified for use in a medium-duty vehicle shall not be used in a heavy-duty vehicle over 14,000 pounds GVWR.

(c)(1)(D) The exhaust emissions from new 2024 and subsequent through 2026 model Otto-cycle heavy-duty engines used in heavy-duty vehicles over 14,000 pounds GVWR, certified to optional low NOx exhaust emission standards shall not exceed:

**Optional Low NOx Exhaust Emission Standards for 2024 and Subsequent through 2026
Model**

**Otto-Cycle Heavy-Duty Engines
(g/bhp-hr)^A**

Test Procedure	Model Year	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Formaldehyde	Particulates
FTP cycle	2024 - 2026	0.010 and 0.020	0.14	14.4	0.01	0.005
FTP cycle	2027 and Subsequent	0.010	0.14	14.4	0.01	0.005

^AA manufacturer may not include an engine family certified to the optional NOx emission standard in the federal or California ABT programs for NOx but may include it for Non-methane hydrocarbons.

(c)(2) Formaldehyde exhaust emissions from new 1993 and subsequent through 2026 model methanol-fueled otto cycle engines shall not exceed:

Model Year	Formaldehyde (g/bhp-hr)
1993-1995	0.10
1996 and Subsequent through 2026	0.05

(3) *Optional Standards for 2023 and Earlier Model Complete and Incomplete Heavy-Duty Vehicles that Use Heavy-Duty Otto-Cycle Engines.* For 2023 and earlier model years only, manufacturers may request to group complete and incomplete heavy-duty Otto-cycle vehicles into the same test group as Otto-cycle vehicles certifying to the LEV III exhaust emission standards and test procedures specified in title 13, CCR, section 1961.2, so long as those complete and incomplete heavy-duty Otto-cycle vehicles meet the most stringent LEV III standards to which any vehicle within that test group certifies.

(4) Greenhouse Gas Emission Standards for New 2016 and Subsequent through 2026 Model Heavy-Duty Otto-Cycle Engines.

(A) CO₂ Emission Standards.

1. The CO₂ emissions from new 2016 through 2020 model heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, shall not exceed 627 g/hp-hr. This standard continues to apply in 2021 and later through 2026 model years for all Otto-cycle engines that are not heavy heavy-duty engines. An FCL must be specified for each engine family, which may not be less than the certified emission level for the engine family. The FEL for the engine family is equal to the FCL multiplied by 1.03. The FCL serves as the CO₂ emission standard for the engine family with respect to certification and confirmatory testing instead of the standard specified in this subsection (c)(4)(A). The FEL serves as the emission standard for the engine family with respect to all other testing. The requirements for the optional averaging, banking, and trading program and for generating credits are described in the applicable test procedures incorporated by reference in subsection (d).

2. As an option, 2017 through ~~2027~~2026 model year heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, may be certified to the Optional Low-CO₂ Emission Standard. The CO₂ emissions from engines certified to the Optional Low-CO₂ Emission Standard may not exceed 490 g/hp-hr. Engines certified to the Optional Low-CO₂ Emission Standard must also comply with the applicable CH₄ and N₂O emission standards set forth in subsections (c)(4)(B) and (c)(4)(C), respectively. In addition, engines certified to the Optional Low CO₂ Emission Standard and participating in the Innovative Technology Regulation set forth in sections 2208 and 2208.1 are not eligible to participate in the averaging, banking, and trading program, or to generate credits for certification.

3. The CO₂ emissions from new ~~2021 and subsequent~~through 2026 model Otto-cycle engines characterized as heavy heavy-duty engines used in heavy heavy-duty vocational vehicles and heavy heavy-duty tractors shall not exceed:

Model Years	Heavy Heavy-Duty – Vocational (g/hp-hr)	Heavy Heavy-Duty – Tractor (g/hp-hr)
2021-2023	513	447
2024-2026	506	436
2027 and later	503	432

(B) The CH₄ emissions from new ~~2016 and subsequent~~model through 2026 model heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr-.

(C) The N₂O emissions from new ~~2016 and subsequent~~through 2026 model heavy-duty Otto-cycle engines, except in all cases engines used in medium-duty vehicles, shall not exceed 0.10 g/hp-hr.

(5) The exhaust emission standards from new ~~2022 and subsequent~~through 2026 model optionally certified heavy-duty Otto-cycle hybrid powertrains used in heavy-duty vehicles over 14,000 pounds GVWR shall not exceed the emission standards in 13 CCR § 1956.8 for heavy-duty Otto-Cycle engines used in heavy-duty vehicles over 14,000 pounds GVWR.

The exhaust emission standards from new ~~2022 and subsequent~~through 2026 model optionally certified Otto-cycle hybrid powertrains used in incomplete vehicles from 10,001 to 14,000 pounds GVWR shall not exceed the emission standards in 13 CCR § 1956.8 for Otto-Cycle engines used in incomplete vehicles from 10,001 to 14,000 pounds GVWR.

(d) *Test Procedures.* The test procedures for determining compliance with standards applicable to 1987 and subsequent ~~through 2026~~ model heavy-duty Otto-cycle engines and vehicles and 2022 and subsequent ~~through 2026~~ model Otto-cycle hybrid powertrains, are set forth in the “California Exhaust Emission Standards and Test Procedures for 1987 through 2003 Model Heavy-Duty Otto-Cycle Engines and Vehicles,” adopted April 25, 1986, as last amended December 27, 2000, the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent ~~through 2026~~ Model Heavy-Duty Otto-Cycle Engines and Vehicles,” adopted December 27, 2000, as last amended ~~December 28, 2023,~~ **[INSERT DATE OF AMENDMENT]**, and the “California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric and Other Hybrid Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes,” adopted October 24, 2002, as last amended October 21, 2014, which are all incorporated by reference herein; and the “California Non-Methane Organic Gas Test Procedures for 1993 through 2016 Model Year Vehicles” and the “California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles,” which are incorporated by reference in ~~section~~ sections 1961.2 and 1961.4, as applicable.

* * * *

(f)

(1) In 1985 and future years ~~through 2026~~, the executive officer may authorize use of engines certified to meet federal emission standards, or which are demonstrated to meet appropriate federal emission standards, in up to a total of 100 heavy-duty vehicles, including otto-cycle and diesel heavy-duty vehicles, in any one calendar year when the executive officer has determined that no engine certified to meet California emission standards exists which is suitable for use in the vehicles.

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

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

* * * *

(h) The exhaust emissions from new:

(1) 1992 through 2004 model-year Otto-cycle engines used in incomplete medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles from 8,501 to 14,000 pounds GVWR; and

(2) 1992 through 2019 model diesel engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles from 8,501 to 14,000 pounds GVWR, and 2020 through 2023 model diesel engines used in medium-duty ultra-low-emission vehicles, and super-ultra-low-emission vehicles from 10,001 to 14,000 pounds GVWR shall not exceed:

Exhaust Emission Standards for Engines Used in 1992 through 2004 Model Incomplete Otto-Cycle Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super Ultra-Low-Emission Vehicles, and 1992 through 2023 Model Diesel Engines Used in Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super Ultra-Low-Emission Vehicles^{A,F}
(grams per brake horsepower-hour)

<i>Model Year</i>	<i>Vehicle Emissions Category^B</i>	<i>Carbon Monoxide</i>	<i>NMHC + NOx^C</i>	<i>Non-Methane Hydrocarbons</i>	<i>Oxides of Nitrogen</i>	<i>Formaldehyde</i>	<i>Particulates^D</i>
1992 ^E - 2001	LEV	14.4	3.5 ^K	n/a	n/a	0.050	0.10 ^K
2002-2003 ^E	LEV	14.4	3.0 ^K	n/a	n/a	0.050	0.10 ^K
1992-2003 ^{E,H}	ULEV	14.4	2.5 ^K	n/a	n/a	0.050	0.10 ^K
2004-2006 ^L	ULEV - Opt A	14.4	2.5 ^{I,J,K}	n/a	n/a	0.050	0.10 ^{J,K}
2004-2006 ^L	ULEV - Opt. B	14.4	2.4 ^{I,J,K}	n/a	n/a	0.050	0.10 ^{J,K}
2007-2023 ^D (diesel only)	ULEV	15.5	n/a	0.14	0.20	0.050	0.01
1992-2006 ^L	SULEV	7.2	2.0 ^K	n/a	n/a	0.025	0.05 ^K
2007-2023 ^D (diesel only)	SULEV	7.7	n/a	0.07	0.10	0.025	0.005

^A This set of standards is optional. For the 1992 through 2019 model years, manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 8501-10,000 pounds gross vehicle weight rating may choose to comply with these standards as an alternative to the primary emission standards and test procedures specified in section 1960.1, section 1961, or section 1961.2, Title 13, California Code of Regulations. For the 1992 through 2023 model years, manufacturers of engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles from 10,001-14,000 pounds gross vehicle weight rating may choose to comply with these standards as an alternative to the primary emission standards and test procedures specified in section 1960.1, section 1961, or section 1961.2, Title 13, California Code of Regulations. For the 2020 and subsequent model years, both incomplete medium-duty vehicles and medium-duty vehicles that use a diesel engine 8,501 to 10,000 pounds GVW must certify to the primary emission standards and test procedures for

complete vehicles specified in section 1961.2, title 13, CCR. Manufacturers that choose to comply with these optional heavy-duty standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in section 2139(c), Title 13, California Code of Regulations.

^B "LEV" means low-emission vehicle.

"ULEV" means ultra-low-emission vehicle.

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

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

^D These standards apply only to diesel engines and vehicles.

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

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

^G [Reserved]

^H For engines certified to the 3.5 grams per brake horsepower-hour (g/bhp-hr) LEV standards, the in-use compliance standard shall be 3.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 2002 and 2003 model year LEV standards, the in-use compliance standard shall be 3.2 g/bhp-hr. For engines certified to the 1992 through 2003 model year ULEV standards, the in-use compliance standard shall be 2.7 g/bhp-hr for the first two model years of introduction. For engines certified to the 1992 through 2023 SULEV standards, the in-use compliance standard shall be 2.2 g/bhp-hr for the first two model years of introduction.

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

^J Emissions averaging may be used to meet these standards for diesel engines, using the requirements for participation in averaging, banking and trading programs, as set forth in the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles," incorporated by reference in section 1956.8 (b), above.

^K Engines of 1998 through 2023 model years may be eligible to generate averaging, banking and trading credits based on these standards according to the requirements of the averaging, banking and trading programs described in the "California Exhaust Emission Standards and Test Procedures for 1985 through 2003 Model Heavy-Duty Diesel Engines and Vehicles" and the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles," incorporated by reference in section 1956.8(b), above.

^L For the 2005 and 2006 model years, these emission standards only apply to diesel engines and vehicles.

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

(A) Early NOx compliant engines. For model years 2007, 2008, and 2009, a manufacturer may, at their option, certify one or more of their engine families to the combined NOx plus NMHC standard or FEL applicable to model year 2006 engines under section 1956.8(h)(2), in lieu of the separate NOx and NMHC standards or FELs applicable to the 2007 through 2023 model years, specified in section 1956.8(h)(2). Each engine certified under this phase-in option must comply with all other emission requirements applicable to model year 2007 engines. To qualify for this option, a manufacturer must satisfy the U.S.-directed production requirement of certifying no more than 50 percent of engines to the NOx plus NMHC standards or FELs applicable to 2006 engines, as specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(1), as adopted January 18, 2001. In addition, a manufacturer may reduce the quantity of engines that are required to be phased-in using the early certification credit program specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(2), as adopted January 18, 2001, and the "Blue Sky" engine program specified in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(4), as adopted January 18, 2001.

(B) Early PM compliant engines. A manufacturer certifying engines to the 2007 through 2023 model year PM standard listed in section 1956.8 (h)(2) (without using credits, as determined in any averaging, banking, or trading program described in “California Exhaust Emission Standards and Test Procedures for 1985 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles,” to comply with the standards) before model year 2007 may reduce the number of engines that are required to meet the 2007 through 2023 model year PM standard listed in section 1956.8(h)(2) in model year 2007, 2008 and/or 2009. To qualify for this option, a manufacturer must satisfy the PM emission requirements pursuant to the methods detailed in 40 Code of Federal Regulations, part 86, section 86.007-11(g)(2)(ii), as adopted January 18, 2001.

(4) No crankcase emissions shall be discharged directly into the ambient atmosphere from any new 2007 ~~or later~~ through 2026 model year diesel heavy-duty diesel engine, with the following exception: heavy-duty diesel engines equipped with turbochargers, pumps, blowers, or superchargers for air induction may discharge crankcase emissions to the ambient atmosphere if the emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. Manufacturers taking advantage of this exception must manufacture the engines so that all crankcase emission can be routed into a dilution tunnel (or other sampling system approved in advance by the Executive Officer), and must account for deterioration in crankcase emissions when determining exhaust deterioration factors. For the purpose of section 1956.8(h)(2), crankcase emissions that are routed to the exhaust upstream of exhaust aftertreatment during all operation are not considered to be “discharged directly into the ambient atmosphere.”

(5) *Optional Standards for 2023 and Earlier Model Complete and Incomplete Heavy-Duty Vehicles that Use Heavy-Duty Diesel Engines.* For 2023 and earlier model years only, manufacturers may request to group complete and incomplete heavy-duty diesel vehicles into the same test group as medium-duty diesel vehicles certifying to the LEV III exhaust emission standards and test procedures specified in title 13, CCR, section 1961.2, so long as those complete and incomplete heavy-duty diesel vehicles meet the most stringent LEV III standards to which any vehicle within that test group certifies.

(6) Greenhouse Gas Emission Standards for New 2014 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and 2016 ~~and Subsequent~~ through 2026 Model Heavy-Duty Otto-Cycle Engines Used in Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super-Ultra-Low-Emission Vehicles.

(A) The CO₂ emissions from new 2014 ~~and subsequent~~ through 2026 model heavy-duty diesel engines and new 2016 ~~and subsequent~~ through 2026 model heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low- emission vehicles shall not exceed:

CO₂ Emission Standards for 2014 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and 2016 and Subsequent through 2026 Model Heavy-Duty Otto-Cycle Engines Used in Medium-Duty Low-Emission Vehicles, Ultra-Low-Emission Vehicles, and Super-Ultra-Low Emission Vehicles ^{A, B}
(in g/hp-hr)

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

^A *Family Certification Levels.* An FCL must be specified for each engine family, which may not be less than the certified emission level for the engine family. The FEL for the engine family is equal to the FCL multiplied by 1.03. The FCL serves as the CO₂ emission standard for the engine family with respect to certification and confirmatory testing instead of the standards specified in this subsection (h)(6)(A). The FEL serves as the emission standard for the engine family with respect to all other testing.

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

^C *Alternate Emission Standards Based on 2011 Model Year Engines.* For model years 2014 through 2016, heavy-duty diesel engines may be certified to these alternate emission standards if they are not part of an averaging set in which a balance of banked credits remain. These alternate standards are determined from the measured emission rate of the test engine of the applicable baseline 2011 engine family(ies) as described in the California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel-Engines and Vehicles, as incorporated by reference in section (b). The alternate CO₂ standard for light heavy-duty vocational-certified engines is equal to the baseline 2011 emission rate multiplied by 0.975.

(B) The CH₄ emissions from new 2014 and subsequent through 2026 model heavy-duty diesel engines and new 2016 through 2026 model heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles shall not exceed 0.10 g/hp-hr.

(C) The N₂O emissions from new 2014 through 2026 model heavy-duty diesel engines and subsequent new 2016 through 2026 model heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles shall not exceed 0.10 g/hp-hr.

~~(C) The N₂O emissions from new 2014 and subsequent model heavy-duty diesel engines and new 2016 and subsequent heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low-emission vehicles, and super-ultra-low-emission vehicles shall not exceed 0.10 g/hp-hr.~~

(7) The exhaust emissions from new 2024 and subsequent through 2026 model diesel engines used in medium-duty vehicles from 10,001 – 14,000 pounds GVWR, shall not exceed:

Exhaust Emission Standards for 2024 through 2026 Model Diesel Engines Used in Medium-Duty Vehicles from 10,001 – 14,000 pounds GVWR (g/bhp-hr)^A

Test Procedure	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Particulates	Formaldehyde
FTP cycle	0.050	0.14	15.5	0.005	0.050
RMC cycle	0.050	0.14	15.5	0.005	0.050
Low-load cycle	0.200	0.14	15.5	0.005	0.050

Exhaust Emission Standards for 2027 and Subsequent Model Diesel Engines Used in Medium-Duty Vehicles from 10,001 – 14,000 pounds GVWR (g/bhp-hr)^A

Test Procedure	Oxides of Nitrogen	Non-methane Hydrocarbons	Carbon Monoxide	Particulates	Formaldehyde
FTP cycle	0.020	0.14	15.5	0.005	0.050
RMC cycle	0.020	0.14	15.5	0.005	0.050
Low-load cycle	0.050	0.14	15.5	0.005	0.050

^A A manufacturers of diesel engines used in medium-duty vehicles from 10,001-14,000 pounds gross vehicle weight rating may choose to comply with these standards as an alternative to the primary emission standards and test procedures specified in section 1961.2 or 1961.4, title 13, CCR. A manufacturer that chooses to comply with these optional heavy-duty engine standards and test procedures shall specify, in the Part I application for certification, an in-use compliance test procedure, as provided in section 2139(c), title 13, CCR. An engine certified for use in a medium-duty vehicle shall not be used in a heavy-duty vehicle over 14,000 pounds GVWR.

(i) Severability: If any provision of this section is held to be invalid or unenforceable by any court of competent jurisdiction, such invalidity shall not affect any provisions of this section that can be effected without the invalid provision.

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

- (1) "Active Bus" has the same meaning as defined in 13 CCR § 2023(b)(1).
- (2) "Bus" has the same meaning as defined in 13 CCR § 2023(b)(6).
- (3) "Bus purchase" or "Purchase" has the same meaning as defined in 13 CCR § 2023(b)(7).
- (4) "Certified emission level" means the highest deteriorated emission level in an engine family for a given pollutant from the applicable transient and/or steady-state testing, rounded to the same number of decimal places as the applicable standard. Note that there may be two certified emission levels for CO₂ if a family is certified for both vocational and tractor use.

(5) “Exempt bus” refers to a bus that is equipped with a 2022 and subsequent through 2026 model year diesel-fueled heavy-duty engine that is certified to both the federal emission standards for 2010 and later through 2026 model year diesel heavy-duty engines and vehicles as set forth in title 40, Code of Federal Regulations, section 86.007-11, as last amended Oct. October 25, 2016, and the federal Greenhouse Gas Emissions and Fuel Economy Standards for Medium- and Heavy-Duty Engines and Vehicles – Phase 2 requirements promulgated at 81 Fed. Reg. 73,478 (October 25, 2016), which are incorporated by reference herein.

(6) “Family certification level” (FCL) means a CO₂ emission level declared by the manufacturer that is at or above emission test results for all emission-data engines. The FCL serves as the emission standard for the engine family with respect to certification testing if it is different than the otherwise applicable standard. The FCL must be expressed to the same number of decimal places as the emission standard it replaces.

(7) “Family emission limit” (FEL) means an emission level declared by the manufacturer to serve in place of an otherwise applicable emission standard (other than CO₂ standards) under the Average, Banking, and Trading Program. The FEL must be expressed to the same number of decimal places as the emission standard it replaces, except for legacy engine families. For legacy engine families, the manufacturer has the option to specify the NO_x and/or PM FEL to either 2 or 3 decimal places, for example, a manufacturer can specify a PM FEL of 0.01 g/bhp-hr or 0.005 g/bhp-hr. The FEL serves as the emission standard for the engine family with respect to all required testing except certification testing for CO₂. The CO₂ FEL is equal to the CO₂ FCL multiplied by 1.03 and rounded to the same number of decimal places as the standard (e.g., the nearest whole g/hp-hr for the 2016 CO₂ standards).

(8) “Heavy-Duty Transient Federal Test Procedure” or “FTP cycle” means the test procedure specified in 40 CFR § 86.007-11(a)(2), as amended October 25, 2016, incorporated by reference herein, for heavy-duty diesel engines, and the test procedure specified in 40 CFR § 86.008-10(a)(2), as amended on October 25, 2016, incorporated by reference herein, for heavy-duty Otto-cycle engines.

(9) “Heavy heavy-duty engine” means an engine used in a vehicle that normally exceeds 33,000 pounds GVWR. Heavy heavy-duty engines are designed for multiple rebuilds and have cylinder liners. Vehicles in this group are normally tractors, trucks, straight trucks with dual rear axles, and buses used in inter-city, long-haul applications. Otto-cycle engines that are best characterized by this definition share a primary intended service class with diesel heavy heavy-duty engines. However, gasoline-fueled engines are presumed not to be characterized by this definition; for example, vehicle manufacturers may install some number of gasoline-fueled engines in vehicles with a GVWR that is above 33,000 pounds without causing the engine manufacturer to consider those to be heavy heavy-duty engines.

(10) “Hybrid powertrain or optionally certified hybrid powertrain” means a group of components that includes an engine, electric motor-generator system, rechargeable energy storage system other than a conventional battery system or conventional flywheel, battery management system, including charge controller and thermal management systems and associated power electronics. Transmissions, final drives, and drive shafts may be included as powertrain components if specified by the hybrid powertrain manufacturer. Supplemental electrical batteries and hydraulic accumulators

are examples of hybrid energy storage systems. Note other examples of systems that qualify as hybrid engines or powertrains are systems that recover kinetic energy and use it to power an electric heater in the aftertreatment.

~~(11) "Intermediate useful life" means the period of use of 435,000 miles or eight years or 22,000 hours, whichever first occurs, applicable for the intermediate emission standards for oxides of nitrogen for 2027 and subsequent model year heavy heavy-duty diesel engines.~~

~~(12) "Intermediate useful life NOx standard" means the emissions standards for oxides of nitrogen applicable to the intermediate useful life for 2027 and subsequent model year heavy heavy-duty diesel engines.~~

~~(13)~~(11) "Legacy engine family" means an engine family certified under the provisions of title 13, CCR, section 1956.8(a)(2)(C)3.

~~(14)~~(12) "Light heavy-duty engine" means an engine used in a vehicle that is normally at or below 19,500 pounds GVWR. Light heavy-duty engines usually are not designed for rebuild and do not have cylinder liners. Vehicle body types in this group might include any heavy-duty vehicle built for a light-duty truck chassis, van trucks, multi-stop vans, and some straight trucks with a single rear axle. Typical applications would include personal transportation, light-load commercial delivery, passenger service, agriculture, and construction.

~~(15)~~(13) "Low-load cycle" means the emission test procedure with the low-load cycle according to section I.11.B.8 of the "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~through 2026 Model Heavy-Duty Diesel Engines and Vehicles," incorporated by reference in subsection (b).

~~(16)~~(14) "Medium heavy-duty engine" means an engine used in a vehicle that is normally between 19,501 to 33,000 pounds GVWR. Medium heavy-duty engines may be designed for rebuild and may have cylinder liners. Vehicle body types in this group would typically include school buses, straight trucks with single rear axles, city tractors, and a variety of special purpose vehicles such as small dump trucks, and refuse trucks. Typical applications would include commercial short haul and intra-city delivery and pickup.

~~(17)~~(15) "NOx exempt areas" has the same meaning as defined in 13 CCR § 2023(b)(39).

~~(18)~~(16) "Primary intended service class" means the class that best describes the vehicle for which the manufacturer designs and markets the engine. The three primary intended service classes are light heavy-duty, medium heavy-duty, and heavy heavy-duty.

~~(19)~~(17) "Ramped Modal Cycle" or "RMC cycle" means the supplemental emission test procedure with the steady-state cycle in 40 CFR § 86.1360, as amended October 25, 2016, incorporated by reference herein.

~~(20)~~(18) "Tractor" means a vehicle meeting the definition of "tractor" in 40 CFR § 1037.801, as amended October 25, 2016, incorporated by reference herein, but not classified as a "vocational tractor" under 40 CFR § 1037.630, as amended October 25, 2016, incorporated by reference herein, or relating to such a vehicle.

~~(21)~~(19) "Tractor engine" means an engine certified for use in tractors. Where an engine family is certified for use in both tractors and vocational vehicles, "tractor engine" means an engine that the engine manufacturer reasonably believes will be (or has

been) installed in a tractor. Note that the Executive Officer may require a manufacturer to document how it determines that an engine is a tractor engine.

(2220) "Test Procedure" means all aspects of engine testing including, but not limited to, the cycle, preconditioning procedures, equipment specifications, calibrations, calculations, and other protocols and specifications needed to measure emissions.

(2321) "Transit Agency" has the same meaning as defined in 13 CCR § 2023(b)(51).

(2422) "Urban Bus" has the same meaning as defined in 40 CFR § 86.091-2, as amended July 26, 1990, incorporated by reference herein.

(2523) "Vocational engine" means an engine certified for use in vocational vehicles. Where an engine family is certified for use in both tractors and vocational vehicles, "vocational engine" means an engine that the engine manufacturer reasonably believes will be (or has been) installed in a vocational vehicle. Note that the provisions of this part may require a manufacturer to document how it determines that an engine is a vocational engine.

(2624) "Vocational vehicle" means a vehicle meeting the definition of "vocational" vehicle in 40 CFR § 1037.801, as amended October 25, 2016, incorporated by reference herein.

(2725) "Zero-emission powertrain" means an all-electric or hydrogen fuel-cell powertrain assembly, which includes (if applicable) the electric traction motor, system controller, generator, on-board charger, battery management system, thermal management systems, energy storage system (batteries, capacitors, and flywheels), inverter, fuel-cell stack, and the interface at which electrical power is converted to tractive mechanical power or vice-versa (in the case of a regenerative braking system), certified pursuant to the requirements in subsection (a)(8).

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

§ 1965. Emission Control, Smog Index, and Environmental Performance Labels - 1979 and Subsequent Model-Year Motor Vehicles.

* * * *

In addition to all other requirements, emission control labels are required by the California certification procedures contained in the "California Motor Vehicle Emission Control and Smog Index Label Specifications for 1978 through 2003 Model Year Motorcycles, Light-, Medium- And Heavy-Duty Engines And Vehicles," adopted March 1, 1978, as last amended September 5, 2003, which is incorporated herein by reference, the "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in section 1961(d), the "California 2015 through 2025 Model Year Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Year Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in section 1961.2(d), the "California 2026 and Subsequent Model Year Criteria Pollutant Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in section 1961.4(c)(1), the "California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel-Engines and Vehicles," incorporated by reference in section 1956.8(b), the "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," incorporated by reference in section 1956.8(b) and (d), the "California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Otto-Cycle Engines," incorporated by reference in section 1956.8(d), the "California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains," incorporated by reference in section 1956.8.2(c), and the "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," incorporated by reference in title 17, CCR, section 95663(d).

Smog index labels for passenger cars and light-duty trucks shall conform to the "California Smog Index Label Specifications for 2004 Through 2009 Model Year Passenger Cars and Light-Duty Trucks," adopted September 5, 2003, as last amended May 2, 2008, which is incorporated herein by reference. Environmental Performance labels for passenger cars, light-duty trucks, and medium-duty passenger vehicles shall conform to the "California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles," adopted May 2, 2008, as last amended September 2, 2015, which is incorporated herein by reference. Environmental Performance labels for medium-duty vehicles, except medium-duty passenger vehicles, shall conform to the "California Environmental Performance Label Specifications for 2021 and Subsequent Model Year Medium-Duty Vehicles, Except Medium-Duty Passenger Vehicles," adopted

December 19, 2018, as last amended September 9, 2021, which is incorporated herein by reference. Motorcycles shall meet the requirements of Title 40, Code of Federal Regulations, section 86.413-78, as last amended October 28, 1977, which is incorporated herein by reference.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018, 43101, 43104, 43105, 43200 and 43200.1, Health and Safety Code. Reference: Sections 39002, 39003, 43000, 43013, 43018.5, 43100, 43101, 43102, 43104, 43107, 43200 and 43200.1, Health and Safety Code.

§ 1968.2. Malfunction and Diagnostic System Requirements--2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines.

* * * *

(c) Definitions.

* * * *

“Family Emission Limit (FEL)” refers to the exhaust emission levels to which an engine family is certified under the averaging, banking, and trading program incorporated by reference in title 13, CCR section 1956.8 or 1956.8.2, whichever is applicable.

* * * *

“FTP cycle”. For passenger vehicles, light-duty trucks, and medium-duty vehicles certified on a chassis dynamometer, FTP cycle refers to the driving schedule in 40 Code of Federal Regulations (CFR) 40, Appendix I, Part 86, section (a) entitled, “EPA Urban Dynamometer Driving Schedule for Light-Duty Vehicles and Light-Duty Trucks” (i.e., the FTP-72 cycle or LA-4 cycle) as it existed on July 8, 2019 and incorporated by reference herein. For 2004 to 2026 model year medium-duty engines certified on an engine dynamometer, FTP cycle refers to the engine dynamometer schedule in 40 CFR 40, Appendix I, Part 86, section (f)(1), entitled, “EPA Engine Dynamometer Schedule for Heavy-Duty Otto-Cycle Engines,” or section (f)(2), entitled, “EPA Engine Dynamometer Schedule for Heavy-Duty Diesel Engines,” as those sections existed on January 25, 2018 and incorporated by reference herein. For 2026 model year medium-duty engines certified on an engine dynamometer and hybrid powertrains certified on a powertrain dynamometer, the manufacturer may elect to define FTP cycle as the engine dynamometer schedule in 40 CFR 1036.512 entitled “Federal Test Procedure,” as that section existed on October 24, 2024, and incorporated by reference herein. For 2027 and subsequent model year medium-duty engines certified on an engine dynamometer and hybrid powertrains certified on a powertrain dynamometer, FTP cycle refers to the engine dynamometer schedule in 40 CFR 1036.512 entitled “Federal Test Procedure,” as that section existed on October 24, 2024.

* * * *

“Supplemental Emission Test (SET) cycle”. For 2004 to 2026 model year medium-duty engines certified on an engine dynamometer, SET cycle refers to the driving schedule defined as the “supplemental steady state emission test” in 40 CFR 86.1360-2007, as amended July 13, 2005. For 2026 model year medium-duty engines certified on an engine dynamometer and hybrid powertrains certified on a

powertrain dynamometer, the manufacturer may elect to define SET cycle as the driving schedule in 40 CFR 1036.510 entitled “Supplemental Emission Test” as that section existed on October 24, 2024, and incorporated by reference herein. For 2027 and subsequent model year medium-duty engines certified on an engine dynamometer and hybrid powertrains certified on a powertrain dynamometer, SET cycle refers to the driving schedule in 40 CFR 1036.510 entitled “Supplemental Emission Test” as that section existed on October 24, 2024.

* * * *

“*SET standard*” refers to the certification exhaust emission standards and test procedures applicable to the SET cycle incorporated by reference in title 13, CCR sections 1956.8(b) and (d) or 1956.8.2, whichever is applicable, to which the engine is certified.

* * * *

(d) *General Requirements.*

Section (d) sets forth the general requirements of the OBD II system. Specific performance requirements for components and systems that shall be monitored are set forth in sections (e) and (f) below.

* * * *

(3) *Monitoring Conditions.*

Section (d)(3) sets forth the general monitoring requirements while sections (e) and (f) set forth the specific monitoring requirements as well as identify which of the following general monitoring requirements in section (d)(3) are applicable for each monitored component or system identified in sections (e) and (f).

* * * *

(3.2) As specifically provided for in sections (e) and (f), manufacturers shall define monitoring conditions in accordance with the criteria in sections (d)(3.2.1) through (3.2.3). The requirements of section (d)(3.2) shall be phased in as follows: 30 percent of all 2005 model year vehicles, 60 percent of all 2006 model year vehicles, and 100 percent of all 2007 and subsequent model year vehicles. Manufacturers may use an alternate phase-in schedule in lieu of the required phase-in schedule if the alternate phase-in schedule provides for equivalent compliance volume as defined in section (c) with the exception that 100 percent of 2007 and subsequent model year vehicles shall comply with the requirements. Small volume manufacturers shall meet the requirements on 100 percent of 2007 and subsequent model year vehicles but shall not be

required to meet the specific phase-in requirements for the 2005 and 2006 model years.

- (3.2.1) Manufacturers shall define monitoring conditions that, in addition to meeting the criteria in section (d)(3.1), ensure that the monitor yields an in-use performance ratio (as defined in section (d)(4)) that meets or exceeds the minimum acceptable in-use monitor performance ratio on in-use vehicles. For purposes of this regulation, except as provided below in section (d)(3.2.1)(G), the minimum acceptable in-use monitor performance ratio is:

* * * *

(G) For interim years:

* * * *

- (vi) for diesel PM filter filtering performance monitors (section (f)(9.2.1)) and missing substrate monitors (section (f)(9.2.5)) not using the denominator criteria in section (d)(4.3.2)(G):

- a. for passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard:
 1. for the 2019 through 2021 model years, 0.100
 2. for the 2022 through ~~2025~~2028 model years, 0.150
 3. for the ~~2026~~2029 through ~~2028~~2031 model years meeting Option 1 for the PM threshold in Table 3 at the beginning of section (f), 0.336
 4. for the ~~2026~~2029 through ~~2028~~2031 model years meeting Option 2 for the PM threshold in Table 3 at the beginning of section (f), 0.150
- b. for medium-duty vehicles (except MDPVs) certified to a chassis dynamometer tailpipe emission standard:
 1. for the 2019 through 2021 model years, 0.100
 2. for the 2022 through ~~2025~~2028 model years, 0.150
- c. for medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard:
 1. for the 2016 through 2018 model years, 0.100
 2. for the 2019 through ~~2025~~2028 model years, 0.300

3. for the ~~2026~~2029 through ~~2028~~2031 model years meeting Option 1 in section (f)(9.2.1)(A)(ii)e.1., 0.336
4. for the ~~2026~~2029 through ~~2028~~2031 models years meeting Option 2 in section (f)(9.2.1)(A)(ii)e.2., 0.150

* * * *

(4) *In-Use Monitor Performance Ratio Definition.*

* * * *

(4.3) Denominator Specifications

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(4.3.2) Specifications for incrementing:

* * * *

(O) In addition to the requirements of section (d)(4.3.2)(B) above, the denominator for the cold start emission reduction strategy cold start catalyst heating monitor (section (e)(11.2.3)) shall be incremented if and only if the CSERS monitoring conditions (as defined in section (c)) have been met and idle operation in park or neutral during the first 30 seconds after engine start is greater than or equal to 10 seconds.

(P) For vehicles that have NOx converting catalyst systems with more than one catalyst component in series, the manufacturer may request Executive Officer approval to increment the denominator for a monitor for the NOx catalyst(s), reductant injection system, or NOx sensor required by sections (f)(2.2.2), (f)(2.2.3)(A), (f)(5.2.2)(A), or (f)(5.2.2)(D) using the criteria set forth in section (d)(4.3.2)(G). The Executive Officer shall approve the request to use the denominator incrementing criteria in section (d)(4.3.2)(G) for the monitor upon determining that the manufacturer has demonstrated, using data or engineering analysis, that the enable conditions necessary for robust diagnostic decisions for that monitor are unlikely to occur frequently enough to allow the monitor to comply with the minimum ratio requirements per sections (f)(2.3.1) and (f)(5.3.1)(A).

* * * *

(4.5) Disablement of Numerators and Denominators

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(4.5.5) For 30 percent of 2019, 60 percent of 2020, and 100 percent of 2021 and subsequent model year vehicles, within ten seconds of a malfunction

being detected for any component used to determine if any of the criteria in sections (d)(4.3.2)(C) through (J) and (L) through (OP) are satisfied (e.g., engine cold start), the OBD II system shall disable further incrementing of the corresponding numerator and denominator for each monitor that is affected. When the malfunction is no longer detected (i.e., the pending code is erased through self-clearing or through a scan tool command), incrementing of the corresponding numerators and denominators shall resume within ten seconds.

(5) *Standardized tracking and reporting of monitor performance.*

* * * *

(5.7) Supplemental monitor activity data: For vehicles using SAE J1979-2, the OBD II system shall track and report the following data in accordance with SAE J1979-2 specifications for each diagnostic or emission-critical powertrain control unit:

(5.7.1) Mini-Numerator

* * * *

(B) Specifications for incrementing:

- (i) The mini-numerator, when incremented, shall be incremented by an integer of one. The mini-numerator may not be incremented more than once per driving cycle.
- (ii) The mini-numerator shall be incremented at the end of a driving cycle if and only if the associated monitor ran and completed on the driving cycle.
- (iii) ~~The~~ For 2030 and earlier model year vehicles, the OBD II system shall pause further incrementing of the mini-numerator on a driving cycle if a malfunction has been detected which can illuminate the MIL as described in section (d)(2.2.2), and the diagnostic or emission-critical powertrain control unit that tracks and reports the mini-numerator stores a pending fault code for the malfunction. Incrementing of the mini-numerator shall resume for the next driving cycle in which no such fault code is present. Alternatively, for 2027 through 2030 model year vehicles, the manufacturer may elect to comply with the provisions in section (d)(5.7.1)(B)(iv) below.
- (iv) For 2031 and subsequent model year vehicles, if a malfunction has been detected which can illuminate the MIL as described in section (d)(2.2.2) and a pending fault code is stored for the malfunction, the

OBD II system shall pause and resume incrementing of the mini-numerator on a driving cycle according to the following provisions:

a. All mini-numerators that are tracked on the diagnostic or emission-critical powertrain control unit that stored the pending fault code shall be paused.

b. ~~(iv)~~ If the malfunction disables incrementing of the general denominator in accordance with section (d)(5.6.2)(C), all mini-numerators on all diagnostic or emission-critical powertrain control units shall be paused.

c. Incrementing of all paused mini-numerators that are tracked on a diagnostic or emission-critical powertrain control unit shall resume for the next driving cycle in which both of the following conditions are true:

1. No pending fault codes are stored on the diagnostic or emission-critical powertrain control unit, and

2. No pending fault codes that can disable incrementing of the general denominator are stored on any diagnostic or emission-critical powertrain control unit.

(v) The OBD II system shall cease further incrementing of the mini-numerator if the mini-numerator has reached a value of 255.

* * * *

(5.7.2) Mini-Denominator

(A) Definition: The mini-denominator is defined as the counter that indicates the number of general denominators that have accumulated since the last time the mini-denominator was reset to zero. The OBD II system shall track and report a mini-denominator for each diagnostic or emission-critical powertrain control unit that is capable of storing a pending fault code and that tracks and reports mini-numerator data.

* * * *

(e) *Monitoring Requirements for Gasoline/Spark-Ignited Engines.*

* * * *

(17) *Exceptions to Monitoring Requirements*

(17.1) Except as provided in sections (e)(17.1.1) through (17.1.3), (e)(17.1.4)(B), and (e)(17.1.5) below, upon request of a manufacturer or upon the best

engineering judgment of the ARB, the Executive Officer may revise the emission threshold for a malfunction on any diagnostic required in section (e) if the most reliable monitoring method developed requires a higher threshold to prevent false indications of a malfunction.

* * * *

(17.1.4) For medium-duty vehicles certified to an engine dynamometer tailpipe emission standard:

* * * *

(B) Alternate malfunction criteria:

(i) For 2022 and 2023 model year vehicles using engines that meet all the requirements under sections (e)(17.1.4)(B)(i)a. through c. below, the manufacturer shall use the NO_x threshold specified in section (e)(17.1.4)(B)(ii) and the PM threshold specified in section (e)(17.1.4)(B)(iii).:

a. Certify to an FTP NO_x emission standard of 0.10 g/bhp-hr or lower,

b. Certify to an FTP PM emission standard of 0.005 g/bhp-hr or lower, and

c. Comply with the 1-binned moving average window method for in-use testing as described in section 86.1370.B of "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles," incorporated by reference in section 1956.8(d), title 13, CCR.

* * * *

(iii) For 2024 and subsequent model year vehicles using engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, the manufacturer shall use a PM threshold of 0.015 g/bhp-hr (e.g., detect a malfunction before PM emissions exceed 0.015 g/bhp-hr).

(iv) For 2027 and subsequent model year vehicles using engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower, for the NMHC thresholds set forth in section (e), the manufacturer shall use 0.140 g/bhp-hr as the applicable NMHC standard (e.g., if the malfunction criteria is 1.5 times the applicable FTP NMHC standard, the manufacturer shall detect a malfunction before NMHC emissions exceed 0.210 g/bhp-hr).

- (v) For 2027 and subsequent model year vehicles using engines certified to an FTP engine CO standard of 14.4 g/bhp-hr or lower, for the CO thresholds set forth in section (e), the manufacturer shall use 14.4 g/bhp-hr as the applicable CO standard (e.g., if the malfunction criteria is 1.5 times the applicable FTP CO standard, the manufacturer shall detect a malfunction before CO emissions exceed 21.6 g/bhp-hr).
- (C) Alternate malfunction criteria for engine cooling system thermostat monitor: For 2022 and 2023 model year vehicles using engines that meet the criteria under sections (e)(17.1.4)(B)(i)a. through c. and 2024 and subsequent model year vehicles using engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower or certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, and 2027 and subsequent model year vehicles using engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower or certified to an FTP engine CO standard of 14.4 g/bhp-hr or lower, for the thermostat monitor malfunction criteria specified under section (e)(10.2.1)(A)(ii) where fuel, spark timing, and/or other coolant temperature-based modifications to the engine control strategies would not cause an emissions increase of 50 or more percent of the applicable standards, the manufacturer shall use the following ~~NOx or PM~~ standard:
- (i) For engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower, 0.20 g/bhp-hr for the applicable FTP NOx standard.
 - (ii) For engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, 0.01 g/bhp-hr for the applicable FTP PM standard.
 - (iii) For engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower, 0.140 g/bhp-hr for the applicable FTP NMHC standard.
 - (iv) For engines certified to an FTP engine CO standard of 14.4 g/bhp-hr or lower, 14.4 g/bhp-hr for the applicable FTP CO standard.
- (D) Alternate test-out criteria: For the test-out criteria (i.e., criteria used to determine if the specific component or function is exempt from the monitoring requirements) specified in sections (e)(11.2.3)(C) and (e)(15.1.2), when determining if no malfunction can cause emissions to exceed the FTP standards or increase by the maximum allowed percentage of the FTP standards, the manufacturer shall use the following standards:
- (i) For 2027 and subsequent model year engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower, 0.20 g/bhp-hr for the applicable FTP NOx standard.

- (ii) For 2027 and subsequent model year engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, 0.01 g/bhp-hr for the applicable FTP PM standard.
- (iii) For 2027 and subsequent model year vehicles using engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower, 0.140 g/bhp-hr for the applicable FTP NMHC standard.
- (iv) For 2027 and subsequent model year vehicles using engines certified to an FTP engine CO standard of 14.4 g/bhp-hr or lower, 14.4 g/bhp-hr for the applicable FTP CO standard.

* * * *

(f) *Monitoring Requirements for Diesel/Compression-Ignition Engines.*

For non-Low Emission Vehicle III applications (e.g., Low Emission Vehicle applications and Low Emission Vehicle II applications), the emission thresholds are specified in the monitoring sections in section (f) below. For Low Emission Vehicle III applications, wherever an emission threshold for a malfunction on a diagnostic is required in section (f), the emission thresholds shall be set in accordance with Table 2 and Table 3 below:

* * * *

Table 3

LEV-III OBD II Diesel PM Filter Filtering Performance Monitor Threshold					
Exhaust Standards		PM Filter Filtering Performance Monitor Threshold			
Vehicle Type	Vehicle Emission Category	NMOG+ NOx Mult. ¹	CO Mult. ¹	PM Mult.	PM THD (mg/mi)
Passenger Cars, Light-Duty Trucks, and Chassis Certified MDPVs	LEV160	1.50	1.50	N/A	Up to and including the 2025 <u>2028</u> model year: 17.50
	ULEV125				
	ULEV70	2.00			
	ULEV50				Option 1 ⁵ : 2026-2028MY <u>2029-2031MY</u> : 17.50 2029 <u>2032</u> +MY: 10.00
	SULEV30	2.50	2.50		
	SULEV20 ⁴				Option 2 ⁵ : 2026 <u>2029</u> +MY: 10.00

2016MY- 2018MY Chassis Certified MDVs (except MDPVs)	All MDV Emission Categories	N/A	N/A	1.75 ²	17.50 ³
2019+MY Chassis Certified MDVs (except MDPVs) 8,500- 10,000 lbs. GVWR	All MDV Emission Categories	1.50	1.50	1.50 ²	Up to and including the <u>2028MY2031MY:</u> 17.50 ³ <u>20292032</u> +MY: 14.00
2019+MY Chassis Certified MDVs (except MDPVs) 10,001- 14,000 lbs. GVWR	All MDV Emission Categories	1.50	1.50	1.50 ²	17.50 ³

1 Applies to 2019 and subsequent model years

2 Applies to vehicles not included in the phase-in of the PM standards set forth in title 13, CCR section 1961.2(a)(2)(B)2

3 Applies to vehicles included in the phase-in of the PM standards set forth in title 13, CCR section 1961.2(a)(2)(B)2

4 Manufacturer shall use the 2.50 times NMOG+NOx multiplier for vehicles not using the provisions of section (f)(17.1.7)

5 All vehicles within a specific test group shall meet the same Option (either Option 1 or Option 2). A test group that is carried over to a subsequent model year(s) may use one Option one year, then use the other Option another year. In order for a test group to qualify for the provisions of sections (h)(2.2.1) and (k)(7.3), the PM filter filtering performance monitor must detect a malfunction before emissions exceed the PM threshold under Option 2 (e.g., the PM filter filtering performance monitor may not have a deficiency for not being able to detect a malfunction before emissions exceed the PM threshold under Option 2) and must meet the minimum acceptable ratio in section (d)(3.2.1)(G)(vi).

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(5) Exhaust Gas Sensor Monitoring

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(5.2) Malfunction Criteria:

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(5.2.2) NOx and PM sensors:

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- (D) Monitoring capability: To the extent feasible, the OBD II system shall detect a malfunction of the sensor when the sensor output voltage, resistance, impedance, current, amplitude, activity, offset, or other characteristics are no longer sufficient for use as an OBD II system monitoring device (e.g., for catalyst, EGR, PM filter, SCR, or NOx adsorber monitoring). The dependent monitor (e.g., catalyst, EGR, SCR, or NOx adsorber monitor) for which the sensor is used as an OBD II system monitoring device must make a robust diagnostic decision (e.g., avoid false passes of a best performing unacceptable catalyst and false fails of a nominal catalyst) with a deteriorated but passing exhaust gas sensor.
- (i) For the NOx sensor on 2025 and subsequent model year vehicles, the manufacturer shall test each applicable failure mode of the NOx sensor (e.g., sensor offset high failure mode, sensor gain low failure mode) with the component/system for the dependent monitor set at the best performing unacceptable level (e.g., with a best performing unacceptable catalyst). For each applicable NOx sensor failure mode, the manufacturer shall collect one data point with the sensor performance set at the sensor monitor malfunction threshold, at least three data points with the sensor performance set above the sensor malfunction threshold, and at least three data points with the sensor performance set below the sensor malfunction threshold. The spacing between the data points shall be set at two sigma and calculated using the variance of the applicable NOx sensor monitor output (i.e., the variance calculated from the NOx sensor monitor result distribution for the malfunction threshold sensor for the sensor failure mode under consideration). If the two sigma spacing places a data point(s) in a region that will be tested by a different NOx sensor failure mode, the spacing for all data point(s) above or below the sensor malfunction threshold and between the NOx sensor malfunction thresholds for the two NOx sensor failure modes may be modified such that all the data point(s) remain equally spaced from each other and within the region of the failure mode currently being tested. The manufacturer shall also submit test data and/or engineering analysis demonstrating the NOx sensor monitor robustness against false-pass and false-fail decisions. The robustness data/analysis shall include test results from a wide range of sensor monitor enable conditions and may include data/analysis previously collected during development of the sensor monitor. For each applicable NOx sensor failure mode, the

manufacturer shall perform tests of all the required data points without sending a scan tool code clear command between each data point test (e.g., for testing of the sensor offset high failure mode, the manufacturer shall perform tests of all seven data points without sending a code clear command in-between each test). The manufacturer shall send a scan tool code clear command between testing of each applicable NOx sensor failure mode (e.g., collect all seven data points for testing of the sensor offset high failure mode, then send a code clear command before testing of the sensor gain high failure mode). The NOx sensor monitor is deemed compliant if, during testing of each applicable sensor failure mode, all the following are met:

- a. ~~The NOx sensor monitor makes a fail decision during a~~ During testing for each data point (except the data point at the sensor monitor malfunction threshold) in the failing region of the sensor monitor, the NOx sensor monitor makes a fail decision,
- b. ~~During~~ The NOx sensor monitor makes a pass decision during testing for each data point (except the data point at the sensor monitor malfunction threshold) in the passing region of the sensor monitor,
- c. ~~The dependent monitor (e.g., catalyst monitor) makes a fail decision during testing for each data point (except the data point at the sensor monitor malfunction threshold) in the passing region of the sensor monitor,~~
- d. ~~Either the dependent monitor or the~~ 1. The NOx sensor monitor makes a pass decision, or
 - 2. A separate NOx sensor monitor for the same NOx sensor makes a fail decision during,
- c. ~~During testing at~~ for each data point (except the data point at the sensor monitor malfunction threshold) in the passing region of the sensor monitor,
 - e 1. The MIL illuminates and is commanded on dependent monitor makes a fail decision, or
 - 2. A separate NOx sensor monitor for the same NOx sensor makes a fail decision,
- d. ~~During testing at the data point at the sensor monitor malfunction threshold, either the NOx dependent monitor or the sensor monitor makes a fail decision,~~

- e. During testing for at least once during one data point (including the data point at the sensor monitor malfunction threshold) in the passing region of the sensor monitor, the dependent monitor makes a fail decision.
 - f. During testing of each applicable NOx sensor failure mode, the MIL illuminates and is commanded on at least once for the applicable NOx sensor failure mode being tested, and
 - ~~f. The~~ g. During testing of each applicable NOx sensor failure mode, the MIL illuminates and is commanded on at least once for a malfunction of the dependent component/system for the dependent monitor (e.g., catalyst) at least once during testing of each applicable or for a separate NOx sensor failure mode monitor for the same NOx sensor.
- (ii) If the manufacturer data do not satisfy sections (f)(5.2.2)(D)(i)a., b., c., e., f., or fg. above due to a result being in the 2 percent tail of a normal distribution or do not satisfy section (f)(5.2.2)(D)(i)d., the manufacturer may submit additional data points at the same sensor performance level to support the demonstration of compliance.
- ~~(iii)~~(iii) If the manufacturer data do not satisfy the criterion in either section (f)(5.2.2)(D)(i)b. or (f)(5.2.2)(D)(i)c. above due to interactions between the performance of the component/system for the dependent monitor and the performance of the sensor (e.g., increased ammonia slip from a best performing unacceptable catalyst), the requirement shall be considered compliant if a fail decision is made by either the dependent monitor or the sensor monitor when the sensor performance level is in the passing region of the sensor monitor and the manufacturer indicates in service literature that the component/system for the dependent monitor or the sensor may be malfunctioning.
- (iv) If the manufacturer data do not satisfy section (f)(5.2.2)(D)(i)e. above, the manufacturer may submit additional data points at different sensor performance levels with all data points (additional data points and previous data points) in the passing region of the sensor monitor equally spaced from each other to support the demonstration of compliance.
- (v) The Executive Officer may waive the requirements for the submittal of the data under section (f)(5.2.2)(D)(i) above for a test group if the data have been submitted for a previous model year and the calibrations of the NOx sensor monitor and dependent monitor for the current test group have not changed from the previous model year.

(iv)(vi) The manufacturer may meet the requirements in section
(f)(5.2.2)(D)(i) above on 2023 and 2024 model year vehicles.

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(9) *Particulate Matter (PM) Filter Monitoring*

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(9.2) Malfunction Criteria:

(9.2.1) Filtering Performance:

(A) The OBD II system shall detect a malfunction prior to a decrease in the filtering capability of the PM filter that would cause a vehicle's emissions to exceed:

* * * *

(ii) For medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard:

* * * *

d. the applicable NOx standard by more than 0.2 g/bhp-hr (e.g., cause NOx emissions to exceed 0.4 g/bhp-hr if the exhaust emission standard is 0.2 g/bhp-hr) as measured from an applicable cycle emission test, or 0.03 g/bhp-hr PM as measured from an applicable cycle emission test on 2024 and 2025 through 2028 model year vehicles;

e. For 20262029 and subsequent model year vehicles, the applicable NOx standard by more than 0.2 g/bhp-hr (e.g., cause NOx emissions to exceed 0.4 g/bhp-hr if the exhaust emission standard is 0.2 g/bhp-hr) as measured from an applicable cycle emission test, or the PM thresholds (as measured from an applicable cycle emission test cycle) from either Option 1 or Option 2 as described below:

1. Option 1: 0.03 g/bhp-hr PM for 20262029 through 20282031 model year vehicles, and 0.02 g/bhp-hr PM for 20292032 and subsequent model year vehicles; or
2. Option 2: 0.02 g/bhp-hr PM for 20262029 and subsequent model year vehicles.

* * * *

(9.2.4) Catalyzed PM Filter:

(A) NMHC conversion: For 2015 and subsequent model year passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard and 2015 and subsequent model year medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard with catalyzed PM filters that convert NMHC emissions:

* * * *

(iii) PM filters are exempt from the monitoring requirements of sections (f)(9.2.4)(A)(i) and (ii) if both of the following criteria are satisfied: (1) no malfunction of the PM filter's NMHC conversion capability can cause emissions to increase by ~~45~~30 percent or more of the applicable full useful life NMHC, NOx (or NMOG+NOx, if applicable), CO, or PM standard as measured from an applicable emission test cycle; and (2) no malfunction of the PM filter's NMHC conversion capability can cause emissions to exceed the applicable full useful life NMHC, NOx (or NMOG+NOx, if applicable), CO, or PM standard as measured from an applicable emission test cycle.

* * * *

(17) *Exceptions to Monitoring Requirements*

(17.1) Except as provided in sections (f)(17.1.1) through (17.1.4) below, upon request of a manufacturer or upon the best engineering judgment of the ARB, the Executive Officer may revise the emission threshold for a malfunction on any diagnostic required in section (f) for medium-duty vehicles if the most reliable monitoring method developed requires a higher threshold to prevent false indications of a malfunction. Additionally, upon the request of a manufacturer or upon the best engineering judgment of the ARB, the Executive Officer may revise the emission threshold for a malfunction on any diagnostic required in section (f) for passenger cars, light-duty trucks, and MDPVs certified to a chassis dynamometer tailpipe emission standard if the Executive Officer determines that (1) the most reliable monitoring method developed requires a higher threshold to prevent false indications of a malfunction; (2) a higher threshold is needed under section (e)(17.1) for a corresponding diagnostic in section (e) (e.g., EGR system, misfire, exhaust gas sensor, aftertreatment) for light-duty vehicles; and (3) the threshold for the diagnostic on the diesel vehicle is less than or equal to the threshold required for the corresponding diagnostic on the gasoline vehicle. Additionally, except as specified in section (f)(9.2.1)(A)(iii), for 2007 through 2013 model year light-duty vehicles and 2007 through 2015 model year medium-duty vehicles, the Executive Officer may revise the PM filter malfunction criteria of section (f)(9.2.1) to exclude detection of specific failure modes (e.g., combined failure of partially melted and partially cracked

substrates) if the most reliable monitoring method developed requires the exclusion of specific failure modes to prevent false indications of a malfunction.

* * * *

(17.1.3) For medium-duty diesel vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard:

* * * *

(B) Alternate malfunction criteria:

- (i) For 2022 and 2023 model year vehicles using engines that meet all the requirements under sections (f)(17.1.3)(B)(i)a. through e. below, in lieu of the NOx and PM thresholds set forth in sections (f)(1) through (f)(9), and (f)(12) through (f)(14), the manufacturer shall use the NOx threshold specified in section (f)(17.1.3)(B)(ii) and the PM threshold specified in section (f)(17.1.3)(B)(iii):
 - a. Certify to an FTP and SET NOx emission standard of 0.10 g/bhp-hr or lower,
 - b. Certify to a low load cycle NOx emission standard of 0.30 g/bhp-hr or lower (as described in section I.11.B.8 of “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR),
 - c. Certify to an optional idle NOx standard of 10 g/hr (as described in section I.11.B.6.3 of “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR),
 - d. Certify to an FTP, SET, and low load cycle (as described in section I.11.B.8 of “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR) PM emission standard of 0.005 g/bhp-hr or lower, and
 - e. Comply with the 3-binned moving average window method for in-use testing as described in section 86.1370.B of “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and

Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR.

* * * *

- (iii) For 2024 and subsequent model year vehicles using engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, if the manufacturer uses the malfunction criteria “the applicable PM standard plus 0.02 g/bhp-hr PM” in lieu of the 0.03 g/bhp-hr PM threshold set forth in section (f) as allowed in section (f)(17.1.3)(A), the manufacturer shall use a PM threshold of 0.03 g/bhp-hr (e.g., detect a malfunction before PM emissions exceed 0.03 g/bhp-hr rather than before PM emissions exceed the applicable PM standards by more than 0.02 g/bhp-hr).
- (iv) For 2027 and subsequent model year vehicles using engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower, for the NMHC thresholds set forth in section (f), the manufacturer shall use 0.140 g/bhp-hr as the applicable NMHC standard (e.g., if the malfunction criteria is 2.0 times the applicable NMHC standard, the manufacturer shall detect a malfunction before NMHC emissions exceed 0.280 g/bhp-hr).
- (v) For 2027 and subsequent model year vehicles using engines certified to an FTP engine CO standard of 15.5 g/bhp-hr or lower, for the CO thresholds set forth in section (f), the manufacturer shall use 15.5 g/bhp-hr as the applicable CO standard (e.g., if the malfunction criteria is 2.0 times the applicable CO standard, the manufacturer shall detect a malfunction before CO emissions exceed 31.0 g/bhp-hr).
- (C) Alternate malfunction criteria for engine cooling system thermostat monitor: For 2022 and 2023 model year vehicles using engines that meet the criteria under sections (f)(17.1.3)(B)(i)a. through e. and 2024 and subsequent model year vehicles using engines certified to an FTP engine NO_x standard of 0.10 g/bhp-hr or lower or certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, and 2027 and subsequent model year vehicles using engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower or certified to an FTP engine CO standard of 15.5 g/bhp-hr or lower, for the thermostat monitor malfunction criteria specified under section (f)(11.2.1)(A)(ii) where fuel, injection timing, and/or other coolant temperature-based modifications to the engine control strategies would not cause an emissions increase of 50 or more percent of the applicable standards, the manufacturer shall use the following ~~NO_x or PM~~ standards:

- (i) For engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower, 0.20 g/bhp-hr for the applicable FTP NOx standard.
- (ii) For engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, 0.01 g/bhp-hr for the applicable FTP PM standard.
- (iii) For engines certified to an FTP NMHC standard of 0.140 g/bhp-hr or lower, 0.140 g/bhp-hr for the applicable NMHC standard.
- (iv) For engines certified to an FTP CO standard of 15.5 g/bhp-hr or lower, 15.5 g/bhp-hr for the applicable CO standard.

(D) Alternate test-out criteria:

- (i) For 2022 and 2023 model year vehicles using engines that meet all the requirements under sections (f)(17.1.3)(D)(i)a. through e. below, the manufacturer shall use the NOx test-out criteria specified in section (f)(17.1.3)(D)(ii) and the PM test-out criteria specified in section (f)(17.1.3)(D)(iii).:
 - a. Certify to an FTP and SET NOx emission standard of 0.10 g/bhp-hr or lower,
 - b. Certify to a low load cycle NOx emission standard of 0.30 g/bhp-hr or lower (as described in section 1.11.B.8 of “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR),
 - c. Certify to an optional idle NOx standard of 10 g/hr (as described in section 1.11.B.6.3 of “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR),
 - d. Certify to an FTP, SET, and low load cycle (as described in section 1.11.B.8 of “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR) PM emission standard of 0.005 g/bhp-hr or lower, and
 - e. Comply with the 3-binned moving average window method for in-use testing as described in section 86.1370.B of “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and

Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR.

* * * *

(iii) For 2024 and subsequent model year vehicles using engines certified to an FTP PM emission standard of 0.005 g/bhp-hr or lower, in lieu of the PM test-out criteria specified in sections (f)(1.2.3)(D), (f)(6.2.6)(C), (f)(9.2.4)(A), and (f)(15.2.2)(F)(ii), the manufacturer shall use the following criteria to determine if the specific component or function is exempt from the monitoring requirements:

- a. In lieu of the criterion where no malfunction can cause PM emissions to increase by 15 percent or more of the applicable PM standard, the manufacturer shall use the criterion where no malfunction can cause PM emissions to increase by 0.0015 g/bhp-hr or more.
- b. In lieu of the criterion where no malfunction can cause PM emissions to exceed the applicable PM standard, the manufacturer shall use the criterion where no malfunction can cause PM emissions to exceed 0.01 g/bhp-hr.

(iv) For 2027 and subsequent model year vehicles using engines certified to an FTP NMHC standard of 0.140 g/bhp-hr or lower, for the NMHC test-out criteria specified in sections (f)(9.2.4)(A), (f)(12.2.2)(B), and (f)(15.2.2)(F)(ii), the manufacturer shall use 0.140 g/bhp-hr as the applicable NMHC standard to determine if the specific component or function is exempt from the monitoring requirements (e.g., for the criterion where no malfunction can cause NMHC emissions to increase by 15 percent or more of the applicable NMHC standard, the manufacturer shall use the criterion where no malfunction can cause NMHC emissions to increase by 0.021 g/bhp-hr or more).

(v) For 2027 and subsequent model year vehicles using engines certified to an FTP CO standard of 15.5 g/bhp-hr or lower, for the CO test-out criteria specified in sections (f)(9.2.4)(A), (f)(12.2.2)(B), and (f)(15.2.2)(F)(ii), the manufacturer shall use 15.5 g/bhp-hr as the applicable CO standard to determine if the specific component or function is exempt from the monitoring requirements (e.g., for the criterion where no malfunction can cause CO emissions to increase by 15 percent or more of the applicable CO standard, the manufacturer shall use the criterion where no malfunction can cause CO emissions to increase by 2.325 g/bhp-hr or more).

* * * *

(g) *Standardization Requirements*

* * * *

(4) *Required Emission Related Functions:*

The following standardized functions shall be implemented in accordance with the specifications in SAE J1979 or SAE J1979-2, whichever is applicable, to allow for access to the required information by a scan tool meeting SAE J1978 specifications:

(4.1) Readiness Status:

(4.1.1) For vehicles using SAE J1979:

* * * *

(I) For 2004 through 2018 model year vehicles, manufacturers are not required to use the following monitors in determining the readiness status for the specific component or system:

(i) Circuit and out-of-range monitors that are required to be continuous.

(ii) Gasoline and diesel exhaust gas sensor feedback monitors specified in sections (e)(7.2.1)(C), (e)(7.2.2)(E), (f)(5.2.1)(A)(iii), (f)(5.2.1)(B)(iii), and (f)(5.2.2)(C)

(iii) Gasoline fuel system monitors specified in sections (e)(6.2.1)(A), (e)(6.2.1)(B), (e)(6.2.2), and (e)(6.2.4)

(iv) Diesel feedback control monitors specified in sections (f)(2.2.3)(D), (f)(4.2.4), (f)(6.2.4), (f)(7.2.5), (f)(8.2.3), and (f)(9.2.7)

(J) For condition (1) described in section (g)(4.1.1)(D), for a monitor that increments the denominator using any of the criteria in sections (d)(4.3.2)(C) through (J) and (L) through (P), the monitor may be considered to have “fully executed and determined that the component or system is not malfunctioning” if the following criteria are met:

(i) at least 15 warm-up cycles have occurred since the fault memory was last cleared,

(ii) at least 200 miles have accumulated since the fault memory was last cleared, and

(iii) no permanent fault code is stored for that monitor.

(4.1.2) For vehicles using SAE J1979-2:

* * * *

(F) If the manufacturer elects to additionally indicate readiness status through the MIL in the key on, engine off position as provided for in section (d)(2.1.3), the readiness status shall be indicated in the following manner: If the readiness status for all monitored components or systems is “complete”, the MIL shall continuously illuminate in the key on, engine off position for at least 15 seconds as required by section (d)(2.1.2). If the readiness status for one or more of the monitored components or systems is “not complete”, after 15-20 seconds of operation in the key on, engine off position with the MIL illuminated continuously as required by section (d)(2.1.2), the MIL shall blink once per second for 5-10 seconds. The data stream value for MIL status (section (g)(4.2)) shall indicate “commanded off” during this sequence unless the MIL has also been “commanded on” for a detected fault.

(G) For condition (1) described in section (g)(4.1.2)(B), for a monitor that increments the denominator using any of the criteria in sections (d)(4.3.2)(C) through (J) and (L) through (P), the monitor may be considered to have “fully executed and determined that the component or system is not malfunctioning” if the following criteria are met:

(i) at least 15 warm-up cycles have occurred since the fault memory was last cleared,

(ii) at least 200 miles have accumulated since the fault memory was last cleared, and

(iii) no permanent fault code is stored for that monitor.

(4.2) Data Stream: The following signals shall be made available on demand through the standardized data link connector in accordance with SAE J1979 or SAE J1979-2 specifications, whichever is applicable. The actual signal value shall always be used instead of a default or limp home value.

* * * *

(4.2.3) Additionally, for all 2010 and subsequent model year vehicles with a diesel engine:

* * * *

(J) For all 2024 and subsequent model year medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard, engine rated speed.

(K) For all 2031 and subsequent model year medium-duty vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard, family certification level (FCL) for CO₂ (g/bhp-hr) and the highest value of

rated power ("Pmax") for all the configurations included in the engine family (specifically, the CO₂ FCL and Pmax used by the OBD system to comply with the NOx emission tracking requirements in section (g)(6.12.3)(J)).

* * * *

(6) *Vehicle Operation and Control Strategies Tracking Requirements:*

* * * *

(6.12) NOx Emission Tracking Requirements:

* * * *

(6.12.2) The parameters in section (g)(6.12.1) shall be stored in the four data arrays described below. Data in each array shall be updated at a frequency of 1 Hertz. based on signals that are sampled at a frequency of at least 1 Hertz.

* * * *

(6.12.3) Each parameter in each array in section (g)(6.12.2) shall be stored in a series of bins that are defined as indicated below. Table 4 indicates the bins that are assigned to each array and to each parameter. The requirement to support the bins in the table indicated as "A" and "B" only applies to medium-duty diesel engines certified to an engine dynamometer tailpipe emission standard. Medium-duty diesel engines certified to a chassis dynamometer tailpipe emission standard may support bins "A" and "B" if both bins are set to zero at all times. References to "rated power" mean the engine's rated net brake power.

* * * *

(F) "Bin 15" stores data only when the engine is operating within the NOx NTE control area and none of the NTE exclusion criteria are satisfied. For 2026 and subsequent medium-duty vehicles certified to a chassis dynamometer tailpipe emission standard, Bin 15 shall be set to zero at all times. For 2031 and subsequent model year medium-duty diesel engines certified to an engine dynamometer tailpipe emission standard, Bin 15 shall be set to zero at all times.

~~(G)~~(G) For 2022 through 2030 model year medium-duty diesel engines, "Bin 16" stores data only when an active PM filter regeneration event is being commanded. For 2031 and subsequent model year diesel engines, Bin 16 stores data when any infrequent regeneration event (e.g., an active PM

filter regeneration, catalyst desulfurization, or de-crystallization event) is being commanded.

(H) "Bin 17" stores the total value of the parameter in a given array only when the pause conditions of section (g)(6.12.5)(A) are met.

(I) Storage of data in Bins 1 through 14 occurs independently of data storage in Bins 15 and 16, and is not interrupted or otherwise affected by activity related to Bins 15 and 16.

(J) 2-bin moving average window (2B-MAW) bins. For 2031 and subsequent model year medium-duty diesel engines certified to an engine dynamometer tailpipe emission standard, "Bin A" and "Bin B," described below, shall store data from overlapping 300-second windows of engine operation. Storage of data shall begin after engine start when 300 seconds of engine operation have elapsed for which none of the conditions described in (g)(6.12.3)(J)(iv) are met. Each second thereafter, the OBD system shall store the last 300 seconds of valid data in the appropriate bin. The OBD system shall discard any partial window of valid data (i.e., a window that contains less than 300 seconds of valid data) at the end of the driving cycle.

(i) "Bin A" shall store data when the normalized CO₂ mass over the window is 6 percent or less as determined according to section (g)(6.12.3)(J)(iii).

(ii) "Bin B" shall store data when the normalized CO₂ mass over the window is greater than 6 percent as determined according to section (g)(6.12.3)(J)(iii).

(iii) Determination of normalized CO₂ mass. The OBD system shall estimate the normalized CO₂ mass over a window using the method described below:

Normalized CO₂ mass = (Window CO₂ mass) / (CO₂ FCL * P_{max} * t_{window}), where:

1. "Window CO₂ mass" is the total mass of CO₂ in grams emitted by the engine over the 300-second window. The OBD system shall estimate this value by converting the engine's fuel consumption over the window into an equivalent amount of CO₂ using the following conversion factor: 1 gallon of diesel fuel = 10,180 grams of CO₂.

2. "CO₂ FCL" is the engine's family certification level for CO₂ over the FTP duty cycle in g/bhp-hr. If the engine family includes no

FTP testing, use the engine's FCL for CO₂ over the SET duty cycle.

3. "P_{max}" is the highest value of rated power in units of horsepower for all the configurations included in the engine family.

4. "t_{window}" is the duration of the window, i.e., 0.083 hours (300 seconds).

(iv) Excluded data. The OBD system shall exclude data from a window for any period meeting one or more of the following conditions:

a. The engine is off.

b. NOx emission tracking is paused in accordance with section (g)(6.12.5)

c. The MIL is commanded on, or a pending fault code is stored.

1. The OBD system shall furthermore reset or clear the memory that stores the last 300 seconds of valid data upon illumination of the MIL or storage of a pending fault code.

d. One of the NOx sensors used to determine the NOx mass parameters listed in section (g)(6.12.1) is not reporting valid NOx concentration data.

e. The engine is commanding an infrequent regeneration event (e.g., an active PM filter regeneration, catalyst desulfurization, de-crystallization event).

f. The engine has one or more active AECDs for emergency vehicles under 40 CFR 1036.115(h)(4), as it existed on October 18, 2024 and incorporated by reference herein.

g. The barometric pressure is less than 82.5 kilopascals (kPa).

h. The ambient air temperature is less than 0 degrees Celsius.

i. The ambient air temperature is greater than $-0.0014 \times h + 37.78$ degrees Celsius, where the height "h" shall be approximated by $(101.3 - \text{barometric pressure}) \text{ kPa} \times 328 \text{ feet} / 1.2 \text{ kPa}$.

(v) The OBD system shall handle time intervals which include alternating period of both valid data that are less than 300 seconds and periods of excluded data according to the following requirements:

a. The OBD system shall combine short periods (i.e., less than 300 seconds) of valid data that are separated by periods of excluded data into a 300-second window and store the window in the

appropriate bin provided that no period of excluded data encompassed by the window exceeds 599 seconds.

- b. The OBD system shall discard a partial window of valid data (i.e., a window that contains less than 300 seconds of valid data) if it includes a period of excluded data that is 600 or more seconds long. If data are discarded, a new window shall begin with the first two consecutive seconds for which none of the conditions for excluded data are satisfied.

Table 4. NOx Emission Tracking Parameters and Arrays

<u>Parameter</u>	<u>Active 100-Hour Array (Bins)</u>	<u>Stored 100-Hour Array (Bins)</u>	<u>Lifetime Array (Bins)</u>	<u>Lifetime Engine Activity Array (Bins)</u>
<u>NOx mass – engine out (g)</u>	<u>1-17</u>	<u>1-17</u>	<u>1-17</u>	<u>None</u>
<u>NOx mass – tailpipe (g)</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>None</u>
<u>Engine output energy (kWh)</u>	<u>1-17 and B</u>	<u>1-17 and B</u>	<u>1-17 and B</u>	<u>1-17</u>
<u>Distanced traveled (km)</u>	<u>1-17</u>	<u>1-17</u>	<u>1-17</u>	<u>1-17</u>
<u>Engine run time (hours)</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17</u>
<u>Total fuel consumption (liters)</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17</u>

* * * *

(6.12.5) Pause conditions for tracking:

* * * *

(B) The OBD system shall pause tracking of all parameters listed in section (g)(6.12.1) within 10 seconds if any of the conditions in sections (g)(6.12.5)(B)(i) through (iii) below occur. When the condition no longer occurs (e.g., the engine stop lamp is not commanded on), tracking of all parameters in section (g)(6.12.1) shall resume within 10 seconds:

- (i) A malfunction of any component used to determine vehicle speed has been detected and the MIL is commanded on for that malfunction;
- (ii) A NOx sensor malfunction has been detected and the MIL is commanded on or a pending fault code is stored for that malfunction;
- (iii) The engine stop lamp (if equipped) is commanded on.

* * * *

(h) *Monitoring System Demonstration Requirements For Certification*

* * * *

(2) *Selection of Test Vehicles:*

* * * *

(2.2) A manufacturer certifying one to five test groups in a model year shall provide emission test data from a test vehicle from one test group. A manufacturer certifying six to fifteen test groups in a model year shall provide emission test data from test vehicles from two test groups. A manufacturer certifying sixteen or more test groups in a model year shall provide emission test data from test vehicles from three test groups. The Executive Officer may waive the requirement for submittal of data from one or more of the test groups if data have been previously submitted for all of the test groups.

(2.2.1) If the manufacturer is certifying a ~~2026~~2029 through ~~2028~~2031 model year test group(s) with a PM filter filtering performance monitor meeting Option 2 in Table 3 at the beginning of section (f) or in section (f)(9.2.1)(A)(ii)e.2., and the PM filter monitor is not granted a deficiency for not meeting Option 2 or the minimum acceptable ratio in section (d)(3.2.1)(G)(vi), the manufacturer may implement one of the following options, but may not implement both options simultaneously on the same test group:

(A) Option A: When determining the number of test vehicles to test under section (h) for one of the following two model years, for each test group meeting Option 2 in the current model year, the manufacturer may exclude one test group from the total number of test groups being certified for one of the following two model years as long as the resulting total number of test groups is at least one. For example, a manufacturer certifying a test group that meets Option 2 in the ~~2027~~2030 model year may exclude one test group from the total count of test groups being certified in either the ~~2028~~2031 model year or the ~~2029~~2032 model year with the exception that at least one vehicle must be tested under section (h) for the ~~2028~~2031 and ~~2029~~2032 model years. A manufacturer certifying only one test group in one of the following two model years may not use this Option A for that model year.

(B) Option B: The manufacturer may use the provisions under section (k)(7.3.2).

(2.3) Except as provided in sections (h)(2.3.1) and (2.3.2) below, for the test vehicle(s), a manufacturer shall use a certification emission durability test vehicle(s), a representative high mileage vehicle(s), or a vehicle(s) aged to

the end of the full useful life using an ARB-approved alternative durability procedure (ADP).

* * * *

(2.3.2) For 2022 and subsequent ~~through 2026~~ model year medium-duty diesel vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard, the manufacturer shall use a test engine that meets the provisions specified under title 13, CCR section 1971.1(i)(2.3.4). For 2026 model year medium-duty diesel vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard, the manufacturer may elect to use a test engine that meets the provisions specified under title 13, CCR section 1971.1 (i)(2.3.5). For 2027 and subsequent model year medium-duty diesel vehicles (including MDPVs) certified to an engine dynamometer tailpipe emission standard, the manufacturer shall use a test engine that meets the provisions specified under title 13, CCR section 1971.1(i)(2.3.5).

* * * *

(i) *Certification Documentation*

* * * *

- (2) The following information shall be submitted as “Part 1” of the certification application. Except as provided below for demonstration data, the Executive Officer will not issue an Executive Order certifying the covered vehicles without the information having been provided. The information must include:

* * * *

- (2.16) A checklist of all the malfunction criteria in sections (e) or (f) and the corresponding diagnostic noted by fault code for each malfunction criterion. ~~The~~For checklists submitted before January 1, 2027, the manufacturer shall use the formats of the checklists detailed in Attachments F and G of ARB Mail-Out #MSC 06-23, December 21, 2006, incorporated by reference. For checklists submitted before January 1, 2027, the manufacturer may elect to use CARB form ECCD/OBD-113 OBD II Gasoline Monitoring Requirements Checklist,” April 2024, for gasoline vehicles and ECCD/OBD-114 OBD II Diesel Monitoring Requirements Checklist,” May 2024, for diesel vehicles, both incorporated by reference. For checklists submitted on or after January 1, 2027, the manufacturer shall use CARB form ECCD/OBD-113 OBD II Gasoline Monitoring Requirements Checklist,” April 2024, for gasoline vehicles and ECCD/OBD-114 OBD II Diesel Monitoring Requirements Checklist,” May 2024, for diesel vehicles.

* * * *

(j) *Production Vehicle Evaluation Testing.*

(1) *Verification of Standardized Requirements.*

* * * *

- (1.5) Reporting of Results: The manufacturer shall submit to the Executive Officer all information described in sections (j)(1.5.1), (j)(1.5.2), and (j)(1.5.4), except for the test log files, in one report for each model year. The report shall be one single file for each model year and shall include the information for all testing completed in that specific model year. The manufacturer shall update the report for each new test within the deadlines described below. For reports submitted on or after January 1, 2027, the manufacturer shall submit the information using CARB form ECCD/OBD-129 "OBD II PVE J1 Template," September 2023, incorporated by reference. The manufacturer shall submit the test log files described in sections (j)(1.5.1) and (j)(1.5.2) to the Executive Officer separately from the report described above.

* * * *

(2) *Verification of Monitoring Requirements.*

* * * *

(2.4) Reporting of Results:

- (2.4.1) Manufacturers shall submit a report of the results of all testing conducted pursuant to section (j)(2) to the Executive Officer for review. This report shall identify the method used to induce a malfunction in each diagnostic, the MIL illumination status, and the confirmed fault code(s) stored. The report shall also include all the information described in section (j)(2.4.2). For reports submitted on or after January 1, 2027, the manufacturer shall submit the information using CARB form ECCD/OBD-130 OBD II PVE J2 Template," August 2023, incorporated by reference.

* * * *

(k) *Deficiencies.*

* * * *

(7) *Exceptions to Fines Requirements.*

* * * *

(7.3) If the manufacturer is certifying a ~~2026~~2029 through ~~2028~~2031 model year test group(s) with a PM filter filtering performance monitor meeting Option 2 in Table 3 at the beginning of section (f) or in section (f)(9.2.1)(A)(ii)e.2., and the PM filter monitor is not granted a deficiency for not meeting Option 2 or the minimum acceptable ratio in section (d)(3.2.1)(G)(vi), the manufacturer may implement one of the following options, but may not implement both options simultaneously on the same test group:

(7.3.1) Option A: The manufacturer may use the provisions under section (h)(2.2.1)(A).

(7.3.2) Option B: For the test group meeting Option 2 on ~~2026~~2029 through ~~2028~~2031 model year vehicles, a deficiency may be exempted from the specified fines of section (k)(3) and excluded from the count of deficiencies used in section (k)(2) to determine the number of deficiencies subject to fines. For example, a test group meeting Option 2 in the ~~2027~~2030 model year may be granted a deficiency that is exempt from the specific fines and excluded from the count of deficiencies for the ~~2027~~2030 model year.

* * * *

(l) *How to Submit Required Information.*

(1) Wherever section 1968.2 requires manufacturers to submit information to the Executive Officer, the manufacturer may send the information through ~~the electronic documentation system at this website: <https://ww2.arb.ca.gov/certification-document-management-system>~~ FILE@arb.ca.gov.

NOTE: Authority cited: Sections 38501, 38510, 39010, 39600, 39601, 39602.5, 43000.5, 43013, 43018, 43100, 43101, 43104, 43105, 43105.5 and 43106, Health and Safety Code; and Engine Manufacturers Association v. California Air Resources Board (2014) 231 Cal.App.4th 1022. Reference: Sections 38501, 38505, 38510, 39002, 39003, 39010, 39018, 39021.5, 39024, 39024.5, 39027, 39027.3, 39028, 39029, 39031, 39032, 39032.5, 39033, 39035, 39037.05, 39037.5, 39038, 39039, 39040, 39042, 39042.5, 39046, 39047, 39053, 39054, 39058, 39059, 39060, 39515, 39600, 39601, 39602.5, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211 and 43212, Health and Safety Code.

§ 1968.5. Enforcement of Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines.

* * * *

(c) Remedial Action

* * * *

(3) Ordered Remedial Action-Mandatory Recall.

(A) Except as provided in sections (c)(3)(B) below, the Executive Officer shall order the recall and repair of all vehicles in a motor vehicle class that have been determined to be equipped with a nonconforming OBD II system if enforcement testing conducted pursuant to section (b) above or information received from the manufacturer indicates any of the following:

* * * *

(vii) The motor vehicle class cannot be tested so as to obtain valid test results in accordance with the criteria identified in section (b)(6)(C)(ii) due to the nonconforming OBD II system-, except for the following:

- a. Gasoline comprehensive component readiness bit (title 13, CCR section 1968.2 (g)(4.1.2)(B)(xiv)) for 2030 and earlier model year vehicles that use SAE J1979-2.
- b. Diesel comprehensive component readiness bits (title 13, CCR section 1968.2 (g)(4.1.2)(B)(xxix)) for 2030 and earlier model year vehicles that use SAE J1979-2.

* * * *

NOTE: Authority cited: Sections 38501, 38510, 39010, 39600, 39601, 39602.5, 43000.5, 43013, 43016, 43018, 43100, 43101, 43104, 43105, 43105.5, 43106, 43154, 43211 and 43212, Health and Safety Code; and Engine Manufacturers Association v. California Air Resources Board (2014) 231 Cal.App.4th 1022. Reference: Sections 38501, 38505, 38510, 39002, 39003, 39010, 39018, 39021.5, 39024, 39024.5, 39027, 39027.3, 39028, 39029, 39031, 39032, 39032.5, 39033, 39035, 39037.05, 39037.5, 39038, 39039, 39040, 39042, 39042.5, 39046, 39047, 39053, 39054, 39058, 39059, 39060, 39515, 39600, 39601, 39602.5, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211 and 43212, Health and Safety Code.

§ 1971.1. On-Board Diagnostic System Requirements--2010 and Subsequent Model-Year Heavy-Duty Engines.

* * * *

(a) Purpose.

The purpose of this regulation is to reduce motor vehicle and motor vehicle engine emissions by establishing emission standards and other requirements for onboard diagnostic systems (OBD systems) that are installed on 2010 and subsequent model-year engines certified for sale in on-road heavy-duty applications in California. The OBD systems, through the use of an onboard computer(s), shall monitor emission systems in-use for the actual life of the engine and shall be capable of detecting malfunctions of the monitored emission systems, illuminating a malfunction indicator light (MIL) to notify the vehicle operator of detected malfunctions, and storing fault codes identifying the detected malfunctions. The use and operation of OBD systems will ensure reductions in in-use motor vehicle and motor vehicle engine emissions through improvements of emission system durability and performance.

(b) Applicability.

Except as specified in section (d)(7) and elsewhere in this regulation (title 13, CCR section 1971.1), all 2010 and subsequent model-year heavy-duty engines used in on-road applications shall be equipped with an OBD system that has been certified by the Executive Officer as meeting all applicable requirements of this regulation (title 13, CCR section 1971.1).¹

(c) Definitions.

* * * *

“Family Emission Limit (FEL)” refers to the exhaust emission levels to which an engine family is certified under the averaging, banking, and trading program incorporated by reference in title 13, CCR section 1956.8 or 1956.8.2, whichever is applicable.

* * * *

“Federal Test Procedure (FTP) test” refers to an exhaust emission test conducted according to the test procedures incorporated by reference in title 13, CCR section 1956.8(b) and (d) or 1956.8.2, whichever is applicable, that is used to determine compliance with the FTP standard to which an engine is certified.

“FTP cycle”~~-.“~~ For 2010 to 2026 model year engines certified on an engine dynamometer, FTP cycle refers to the engine dynamometer schedule in 40 CFR appendix 1 of part 86, section (f)(1), entitled, “EPA Engine Dynamometer Schedule for Heavy-Duty Otto-Cycle Engines,” or section (f)(2), entitled, “EPA Engine Dynamometer

Schedule for Heavy-Duty Diesel Engines,” as those sections existed on January 25, 2018, and incorporated by reference herein. For 2026 model year engines certified on an engine dynamometer and hybrid powertrains certified on a powertrain dynamometer, the manufacturer may elect to define FTP cycle as the engine dynamometer schedule in 40 CFR 1036.512 entitled “Federal Test Procedure,” as that section existed on October 24, 2024, and incorporated by reference herein. For 2027 and subsequent model year engines certified on an engine dynamometer and hybrid powertrains certified on a powertrain dynamometer, FTP cycle refers to the engine dynamometer schedule in 40 CFR 1036.512 entitled “Federal Test Procedure,” as that section existed on October 24, 2024.

“FTP standard” refers to the certification exhaust emission standards and test procedures applicable to the FTP cycle incorporated by reference in title 13, CCR sections 1956.8(b) and (d) or 1956.8.2, whichever is applicable, to which the engine is certified.

* * * *

“Heavy heavy-duty engine” is defined in title 13, CCR section 1956.8(i-j) or 1956.8.2, whichever is applicable.

* * * *

“Light heavy-duty engine” is defined in title 13, CCR section 1956.8(i-j) or 1956.8.2, whichever is applicable.

* * * *

“Medium heavy-duty engine” is defined in title 13, CCR section 1956.8(i-j) or 1956.8.2, whichever is applicable.

* * * *

“Non-grid energy”, for the purposes of tracking grid energy parameters in section (h)(5), means all energy into the battery during charge depleting operation and during driver-selectable charge increasing operation from any source other than grid power (i.e., while not connected to a source of power for charging). Examples of non-grid energy include energy recovered during braking and energy supplied to the battery during engine operation. If an engine running condition exists while connected to a source of grid power for charging, all energy going into the battery during the engine running event shall be considered non-grid energy. Non-grid energy may not include any energy into the battery during charge sustaining operation.

“Non-methane hydrocarbon (NMHC),” for 2027 and subsequent model year engines, is defined in the definition of “hydrocarbon” in title 13, CCR section 1956.8.2.

* * * *

"Smart device" refers to an electronic powertrain component or system that uses a microprocessor or microcontroller and does not meet the criteria to be classified as a "diagnostic or emission critical electronic powertrain control unit." Devices that provide high level control of transmissions or battery packs are excluded from this definition. Any component or system externally connected to the smart device shall not be considered part of the smart device unless:

- (1) It is a subcomponent integral to the function of the smart device;
- (2) It is permanently attached to the smart device with wires or one-time connectors; and
- (3) The smart device and subcomponent are designed, manufactured, installed, and serviced (per manufacturer published procedures) as a single component.

* * * *

"Supplemental Emission Test (SET) cycle". For 2010 to 2026 model year engines certified on an engine dynamometer, the SET cycle refers to the driving schedule defined as the "supplemental emission test" in 40 CFR 86.1360 as it existed on January 25, 2018, and incorporated by reference herein. For 2026 model year engines certified on an engine dynamometer and hybrid powertrains certified on a powertrain dynamometer, the manufacturer may elect to define SET cycle as the driving schedule in 40 CFR 1036.510 entitled "Supplemental Emission Test" as that section existed on October 24, 2024, and incorporated by reference herein. For 2027 and subsequent model year engines certified on an engine dynamometer and hybrid powertrains certified on a powertrain dynamometer, the SET cycle refers to the driving schedule in 40 CFR 1036.510 entitled "Supplemental Emission Test" as that section existed on October 24, 2024.

"SET standard" refers to the certification exhaust emission standards and test procedures applicable to the SET cycle incorporated by reference in title 13, CCR sections 1956.8(b) and (d) or 1956.8.2, whichever is applicable, to which the engine is certified.

* * * *

(d) General Requirements.

Section (d) sets forth the general requirements of the OBD system. Specific performance requirements for components and systems that shall be monitored are set forth in sections (e) through (g) below. The OBD system is required to detect all malfunctions specified in sections (e) through (g). However, except as specified elsewhere, the OBD system is not required to use a unique monitor to detect each malfunction specified.

* * * *

(2) *MIL and Fault Code Requirements.*

* * * *

(2.2) MIL Illumination and Fault Code Storage Protocol.

(2.2.1) For vehicles using the ISO 15765-4 protocol for the standardized functions required in section (h):

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(D) Storage and erasure of freeze frame conditions.

* * * *

(ii) For engines using SAE J1979-2:

* * * *

d. Except as provided below in section (d)(2.2.1)(D)(ii)d.1., if a fault code is stored when the maximum number of frames of freeze frame conditions is already stored in the diagnostic or emission critical ~~powertrain~~electronic control unit, the OBD system may not replace any currently stored freeze frame conditions in the control unit with freeze frame conditions for the newly stored fault code.

1. For 2023 through 2026 model year engines, if a misfire or fuel system fault code is stored when the maximum number of frames of freeze frame conditions is already stored in the diagnostic or emission critical ~~powertrain~~electronic control unit, the OBD system may replace any of the currently stored freeze frame conditions for a fault code in the control unit with freeze frame conditions for the newly stored fault code as allowed for gasoline and diesel misfire and fuel system monitors under sections (e)(1.4.2)(D), (e)(2.4.2)(B), (f)(1.4.4), and (f)(2.4.3).

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(4) *In-Use Monitor Performance Ratio Definition.*

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(4.3) Denominator Specifications

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(4.3.2) Specifications for incrementing:

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(B) Except as provided for in sections (d)(4.3.2)(C) through (OP), the denominator for each monitor shall be incremented within 10 seconds if and only if the following criteria are satisfied on a single driving cycle:

* * * *

(N) In addition to the requirements of section (d)(4.3.2)(B) above, the denominator for the cold start emission reduction strategy cold start catalyst heating monitor (section (f)(4.2.3)) shall be incremented only if the CSERS monitoring conditions (as defined in section (c)) have been met and:

- (i) For monitors not covered under section (d)(4.3.2)(N)(ii), idle operation in park or neutral during the first 30 seconds after engine start is greater than or equal to 10 seconds, or
- (ii) For monitors for which manufacturers have received Executive Officer approval to enable without regard to the transmission gear position as provided for in section (f)(4.2.3), idle operation during the first 30 seconds after engine start is greater than or equal to 10 seconds.

~~(O)~~ For engines that have NOx converting catalyst systems with more than one catalyst component in series, the manufacturer may request Executive Officer approval to increment the denominator for a monitor for the NOx catalyst(s), reductant injection system, or NOx sensor required by section (e)(6.2.1), (e)(6.2.2)(A), (e)(9.2.2)(A), or (e)(9.2.2)(D) using the criteria set forth in section (d)(4.3.2)(G). The Executive Officer shall approve the request to use the denominator incrementing criteria in section (d)(4.3.2)(G) for the monitor upon determining that the manufacturer has demonstrated, using data or engineering analysis, that the enable conditions necessary for robust diagnostic decisions for that monitor are unlikely to occur frequently enough to allow the monitor to comply with the minimum ratio requirements per sections (e)(6.3.1) and (e)(9.3.1)(A).

(P) For a monitor designed to detect malfunctions specified under more than one section (e.g., one NMHC converting catalyst monitor to detect malfunctions under sections (e)(5.2.2) and (e)(5.2.3)(A)), if each section is subject to different denominator incrementing criteria, the manufacturer shall request Executive Officer approval of the criteria used for incrementing the monitor denominator. Executive Officer approval of the criteria shall be based on manufacturer data and/or engineering evaluation demonstrating that the proposed denominator incrementing criteria results in the lowest in-use monitor performance ratio for the monitor.

* * * *

(4.5) Disablement of Numerators and Denominators

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(4.5.4) For 2024 and subsequent model year engines, within ten seconds of a malfunction being detected for any component used to determine if any of the criteria in sections (d)(4.3.2)(C) through (I) and (K) through ~~(N)~~(Q) are satisfied (e.g., engine cold start), the OBD system shall disable further incrementing of the corresponding numerator and denominator for each monitor that is affected. When the malfunction is no longer detected (i.e., the pending code is erased through self-clearing or through a scan tool command), incrementing of the corresponding numerators and denominators shall resume within 10 seconds.

(5) *Standardized tracking and reporting of monitor performance.*

(5.1) For monitors required to track and report in-use monitor performance in section (d)(3.2), the performance data shall be tracked and reported in accordance with the specifications in sections (d)(4), (d)(5), and (h)(5.1).

* * * *

(5.1.2) For gasoline engines using SAE J1979 or SAE J1939, the OBD system shall separately report an in-use monitor performance numerator and denominator for each of the following components: catalyst bank 1, catalyst bank 2, primary oxygen sensor bank 1, primary oxygen sensor bank 2, secondary oxygen sensor, evaporative leak detection system, EGR/VVT system, ~~and secondary air system,~~ and fuel system. The OBD system shall also report a general denominator and an ignition cycle counter in the standardized format specified in sections (d)(5.5), (d)(5.6), and (h)(5.1).

(5.1.3) For diesel engines using SAE J1979-2, the OBD system shall separately report an in-use monitor performance numerator and denominator for each supported fault code associated with each monitor of the following components: fuel system, NMHC catalyst, NOx catalyst, exhaust gas sensor, EGR/system, VVT system, PM filter, boost pressure control system, and NOx adsorber. The OBD system shall also report a general denominator, an ignition cycle counter(s), and supplemental monitor activity data in the standardized format specified in sections (d)(5.5), (d)(5.6), (d)(5.7), and (h)(5.1).

(5.1.4) For gasoline engines using SAE J1979-2, the OBD system shall separately report an in-use monitor performance numerator and denominator for each supported fault code associated with each monitor of the following components: catalyst bank 1, catalyst bank 2, primary

oxygen sensor bank 1, primary oxygen sensor bank 2, secondary oxygen sensor, evaporative leak detection system, EGR/ system, VVT system, ~~and secondary air system, and fuel system~~. The OBD system shall also report a general denominator, an ignition cycle counter(s), and supplemental monitor activity data in the standardized format specified in sections (d)(5.5), (d)(5.6), (d)(5.7), and (h)(5.1).

* * * *

- (5.7) Supplemental monitor activity data: For engines using SAE J1979-2, the OBD system shall track and report the following data in accordance with SAE J1979-2 specifications for each diagnostic or emission-critical ~~powertrain~~electronic control unit:

(5.7.1) Mini-Numerator

* * * *

(B) Specifications for incrementing:

- (i) The mini-numerator, when incremented, shall be incremented by an integer of one. The mini-numerator may not be incremented more than once per driving cycle.
- (ii) The mini-numerator shall be incremented at the end of a driving cycle if and only if the associated monitor ran and completed on the driving cycle.
- ~~(iii) The~~ (iii) For 2030 and earlier model year engines, the OBD system shall pause further incrementing of the mini-numerator on a driving cycle if a malfunction has been detected which can illuminate the MIL as described in section (d)(2.2) and the diagnostic or emission-critical ~~powertrain~~electronic control unit that tracks and reports the mini-numerator stores a pending fault code for the malfunction. Incrementing of the mini-numerator shall resume for the next driving cycle in which no such fault code is present. Alternatively, for 2027 through 2030 model year engines, the manufacturer may elect to comply with the provisions in section (d)(5.7.1)(B)(iv) below.
- ~~(iv)~~ (iv) For 2031 and subsequent model year engines, if a malfunction has been detected which can illuminate the MIL as described in section (d)(2.2) and a pending fault code is stored for the malfunction, the OBD system shall pause and resume incrementing of the mini-numerator on a driving cycle according to the following provisions:

- a. All mini-numerators that are tracked on the diagnostic or emission-critical electronic control unit that stored the pending fault code shall be paused.
- b. If the malfunction disables incrementing of the general denominator in accordance with section (d)(5.6.2)(C), all mini-numerators on all diagnostic or emission-critical electronic control units shall be paused.
- c. Incrementing of all paused mini-numerators that are tracked on a diagnostic or emission-critical electronic control unit shall resume for the next driving cycle in which both of the following conditions are true:
 - 1. No pending fault codes are stored on the diagnostic or emission-critical electronic control unit, and
 - 2. No pending fault codes that can disable incrementing of the general denominator are stored on any diagnostic or emission-critical electronic control unit.

(v) The OBD system shall cease further incrementing of the mini-numerator if the mini-numerator has reached a value of 255.

* * * *

(5.7.2) Mini-Denominator

(A) Definition: The mini-denominator is defined as the counter that indicates the number of general denominators that have accumulated since the last time the mini-denominator was reset to zero. The OBD system shall track and report a mini-denominator for each diagnostic or emission-critical ~~powertrain control unit~~ electronic control unit that is capable of storing a pending fault code and that tracks and reports mini-numerator data.

(B) Specifications for incrementing:

* * * *

(iii) The OBD system shall pause further incrementing of the mini-denominator on a driving cycle if a malfunction has been detected which can illuminate the MIL as described in section (d)(2.2) and the diagnostic or emission-critical ~~powertrain~~ electronic control unit that tracks and reports the mini-denominator stores a pending fault code for the malfunction. Incrementing of the mini-denominator shall resume for the next driving cycle in which no such fault code is present.

* * * *

(e) Monitoring Requirements for Diesel/Compression-Ignition Engines.

(1) Fuel System Monitoring

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(1.4) MIL Illumination and Fault Code Storage:

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(1.4.2) Additionally, for malfunctions identified in section (e)(1.2.1) (i.e., fuel pressure control) on all 2013 and subsequent model year engines:

* * * *

(D) Storage of freeze frame conditions.

(i) For engines using SAE J1979 or SAE J1939:

- a. For 2013 through 2015 model year engines, a manufacturer shall store and erase freeze frame conditions either in conjunction with storing and erasing a pending fault code or in conjunction with storing and erasing a confirmed/MIL-on fault code. For 2016 and subsequent model year engines, a manufacturer shall store and erase freeze frame conditions in accordance with section (d)(2.2.1)(D)(iii)ic. or (d)(2.2.2)(D).

* * * *

(2) Misfire Monitoring

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(2.4) MIL Illumination and Fault Code Storage:

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(2.4.2) Additionally, for misfires identified in section (e)(2.2.2):

* * * *

(B) Storage of freeze frame conditions.

(i) For engines using SAE J1979 or SAE J1939:

- a. For 2013 through 2015 model year engines, the OBD system shall store and erase freeze frame conditions either in conjunction with storing and erasing a pending fault code or in conjunction with storing a confirmed/MIL-on fault code and erasing a confirmed/previously MIL-on fault code. For 2016 and subsequent

model year engines, a manufacturer shall store and erase freeze frame conditions in accordance with section (d)(2.2.1)(D)(iii)c. or (d)(2.2.2)(D).

* * * *

(6) *Oxides of Nitrogen (NOx) Converting Catalyst Monitoring*

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(6.2) Malfunction Criteria: For purposes of section (e)(6), each catalyst in a series configuration that converts NOx shall be monitored either individually or in combination with others.

* * * *

(6.2.3) Catalyst System Aging and Monitoring

* * * *

(B) For 2025 and subsequent model year engines from engine families selected for monitoring system demonstration in section (i):

* * * *

(ii) Information and data to support methods established by the manufacturer to represent real world catalyst deterioration under normal and malfunctioning engine operating conditions in section (f)(6.2.3)(A) must be submitted to the Executive Officer and shall include an analysis of the potential failure modes and effects, highlighting the most likely cause of failure, comparison of laboratory aged versus real world aged catalysts, and include the following for a laboratory aged catalyst and three field-returned catalysts (data for all field-returned catalysts that are collected for this aging correlation analysis must be submitted to the Executive Officer):

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(7) *NOx Adsorber Monitoring*

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(7.2) Malfunction Criteria:

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(7.2.6) Adsorber System Aging and Monitoring

(A) For purposes of determining the NOx adsorber system malfunction criteria in section (e)(7.2.1), the manufacturer shall meet the following

requirements, the manufacturer shall submit a system aging and monitoring plan to the Executive Officer for review and approval. The plan shall include the description and location of each component, the monitoring strategy for each component and/or combination of components, and the method for determining the malfunction criteria of section (e)(7.2.1) including the deterioration/aging process. Executive Officer approval of the plan shall be based on the representativeness of the aging to real world NOx adsorber system component deterioration under normal and malfunctioning engine operating conditions, the effectiveness of the method used to determine the malfunction criteria of section (e)(7.2.1), the ability of the component monitor(s) to pinpoint the likely area of malfunction and ensure the correct components are repaired/replaced in-use, and the ability of the component monitor(s) to accurately verify that each NOx adsorber system component is functioning as designed and as required in section (e)(7.2.1).

* * * *

(7.3) Monitoring Conditions:

(7.3.1) Manufacturers shall define the monitoring conditions for malfunctions identified in sections (e)(7.2.1) (i.e., adsorber capability) in accordance with sections (d)(3.1) and (d)(3.2) (i.e., minimum ratio requirements). Additionally, manufacturers shall track and report the in-use performance of the NOx adsorber monitors under section (e)(7.2.1) in accordance with section (d)(3.2.1).

* * * *

(B) For engines using SAE J1979-2, for purposes of tracking and reporting as required in section (d)(3.2.1), all monitors used to detect malfunctions identified in ~~sections~~section (e)(~~57.2.2~~5.2.2) and (~~5.2.31~~) shall be tracked and reported separately as specified in section (d)(5.1.3) or tracked separately but reported as a single set of values as specified in section (d)(5.2.2)(B), whichever is applicable.

* * * *

(8) *Particulate Matter (PM) Filter Monitoring*

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(8.2) Malfunction Criteria:

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(8.2.4) Catalyzed PM Filter:

(A) NMHC conversion: For 2015 and subsequent model year engines with catalyzed PM filters that convert NMHC emissions:

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(iii) Catalyzed PM filters are exempt from this monitoring if both of the following criteria are satisfied: (1) no malfunction of the catalyzed PM filter's NMHC conversion capability can cause emissions to increase by 4530 percent or more of the applicable NMHC, NOx, CO, or PM standard as measured from an applicable emission test cycle; and (2) no malfunction of the catalyzed PM filter's NMHC conversion capability can cause emissions to exceed the applicable NMHC, NOx, CO, or PM standard as measured from an applicable emission test cycle.

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(9) *Exhaust Gas Sensor Monitoring*

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(9.2) Malfunction Criteria:

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(9.2.2) NOx and PM sensors:

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(D) Monitoring capability: To the extent feasible, the OBD system shall detect a malfunction of the sensor when the sensor output voltage, resistance, impedance, current, amplitude, activity, offset, or other characteristics are no longer sufficient for use as an OBD system monitoring device (e.g., for catalyst, EGR, PM filter, SCR, or NOx adsorber monitoring). The dependent monitor (e.g., catalyst, EGR, SCR or NOx adsorber monitor) for which the sensor is used as an OBD system monitoring device must make a robust diagnostic decision (e.g., avoid false passes of a best performing unacceptable catalyst and false fails of a nominal catalyst) with a deteriorated but passing exhaust gas sensor.

(i) For the NOx sensor on 2025 and subsequent model year engines, the manufacturer shall test each applicable failure mode of the NOx sensor (e.g., sensor offset high failure mode, sensor gain low failure mode) with the component/system for the dependent monitor set at the best performing unacceptable level (e.g., with a best performing unacceptable catalyst). For each applicable NOx sensor failure mode, the manufacturer shall collect one data point with the sensor performance set at the sensor monitor malfunction threshold, at least

three data points with the sensor performance set above the sensor malfunction threshold, and at least three data points with the sensor performance set below the sensor malfunction threshold. The spacing between the data points shall be set at two sigma and calculated using the variance of the applicable NOx sensor monitor output (i.e., the variance calculated from the NOx sensor monitor result distribution for the malfunction threshold sensor for the sensor failure mode under consideration). If the two sigma spacing places a data point(s) in a region that will be tested by a different NOx sensor failure mode, the spacing for all data point(s) above or below the sensor malfunction threshold and between the NOx sensor malfunction thresholds for the two NOx sensor failure modes may be modified such that all the data point(s) remain equally spaced from each other and within the region of the failure mode currently being tested. The manufacturer shall also submit test data and/or engineering analysis demonstrating the NOx sensor monitor robustness against false-pass and false-fail decisions. The robustness data/analysis shall include test results from a wide range of sensor monitor enable conditions and may include data/analysis previously collected during development of the sensor monitor. For each applicable NOx sensor failure mode, the manufacturer shall perform tests of all the required data points without sending a scan tool code clear command between each data point test (e.g., for testing of the sensor offset high failure mode, the manufacturer shall perform tests of all seven data points without sending a code clear command in-between each test). The manufacturer shall send a scan tool code clear command between testing of each applicable NOx sensor failure mode (e.g., collect all seven data points for testing of the sensor offset high failure mode, then send a code clear command before testing of the sensor gain high failure mode). The NOx sensor monitor is deemed compliant if, during testing of each applicable sensor failure mode, all the following are met:

- a. ~~The NOx sensor monitor makes a fail decision during~~ During testing for each data point (except the data point at the sensor monitor malfunction threshold) in the failing region of the sensor monitor, the NOx sensor monitor makes a fail decision.
- b. ~~The NOx sensor monitor makes a pass decision during testing for each data point (except the data point at the sensor monitor malfunction threshold) in the passing region of the sensor monitor,~~
- c. ~~The dependent monitor (e.g., catalyst monitor) makes a fail decision during~~ b. During testing for each data point (except the data point at

the sensor monitor malfunction threshold) in the passing region of the sensor monitor,);

~~d. Either~~ 1. The NOx sensor monitor makes a pass decision, or

2. A separate NOx sensor monitor for the same NOx sensor makes a fail decision,

c. During testing for each data point (except the data point at the sensor malfunction threshold) in the passing region of the sensor monitor,

1. The dependent monitor ~~or the sensor monitor~~ makes a fail decision during, or

2. A separate NOx sensor monitor for the same NOx sensor makes a fail decision,

~~d. During testing at the data point at the~~ data point at the sensor monitor malfunction threshold,

~~e. The MIL illuminates and is commanded on for a malfunction~~ of threshold, either the NOx dependent monitor or the sensor monitor makes a fail decision,

e. During testing for at least once during one data point (including the data point at the sensor malfunction threshold) in the passing region of the sensor monitor, the dependent monitor makes a fail decision,

f. During testing of each applicable NOx sensor failure mode, the MIL illuminates and is commanded on at least once for the applicable NOx sensor failure mode being tested, and

~~f. The~~ g. During testing of each applicable NOx sensor failure mode, the MIL illuminates and is commanded on at least once for a malfunction of the dependent component/system for the dependent monitor (e.g., catalyst) at least once during testing of each applicable or for a separate NOx sensor failure mode monitor for the same NOx sensor.

(ii) If the manufacturer data do not satisfy sections (e)(9.2.2)(D)(i)a., b., c., e., f., or fg. above due to a result being in the 2 percent tail of a normal distribution or do not satisfy section (e)(9.2.2)(D)(i)d., the manufacturer may submit additional data points at the same sensor performance level to support the demonstration of compliance.

~~(iii)~~(iii) If the manufacturer data do not satisfy the criterion in either section (e)(9.2.2)(D)(i)b. or (e)(9.2.2)(D)(i)c. above due to interactions between the performance of the component/system for the dependent monitor and the performance of the sensor (e.g., increased ammonia slip from a best performing unacceptable catalyst), the requirement shall be considered compliant if a fail decision is made by either the dependent monitor or the sensor monitor when the sensor performance level is in the passing region of the sensor monitor and the manufacturer indicates in service literature that the component/system for the dependent monitor or the sensor may be malfunctioning.

(iv) If the manufacturer data do not satisfy section (e)(9.2.2)(D)(i)e. above, the manufacturer may submit additional data points at different sensor performance levels with all data points (additional data points and previous data points) in the passing region of the sensor monitor equally spaced from each other to support the demonstration of compliance.

(v) The Executive Officer may waive the requirements for the submittal of the data under section (e)(9.2.2)(D)(i) above for an engine if the data have been submitted for a previous model year and the calibrations of the NOx sensor monitor and dependent monitor for the current engine have not changed from the previous model year.

~~(iv)~~(vi) The manufacturer may meet the requirements in section (e)(9.2.2)(D)(i) above on 2023 and 2024 model year engines.

* * * *

(g) Monitoring Requirements For All Engines.

* * * *

(3) Comprehensive Component Monitoring

(3.1) Requirement:

(3.1.1) Except as provided in sections (g)(3.1.3), (g)(3.1.4), (g)(3.1.5), (g)(3.1.6), and (g)(4), the OBD system shall monitor for malfunction any electronic powertrain component/system not otherwise described in sections (e)(1) through (g)(2) that either provides input to (directly or indirectly) or receives commands from an on-board computer or smart device, and any of the following: (1) can affect NMHC, NOx, CO, or PM emissions during any reasonable in-use driving condition, (2) is used as part of the diagnostic strategy for any other monitored system or component, (3) is used as an input to (directly or indirectly) an inducement strategy on 2024

and subsequent model year engines, or (4) is used as an input to (directly or indirectly) or output from an AECD strategy. Each input to or output from a smart device that meets criterion (1) or (2) above shall be monitored pursuant to section (g)(3). Further detection or pinpointing of faults internal to the smart device is not required. If the control system detects deterioration or malfunction of the component/system and takes direct action to compensate or adjust for it, manufacturers may not use the criteria under section (g)(3) and are instead subject to the default action requirements of section (d)(2.2.1)(E) or (d)(2.2.2)(E), as applicable.

- (A) Input Components: Input components required to be monitored may include the crank angle sensor, knock sensor, throttle position sensor, cam position sensor, intake air temperature sensor, boost pressure sensor, manifold pressure sensor, mass air flow sensor, exhaust temperature sensor, exhaust pressure sensor, fuel pressure sensor, fuel composition sensor (e.g. flexible fuel vehicles), and electronic components used to comply with any applicable engine idling requirements of title 13, CCR section 1956.8 or 1956.8.2, whichever is applicable.

* * * *

(3.2) Malfunction Criteria:

(3.2.1) Input Components:

* * * *

- (B) To the extent feasible, the OBD system shall separately detect and store different fault codes that distinguish rationality faults from circuit faults and out-of-range faults. Two-sided rationality fault diagnostics are not required to set separate fault codes for each side. Additionally:

* * * *

- (ii) For all other inputs: For component circuit and out-of-range faults, the OBD system shall separately detect and store different fault codes for each distinct malfunction (e.g., out-of-range low, out-of-range high, open circuit). Notwithstanding, the OBD system is not required to store separate fault codes for lack of circuit continuity faults that cannot be distinguished from other out-of-range faults. For sensors that are fixed to a circuit board within a diagnostic or emission critical electronic control unit, as defined in section (c), manufacturers may combine circuit and out-of-range value faults into a single fault code that identifies the malfunctioning sensor.

- (C) For input components that are used to activate alternate strategies that can affect emissions (e.g., AECDs, engine shutdown systems or

strategies to meet NOx idling standards required by title 13, CCR section 1956.8 or 1956.8.2, whichever is applicable), the OBD system shall detect rationality malfunctions that cause the system to erroneously activate or deactivate the alternate strategy. To the extent feasible when using all available information, the rationality fault diagnostics shall detect a malfunction if the input component inappropriately indicates a value that activates or deactivates the alternate strategy. For example, if an alternate strategy requires the intake air temperature to be greater than 120 degrees Fahrenheit to activate, the OBD system shall detect malfunctions that cause the intake air temperature sensor to inappropriately indicate a temperature above 120 degrees Fahrenheit.

* * * *

(5) *Exceptions to Monitoring Requirements*

* * * *

(5.2) Alternate Malfunction Criteria and Monitoring Test-Out Criteria

(5.2.1) Alternate malfunction criteria for diesel/compression-ignition engines:

* * * *

(C) For 2022 and 2023 model year engines that meet all the requirements under sections (g)(5.2.1)(C)(i) through (v) below, in lieu of the NOx and PM thresholds set forth in sections (e)(1) through (e)(11), the manufacturer shall use the NOx threshold specified in section (g)(5.2.1)(D) and the PM threshold specified in section (g)(5.2.1)(E).:

- (i) Certify to an FTP and SET NOx emission standard of 0.10 g/bhp-hr or lower,
- (ii) Certify to a low load cycle NOx emission standard of 0.30 g/bhp-hr or lower (as described in section I.11.B.8 of “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR),
- (iii) Certify to an optional idle NOx standard of 10 g/hr (as described in section I.11.B.6.3 of “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR),
- (iv) Certify to an FTP, SET, and low load cycle (as described in section I.11.B.8 of “California Exhaust Emission Standards and Test

Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR) PM emission standard of 0.005 g/bhp-hr or lower, and

- (v) Comply with the 3-binned moving average window method for in-use testing as described in section 86.1370.B of “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR.

* * * *

- (E) For 2024 and subsequent model year engines certified to an FTP PM emission standard of 0.005 g/bhp-hr or lower, in lieu of the PM thresholds set forth in sections (e)(1) through (e)(11), the manufacturer shall use a PM threshold of 0.03 g/bhp-hr as measured on the FTP and SET cycles, (e.g., detect a malfunction before PM emissions exceed 0.03 g/bhp-hr rather than before PM emissions exceed the applicable PM standards by more than 0.02 g/bhp-hr).

- (F) For 2027 and subsequent model year engines certified to an FTP NMHC standard of 0.140 g/bhp-hr or lower, for the NMHC thresholds set forth in sections (e)(1) through (e)(11), the manufacturer shall use 0.140 g/bhp-hr as the applicable NMHC standard (e.g., if the malfunction criteria is 2.0 times the applicable NMHC standard, the manufacturer shall detect a malfunction before NMHC emissions exceed 0.280 g/bhp-hr).

- (G) For 2027 and subsequent model year engines certified to an FTP CO standard of 15.5 g/bhp-hr or lower, for the CO thresholds set forth in sections (e)(1) through (e)(11), the manufacturer shall use 15.5 g/bhp-hr as the applicable CO standard (e.g., if the malfunction criteria is 2.0 times the applicable CO standard, the manufacturer shall detect a malfunction before CO emissions exceed 31.0 g/bhp-hr).

(5.2.2) Alternate malfunction criteria for gasoline/spark-ignited engines:

* * * *

- (B) For 2022 and 2023 model year engines that meet all the requirements under sections (g)(5.2.2)(B)(i) through (iii) below, in lieu of the NOx and PM thresholds set forth in sections (f)(1) through (f)(6) and (f)(8) through (f)(9), the manufacturer shall use the NOx threshold specified in section (g)(5.2.2)(C) and the PM threshold specified in section (g)(5.2.2)(D):

- (i) Certify to an FTP NOx emission standard of 0.10 g/bhp-hr or lower,

- (ii) Certify to an FTP PM emission standard of 0.005 g/bhp-hr or lower, and
- (iii) Comply with the 1-binned moving average window method for in-use testing as described in section 86.1370.B of "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles," incorporated by reference in section 1956.8(d), title 13, CCR,

* * * *

(D) For 2024 and subsequent model year engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, in lieu of the PM thresholds set forth in sections (f)(1) through (f)(6) and (f)(8) through (f)(9), the manufacturer shall use a PM threshold of 0.015 g/bhp-hr (i.e., detect a malfunction before PM emissions exceed 0.015 g/bhp-hr rather than before PM emissions exceed 1.5 times the applicable PM standards).

(E) For 2027 and subsequent model year engines certified to an FTP NMHC standard of 0.140 g/bhp-hr or lower, for the NMHC thresholds set forth in sections (f)(1) through (f)(6) and (f)(8) through (f)(9), the manufacturer shall use 0.140 g/bhp-hr as the applicable NMHC standard (e.g., if the malfunction criteria is 1.5 times the applicable NMHC standard, the manufacturer shall detect a malfunction before NMHC emissions exceed 0.210 g/bhp-hr).

(F) For 2027 and subsequent model year engines certified to an FTP CO standard of 14.4 g/bhp-hr or lower, for the CO thresholds set forth in sections (f)(1) through (f)(5) and (f)(8) through (f)(9), the manufacturer shall use 14.4 g/bhp-hr as the applicable CO standard (e.g., if the malfunction criteria is 1.5 times the applicable CO standard, the manufacturer shall detect a malfunction before CO emissions exceed 21.6 g/bhp-hr).

(5.2.3) Alternate malfunction criteria for engine cooling system thermostat monitor:

(A) Diesel/compression-ignition engines: For 2022 and 2023 model year engines that are certified to Optional Low NOx emission standards of 0.10 g/bhp-hr or lower or that meet the criteria under sections (g)(5.2.1)(C)(i) through (v), ~~and 2024 and subsequent model year engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower or certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, for the thermostat monitor malfunction criteria specified under section (g)(1.2.1)(A)(ii) where fuel, spark timing, and/or other coolant temperature-based modifications to the~~

~~engine control strategies would not cause an emissions increase of 50 or more percent of the applicable standards, the manufacturer shall use the following NOx or PM standard:~~

~~(i) For engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower, 0.20 g/bhp-hr for the applicable NOx standard.~~

~~(ii) For engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, 0.01 g/bhp-hr for the applicable PM standard.~~

~~(B) Gasoline/spark-ignited engines: For 2022 and 2023 model year engines that are certified to Optional Low NOx emission standards of 0.10 g/bhp-hr or lower or that meet the criteria under sections (g)(5.2.2)(B)(i) through (iii), 2022 and 2023 model year, and 2024 and 2027 and subsequent model year engines certified to an FTP engine NOx NMHC standard of 0.10 140 g/bhp-hr or lower or certified to an FTP engine PM CO standard of 0.005 15.5 g/bhp-hr or lower, for the thermostat monitor malfunction criteria specified under section (g)(1.2.1)(A)(ii) where fuel, spark timing, and/or other coolant temperature-based modifications to the engine control strategies would not cause an emissions increase of 50 or more percent of the applicable standards, the manufacturer shall use the following NOx or PM standard standards:~~

(i) For engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower, 0.20 g/bhp-hr for the applicable NOx standard.

~~(i) For engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower, 0.20 g/bhp-hr for the applicable NOx standard.~~

~~(ii) For engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, 0.01 g/bhp-hr for the applicable PM standard.~~

(iii) For engines certified to an FTP NMHC standard of 0.140 g/bhp-hr or lower, 0.140 g/bhp-hr for the applicable NMHC standard.

(iv) For engines certified to an FTP CO standard of 15.5 g/bhp-hr or lower, 15.5 g/bhp-hr for the applicable CO standard.

(B) Gasoline/spark-ignited engines: For 2022 and 2023 model year engines that are certified to Optional Low NOx emission standards of 0.10 g/bhp-hr or lower or that meet the criteria under sections (g)(5.2.2)(B)(i) through (iii), 2022 and 2023 model year, 2024 and subsequent model year engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower or certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, and 2027 and subsequent model year engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower or certified to an FTP engine CO standard of 14.4 g/bhp-hr or lower, for the thermostat monitor

malfunction criteria specified under section (g)(1.2.1)(A)(ii) where fuel, spark timing, and/or other coolant temperature-based modifications to the engine control strategies would not cause an emissions increase of 50 or more percent of the applicable standards, the manufacturer shall use the following standards:

(i) For engines certified to an FTP engine NOx standard of 0.10 g/bhp-hr or lower, 0.20 g/bhp-hr for the applicable NOx standard.

(ii) For engines certified to an FTP engine PM standard of 0.005 g/bhp-hr or lower, 0.01 g/bhp-hr for the applicable PM standard.

(iii) For engines certified to an FTP engine NMHC standard of 0.140 g/bhp-hr or lower, 0.140 g/bhp-hr for the applicable NMHC standard.

(iv) For engines certified to an FTP engine CO standard of 14.4 g/bhp-hr or lower, 14.4 g/bhp-hr for the applicable CO standard.

(5.2.4) Alternate test-out criteria for diesel/compression-ignition engines:

* * * *

(B) For 2022 and 2023 model year engines that meet all the requirements under sections (g)(5.2.4)(B)(i) through (v) below, in lieu of the NOx and PM test-out criteria specified in sections (e)(3.2.6)(B), (e)(5.2.3)(B)(i), (e)(8.2.4)(A)(iii), (e)(8.2.4)(B)(i), and (g)(3.2.2)(F)(ii), the manufacturer shall use the NOx criteria specified in section (g)(5.2.4)(C) and the PM criteria specified in section (g)(5.2.4)(D) to determine if the specific component or function is exempt from the monitoring requirements.:

(i) Certify to an FTP and SET NOx emission standard of 0.10 g/bhp-hr or lower,

(ii) Certify to a low load cycle NOx emission standard of 0.30 g/bhp-hr or lower (as described in section I.11.B.8 of "California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles," incorporated by reference in section 1956.8(b), title 13, CCR),

(iii) Certify to an optional idle NOx standard of 10 g/hr (as described in section I.11.B.6.3 of "California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles," incorporated by reference in section 1956.8(b), title 13, CCR),

(iv) Certify to an FTP, SET, and low load cycle (as described in section I.11.B.8 of "California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~ through 2026 Model Heavy-Duty

Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR) PM emission standard of 0.005 g/bhp-hr or lower, and

- (v) Comply with the 3-binned moving average window method for in-use testing as described in section 86.1370.B of “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in section 1956.8(b), title 13, CCR.

* * * *

- (D) For 2024 and subsequent model year engines certified to an FTP PM emission standard of 0.005 g/bhp-hr or lower, in lieu of the PM test-out criteria specified in sections (e)(3.2.6)(B), (e)(8.2.4)(A)(iii), and (g)(3.2.2)(F)(ii), the manufacturer shall use the following criteria to determine if the specific component or function is exempt from the monitoring requirements:

- (i) In lieu of the criterion where no malfunction can cause PM emissions to increase by 15 percent or more of the applicable PM standard, the manufacturer shall use the criterion where no malfunction can cause PM emissions to increase by 0.0015 g/bhp-hr or more.
- (ii) In lieu of the criterion where no malfunction can cause PM emissions to exceed the applicable PM standard, the manufacturer shall use the criterion where no malfunction can cause PM emissions to exceed 0.01 g/bhp-hr.

- (E) For 2027 and subsequent model year engines certified to an FTP NMHC standard of 0.140 g/bhp-hr or lower, for the NMHC test-out criteria specified in sections (e)(3.2.6)(B), (e)(8.2.4)(A)(iii), (e)(11.2.2)(B), and (g)(3.2.2)(F)(ii), the manufacturer shall use 0.140 g/bhp-hr as the applicable NMHC standard to determine if the specific component or function is exempt from the monitoring requirements (e.g., for the criterion where no malfunction can cause NMHC emissions to increase by 15 percent or more of the applicable NMHC standard, the manufacturer shall use the criterion where no malfunction can cause NMHC emissions to increase by 0.021 g/bhp-hr or more).

- (F) For 2027 and subsequent model year engines certified to an FTP CO standard of 15.5 g/bhp-hr or lower, for the CO test-out criteria specified in sections (e)(3.2.6)(B), (e)(8.2.4)(A)(iii), (e)(11.2.2)(B), and (g)(3.2.2)(F)(ii), the manufacturer shall use 15.5 g/bhp-hr as the applicable CO standard to determine if the specific component or function is exempt from the

monitoring requirements (e.g., for the criterion where no malfunction can cause CO emissions to increase by 15 percent or more of the applicable CO standard, the manufacturer shall use the criterion where no malfunction can cause CO emissions to increase by 2.325 g/bhp-hr or more).

(5.2.5) Alternate test-out criteria for gasoline/spark-ignited engines:

(A) For 2027 and subsequent model year engines certified to an FTP NMHC standard of 0.140 g/bhp-hr or lower, for the NMHC test-out criteria specified in section (f)(4.2.3)(C)(i), the manufacturer shall use 0.140 g/bhp-hr as the applicable NMHC standard to determine if the specific component or function is exempt from the monitoring requirements.

(B) For 2027 and subsequent model year engines certified to an FTP CO standard of 14.4 g/bhp-hr or lower, for the CO test-out criteria specified in section (f)(4.2.3)(C)(i), the manufacturer shall use 14.4 g/bhp-hr as the applicable CO standard to determine if the specific component or function is exempt from the monitoring requirements.

* * * *

(h) Standardization Requirements.

* * * *

(4) Required Emission Related Functions:

The following standardized functions shall be implemented in accordance with the specifications in SAE J1979, SAE J1979-2, or SAE J1939 to allow for access to the required information by a scan tool meeting SAE J1978 specifications or designed to communicate with an SAE J1939 network:

- (4.1) Readiness Status: In accordance with SAE J1979/J1939-73 specifications, the OBD system shall indicate “complete” or “not complete” since the fault memory was last cleared for each of the installed monitored components and systems identified in sections (e)(1) through (f)(9), and (g)(3) except (e)(11) and (f)(4).

(4.1.1) For engines using SAE J1979 or SAE J1939:

* * * *

- (l) Subject to Executive Officer approval, if monitoring is disabled for a multiple number of driving cycles due to the continued presence of extreme operating conditions (e.g., cold ambient temperatures, high altitudes), readiness status for the subject monitoring system may be set

to indicate “complete” without monitoring having been completed. Executive Officer approval shall be based on the conditions for monitoring system disablement and the number of driving cycles specified without completion of monitoring before readiness is indicated as “complete”.

(J) For condition (1) described in section (h)(4.1.1)(D), for a monitor that increments the denominator using any of the criteria in sections (d)(4.3.2)(C) through (I) and (K) through (O), the monitor may be considered to have “fully executed and determined that the component or system is not malfunctioning” if the following criteria are met:

(i) at least 15 warm-up cycles have occurred since the fault memory was last cleared,

(ii) at least 400 minutes of engine run time have accumulated since the fault memory was last cleared, and

(iii) no permanent fault code is stored for that monitor.

(4.1.2) For engines using SAE J1979-2:

* * * *

(B) The readiness status for each component/system readiness bit listed below shall immediately indicate “complete” if any of the following conditions occur: (1) except for misfire (sections (h)(4.1.2)(B)(ii) and (h)(4.1.2)(B)(xvii)), all the respective supported monitors listed below for each component/system have fully executed and determined that the component or system is not malfunctioning, (2) at least one of the monitors listed below for each component/system has determined that the component or system is malfunctioning after the requisite number of decisions necessary for determining the MIL status have been fully executed, regardless of whether or not the other monitors listed have been fully executed, or (3) for misfire (sections (h)(4.1.2)(B)(ii) and (h)(4.1.2)(B)(xvii)), 4,000 fueled engine revolutions have occurred and all the respective supported monitors have fully executed and determined that there is no misfire malfunction:

* * * *

(v) Diesel NMHC Converting Catalyst: ~~sections (e)(5.2.2) and (e)(5.2.3)~~

a. For 2023 through 2030 model year engines, sections (e)(5.2.2) and (e)(5.2.3)

b. For 2031 and subsequent model year engines, sections (e)(5.2.2) and (e)(5.2.3)(A)

c. For 2023 through 2030 model year engines, the monitors listed in section (h)(4.1.2)(B)(v)b. may be used in lieu of the monitors listed in section (h)(4.1.2)(B)(v)a.

* * * *

(F) Subject to Executive Officer approval, if monitoring is disabled for a multiple number of driving cycles due to the continued presence of extreme operating conditions (e.g., cold ambient temperatures, high altitudes), readiness status for the subject monitoring system may be set to indicate “complete” without monitoring having been completed. Executive Officer approval shall be based on the conditions for monitoring system disablement and the number of driving cycles specified without completion of monitoring before readiness is indicated as “complete”.

(G) For condition (1) described in section (h)(4.1.2)(B), for a monitor that increments the denominator using any of the criteria in sections (d)(4.3.2)(C) through (I) and (K) through (O), the monitor may be considered to have “fully executed and determined that the component or system is not malfunctioning” if the following criteria are met:

(i) at least 15 warm-up cycles have occurred since the fault memory was last cleared,

(ii) at least 400 minutes of engine run time have accumulated since the fault memory was last cleared, and

(iii) no permanent fault code is stored for that monitor.

(4.2) Data Stream: The following signals shall be made available on demand through the standardized data link connector in accordance with SAE J1979/J1979-2/J1939 specifications. The actual signal value shall always be used instead of a default or limp home value.

* * * *

(4.2.2) For all diesel engines:

* * * *

~~(D)~~(D) For 2010 through 2026 model year engines, NOx NTE control area status (i.e., inside control area, outside control area, inside manufacturer-specific NOx NTE carve-out area, or deficiency active area), PM NTE control area status (i.e., inside control area, outside control area, inside manufacturer-specific PM NTE carve-out area, or deficiency active area);

* * * *

(I) For 2024 and subsequent model year engines, engine rated speed and engine family.

~~(J)~~(J) For 2031 and subsequent model year engines, family certification level (FCL) for CO₂ (g/bhp-hr) and the highest value of rated power ("Pmax") for all the configurations included in the engine family (specifically, the CO₂ FCL and Pmax used by the OBD system to comply with the NOx emission tracking requirements in section (h)(5.3.3)(J)).

(K) For purposes of the calculated load and torque parameters in section (h)(4.2.2)(A) and the torque, fuel rate, and modeled exhaust flow parameters in section (h)(4.2.2)(G), manufacturers shall report the most accurate values that are calculated within the applicable electronic control unit (e.g., the engine control module). "Most accurate values", in this context, shall be of sufficient accuracy, resolution, and filtering to be used for the purposes of in-use emission testing with the engine still in a vehicle (e.g., using portable emission measurement equipment).

(4.2.3) For all engines so equipped:

* * * *

(G) For 2024 and subsequent model year engines, commanded DEF dosing, DEF dosing mode (A, B, C, etc.), DEF dosing rate, DEF usage for current driving cycle, target ammonia storage level on SCR, modeled actual ammonia storage level on SCR, SCR intake temperature, SCR outlet temperature, stability of NOx sensor reading, EGR mass flow rate, engine fuel rate, vehicle fuel rate, hydrocarbon doser flow rate, hydrocarbon doser injector duty cycle, aftertreatment fuel pressure, charge air cooler outlet temperature, propulsion system active, chassis odometer reading, engine odometer reading (if available), hybrid/EV charging state, hybrid/EV battery system voltage, hybrid/EV battery system current, commanded/target fresh air flow, crankcase pressure sensor output, crankcase oil separator rotational speed, evaporative system purge pressure sensor output, and vehicle speed limiter speed limit.

(H) For 2027 and subsequent model year diesel engines, the parameters listed in 40 CFR 1036.110(b)(9), as it existed on October 25, 2024, and incorporated by reference herein.

(I) For 2027 and subsequent model year gasoline engines, the parameters listed in 40 CFR 1036.110(b)(10), as it existed on October 25, 2024 and incorporated by reference herein.

* * * *

(4.3) Freeze Frame:

(4.3.1) For engines using SAE J1979 or SAE J1939:

* * * *

(B) "Freeze frame" conditions must include the fault code which caused the data to be stored and all of the signals required in sections (h)(4.2.1)(A) and (4.2.2)(A). Freeze frame conditions shall also include all of the signals required on the engine in sections (h)(4.2.1)(B), (4.2.2)(B), (4.2.2)(E), (4.2.3)(A), and (4.2.3)(B) that are used for diagnostic or control purposes in the specific diagnostic or emission-critical ~~powertrain~~electronic control unit that stored the fault code.

* * * *

(4.3.2) For engines using SAE J1979-2:

(A) "Freeze frame" information required to be stored pursuant to sections (d)(2.2.1)(D), ~~(d)(2.2.2)(D)~~, (e)(1.4.2)(D), (e)(2.4.2)(B), (f)(1.4.4), and (f)(2.4.3) shall be made available on demand through the standardized data link connector in accordance with SAE J1979-2 specifications.

(B) "Freeze frame" conditions must include the fault code which caused the data to be stored and all of the signals required in sections (h)(4.2.1)(A) and (4.2.2)(A). Freeze frame conditions shall also include all of the signals required on the engine in sections (h)(4.2.1)(B), (4.2.2)(B), (4.2.2)(E), (4.2.3)(A), (4.2.3)(B), and (4.2.4)(A) that are used for diagnostic or control purposes in the specific diagnostic or emission-critical ~~powertrain~~electronic control unit that stored the fault code.

(C) Freeze frame conditions shall be stored on two data frames per fault code (as described in section (d)(2.2.1)(D)(ii)). The OBD system shall have the ability to store freeze frame conditions for a minimum of five fault codes per diagnostic or emission critical ~~powertrain~~electronic control unit.

* * * *

(4.6) Software Calibration Identification:

(4.6.1) Except as provided for in section (h)(4.6.3), on all vehicles, a single software calibration identification number (CAL ID) for each diagnostic or emission critical electronic control unit(s) shall be made available through the standardized data link connector in accordance with the SAE J1979/J1979-2/J1939 specifications.

* * * *

(4.6.3) Manufacturers may request Executive Officer approval to respond with more than one CAL ID per diagnostic or emission critical

powertrain electronic control unit. Executive Officer approval of the request shall be based on the method used by the manufacturer to ensure each control unit will respond to a generic scan tool with the CAL IDs in order of highest to lowest priority with regards to areas of the software most critical to emission and OBD system performance.

(4.7) Software Calibration Verification Number:

* * * *

(4.7.2) One CVN shall be made available for each CAL ID made available. For diagnostic or emission critical powertrain electronic control units with more than one CAL ID, each CVN shall be output to a generic scan tool in the same order as the CAL IDs are output to the generic scan tool to allow the scan tool to match each CVN to the corresponding CAL ID.

* * * *

(4.10) Erasure of Emission-Related Diagnostic Information:

* * * *

(4.10.2) For all vehicles, the emission-related diagnostic information shall be erased as a result of a command by a scan tool (generic or enhanced) and may be erased if the power to the on-board computer is disconnected. At a minimum, the emission-related diagnostic information shall be erased as a result of a command by a scan tool while in the key on, engine off position.

(A) For engines using SAE J1979 or SAE J1939, except as provided for in sections (h)(4.4.1)(F)(iv), (h)(4.4.2)(F)(iv), (h)(4.8.3), and (h)(4.10.4), if any of the emission-related diagnostic information is erased as a result of a command by a scan tool or during an on-board computer reprogramming event, all emission-related diagnostic information shall be erased from all diagnostic or emission critical electronic control units. For these control units, the OBD system may not erase a subset of the emission-related diagnostic information in response to a scan tool command (e.g., in such cases, the OBD system may not erase only one of three stored fault codes or only information from one control unit without erasing information from the other control unit(s)).

* * * *

(5) *Tracking Requirements:*

* * * *

(5.3) NOx Emission Tracking Requirements:

* * * *

(5.3.2) The parameters in section (h)(5.3.1) shall be stored in the four data arrays described below. Data in each array shall be updated at a frequency of 1 Hertz based on signals that are sampled at a frequency of at least 1 Hertz.

* * * *

(5.3.3) Each parameter in each array in section (h)(5.3.2) shall be stored in a series of bins that are defined as indicated below. Table 1 indicates the bins that are assigned to each array and to each parameter. References to “rated power” mean the engine's rated net brake power.

* * * *

~~(F)~~(F) For 2022 through 2030 model year diesel engines, “Bin 15” stores data only when the engine is operating within the NOx NTE control area and none of the NTE exclusion criteria are satisfied. For 2031 and subsequent model year diesel engines, Bin 15 shall be set to zero at all times.

~~(G)~~(G) For 2022 through 2030 model year diesel engines, “Bin 16” stores data only when an active PM filter regeneration event is being commanded. For 2031 and subsequent model year diesel engines, Bin 16 stores data when any infrequent regeneration event (e.g., an active PM filter regeneration, catalyst desulfurization, de-crystallization event) is being commanded.

(H) “Bin 17” stores the total value of the parameter in a given array only when the pause conditions of section (h)(5.3.6)(A) are met.

(I) Storage of data in Bins 1 through 14 occurs independently of data storage in Bins 15 and 16, and is not interrupted or otherwise affected by activity related to Bins 15 and 16.

(J) 2-bin moving average window (2B-MAW) bins. For 2031 and subsequent model year diesel engines, “Bin A” and “Bin B,” described below, shall store data from overlapping 300-second windows of engine operation. Storage of data shall begin after engine start when 300 seconds of engine operation have elapsed for which none of the conditions described in section (h)(5.3.3)(J)(iv) are met. Each second thereafter, the OBD system shall store the last 300 seconds of valid data in the appropriate bin. The OBD system shall discard any partial window of valid data (i.e., a window that contains less than 300 seconds of valid data) at the end of the driving cycle.

- (i) “Bin A” shall store data when the normalized CO₂ mass over the window is 6 percent or less as determined according to section (h)(5.3.3)(J)(iii).
- (ii) “Bin B” shall store data when the normalized CO₂ mass over the window is greater than 6 percent as determined according to section (h)(5.3.3)(J)(iii).
- (iii) Determination of normalized CO₂ mass. The OBD system shall estimate the normalized CO₂ mass over a window using the method described below:
 - a. Normalized CO₂ mass = (Window CO₂ mass) / (CO₂ FCL * P_{max} * t_{window}), where:
 - 1. “Window CO₂ mass” is the total mass of CO₂ in grams emitted by the engine over the 300-second window. The OBD system shall estimate this value by converting the engine’s fuel consumption over the window into an equivalent amount of CO₂ using the following conversion factor: 1 gallon of diesel fuel = 10,180 grams of CO₂.
 - 2. “CO₂ FCL” is the engine’s family certification level for CO₂ over the FTP duty cycle in g/bhp-hr. If the engine family includes no FTP testing, use the engine’s FCL for CO₂ over the SET duty cycle.
 - 3. “P_{max}” is the highest value of rated power in units of horsepower for all the configurations included in the engine family.
 - 4. “t_{window}” is the duration of the window, i.e., 0.083 hours (300 seconds).
- (iv) Excluded data. The OBD system shall exclude data from a window for any period meeting one or more of the following conditions:
 - a. The engine is off.
 - b. NOx emission tracking is paused in accordance with section (h)(5.3.6).
 - c. The MIL is commanded on, or a pending fault code is stored.
 - 1. The OBD system shall furthermore reset or clear the memory that stores the last 300 seconds of valid data upon illumination of the MIL or storage of a pending fault code.

- d. One of the NOx sensors used to determine the NOx mass parameters listed in section (h)(5.3.1) is not reporting valid NOx concentration data.
- e. The engine is commanding an infrequent regeneration event (e.g., an active PM filter regeneration, catalyst desulfurization, de-crystallization event).
- f. The engine has one or more active AECDs for emergency vehicles under 40 CFR 1036.115(h)(4) as it existed on October 18, 2024, and incorporated by reference herein.
- g. The barometric pressure is less than 82.5 kilopascals (kPa).
- h. The ambient air temperature is less than 0 degrees Celsius.
- i. The ambient air temperature is greater than $-0.0014 \times h + 37.78$ degrees Celsius, where the height "h" shall be approximated by $(101.3 - \text{barometric pressure}) \text{ kPa} \times 328 \text{ feet} / 1.2 \text{ kPa}$.
- (v) The OBD system shall handle time intervals which include alternating periods of both valid data that are less than 300 seconds and periods of excluded data according to the following requirements:
 - a. The OBD system shall combine short periods (i.e., less than 300 seconds) of valid data that are separated by periods of excluded data into a 300-second window and store the window in the appropriate bin provided that no period of excluded data encompassed by the window exceeds 599 seconds.
 - b. The OBD system shall discard a partial window of valid data (i.e., a window that contains less than 300 seconds of valid data) if it includes a period of excluded data that is 600 or more seconds long. If data are discarded, a new window shall begin with the first two consecutive seconds for which none of the conditions for excluded data are satisfied.

Table 1. NOx Emission Tracking Parameters and Arrays

<u>Parameter</u>	<u>Active 100-Hour Array (Bins)</u>	<u>Stored 100-Hour Array (Bins)</u>	<u>Lifetime Array (Bins)</u>	<u>Lifetime Engine Activity Array (Bins)</u>
<u>NOx mass – engine out (g)</u>	<u>1-17</u>	<u>1-17</u>	<u>1-17</u>	<u>None</u>

<u>NOx mass – tailpipe (g)</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>None</u>
<u>Engine output energy (kWh)</u>	<u>1-17 and B</u>	<u>1-17 and B</u>	<u>1-17 and B</u>	<u>1-17</u>
<u>Distanced traveled (km)</u>	<u>1-17</u>	<u>1-17</u>	<u>1-17</u>	<u>1-17</u>
<u>Engine run time (hours)</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17</u>
<u>Total fuel consumption (liters)</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17, A, and B</u>	<u>1-17</u>

* * * *

(5.3.6) Pause conditions for tracking:

* * * *

(B) The OBD system shall pause tracking of all parameters listed in section (h)(5.3.1) within 10 seconds if any of the conditions in sections (h)(5.3.6)(B)(i) through (iii) below occur. When the condition no longer occurs (e.g., the engine stop lamp is not commanded on), tracking of all parameters in section (h)(5.3.1) shall resume within 10 seconds:

- (i) A malfunction of any component used to determine vehicle speed has been detected and the MIL is commanded on for that malfunction;
- (ii) A NOx sensor malfunction has been detected and the MIL is commanded on or a pending fault code is stored for that malfunction;
- (iii) The engine stop lamp (if equipped) is commanded on.

* * * *

(5.7) For each parameter specified in sections (h)(5.4), (h)(5.5), and (h)(5.6):

* * * *

(5.7.5) The OBD system shall pause tracking of all parameters listed in sections (h)(5.4), (5.5), and (5.6) within 10 seconds if any of the conditions in sections (h)(5.7.5)(A) through (C) below occur. When the condition no longer occurs (e.g., the engine stop lamp is not commanded on), tracking of all parameters in sections (h)(5.4), (5.5), and (5.6) shall resume within 10 seconds:

- (A) A malfunction of any component used to determine vehicle speed has been detected and the MIL is commanded on for that malfunction;
- (B) A NOx sensor malfunction has been detected and the MIL is commanded on or a pending fault code is stored for that malfunction; or
- (C) The engine stop lamp (if equipped) is commanded on.

* * * *

(5.9) Cold Start Emission Reduction Strategy Tracking Requirements

(5.9.1) For purposes of section (h)(5.9), the following terms shall be defined as follows:

* * * *

- (C) “Engine output energy”, in units of Joules (J) or Watts (W)*s, is defined by integrating brake engine power output over time, with:

“Brake engine power output” = 2π x (Brake engine torque) x (Engine RPM)/60 in units of W, and

“Brake engine torque” = (engine reference torque) x [(% indicated torque) - (% friction torque)].

* * * *

- (E) “Pre-SCR heat energy” is defined as the heat energy flow prior to the SCR over time, with:

“Heat energy flow prior to the SCR” = [heat capacity of exhaust gas (Cp)] x [exhaust mass flow (m_{exhaust})] x (temperature difference between SCR inlet and ambient) /1000. If the “temperature difference between SCR inlet and ambient” is a negative value, the manufacturer may use a value of zero for the “temperature difference between SCR inlet and ambient” in lieu of the negative value.

* * * *

(5.9.3) The parameters in section (h)(5.9.2) shall be stored in the two data types described below.

- (A) Current driving cycle data
- (B) Historical data, using an exponentially weighted moving average (EWMA) equation with lambda (λ) = 0.2 for calculation of the historical data, with the EWMA equation as follows:

$EWMA(t) = (1-\lambda)*EWMA(t-1) + \lambda*Y(t)$ (for $t = 1, 2, \dots, n$), where

EWMA(t) is the weighted mean of historical data (the current weighted moving average),

EWMA(t-1) is the weighted mean of historical data calculated one event prior to time t,

Y(t) is the observation at time t (~~i.e., the current driving cycle data described in section (h)(5.9.4)(A)),₁~~

n is the number of measurements, and

λ is a constant that determines the degree of weighting/filtering for the EWMA calculation.

- (5.9.4) The OBD system shall set the current driving cycle data (section ~~(gh)~~(5.9.3)(A)) for all parameters listed in section (h)(5.9.2) to zero if any parameter had not reached the condition required to stop incrementing before the end of the driving cycle (e.g., if the FTP catalyst light-off time is not achieved before the end of the driving cycle, the current driving cycle data for all parameters shall be set to zero). The OBD system may not use the zero values in the calculation of the historical data (section (h)(5.9.3)(B)).

* * * *

(7) *Exceptions to Standardization Requirements*

* * * *

- (7.2) For engines using SAE J1979-2:

* * * *

- (7.2.2) A manufacturer may request Executive Officer approval to meet the standardization requirements of section ~~(gh)~~ using an alternate scan tool that does not meet SAE J1978. The Executive Officer shall approve the request upon determining that the SAE J1978 specifications do not adequately accommodate the SAE J1979-2 specifications, and that the manufacturer has submitted information that demonstrate the alternate scan tool is able to access all information required for SAE J1979-2 engines and is able to perform all the functions in title 13, CCR section 1971.1 required for SAE J1978 tools and applicable to engines meeting SAE J1979-2.

* * * *

(i) *Monitoring System Demonstration Requirements for Certification.*

* * * *

(2) *Selection of Test Engines:*

* * * *

(2.3) Aging and data collection of diesel test engines:

* * * *

(2.3.4) For 2024 and subsequent through 2026 model year test engines:

(A) A manufacturer shall collect emission, deterioration and performance data from an actual high mileage system(s) (consisting of the engine, engine emission controls, and aftertreatment) to validate its accelerated aging process. The manufacturer shall collect the data from a system(s) that is the most representative of the system design to be certified and has a minimum actual mileage of full useful life. The manufacturer shall submit a plan for system selection, procurement, and data collection to the Executive Officer for approval prior to proceeding with the data collection. The Executive Officer shall approve the plan upon determining that the submitted description will result in the manufacturer gathering data necessary to quantify emission performance, system performance, and deterioration of the system elements in a manner that will allow comparison to deterioration and performance levels achieved with the manufacturer's accelerated aging process. The material and information used to validate a manufacturer's accelerated aging process shall include, but is not limited to, the following:

* * * *

(B) A manufacturer shall use a system (consisting of the engine, engine emission controls, aftertreatment) aged by an accelerated aging process which results in a representative full useful life system. Manufacturers are required to submit for Executive Officer approval a description of the accelerated aging process and data to support the accelerated aging process. The Executive Officer shall approve the process upon determining that the process includes (but is not limited to) the conditions under section (i)(2.3.4)(B)(i) through (vi) below, that the submitted description and data demonstrate that the aging process will result in a system representative of the manufacturer's best estimates of the system performance at full useful life, and that the manufacturer has utilized the data collected under section (i)(2.3.4)(A) to validate the correlation of the

aging process to actual high mileage systems up to a minimum of full useful life.

- (i) Minimum system (engine, engine emission controls, aftertreatment) accelerated aging process aging hours as specified below:
 - a. For heavy heavy-duty engines: 2,500 hours
 - b. For medium heavy-duty engines: 1,063 hours
 - c. For light heavy-duty engines: 632 hours
- (ii) Operation at rated horsepower.
- (iii) Operation at load levels greater than 80% of the rated torque, with sustained intervals at 100% of the rated torque.
- (iv) Operation over transient conditions (e.g., Mode 2 of FTP cycle).
- (v) The calculated number of regeneration events experienced over full useful life.
- (vi) Thermal cycling events (i.e., system shut down with a subsequent cold start). These thermal cycling events (i.e., shut down periods) shall not be included in the minimum aging hours specified in section (i)(2.3.4)(B)(i) above.

(C) For 2026 model year test engines, a manufacturer may elect to meet the requirements in (i)(2.3.5) in lieu of the requirements in sections (i)(2.3.4)(A) and (B).

(2.3.5) For 2027 and subsequent model year test engines, a manufacturer shall meet the requirements in either section (i)(2.3.5)(A) or (B) below:

(A) Except as provided below in (i)(2.3.5)(A)(i) and (i)(2.3.5)(C), the manufacturer shall follow the requirements specified in sections (i)(2.3.4)(A) and (i)(2.3.4)(B) above.

(i) In lieu of collecting emission, deterioration and performance data from an actual high-mileage system meeting the mileage requirements as stated in section (i)(2.3.4)(A) to validate its accelerated aging process, the manufacturer may elect to collect the data from a system used for manufacturer self-testing and meeting the mileage requirements as specified in title 13, CCR section 1971.5(c). If the manufacturer elects to use a system used for manufacturer self-testing, the manufacturer shall submit a plan for data collection to the Executive Officer for approval prior to proceeding with the data collection in lieu of a plan for system selection, procurement, and data collection as stated in section (i)(2.3.4)(A).

(B) The manufacturer shall use the accelerated aging process specified in 40 CFR 1036.245, as it existed on April 8, 2025, and incorporated by reference herein, and data collection requirements as follows:

- (i) For testing required in section (i)(3), the manufacturer shall use a system (consisting of the engine, engine emission controls, aftertreatment) aged by an accelerated aging process which results in a representative full useful life system using the procedure specified in 40 CFR 1036.245, as it existed on April 8, 2025, with the exception that in 40 CFR 1036.245(c)(6), the manufacturer shall use the accelerated bench-aging procedure in 40 CFR 1065.1131 through 1065.1145, as they existed on April 8, 2025. Accelerated aftertreatment system aging referenced in 40 CFR 1036.245 and fully defined in 40 CFR 1065.1131 through 1065.1145 shall include injectors (e.g., diesel exhaust fluid, hydrocarbon), aftertreatment monitoring sensors, and aftertreatment control sensors.
- (ii) Except as provided in section (i)(2.3.5)(C) below, the manufacturer shall collect emission, deterioration, and performance data from an actual high mileage system(s) (consisting of the engine, engine emission controls, and aftertreatment) or a system used for manufacturer self-testing as specified in title 13, CCR section 1971.5(c) to validate its accelerated aging process. If the manufacturer is using a system that is not used for manufacturer self-testing, the manufacturer shall submit a plan for system selection, procurement, and data collection to the Executive Officer for approval. If the manufacturer is using a system used for manufacturer self-testing, the manufacturer shall submit a plan for data collection to the Executive Officer for approval.
 - a. The data shall include a comparison between a representative full useful life system(s) and the accelerated aged engine of any and all adaptation/learning parameters associated with the feedback or feed-forward controls for the fuel system (e.g., fuel injection quantity and timing, fuel pressure), EGR system (e.g., EGR flow, EGR valve position), boost pressure control system (e.g., VGT position, turbine speed, manifold pressure), and DEF dosing system (e.g., DEF injection pressure, dosing quantity), implemented by the manufacturer to maintain emission control performance to the applicable emission certification standard over the life of the system. These data will not be used as criteria to approve the use of the accelerated aging process specified in section (i)(2.3.5)(B).

b. The Executive Officer shall approve the plan upon determining that the submitted description will result in the manufacturer gathering data necessary to quantify emission performance, system performance, and deterioration of the system elements in a manner that will allow comparison to deterioration and performance levels achieved with the manufacturer's accelerated aging process.

(C) The Executive Officer may waive the requirement for submittal of the plan and data required in sections (i)(2.3.5)(A) and (i)(2.3.5)(B) for an engine if the plan and data have been submitted for a previous model year, the aging method has not changed from the previous model year, and the calibrations and hardware of the test engine system for the current model year have not changed to the extent aging mechanisms are affected from the previous model year.

* * * *

(5) Evaluation Protocol:

(5.1) Full OBD engine ratings subject to sections (d)(7.1.1), (d)(7.2.2), or (d)(7.3) shall be evaluated according to the following protocol.

* * * *

(5.1.2) Except as provided in section (i)(5.1.2)(A) and (B) below, if the MIL illuminates prior to emissions exceeding the applicable emission threshold malfunction criteria specified in sections (e) through (g), no further demonstration is required. With respect to the misfire monitor demonstration test, if a manufacturer has elected to use the minimum misfire malfunction criteria of five or one percent as allowed in sections (e)(2.2.2) and (f)(2.2.2)(A), respectively, no further demonstration is required if the MIL illuminates with misfire implanted at the malfunction criteria limit.

(A) If the MIL illuminates prior to emissions exceeding the applicable emission threshold malfunction criteria specified in section (e) through (g) and a default fuel or emission control strategy is used when a malfunction is detected and the strategy is an AECD that is disclosed in the application for emissions certification (as required in Part 86, Subpart I, section 21 of the "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~through 2026 Model Heavy-Duty Diesel Engines And Vehicles" and Part I section 21 of the "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles," as incorporated by reference in section 1956.8(d), title 13, CCR, or in the "California Exhaust

Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains,” as incorporated by reference in section 1956.8.2(c), title 13, CCR), the test engine shall be retested with the system or component adjusted to the worst acceptable limit (i.e., the applicable monitor indicates the system or component's performance is passing but at the closest possible value relative to the monitor threshold value at which a fault would be detected that would invoke the default strategy and illuminate the MIL). The manufacturer may request the Executive Officer to accept test data when the system or component's performance is at the worst acceptable limit within a margin of error necessary to accommodate testing variability and/or other practical limitations in setting the performance at the absolute worst acceptable limit. The Executive Officer shall accept the test data upon determining that the test data adequately demonstrate that emissions do not exceed the applicable malfunction criteria at the tested worst acceptable limit and that emissions will not exceed the applicable emission threshold malfunction criteria before performance exceeds the monitor threshold for fault detection.

* * * *

(5.1.3) If the MIL does not illuminate when the system or component is set at its limit(s), the criteria limit or the OBD system is not acceptable.

(A) Except as provided for in section (i)(5.1.3)(C), if the MIL first illuminates after emissions exceed the applicable emission threshold malfunction criteria specified in sections (e) through (g), the test engine shall be retested with the tested system or component adjusted so that the MIL will illuminate without emissions exceeding the applicable emission threshold malfunction criteria specified in sections (e) through (g). If the system or component cannot be adjusted to meet this criterion because a default fuel or emission control strategy is used when a malfunction is detected (e.g., open loop fuel control used after an oxygen sensor malfunction is determined) and the strategy is an AECD that is disclosed in the application for emissions certification (as required in Part 86, Subpart I, section 21 of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines And Vehicles” and Part I section 21 of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles,” as incorporated by reference in section 1956.8(d), title 13, CCR, or in the “California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains,” as incorporated by reference in section 1956.8.2(c), title 13,

CCR), the test engine shall be retested with the system or component adjusted to the worst acceptable limit (i.e., the applicable monitor indicates the system or component's performance is passing but at the closest possible value relative to the monitor threshold value at which a fault would be detected that would invoke the default strategy and illuminate the MIL). The manufacturer may request the Executive Officer to accept test data when the system or component's performance is at the worst acceptable limit within a margin of error necessary to accommodate testing variability and/or other practical limitations in setting the performance at the absolute worst acceptable limit. The Executive Officer shall accept the test data upon determining that the test data adequately demonstrate that emissions do not exceed the applicable malfunction criteria at the tested worst acceptable limit and that emissions will not exceed the applicable emission threshold malfunction criteria before performance exceeds the monitor threshold for fault detection. For the catalyst (i.e., components monitored under sections (e)(5.2.2), (e)(6.2.1), (e)(7.2.1), and (f)(6.2.1)) and PM filter system (i.e., sections (e)(8.2.1) and (e)(8.2.4)(A)), these testing provisions under section (i)(5.1.3)(A) shall apply only if the on-board computer invokes a default fuel or emission control strategy upon detection of the relevant catalyst or PM filter malfunction. Otherwise, the provisions of section (i)(5.1.3)(B) shall apply to testing of the catalyst or PM filter system.

* * * *

(j) Certification Documentation.

* * * *

- (2) The following information shall be submitted as part of the certification application. Except as provided below for demonstration data, the Executive Officer will not issue an Executive Order certifying the covered engines without the information having been provided. The information must include:

* * * *

- (2.17) A checklist of all the malfunction criteria in sections (e), (f), and (g) and the corresponding diagnostic noted by fault code for each malfunction criterion. ~~The~~For checklists submitted before January 1, 2027, the manufacturer shall use the formats of the checklists detailed in Attachments G and H of ARB Mail-Out #MSC 09-22, July 7, 2009, incorporated by reference. For checklists submitted before January 1, 2027, the manufacturer may elect to use CARB form ECCD/OBD-119 "HD OBD Diesel Monitoring Requirements Checklist," July 2024, for diesel engines and ECCD/OBD-118 "HD OBD Gasoline Monitoring Requirements Checklist," July 2024, for gasoline engines, both

incorporated by reference. For checklists submitted on or after January 1, 2027, the manufacturer shall use CARB form ECCD/OBD-119 “HD OBD Diesel Monitoring Requirements Checklist,” July 2024, for diesel engines and ECCD/OBD-118 “HD OBD Gasoline Monitoring Requirements Checklist,” July 2024, for gasoline engines.

* * * *

(k) Deficiencies.

* * * *

- (3) The fines for engines specified in section (k)(2) above shall be as follows below in sections (k)(3.1) and (3.2). Fines are payable to the State Treasurer for deposit in the Air Pollution Control Fund. Except as provided below, a manufacturer shall submit the fines payment not more than 30 calendar days after the close of a calendar quarter. Within 30 days from the end of the calendar quarter, a manufacturer shall report the number of affected engines produced for sale in California during the quarter and submit the total payment for the engines produced for sale during that quarter. A manufacturer may request Executive Officer approval for an alternate payment schedule in lieu of the schedule described above. Executive Officer approval shall be based on the projected sales volume of the entire manufacturer product line, and the appropriateness and effectiveness of the schedule in paying the total fines in a timely manner.

* * * *

- (3.2) For 2024 and subsequent model year engines, except as provided below in section (k)(3.2.1), the fines are in the amount of \$100 per deficiency per engine for non-compliance with any of the monitoring requirements specified in sections (e), (f), and (g)(4), and \$50 per deficiency per engine for non-compliance with any other requirement of section 1971.1. In determining the identified order of deficiencies, deficiencies specified under section (k)(3.2.1) (except for two Emission Threshold 1 (ET1) deficiencies during the first model year the deficiencies are applied and one ET1 deficiency during the second model year the deficiency is applied) shall not be included, and deficiencies subject to \$100 are identified first. Total fines per engine under section (k) may not exceed \$600 per engine for 2024 model year engines, \$800 per engine for 2025 model year engines, \$1000 per engine for 2026 model year engines, and \$1250 per engine for 2027 and subsequent model year engines.

- (3.2.1) For deficiencies regarding monitors not detecting a malfunction before emissions exceeded the malfunction criteria defined in sections (e) through (g), the fines are in the amount described in Table 42 below. Except for two ET1 deficiencies during the first model year the deficiencies

are applied and one ET1 deficiency during the second model year the deficiency is applied, the deficiencies shall not be included in the count of deficiencies used in (k)(2) to determine the number of deficiencies subject to fines.

Table 12

		<i>Applicable Model Year (MY) for Deficiency</i>			
Deficiency Type	Threshold Exceedance (% of malfunction criteria)	1st MY	2nd MY (1 MY carryover)	3rd MY (2 MY carryover)	4th MY (3 MY carryover)
ET1	100 - 120	Free for 2 ET1, \$100 for all other ET1	Free for 1 ET1, \$100 for all other ET1	\$150	\$200
ET2	121-150	\$200	\$200	\$250	\$300
ET3	151-200	\$300	\$300	\$350	\$400

* * * *

(I) *Production Engine/Vehicle Evaluation Testing.*

(1) *Verification of Standardized Requirements.*

* * * *

(1.4) Required Testing:

* * * *

(1.4.3) The testing shall further verify that the following information can be properly communicated to any SAE J1978/J1939 scan tool:

* * * *

(E) An emission-related fault code (permanent, confirmed, pending, MIL-on, and previously MIL-on) in accordance with SAE J1979/J1979-2/J1939-73 (including correctly indicating the number of stored fault codes and MIL command status (e.g., Mode/Service \$01, PID \$01, Data A for SAE J1979, Service \$22, PID \$F501 for SAE J1979-2, or J1939/73 Diagnostic

Message 1)) and section (h)(4.4) for each diagnostic ~~and~~or emission critical electronic ~~powertrain~~ control unit;

* * * *

(1.5) Reporting of Results:

(1.5.1) The manufacturer shall submit to the Executive Officer all information described in sections (I)(1.5.1)(A) through (C), except for the test log files, in one report for each engine model year. The report shall be one single file for each engine model year and shall include the information for all testing completed in that specific engine model year. The manufacturer shall update the report for each new test within the deadlines described below. For reports submitted on or after January 1, 2027, the manufacturer shall submit the information using CARB form ECCD/OBD-127 "HD OBD PEVE L1 Template," September 2023, incorporated by reference. The manufacturer shall submit the test log files described in sections (I)(1.5.1)(A) and (B) to the Executive Officer separately from the report described above.

* * * *

(2) *Verification of Monitoring Requirements.*

* * * *

(2.4) Reporting of Results:

(2.4.1) Manufacturers shall submit a report of the results of all testing conducted pursuant to section (I)(2) to the Executive Officer for review. This report shall identify the method used to induce a malfunction in each diagnostic, the MIL illumination status, and the fault code(s) stored. The report shall also include all the information described in section (I)(2.4.2). For reports submitted on or after January 1, 2027, the manufacturer shall submit the information using CARB form ECCD/OBD-128 "HD OBD PEVE L2 Template," August 2023, incorporated by reference.

* * * *

(n) *How to Submit Required Information.*

- (1) Wherever section 1971.1 requires manufacturers to submit information to the Executive Officer, the manufacturer may send the information through eFILE@arb.ca.gov ~~the electronic documentation system at this website:~~
~~<https://ww2.arb.ca.gov/certification-document-management-system>.~~

NOTE: Authority cited: Sections 38501, 38510, 39010, 39600, 39601, 39602.5, 43000.5, 43013, 43018, 43100, 43101, 43104, 43105, 43105.5 and 43106, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 39002, 39003, 39010, 39018, 39021.5, 39024, 39024.5, 39027, 39027.3, 39028, 39029, 39031, 39032, 39032.5, 39033, 39035, 39037.05, 39037.5, 39038, 39039, 39040, 39042, 39042.5, 39046, 39047, 39053, 39054, 39058, 39059, 39060, 39515, 39600, 39601, 39602.5, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211 and 43212, Health and Safety Code.

§ 1971.5. Enforcement of Malfunction and Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines.

* * * *

(a) General.

* * * *

(3) Definitions.

The definitions applicable to these rules include those set forth in Health and Safety Code section 39010 et seq. and in Cal. Code Regs., title 13, section 1900(b) and section 1971.1(c), which are incorporated by reference herein. The following definitions are specifically applicable to section 1971.5 and take precedence over any contrary definitions.

* * * *

“Executive Officer” means the Executive Officer of ARB or his or her authorized representative.

“Heavy Heavy-Duty Engine” is defined in Cal. Code Regs., title 13, section 1956.8(j) or 1956.8.2, whichever is applicable.

“Influenced OBD-Related Recall” means an inspection, repair, adjustment, or modification program initiated and conducted by a manufacturer as a result of enforcement testing conducted by the ARB or any other information for the purpose of correcting any nonconforming OBD system for which direct notification of vehicle or engine owners is necessary.

“Light Heavy-Duty Engine” is defined in Cal. Code Regs., title 13, section 1956.8(j) or 1956.8.2, whichever is applicable.

“Major Monitor” means those monitors covered by the requirements set forth in Cal. Code Regs., title 13, section 1971.1(e), (f), and (g)(4).

“Medium Heavy-Duty Engine” is defined in Cal. Code Regs., title 13, section 1956.8(j) or 1956.8.2, whichever is applicable.

* * * *

(b) Testing Procedures for ARB-Conducted Testing.

* * * *

(4) Enforcement Testing Procedures.

* * * *

(B) OBD Emission Testing. After the test sample group has been selected and procured, the Executive Officer may perform one or more of the following tests:

- (i) Emission testing with the test procedures used by the Executive Officer for in-use testing of compliance with exhaust emission standards in accordance with Cal. Code Regs., title 13, ~~section~~sections 1956.8(b) and (d)-) or 1956.8.2, whichever is applicable.

* * * *

(6) Finding of Nonconformance after Enforcement Testing.

After conducting enforcement testing pursuant to section (b)(4) above, the Executive Officer shall make a finding of nonconformance of the OBD system in the identified engine class under the respective tests for the applicable model year(s) as follows:

(A) OBD Emission Testing.

* * * *

- (iv) For 2019 and subsequent model year engines (except as provided for alternate-fueled engines in section (b)(6)(A)(v) below), any engine shall be considered nonconforming if the results of the tests indicate that 50 percent or more of the engines in the test sample do not properly illuminate the MIL when emissions exceed the following:
 - a. For deficient emission threshold monitors, any of the applicable following thresholds: (1) 20 percent of the NMHC, CO, or NO_x emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, (2) 20 percent of the PM malfunction criterion (e.g., 0.0060 g/bhp-hr if the PM malfunction criterion is 0.03 g/bhp-hr) above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, or (3) the applicable emission level for mandatory recall under section (d)(3)(A)(ii).
 - b. For all other component/system monitors not mentioned in section (b)(6)(A)(iv)a. above, the malfunction criteria on any of the applicable standards (i.e., FTP or SET).

- c. For engines certified to an FTP NO_x emission standard of 0.10 g/bhp-hr or lower, for criterion (1) under section (b)(6)(A)(iv)a. above, in lieu of 20 percent of the NO_x emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, the criterion shall be 0.04 g/bhp-hr above the NO_x emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer.
 - d. For engines certified to an FTP NMHC emission standard of 0.140 g/bhp-hr or lower, for criterion (1) under section (b)(6)(A)(iv)a. above, in lieu of 20 percent of the NMHC emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, the criterion shall be 0.028 g/bhp-hr above the NMHC emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer.
 - e. For engines certified to an FTP CO emission standard of 15.5 g/bhp-hr or lower for diesel/compression-ignition engines or 14.4 g/bhp-hr or lower for gasoline/spark-ignited engines, for criterion (1) under section (b)(6)(A)(iv)a. above, in lieu of 20 percent of the CO emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, the criterion shall be 3.1 g/bhp-hr above the CO emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer for diesel/compression-ignition engines, and 2.88 g/bhp-hr above the CO emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer for gasoline/spark-ignited engines.
- (v) For alternate-fueled engines, any engine shall be considered nonconforming if the results of the tests indicate that 50 percent or more of the engines in the test sample do not properly illuminate the MIL when emissions exceed the following:

* * * *

b. For 2022 and subsequent model year engines:

1. For deficient emission threshold monitors, any of the applicable following thresholds: (1) 20 percent of the NMHC, CO, or NO_x emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, (2) 20 percent of the PM malfunction criterion (e.g., 0.0060 g/bhp-hr if the PM malfunction criterion is 0.03 g/bhp-hr) above the emission level at which a malfunction was detected

when the OBD system was approved by the Executive Officer, or
(3) the applicable emission level for mandatory recall under section
(d)(3)(A)(ii).

2. For all other component/system monitors not mentioned in section (b)(6)(A)(v)b.1. above, the malfunction criteria on any of the applicable standards (i.e., FTP or SET).
3. For engines certified to an FTP NO_x emission standard of 0.10 g/bhp-hr or lower, for criterion (1) under section (b)(6)(A)(v)b.1. above, in lieu of 20 percent of the NO_x emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, the criterion shall be 0.04 g/bhp-hr above the NO_x emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer.
4. For engines certified to an FTP NMHC emission standard of 0.140 g/bhp-hr or lower, for criterion (1) under section (b)(6)(A)(v)b.1. above, in lieu of 20 percent of the NMHC emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, the criterion shall be 0.028 g/bhp-hr above the NMHC emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer.
5. For engines certified to an FTP CO emission standard of 15.5 g/bhp-hr or lower for diesel/compression-ignition engines or 14.4 g/bhp-hr or lower for gasoline/spark-ignited engines, for criterion (1) under section (b)(6)(A)(v)b.1. above, in lieu of 20 percent of the CO emission standard above the emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer, the criterion shall be 3.1 g/bhp-hr above the CO emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer for diesel/compression-ignition engines, and 2.88 g/bhp-hr above the CO emission level at which a malfunction was detected when the OBD system was approved by the Executive Officer for gasoline/spark-ignited engines.

* * * *

(c) Manufacturer Self-Testing.

* * * *

(2) *Engine Selection for Manufacturer Self-Testing.*

* * * *

(C) Engines to be included in test sample group.

- (i) In selecting engines to be included in a test sample group for manufacturer self-testing, the manufacturer shall include only engines that:

* * * *

c. ~~Have~~ For 2010 through 2026 model year engines, have mileage that is between 70 to 100 percent of the certified full useful life mileage and an age of less than the certified full useful life age for the subject engines. For 2027 and subsequent model year engines, have the mileage and age as listed below:

1. For diesel/compression-ignition heavy heavy-duty engines, have mileage that is between 60 to 100 percent of the certified full useful life mileage and an age of less than the certified full useful life age for the subject engines.
2. For diesel/compression-ignition medium heavy-duty engines, have mileage that is between 55 to 100 percent of the certified full useful life mileage and an age of less than the certified full useful life age for the subject engines.
3. For diesel/compression-ignition light heavy-duty engines, have mileage that is between 50 to 100 percent of the certified full useful life mileage and an age of less than the certified full useful life age for the subject engines.
4. For gasoline/spark-ignited engines, have mileage that is between 50 to 100 percent of the certified full useful life mileage and an age of less than the certified full useful life age for the subject engines.

* * * *

- (iii) Upon request of the manufacturer, the Executive Officer may approve an alternate engine selection criterion in lieu of a criterion described in sections (c)(2)(A) and (c)(2)(C)(i) above.

- a. The manufacturer may request Executive Officer approval to procure an engine that has mileage that is below ~~70 percent~~ the percentage of the certified full useful life mileage ~~in lieu of the criterion~~ specified in section (c)(2)(C)(i)c. above. The Executive Officer shall approve the use of the engine upon determining that the manufacturer-submitted plan

demonstrates that the engine will produce equivalent results to an engine with mileage that ~~is between 70 to 100 percent~~ meets the percentage of the certified full useful life mileage specified in section (c)(2)(C)(i)c. The plan may involve the manufacturer operating the vehicle to accumulate more mileage on the engine, requesting ~~an~~ extension in the deadline set forth in section (c)(3)(A) below to allow for more mileage accumulation on the engine, and/or providing data showing operating hours-to-mileage equivalency. The plan may not involve the manufacturer operating the engine on a dynamometer to accumulate operating hours for the purposes of showing operating hours-to-mileage equivalency.

* * * *

(3) Compliance/Enforcement Testing Procedures.

~~(A) Within~~ (A) For 2010 through 2026 model year engines, within three calendar years after the model year of the engine (e.g., by the end of calendar year 2013 for a 2010 model year engine), the engine manufacturer shall complete the testing required under section (c)(3). For 2027 and subsequent model year engines, within four calendar years after the model year of the engine (e.g., by the end of calendar year 2031 for a 2027 model year engine), the engine manufacturer shall complete the testing required under section (c)(3). Prior to conducting any testing under section (c)(3), the engine manufacturer shall notify the Executive Officer of the sales volume, the applicable running changes, and the applicable field fixes for each engine group with a unique OBD system calibration within the selected test engine rating. The Executive Officer will then select the specific OBD system calibration that the manufacturer shall use on the test engine during testing under section (c)(3).

* * * *

(6) Manufacturer Reporting of Self-Testing Results to the Executive Officer.

(A) Within 30 days after completing the testing under section (c)(3), the manufacturer shall submit a report of the results of all the testing to the Executive Officer for review. If further testing is required under section (c)(4), an additional report shall be submitted within 30 days of completing the additional testing. For reports submitted on or after January 1, 2027, the manufacturer shall submit the report using CARB form ECCD/OBD-126 "MST Template," February 2023, incorporated by reference. The report(s) must include the following:

* * * *

(d) Remedial Action.

* * * *

(3) Ordered Remedial Action-Mandatory Recall.

- (A) Except as provided in sections (d)(3)(B) below, the Executive Officer shall order the recall and repair of all engines in an engine class that have been determined to be equipped with a nonconforming OBD system if enforcement testing conducted pursuant to sections (b) or (c) above or information received from the manufacturer indicates that:

* * * *

- (vii) The engine class cannot be tested so as to obtain valid test results in accordance with the criteria identified in section (b)(6)(C)(ii) due to the nonconforming OBD system, except for the following:

a. Diesel comprehensive component readiness bit (Cal. Code Regs., title 13, section 1971.1 (h)(4.1.2)(B)(xiv)) for 2030 and earlier model year engines that use SAE J1979-2.

b. Gasoline comprehensive component readiness bit (Cal. Code Regs., title 13, section 1971.1 (h)(4.1.2)(B)(xxvii)) for 2030 and earlier model year engines that use SAE J1979-2.

* * * *

(e) Requirements for Implementing Remedial Actions.

* * * *

(3) Notice to Owners.

* * * *

- (C) The notice must contain the following:

* * * *

- (viii) A card to be used by a vehicle or engine owner in the event the vehicle or engine to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle or engine was sold or transferred. For 2027 and subsequent model year engines, manufacturers may obtain new owner information electronically or using the post card with postage paid.

(ix) If the remedial action involves recall, the notice must also provide:

* * * *

d. A statement that after remedial action has been taken, the manufacturer will have the service facility issue a certificate showing that the engine has been corrected under the recall program, and that such a certificate will be required to be provided to the Department of Motor Vehicles as a condition for vehicle registration.

e. For 2027 and subsequent model year engines, notification letters must inform owners that they will not receive a proof of correction certificate if a recall repair is performed over-the-air during the first six months of the recall. If the recall repair is performed after the first six months, a proof of correction certificate will be provided in person or through the mail.

* * * *

(5) Proof of Performance of Remedial Action Certificate.

If the required remedial action involves a recall, the manufacturer shall provide, through its service agents, to owners of vehicles or engines that have had the remedial action performed a certificate that confirms that the engine has been recalled and that required inspection and/or repairs have been performed. The Executive Officer shall prescribe a format for the certificate, which shall be consistent with the format required in Cal. Code Regs., title 13, section 2117 and section 2129. For 2027 and subsequent model year engines, manufacturers are not required to provide a proof of correction certificate to vehicle and engine owners that have the recall repair performed over-the-air during the first six months of a recall.

* * * *

NOTE: Authority cited: Sections 38501, 38510, 39010, 39600, 39601, 39602.5, 43000.5, 43013, 43016, 43018, 43100, 43101, 43104, 43105, 43105.5, 43106, 43154, 43211 and 43212, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 39002, 39003, 39010, 39018, 39021.5, 39024, 39024.5, 39027, 39027.3, 39028, 39029, 39031, 39032, 39032.5, 39033, 39035, 39037.05, 39037.5, 39038, 39039, 39040, 39042, 39042.5, 39046, 39047, 39053, 39054, 39058, 39059, 39060, 39515, 39600, 39601, 39602.5, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211 and 43212, Health and Safety Code.

§ 2035. Purpose, Applicability, and Definitions.

* * * *

(a) Purpose.

The purpose of this article is to interpret and make specific the statutory emissions warranty set forth in Health and Safety Code sections 43205 and 43205.5 by clarifying the rights and responsibilities of individual motor vehicle, motor vehicle engine, and trailer owners; motor vehicle, motor vehicle engine, trailer manufacturers, and optionally certified hybrid powertrain manufacturers; and the service industry.

(b) *Applicability*.

This article shall apply to:

(1) (A) California-certified 1979 and subsequent model motorcycles, passenger cars, light-duty trucks, and medium-duty vehicles, registered in California, regardless of their original point of registration;

(B) California-certified 1979 through 2026 model heavy-duty vehicles registered in California, regardless of their original point of registration;

(C) California-certified 2027 and subsequent model heavy-duty vehicles, regardless of whether they are registered in California

(D) California-certified 2022 through 2026 model heavy-duty hybrid vehicles greater than 14,000 pounds GVWR, or 2022 through 2026 model incomplete hybrid vehicles from 10,001 to 14,000 pounds GVWR, which are equipped with hybrid powertrains optionally certified pursuant to 13 CCR § 1956.8, registered in California, regardless of their original point of registration; and

(E) California-certified 2027 and subsequent model heavy-duty hybrid vehicles greater than 14,000 pounds GVWR, or 2027 and subsequent model ~~incomplete~~ hybrid vehicles from 10,001 to 14,000 pounds GVWR, which are equipped with 2027 and subsequent model hybrid powertrains ~~optionally~~ certified pursuant to 13 CCR § 1956.82, regardless of whether they are registered in California, and

(2) California-certified motor vehicle engines used in such vehicles; and

(3) California-certified 2020 and subsequent model trailers certified in accordance with the provisions of section 95663(c), title 17, California Code of Regulations, regardless of whether they are registered in California.

(c) *Definitions*.

For the purposes of this article, the following definitions shall apply:

(1) "Trailer" means the same definition as that in section 95662(a), title 17, California Code of Regulations.

(2) "Warrantable condition" means any condition of a vehicle, engine, or trailer which triggers the responsibility of the manufacturer to take corrective action pursuant to sections 2036, 2037, ~~or 2038~~, or 2039.

(3) "*Warranted Part*" means:

(A) In the case of 1979 through 1989 model year passenger cars, light-duty trucks, and medium-duty vehicles, 1979 and later model year motorcycles and heavy-duty vehicles, except those medium and heavy-duty vehicles in subparagraphs (c)(3)(D) and (c)(3)(E) of this section, and 1990 and subsequent model year passenger cars, light-duty trucks, and medium duty vehicles produced before January 24, 1991, any emission-related part installed on a motor vehicle or motor vehicle engine by the vehicle or engine manufacturer, or installed in a warranty repair, which is included on the "Emissions Warranty Parts List" required by section 2036(f) and approved for the vehicle or engine by the Executive Officer.

(B) In the case of 1990 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles other than those identified in subparagraph (A) of this definition, any part installed on a motor vehicle or motor vehicle engine by the vehicle or engine manufacturer, or installed in a warranty repair, which affects any regulated emission from a motor vehicle or engine which is subject to California emission standards.

(C) In the case of heavy-duty vehicles certified to the GHG emission standards of section 95663, title ~~7417~~, any part included in 40 CFR 1037.120, as amended October 25, 2016, which is incorporated by reference herein.

(D) In the case of 2022 through 2027 model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2022 through 2026 model year heavy-duty diesel engines certified on only diesel fuel, and the 2022 through 2026 model year heavy-duty diesel engines certified on only diesel fuel in such vehicles, any part:

1. that affects any regulated emission of criteria pollutants from a motor vehicle or motor vehicle engine that is subject to California emission standards, including those parts, at a minimum, that are contained in the "Emissions Warranty Parts List" required by section 2036(f), and

2. that is installed on a motor vehicle or motor vehicle engine by the vehicle or engine manufacturer, or in a warranty repair.

(E) In the case of 2027 and subsequent model year heavy-duty vehicles greater than 14,000 pounds GVWR that are equipped with 2027 and subsequent model year heavy-duty engines, and the 2027 and subsequent model year heavy-duty engines used in such vehicles, any part:

1. that affects any regulated emission of criteria pollutants from a motor vehicle or motor vehicle engine that is subject to California emission standards, including those parts, at a minimum, that are contained in the “Emissions Warranty Parts List” required by section 2036(f), and

2. that is installed on a motor vehicle or motor vehicle engine by the vehicle or engine manufacturer, or in a warranty repair.

(F) In the case of 2022 ~~and subsequent~~through 2027 model year heavy-duty hybrid vehicles greater than 14,000 pounds GVWR, or 2022 ~~and subsequent~~through 2027 model year incomplete hybrid vehicles from 10,001 to 14,000 pounds GVWR, which are equipped with 2022 ~~and subsequent~~through 2026 model year hybrid powertrains optionally certified pursuant to 13 CCR § 1956.8, and the 2022 ~~and subsequent~~through 2026 model year hybrid powertrains used in such vehicles, any part:

1. that affects any regulated emission of criteria pollutants from a hybrid vehicle or hybrid powertrain that is subject to California emission standards, including, but not limited to, electric motor-generator system, hybrid rechargeable energy storage system, battery management system, including charge controller and thermal management systems and associated power electronics, and including those parts, at a minimum, that are contained in the “Emissions Warranty Parts List” required by section 2036(f), and

2. that is installed on a hybrid vehicle or hybrid powertrain by the hybrid vehicle or hybrid powertrain manufacturer, or in a warranty repair.

(G) In the case of 2020 and subsequent model year trailers certified to the GHG emission standards of section 95663(c), title 17, CCR, any part included in 40 CFR 1037.120, as amended October 25, 2016, which is incorporated by reference herein.

(H) In the case of 2027 and subsequent model year heavy-duty hybrid powertrains used in vehicles greater than 10,000 pounds GVWR, which are certified pursuant to title 13, CCR, section 1956.8.2, any part:

1. that affects any regulated emission of criteria pollutants from a hybrid vehicle or hybrid powertrain that is subject to California emission standards, including, but not limited to, electric motor-generator system, hybrid rechargeable energy storage system, battery management system, including charge controller and thermal management systems and associated power electronics, and including those parts, at a minimum, that are contained in the "Emissions Warranty Parts List" required by title 13, CCR, section 2036(f), and

2. that is installed on a hybrid vehicle or hybrid powertrain by the hybrid vehicle or hybrid powertrain manufacturer, or in a warranty repair.

(4) "Warranty period" means the period of time and mileage that the vehicle, engine, trailer, or part are covered by the warranty provisions.

(5) "Warranty station" means a service facility authorized by the vehicle or engine, or trailer manufacturer to perform warranty repairs. This shall include all of the manufacturer's dealerships which are franchised to service the subject vehicles, engines, or trailers.

(6) "Vehicle, engine, or trailer manufacturer" means the manufacturer granted certification for a motor vehicle, motor vehicle engine, or trailer. In the case of motor vehicles for which certification of the exhaust and evaporative emissions control systems is granted to different manufacturers, the warranty responsibility shall be assigned accordingly.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43205 and 43205.5 Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 43106, 43204, 43205 and 43205.5, Health and Safety Code.

§ 2036. Defects Warranty Requirements for 1979 Through 1989 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles; 1979 and Subsequent Model Motorcycles and Heavy-Duty Vehicles; and Motor Vehicle Engines Used in Such Vehicles; and 2020 and Subsequent Model Year Trailers.

* * * *

(a) Applicability.

This section shall apply to 1979 through 1989 model passenger cars, light-duty trucks, and medium-duty vehicles; 1979 and subsequent model motorcycles and heavy-duty vehicles; motor vehicle engines used in such vehicles; 2020 and subsequent model year trailers certified to the GHG emission standards of section 95663(c), title 17, CCR; ~~and 2022 and subsequent model year heavy-duty hybrid vehicles, or 2022 and subsequent model year incomplete hybrid vehicles from 10,001 to 14,000 pounds GVWRs, equipped with 2022 and subsequent model year through 2026 model year~~ hybrid powertrains optionally certified pursuant to 13 CCR § 1956.8, and 2027 and subsequent model year heavy-duty hybrid powertrains used in such vehicles certified pursuant to title 13, CCR, section 1956.8.2. The warranty period shall begin on the date the vehicle or trailer is delivered to an ultimate purchaser, or if the vehicle or trailer is first placed in service as a “demonstrator” or “company” car prior to delivery, on the date it is first placed in service.

(b) General Emissions Warranty Coverage.

The manufacturer of each motor vehicle, motor vehicle engine, or trailer shall warrant to the ultimate purchaser and each subsequent purchaser that the vehicle, engine, or trailer is:

(1) Designed, built, and equipped so as to conform, at the time of sale, with all applicable regulations adopted by the Air Resources Board pursuant to its authority in chapters 1 and 2, part 5, division 26 of the Health and Safety Code and part 1, division 25.5 of the Health and Safety Code; and

(2) Free from defects in materials and workmanship which cause the failure of a warranted part to be identical in all material respects to that part as described in the vehicle, engine, or trailer manufacturer's application for certification. In addition, for the vehicles specified below in subparagraphs (A) through (C), the manufacturer shall warrant such vehicles are free from defects in materials and workmanship which cause the vehicle's on-board diagnostic malfunction indicator light to illuminate.

(A) for 2022 through 2027 model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2022 through 2026 model year heavy-duty diesel engines certified on only diesel fuel, and 2022 through 2026 model year heavy-duty diesel engines certified on only diesel fuel used in such vehicles.

(B) for 2027 and subsequent model year heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2027 and subsequent model year heavy-duty engines, and 2027 and subsequent model year heavy-duty engines used in such vehicles; and

(C) for 2022 and subsequent model year heavy-duty hybrid powertrains used in vehicles greater than 14,000 pounds GVWR, which are certified pursuant to title 13, CCR, section 1956.8 or 1956.8.2, as applicable; or 2022 and subsequent through 2026 model year incomplete-hybrid powertrains used in vehicles from 10,001 to 14,000 pounds GVWR, which are equipped with 2022 and subsequent model year hybrid powertrains optionally certified pursuant to 13 CCR § 1956.8, any defects in materials or workmanship which cause the vehicle's on-board diagnostic malfunction indicator light certified pursuant to illuminate title 13, CCR, section 1956.8.

(c) Warranty Period.

The warranty period applicable to this section shall be:

* * * *

(4)(A) In the case of diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2021 and prior model year motor vehicle engines, and motor vehicle engines used in such vehicles, a period of use of five years, 100,000 miles, or 3000 hours of operations, whichever first occurs. However, in no case may this period be less than the basic mechanical warranty that the manufacturer provides (with or without additional charge) to the purchaser of the engine. Extended warranties on select parts do not extend the emissions warranty requirements for the entire engine but only for those parts. In cases where responsibility for an extended warranty is shared between the owner and the manufacturer, the emissions warranty shall also be shared in the same manner as specified in the warranty agreement.

(B) In the case of 2022 through 2027 model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2022 through 2026 model year motor vehicle heavy-duty diesel engines, and the 2022 through 2026 model year heavy-duty diesel engines used in such vehicles, the first occurring of either a period of use of five years, or:

110,000 miles for heavy-duty vehicles with engines certified as light heavy-duty engines;

150,000 miles for heavy-duty vehicles with engines certified as medium heavy-duty engines;

350,000 miles for heavy-duty vehicles with engines certified as heavy heavy-duty engines.

However, in no case may these periods be less than the basic mechanical warranty that the manufacturer provides (with or without additional charge) to the purchaser of the engine. Extended warranties on select parts do not extend the emissions warranty requirements for the entire engine but only for those parts. In cases where responsibility for an extended warranty is shared between the owner and the manufacturer, the portion of the emissions warranty extending beyond the minimum mileages listed above shall also be shared in the same manner as specified in the warranty agreement.

The warranty periods in this subparagraph (c)(4)(B) apply only to:

1. warranted parts that affect the regulated emissions of criteria pollutants, as defined in section 2035(c)(23)(D), title 13, CCR, and

2. heavy-duty vehicles with engines certified on only diesel fuel, including engines that have concurrent applications in both dedicated diesel-fueled vehicles and hybrid vehicles.

The warranty periods in subparagraph (c)(4)(A) of this section continue to apply to 2022 through 2027 model year heavy-duty vehicles equipped with 2022 through 2026 model year engines certified to the diesel standards of section 1956.8, title 13, CCR, using alternative fuels (e.g., liquefied or compressed natural gas); with engines certified for use in hybrid vehicles exclusively; and with engines certified for use in dual fuel vehicles; and to heavy-duty vehicles powered with fuel cells.

(C) In the case of 2027 ~~through 2034~~ and subsequent model year ~~diesel-powered~~ heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2027 ~~through 2030~~ and subsequent model year ~~motor vehicle~~ heavy-duty ~~diesel~~ compression-ignition engines, and the 2027 ~~through 2030~~ and subsequent model year heavy-duty ~~diesel~~ compression-ignition engines used in such vehicles, the first occurring of a period of use of ~~seventeen~~ ten years, or:

~~450~~ 210,000 miles or ~~7~~ 10,000 hours for heavy-duty vehicles with engines certified as light heavy-duty engines;

~~220~~ 280,000 miles or ~~44~~ 14,000 hours for heavy-duty vehicles with engines certified as medium heavy-duty engines;

450,000 miles or 22,000 hours for heavy-duty vehicles with engines certified as heavy heavy-duty engines.

However, in no case may these periods be less than the basic mechanical warranty that the manufacturer provides (with or without additional charge) to the purchaser of the engine. Extended warranties on select parts do not extend the emissions warranty requirements for the entire engine but only for those parts. In cases where responsibility for an extended warranty is shared between the owner and the

manufacturer, the portion of the emissions warranty extending beyond the minimum mileages listed above shall also be shared in the same manner as specified in the warranty agreement.

The hour periods are effective as limits to warranty only when an accurate hours meter is provided by the engine manufacturer and is reasonably expected to operate properly over the useful life of the engine. The hours meter shall not count standby-idle time (key-on, engine off) as engine operating time for purposes of identifying the end of the warranty period, such as on a vehicle equipped with stop-start technology.

The warranty periods in this subparagraph (c)(4)(C) apply only to:

1. warranted parts that affect the regulated emissions of criteria pollutants, as defined in section 2035(c)(2)(D)(E), title 13, CCR, and

2. heavy-duty vehicles with engines certified to the diesel-cycle compression-ignition standards of section 1956.8, title 13, CCR, including engines that have concurrent applications in both dedicated internal combustion vehicles and hybrid vehicles.

~~(D) In the case of 2031 and subsequent model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR that are equipped with 2031 and subsequent model year motor vehicle heavy-duty diesel engines, and the 2031 and subsequent model year heavy-duty diesel engines used in such vehicles, the first occurring of a period of use of 10 years, or:~~

~~210,000 miles or 10,000 hours for heavy-duty vehicles with engines certified as light heavy-duty engines;~~

~~280,000 miles or 14,000 hours for heavy-duty vehicles with engines certified as medium heavy-duty engines;~~

~~600,000 miles or 30,000 hours for heavy-duty vehicles with engines certified as heavy heavy-duty engines.~~

~~However, in no case may these periods be less than the basic mechanical warranty that the manufacturer provides (with or without additional charge) to the purchaser of the engine. Extended warranties on select parts do not extend the emissions warranty requirements for the entire engine but only for those parts. In cases where responsibility for an extended warranty is shared between the owner and the manufacturer, the portion of the emissions warranty extending beyond the minimum mileages listed above shall also be shared in the same manner as specified in the warranty agreement.~~

~~The hour periods are effective as limits to warranty only when an accurate hours meter is provided by the engine manufacturer and is reasonably expected to operate properly over the useful life of the engine. The hours meter shall not count standby-idle time~~

~~(key-on, engine off) as engine operating time for purposes of identifying the end of the warranty period, such as on a vehicle equipped with stop-start technology.~~

~~The warranty periods in this subparagraph (c)(4)(D) apply only to;~~

~~1. warranted parts that affect the regulated emissions of criteria pollutants, as defined in section 2035(c)(2)(D), title 13, CCR, and~~

~~2. heavy-duty vehicles with engines certified to the diesel-cycle standards of section 1956.8, title 13, CCR, including engines that have concurrent applications in both dedicated internal combustion vehicles and hybrid vehicles.~~

* * * *

(8)(A) In the case of heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2026 and prior model year motor vehicle engines, and motor vehicle engines used in such vehicles, (except for diesel-powered heavy-duty vehicles, and motor vehicle engines used in such vehicles), a period of use of five years or 50,000 miles, whichever first occurs. However, in no case may this period be less than the basic mechanical warranty period that the manufacturer provides (with or without additional charge) to the purchaser of the engine. Extended warranties on select parts do not extend the emissions warranty requirements for the entire engine but only for those parts. In cases where responsibility for an extended warranty is shared between the owner and the manufacturer, the emissions warranty shall also be shared in the same manner as specified in the warranty agreement.

(B) Reserved.

(C) In the case of 2027 ~~through 2034~~ and subsequent model year heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2027 ~~through 2030~~ and subsequent model year ~~motor vehicle~~ heavy-duty spark-ignition engines, and the 2027 ~~through 2030~~ and subsequent model year heavy-duty spark-ignition engines used in such vehicles, ~~(except for diesel-powered heavy-duty vehicles, and motor vehicle engines used in such vehicles),~~ a period of use of ~~seventeen~~ ten years, ~~110~~ 160,000 miles, or ~~68~~,000 hours, whichever first occurs.

However, in no case may these periods be less than the basic mechanical warranty that the manufacturer provides (with or without additional charge) to the purchaser of the engine. Extended warranties on select parts do not extend the emissions warranty requirements for the entire engine but only for those parts. In cases where responsibility for an extended warranty is shared between the owner and the manufacturer, the portion of the emissions warranty extending beyond the minimum mileages listed above shall also be shared in the same manner as specified in the warranty agreement.

The hour period is effective as a limit to warranty only when an accurate hours meter is provided by the engine manufacturer and is reasonably expected to operate properly over the useful life of the engine. The hours meter shall not count standby-idle time (key-on, engine off) as engine operating time for purposes of identifying the end of the warranty period, such as on a vehicle equipped with stop-start technology.

The warranty period in this subparagraph (c)(8)(C) applies only to:

1. warranted parts that affect the regulated emissions of criteria pollutants, as defined in section 2035(c)(23)(E), title 13, CCR, and

2. heavy-duty vehicles with engines certified to the Otto-cycle spark-ignition standards of section 1956.8.2, title 13, CCR, including engines that have concurrent applications in both dedicated internal combustion vehicles and hybrid vehicles.

~~—— (D) In the case of 2031 and subsequent model year heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2031 and subsequent model year motor vehicle heavy-duty engines, and the 2031 and subsequent model year heavy-duty engines used in such vehicles, (except for diesel-powered heavy-duty vehicles, and motor vehicle engines used in such vehicles), a period of use of 10 years, 160,000 miles, or 8,000 hours, whichever first occurs.~~

~~However, in no case may these periods be less than the basic mechanical warranty that the manufacturer provides (with or without additional charge) to the purchaser of the engine. Extended warranties on select parts do not extend the emissions warranty requirements for the entire engine but only for those parts. In cases where responsibility for an extended warranty is shared between the owner and the manufacturer, the portion of the emissions warranty extending beyond the minimum mileages listed above shall also be shared in the same manner as specified in the warranty agreement.~~

~~The hour period is effective as a limit to warranty only when an accurate hours meter is provided by the engine manufacturer and is reasonably expected to operate properly over the useful life of the engine. The hours meter shall not count standby-idle time (key-on, engine off) as engine operating time for purposes of identifying the end of the warranty period, such as on a vehicle equipped with stop-start technology.~~

~~The warranty period in this subparagraph (c)(8)(D) applies only to:~~

~~1. warranted parts that affect the regulated emissions of criteria pollutants, as defined in section 2035(c)(2)(E), title 13, CCR, and~~

~~2. heavy-duty vehicles with engines certified to the Otto-cycle standards of section 1956.8, title 13, CCR, including engines that have concurrent applications in both dedicated internal combustion vehicles and hybrid vehicles.~~

* * * *

(10) In the case of 2022 ~~and subsequent~~ through 2026 model year hybrid powertrains optionally certified pursuant to 13 CCR § 1956.8, the warranty period shall be as specified below:

(A) In the case of diesel hybrid powertrains, primarily used in vehicles with a GVWR from 14,001 to 19,500 pounds, the warranty period and model year implementation schedules for light heavy-duty diesel engines of this section shall apply to the hybrid powertrains.

(B) In the case of diesel hybrid powertrains primarily used in vehicles with a GVWR from 19,501 to 33,000 pounds, the warranty period and model year implementation schedules for medium heavy-duty diesel engines of this section shall apply to the hybrid powertrains.

(C) In the case of diesel hybrid powertrains primarily used in vehicles with a GVWR greater than 33,000 pounds, the warranty period and model year implementation schedules for heavy heavy-duty diesel engines of this section shall apply to the hybrid powertrains.

(D) In the case of Otto-cycle hybrid powertrains used in vehicles with a GVWR greater than 14,000 pounds, the warranty period and model year implementation schedules for heavy-duty engines, of this section, shall apply to the hybrid powertrains.

(E) In the case of diesel hybrid powertrains used in incomplete vehicles with a GVWR from 10,001 to 14,000 pounds, the warranty period and model year implementation schedules are identical to the warranty period and model year implementation schedules specified for light heavy-duty diesel engines in this section, or for medium duty diesel engines used in such powertrains the warranty period and model year implementation schedules are as specified in 13 CCR § 2037(b).

(F) In the case of Otto-cycle hybrid powertrains used in incomplete vehicles with a GVWR from 10,001 to 14,000 pounds, the warranty period and model year implementation schedules are identical to the warranty period and model year implementation schedules specified for heavy-duty engines (except for diesel-powered heavy-duty vehicles, and motor vehicle engines used in such vehicles) in this section, or for medium duty engines used in such powertrains the warranty period and model year implementation schedules are as specified in 13 CCR § 2037(b).

(11) In the case of 2027 and subsequent model year hybrid powertrains certified pursuant to title 13, CCR, section 1956.8.2, the warranty period shall be as specified below:

(A) In the case of compression-ignition hybrid powertrains, used in vehicles with a GVWR from 14,001 to 19,500 pounds, the warranty period and model year implementation schedules for light heavy-duty engines specified in section (c)(4)(C) shall apply to the hybrid powertrains.

(B) In the case of compression-ignition hybrid powertrains used in vehicles with a GVWR from 19,501 to 33,000 pounds, the warranty period and model year implementation schedules for medium heavy-duty engines specified in section (c)(4)(C) shall apply to the hybrid powertrains.

(C) In the case of compression-ignition hybrid powertrains primarily used in vehicles with a GVWR greater than 33,000 pounds, the warranty period and model year implementation schedules for heavy heavy-duty engines specified in section (c)(4)(C) shall apply to the hybrid powertrains.

(D) In the case of spark-ignition hybrid powertrains used in vehicles with a GVWR greater than 14,000 pounds, the warranty period and model year implementation schedules for heavy-duty spark-ignition engines specified in section (c)(8)(C) shall apply to the hybrid powertrains.

(E) In the case of 2027 and subsequent model year hybrid powertrains certified pursuant to title 13, CCR, section 1956.8.2 for use in vehicles with a GVWR from 10,001 to 14,000 pounds, the warranty period and model year implementation schedules are as specified in title 13, CCR, sections 2037(b)(4) and (b)(5).

(d) Subject to the conditions and exclusions of subsection (j), the warranty on emissions-related parts shall function as follows:

(1) Any warranted part which is not scheduled for replacement as required maintenance in the written instructions required by subsection (e) shall be warranted for the warranty period defined in subsection (c). If any such part fails during the warranty period, it shall be repaired or replaced by the vehicle, engine, or trailer manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period.

(2) (A) Any warranted part which is scheduled only for regular inspection in the written instructions required by subsection (e) shall be warranted for the warranty period defined in subsection (c). A statement in such written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period.

(B) In the case of 2022 through 2027 model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR in which 2022 through 2026 model

year heavy-duty diesel engines are installed, and the 2022 through 2026 model year heavy-duty diesel engines used in such vehicles, any warranted part which is scheduled only for regular inspection in the written instructions required by subsection (e) shall be warranted for the warranty period defined in subsection (c). A statement in such written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. If the regular inspection indicates that a part has failed and needs to be repaired or replaced, any such part shall be repaired or replaced during the applicable warranty period by the vehicle or engine manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period defined in subsection (c).

(C) In the case of all 2027 and subsequent model year heavy-duty vehicles greater than 14,000 pounds GVWR in which 2027 and subsequent model year heavy-duty engines are installed, and the 2027 and subsequent model year heavy-duty engines used in such vehicles, any warranted part which is scheduled only for regular inspection in the written instructions required by subsection (e) shall be warranted for the warranty period defined in subsection (c). A statement in such written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. If the regular inspection indicates that a part has failed and needs to be repaired or replaced, any such part shall be repaired or replaced during the applicable warranty period by the vehicle or engine manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period defined in subsection (c).

(D) In the case of 2022 and subsequent model year heavy-duty hybrid powertrains used in vehicles greater than 14,000 pound GVWR, or 2022 and subsequent model year incomplete hybrid vehicles from 10,001 to 14,000 pounds GVWR, which are equipped with 2022 and subsequent model year hybrid powertrains optionally pounds GVWR, which are certified pursuant to 13 to title 13, CCR §, section 1956.8, and the 2022 and subsequent or 1956.8.2, as applicable, or 2022 through 2026 model year hybrid powertrains used in such vehicles vehicles from 10,001 to 14,000 pounds GVWR, which are certified pursuant to title 13, CCR, section 1956.8, any warranted part that is scheduled only for regular inspection in the written instructions required by subsection (e) shall be warranted for the warranty period defined in subsection (c). A statement in such written instructions to the effect of "repair or replace as necessary" shall not reduce the period of warranty coverage. If the regular inspection indicates that a part has failed and needs to be repaired or replaced, any such part shall be repaired or replaced during the applicable warranty period by the vehicle or engine manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period defined in subsection (c).

(3) (A) Any warranted part which is scheduled for replacement as required maintenance in the written instructions required by subsection (e) shall be warranted for the period of time or mileage, whichever first occurs, prior to the first scheduled replacement point for that part. If the part fails before the first scheduled replacement

point, the part shall be repaired or replaced by the vehicle, engine, or trailer manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

(B) In the case of 2022 through 2027 model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR in which 2022 through 2026 model year heavy-duty diesel engines are installed, and the 2022 through 2026 model year heavy-duty diesel engines used in such vehicles, any warranted part which is scheduled for replacement as required maintenance in the written instructions required by subsection (e) shall be replaced by the owner as scheduled according to section 2040, title 13, CCR. However, if the repaired or replaced part fails before a scheduled replacement during the applicable warranty period, the part shall be repaired or replaced by the vehicle or engine manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period defined in subsection (c).

(C) In the case of all 2027 and subsequent model year heavy-duty vehicles greater than 14,000 pounds GVWR in which 2027 and subsequent model year heavy-duty engines are installed, and the 2027 and subsequent model year heavy-duty engines used in such vehicles, any warranted part which is scheduled for replacement as required maintenance in the written instructions required by subsection (e) shall be replaced by the owner as scheduled according to section 2040, title 13, CCR. However, if the repaired or replaced part fails before a scheduled replacement during the applicable warranty period, the part shall be repaired or replaced by the vehicle or engine manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period defined in subsection (c).

(D) In the case of 2022 and subsequent model year heavy-duty hybrid powertrains used in vehicles greater than 14,000 pound GVWR, ~~or 2022 and subsequent model year incomplete hybrid vehicles from 10,001 to 14,000 pounds GVWR, which are equipped with 2022 and subsequent model year hybrid powertrains optionally which are certified pursuant to title 13, CCR §, section 1956.8, and the 2022 and subsequent~~ or 1956.8.2, as applicable, or 2022 through 2026 model year hybrid powertrains used in ~~such vehicles~~ vehicles from 10,001 to 14,000 pounds GVWR, which are certified pursuant to title 13, CCR, section 1956.8, any warranted part that is scheduled for replacement as required maintenance in the written instructions required by subsection (e) shall be replaced by the owner as scheduled according to section 2040, title 13, CCR. However, if the repaired or replaced part fails before a scheduled replacement during the applicable warranty period, the part shall be repaired or replaced by the vehicle or engine manufacturer according to subsection (4) below. Any such part repaired or replaced under warranty shall be warranted for the remaining warranty period defined in subsection (c). The applicable warranty period for the hybrid vehicles and hybrid powertrains shall be determined as specified in ~~subsections~~ subsections (c)(10) and (c)(11) of this section.

(4) Repair or replacement of any warranted part under the warranty provisions of this article shall be performed at no charge to the vehicle, engine, or trailer owner, at a warranty station, except in the case of an emergency when a warranted part or a warranty station is not reasonably available to the vehicle, engine, or trailer owner. In an emergency, repairs may be performed at any available service establishment, or by the owner, using any replacement part. The manufacturer shall reimburse the owner for his or her expenses including diagnostic charges for such emergency repair or replacement, not to exceed the manufacturer's suggested retail price for all warranted parts replaced and labor charges based on the manufacturer's recommended time allowance for the warranty repair and the geographically appropriate hourly labor rate. Heavy-duty vehicle, engine, and trailer manufacturers shall establish reasonable emergency repair procedures which may differ from those specified in this subsection. A vehicle, engine, or trailer owner may reasonably be required to keep receipts and failed parts in order to receive compensation for warranted repairs reimbursable due to an emergency, provided the manufacturer's written instructions advise the owner of his obligation.

(5) Notwithstanding the provisions of subsection (4), warranty services or repairs shall be provided at all of a manufacturer's dealership which are franchised to service the subject vehicles, engines, or trailers.

(6) The vehicle, engine, or trailer owner shall not be charged for diagnostic labor which leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a warranty station.

(7) The vehicle, engine, or trailer manufacturer shall be liable for damages to other vehicle components proximately caused by a failure under warranty any warranted part.

(8) Throughout the vehicle's, engine's, or trailer's warranty period defined in subsection (b), the vehicle, engine, or trailer manufacturer shall maintain a supply of warranted parts sufficient to meet the expected demand for such parts. The lack of availability of such parts or the incompleteness of repairs within a reasonable time period, not to exceed 30 days from the time the vehicle, engine, or trailer is initially presented to the warranty station for repair, shall constitute an emergency for purposes of subsection (4).

(9) Any replacement part may be used in the performance of any maintenance or repairs. Any replacement part designated by a manufacturer may be used in warranty repairs provided without charge to the vehicle or trailer owner. Such use shall not reduce the warranty obligations of the vehicle, engine, or trailer manufacturer, except that the vehicle, engine, or trailer manufacturer shall not be liable under this article for repair or replacement of any replacement part which is not a warranted part (except as provided under subsection (7)).

(10) Any add-on or modified part exempted by the Air Resources Board from the prohibitions of Vehicle Code section 27156 may be used on a vehicle, engine, or trailer. Such use, in and of itself, shall not be grounds for disallowing a warranty claim made in accordance with this article. The vehicle, engine, or trailer manufacturer shall not be liable under this article to warrant failures of warranted parts caused by the use of an add-on or modified part.

(11) The Executive Officer may request and, in such case, the vehicle, engine, or trailer manufacturer shall provide, any documents which describe that manufacturer's warranty procedures or policies.

(e) Commencing with 1980 models sold on or after September 1, 1979, each manufacturer shall furnish with each new vehicle or engine written instructions for the maintenance and use of the vehicle or engine by the owner, which instructions shall be consistent with this article and applicable regulations in article 2 of this subchapter.

(f) (1) Commencing with 1980 models sold on or after September 1, 1979, each manufacturer shall furnish with each new vehicle or engine a list of the warranted parts installed on that vehicle or engine. The list shall include those parts included on the Air Resources Board "Emissions Warranty Parts List," dated December 14, 1978, as amended on February 22, 1985, and incorporated herein by reference.

(A) In the case of heavy-duty vehicles certified to the GHG emission standards of section 95663, title 17, each manufacturer shall furnish with each new vehicle or engine a list of the warranted parts which includes any part specified in 40 CFR 1037.120, as amended October 25, 2016, incorporated by reference in section 2035(c)(23)(C).

(B) In the case of 2022 through 2027 model year diesel-powered heavy-duty vehicles greater than 14,000 pounds GVWR which are equipped with 2022 through 2026 model year heavy-duty diesel engines certified on only diesel fuel, and the 2022 through 2026 model year heavy-duty diesel engines certified on only diesel fuel used in such vehicles, each manufacturer shall furnish a list that includes any emission-related part that can cause the vehicle's on-board diagnostic malfunction indicator light to illuminate.

(C) In the case of 2027 and subsequent model year heavy-duty vehicles greater than 14,000 pounds GVWR that are equipped with 2027 and subsequent model year heavy-duty engines, and the 2027 and subsequent model year heavy-duty engines used in such vehicles, each manufacturer shall furnish a list that includes any emission-related part that can cause the vehicle's on-board diagnostic malfunction indicator light to illuminate.

(D) In the case of 2022 and subsequent model year heavy-duty hybrid powertrains used in vehicles greater than 14,000 pound GVWR, or 2022 and subsequent model year incomplete hybrid vehicles from 10,001 to 14,000 pounds

~~GVWR, which are equipped with 2022 and subsequent model year hybrid powertrains~~
~~optionally pounds GVWR, which are certified pursuant to title 13, CCR, §section 1956.8,~~
~~and the 2022 and subsequent or 1956.8.2, as applicable, or 2022 through 2026 model~~
~~year hybrid powertrains used in such vehicles~~
GVWR, which are certified pursuant to title 13, CCR, section 1956.8, each manufacturer
shall furnish a list that includes any emission-related part that can cause the vehicle's
on-board diagnostic malfunction indicator light to illuminate.

(E) In the case of trailers certified to the GHG emission standards of section 95663(c), title 17, CCR, each manufacturer shall furnish with each new trailer a list of the warranted parts which includes any part specified in 40 CFR 1037.120, as amended October 25, 2016, which is incorporated by reference herein.

(g) Except for 1980 and 1981 model motorcycles, each manufacturer shall submit the documents required by sections (e) and (f), with the manufacturer's preliminary application for new vehicle, engine, or trailer certification for approval by the Executive Officer. The Executive Officer may reject or require modification of the manufacturer's list of warranted parts to ensure that each such list is of proper scope and also may reject or require modification of any of the documents required by subsection (e). Approval by the Executive Officer of the documents required by subsections (e) and (f), shall be a condition of certification. The Executive Officer shall approve or disapprove the documents required by subsections (e) and (f), within 90 days of the date such documents are received from the manufacturer. Any disapproval shall be accompanied by a statement of the reasons therefore. In the event of disapproval, the manufacturer may petition the Board to review the decision of the Executive Officer.

(h) Notwithstanding subsection (f), the Executive Officer may delete any part from a manufacturer's list of warranted parts provided in the manufacturer demonstrates to the Executive Officer's satisfaction that:

(1) Failure of such part will not increase the emissions of any vehicle, engine, or trailer on which it is installed, and

(2) Any deterioration of driveability or performance which results from failure of the part could not be corrected by adjustments or modifications to other vehicle or trailer components.

(i) Vehicle Inspection Program.

This subsection shall apply to passenger cars, light-duty trucks, medium-duty and heavy-duty vehicles and motorcycles required to be inspected pursuant to any California statutorily authorized motor vehicle emissions inspection and maintenance program. The provisions of this section shall be contained in the warranty statement required pursuant to section 2039.

(1) The owner of a vehicle which fails the inspection during its warranty period may choose to have the vehicle repaired at a warranty station.

(A) If the warranty station identifies that the inspection failure was caused by the failure or malfunction of a warranted part, than the vehicle manufacturer shall be liable for expenses involved in detecting and correcting the part failure or malfunction, unless the warranty station demonstrates that the part failure or malfunction was caused by abuse, neglect, or improper maintenance as specified in subsection (j)(1), or was caused by an adjustment not covered by warranty as specified in subsection (j)(2).

(B) If the warranty station demonstrates that the inspection failure was caused by one or more conditions executed from warranty coverage pursuant to subsection (j), the vehicle owner shall be liable for all diagnostic and repair expenses. Such expenses shall not exceed the maximum repair costs permissible under the inspection program.

(C) If the warranty station identifies that the inspection failure was caused by one or more defects covered under warranty pursuant to these regulations and in combination with one or more conditions excluded from warranty coverage pursuant to subsection (j), than the vehicle owner shall not be charged for the diagnostic and repair costs related to detecting and repairing the warrantable defects.

(2) In the alternative, the owner of a vehicle which fails an inspection may choose to have the vehicle repaired at other than a warranty station. If a warrantable defect is found, the vehicle owner may deliver the vehicle to a warranty station and have the defect corrected free of charge. The vehicle manufacturer shall not be liable for any expenses incurred at a service establishment not authorized to perform warranty repairs, except in the case of an emergency as specified in subsection (d)(4). If the vehicle owner chooses to have the warrantable defect repaired at other than a warranty station, the upper cost limit pursuant to Health and Safety Code section 44017 shall not apply to the repair.

(j) Exclusions.

(1) The repair or replacement of any warranted part otherwise eligible for warranty coverage under subsection (d) or (i), shall be excluded for such warranty coverage if the vehicle, engine, or trailer manufacturer demonstrates that the vehicle, engine, or trailer has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for the repair or replacement of the part.

(2) The following adjustments to warranted parts are excluded from warranty coverage under subsection (d) or (i); the idle air/fuel mixture ratio (for 1979 model passenger cars, and 1979 and 1980 model light-duty trucks and medium-duty

vehicles), curb or high idle speed, ignition timing, valve lash, injection timing for diesel-powered vehicles, or any combination thereof.

(3) Except as provided in subsection (1) above, any adjustment of a component which as a factory installed, and properly operating, adjustment limiting device (such as an idle limiter cap) is eligible for warranty coverage under subsection (d) or (i).

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600 and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 43106, 43204, 43205.5, 44004, 44010, 44011, 44012, 44015 and 44017, Health and Safety Code.

§ 2037. Defects Warranty Requirements for 1990 and Subsequent Model Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles, and Motor Vehicle Engines Used in Such Vehicles.

* * * *

(a) Applicability.

This section shall apply to 1990 and subsequent model passenger cars, light-duty trucks, medium-duty vehicles, and motor vehicle engines used in such vehicles. This section shall apply to medium-duty vehicles certified to the GHG emission standards of section 95663, title 17, for GHG emission control components, as set forth in 40 CFR 1037.120, as amended October 25, 2016, incorporated by reference herein. This section shall also apply to medium-duty engines and hybrid powertrains certified under title 13, California Code of Regulations (CCR), section 1956.8.2 for use in vehicles with a gross vehicle weight rating (GVWR) from 10,001 to 14,000 pounds. The warranty period shall begin on the date the vehicle is delivered to an ultimate purchaser, or if the vehicle is first placed in service as a “demonstrator” or “company” car prior to delivery, on the date it is first placed in service.

(b) General Emissions Warranty Coverage.

The manufacturer of each motor vehicle or motor vehicle engine shall warrant to the ultimate purchaser and each subsequent purchaser that the vehicle or engine is:

(1) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in chapters 1 and 2, part 5, division 26 of the Health and Safety Code; and

(2) Free from defects in materials and workmanship which cause the failure of a warranted part to be identical in all material respects to the part as described in the vehicle or engine manufacturer's application for certification, including any defect in materials or workmanship which would cause the vehicle's on-board diagnostic malfunction indicator light to illuminate, for a period of three years or 50,000 miles, whichever first occurs; and

(2.1) For GHG emission control components in Phase 2 medium-duty vehicles (2021 and subsequent model years) certified to the GHG emission standards of section 95663, title 17, free from defects in materials and workmanship which cause the failure of a warranted part to be identical in all material respects to the part as described in the vehicle or engine manufacturer's application for certification, for a period of five years or 50,000 miles (except tires), whichever first occurs, and for tires only, a period of two years or 24,000 miles, whichever first occurs.

(3) Free from defects in materials and workmanship which cause the failure of a warranted part described in section (c) below for seven years or 70,000 miles,

whichever first occurs. The requirements of this subsection (3) shall not apply to GHG emission control components in Phase 2 medium-duty vehicles certified to the GHG emission standards of section 95663, title 17.

(4) For 2027 and subsequent model year medium-duty compression-ignition engines, and hybrid powertrains that use compression-ignition engines that are used in vehicles with a GVWR from 10,001 to 14,000 pounds, and are certified under title 13, CCR, section 1956.8.2, the warranty period is the first occurring period of 10 years, 210,000 miles or 10,000 hours.

(5) For 2027 and subsequent model year medium-duty spark-ignition engines, and hybrid powertrains that use spark-ignition engines that are used in vehicles with a GVWR from 10,001 to 14,000 pounds, and are certified under title 13, CCR, section 1956.8.2, the warranty period is the first occurring period of 10 years, 160,000 miles, or 8,000 hours.

* * * *

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600 and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 43106, 43204, 43205, 44004, 44010, 44011, 44012, 44015 and 44017, Health and Safety Code.

§ 2038. Performance Warranty Requirements for 1990 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and Motor Vehicle Engines Used in Such Vehicles.

* * * *

(a) Applicability.

This section shall apply to 1990 and subsequent model passenger cars, light-duty trucks, and medium-duty vehicles, and motor vehicle engines used in such vehicles required to be inspected under any California statutorily authorized motor vehicle emissions inspection and maintenance program. This section shall also apply to medium-duty engines and hybrid powertrains certified under title 13, California Code of Regulations (CCR), section 1956.8.2 for use in vehicles with a gross vehicle weight rating (GVWR) from 10,001 to 14,000 pounds. The warranty period shall begin on the date the vehicle is delivered to an ultimate purchaser, or if the vehicle is first placed in service as a “demonstrator” or “company” car prior to delivery, on the date it is first placed in service.

(b) General Emissions Warranty Coverage.

The manufacturer of each passenger car, light-duty truck, and medium-duty vehicle shall warrant to the ultimate purchaser and each subsequent purchaser that the vehicle or engine:

(1) Is designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in chapters 1 and 2, part 5, division 26 of the Health and Safety Code; and

(2) Will, for a period of three years or 50,000 miles, whichever first occurs, pass an inspection established under section 44012 of the Health and Safety Code (“inspection”).

(3) For 2027 and subsequent model year medium-duty compression-ignition engines, and hybrid powertrains that use compression-ignition engines that are used in vehicles with a GVWR from 10,001 to 14,000 pounds, and are certified under title 13, CCR, section 1956.8.2, the warranty period is the first occurring period of 10 years, 210,000 miles or 10,000 hours.

(4) For 2027 and subsequent model year medium-duty spark-ignition engines, and hybrid powertrains that use spark-ignition engines that are used in vehicles with a GVWR from 10,001 to 14,000 pounds, and are certified under title 13, CCR, section 1956.8.2, the warranty period is the first occurring period of 10 years, 160,000 miles, or 8,000 hours.

* * * *

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106, 43204, 43205, 44004, 44010, 44011, 44012, 44014 and 44015, Health and Safety Code.

§ 2039. Emissions Control System Warranty Statement.

* * * *

(a) Each manufacturer shall furnish a copy of the following statement with each new 1991 and subsequent model vehicle or engine produced after January 24, 1991, using those portions of the statement applicable to the vehicle or engine. This statement shall be included with and preceded the manufacturer's warranty statement required in subsection (b), unless otherwise authorized by the Executive Officer.

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (and manufacturer's name, optional) is pleased to explain the emission control system warranty on your (year) (vehicle, truck, or motorcycle). In California, new motor vehicles must be designated, built and equipped to meet the State's stringent anti-smog standards. (Manufacturer's name) must warrant the emission control system on your (vehicle, truck, or motorcycle) for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your (vehicle, truck, or motorcycle).

Your emission control system may include parts such as the carburetor or fuel-injection system, the ignition system, catalytic converter, and engine computer. Also included may be hoses, belts, connectors and other emission-related assemblies. Where a warrantable condition exists, (manufacturer's name) will repair your (vehicle, truck, or motorcycle) at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

[For 1990 and subsequent model passenger cars, light-duty trucks, and medium-duty vehicles.]

- For 3 years or 50,000 miles (or a longer period of time or mileage, optional) (whichever first occurs);

1) If your (vehicle or truck) fails a Smog Check inspection, all necessary repairs and adjustments will be made by (manufacturer's name) to ensure that your emission control system PERFORMANCE WARRANTY.

2) If any emission-related part on your (vehicle or truck) is defective, the part will be repaired or replaced by (manufacturer's name). This is your short-term emission control system DEFECTS WARRANTY.

- For 7 years or 70,000 miles (or a longer period of time or mileage, optional) (Whichever first occurs);

1) If an emission-related part listed in this warranty booklet specially noted with coverage for 7 years or 70,000 miles is defective, the part will be repaired or replaced by (manufacturer's name). This is your long-term emission control system DEFECTS WARRANTY.

[For 2027 and subsequent model year medium-duty compression-ignition engines, and hybrid powertrains that use compression-ignition engines that are used in vehicles with a gross vehicle weight rating (GVWR) from 10,001 to 14,000 pounds, and are certified under title 13, CCR, section 1956.8.2.]

- For 10 years, 210,000 miles or 10,000 hours (or a longer period of time, mileage or operation hour, optional) (whichever first occurs);

1) If your (vehicle or truck) fails a Smog Check inspection, all necessary repairs and adjustments will be made by (manufacturer's name) to ensure that your emission control system PERFORMANCE WARRANTY.

2) If any emission-related part on your (vehicle or truck) is defective, the part will be repaired or replaced by (manufacturer's name). This is your short-term emission control system DEFECTS WARRANTY.

[For 2027 and subsequent model year medium-duty spark-ignition engines, and hybrid powertrains that use spark-ignition engines that are used in vehicles with a GVWR from 10,001 to 14,000 pounds, and are certified under title 13, CCR, section 1956.8.2.]

- For 10 years, 160,000 miles or 8,000 hours (or a longer period of time, mileage or operation hour, optional) (whichever first occurs);

1) If your (vehicle or truck) fails a Smog Check inspection, all necessary repairs and adjustments will be made by (manufacturer's name) to ensure that your emission control system PERFORMANCE WARRANTY.

2) If any emission-related part on your (vehicle or truck) is defective, the part will be repaired or replaced by (manufacturer's name). This is your short-term emission control system DEFECTS WARRANTY.

* * * *

Note: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 43106, 43204, 43205, 44004, 44010, 44011, 44012, 44014 and 44015, Health and Safety Code.

§ 2112. Definitions.

* * * *

(h) “Nonconformity” or “noncompliance” exists whenever:

(1) a substantial number of a class or category of vehicles, engines, or trailers, although properly maintained and used, experience a failure of the same emission-related component within their useful lives which, if uncorrected, results in the vehicles', engines', or trailers' failure to meet the applicable standards; or
(2) a class or category of vehicles, engines, or trailers within their useful lives, although properly maintained and used, on average does not comply with the emission standards prescribed under section 43101 of the Health and Safety Code which are applicable to the model-year of such vehicles, engines, or trailers.

(3) a class or category of vehicles or engines within their useful lives, although properly maintained and used, that do not comply with the in-use emission standards specified in section 1956.8, title 13, California Code of Regulations and “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles”,¹ incorporated by reference in section 1956.8(b), title 13, California Code of Regulations, or that do not comply with the in-use emissions standards specified in section 1956.8.2, title 13, California Code of Regulations and “California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains,” incorporated by reference in section 1956.8.2(c), title 13, California Code of Regulations.

(4) a class or category of vehicles or engines within their useful lives, although properly maintained and used, that do not comply with the in-use emission standards specified in section 1956.8, title 13, California Code of Regulations and “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles”,¹ incorporated by reference in section 1956.8(d), title 13, California Code of Regulations, or that do not comply with the in-use emissions standards specified in section 1956.8.2, title 13, California Code of Regulations and “California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains,” incorporated by reference in section 1956.8.2(c), title 13, California Code of Regulations.

* * * *

(l) “Useful life” means, for the purposes of this article:

* * * *

(18) For those passenger cars, light-duty trucks, and medium-duty vehicles certified to the standards in section 1961.2, 1961.3, or 1961.4, the useful life shall be 15 years or

150,000 miles, whichever first occurs. For 2024 ~~and subsequent~~ through 2026 model-year engines certified to the standards in section 1956.8 for use in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds certified to the standards in section 1961.2 or 1961.4, the useful life shall be 15 years or 150,000 miles, whichever first occurs.

(18.1) For 2027 and subsequent model-year compression-ignition engines certified under title 13, California Code of Regulations, section 1956.8.2(b)(1) and used in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds, for carbon monoxide, particulate matter, oxides of nitrogen, and hydrocarbon emissions standards, a period of use of 15 years or 270,000 miles, or 13,000 hours, whichever first occurs.

(18.2) For 2027 and subsequent model-year spark-ignition engines certified under title 13, California Code of Regulations, section 1956.8.2(b)(1) and used in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds, for carbon monoxide, particulate matter, oxides of nitrogen, and hydrocarbon emissions standards, a period of use of 15 years or 200,000 miles, or 10,000 hours, whichever first occurs.

(18.3) For 2027 and subsequent model-year engines certified to the greenhouse gas emission standards under title 13, California Code of Regulations, section 1956.8.2(b)(7) and used in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of 15 years or 150,000 miles, whichever first occurs.

(19) (A) For 2004 through 2026 model-year light heavy-duty diesel engines, except 2024 through 2026 model-year engines used in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds, for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbons emissions standards, a period of use of 10 years or 110,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer.

(B) For 2027 ~~through 2030~~ and subsequent model-year light heavy-duty diesel engines ~~used in heavy-duty vehicles with a GVWR greater than 14,000 pounds, for carbon monoxide, particulate matter, oxides of nitrogen, and non-methane hydrocarbons emissions standards, a period of use of 12 years or 190,000 miles, whichever first occurs.~~

~~(C) For 2031 and subsequent model-year light heavy-duty diesel engines used in heavy-duty vehicles with a GVWR greater than 14,000 pounds, for carbon monoxide, particulate, oxides of nitrogen, and non-methane hydrocarbons~~ hydrocarbon emissions standards, a period of use of 15 years, or 270,000 miles, or 13,000 hours, whichever first occurs.

~~(D) For 2024 and subsequent model-year diesel engines used in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds, see subparagraph (I)(18) of this section.~~

(19.1) For 2014 through 2020 model-year light heavy-duty diesel engines certified to the Greenhouse Gas emission standards in sections 1956.8(a)(7) and 1956.8(h)(6), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of ten years or 110,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer. For 2021 ~~and subsequent~~ through 2026 model-year light heavy-duty diesel engines certified to the Greenhouse Gas emission standards in sections 1956.8(a)(7) and 1956.8(h)(6), title 13, CCR, and 2027 and subsequent model-year light heavy-duty engines certified to the Greenhouse Gas emission standards in section 1956.8.2(b)(7), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of fifteen years or 150,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer.

(20) (A) For 2004 through 2026 model-year medium heavy-duty diesel engines, for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbons emissions standards, a period of use of 10 years or 185,000 miles, whichever first occurs; or any alternative useful life period approved by the Executive Officer.

(B) For 2027 ~~through 2030~~ and subsequent model-year medium heavy-duty ~~diesel~~ engines, for carbon monoxide, particulate matter, oxides of nitrogen, and ~~non-methane hydrocarbons emissions standards,~~ a period of use of 11 years or 270,000 miles, whichever first occurs.

~~(C) For 2031 and subsequent model-year medium heavy-duty diesel engines, for carbon monoxide, particulate, oxides of nitrogen, and non-methane hydrocarbons~~ hydrocarbon emissions standards, a period of use of 12 years, or 350,000 miles, or 17,000 hours, whichever first occurs.

(20.1) For 2014 ~~and subsequent~~ through 2026 model-year medium heavy-duty diesel engines certified to the Greenhouse Gas emission standards in section 1956.8(a)(7), title 13, CCR and 2027 and subsequent model-year medium heavy-duty engines certified to the Greenhouse Gas emission standards in section 1956.8.2(b)(7), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of ten years or 185,000 miles, whichever first occurs, or any alternative useful life period approved by the Executive Officer.

(21) (A) For 2004 through 2026 model-year heavy heavy-duty diesel engines, 2004 through 2026 model-year heavy-duty diesel urban buses, 2004 through 2026 model-year heavy-duty diesel engines to be used in urban buses, and 2004 through 2026 model year hybrid-electric urban buses for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbon emissions

standards, a period of use of 10 years or 435,000 miles, or 22,000 hours, whichever first occurs, or any alternative useful life period approved by the Executive Officer, except as provided in paragraphs (21)(A)(i) and (21)(A)(ii).

(i) The useful life limit of 22,000 hours in paragraph (21)(A) of this definition is effective as a limit to the useful life only when an accurate hours meter is provided by the manufacturer with the engine and only when such hours meter can reasonably be expected to operate properly over the useful life of the engine.

(ii) For an individual engine, if the useful life hours limit of 22,000 hours is reached before the engine reaches 10 years or 100,000 miles, the useful life shall become 10 years or 100,000 miles, whichever first occurs.

~~(B) For 2027 through 2030 and subsequent model-year heavy heavy-duty diesel engines, 2027 through 2030 model-year heavy-duty diesel urban buses, 2027 through 2030 model-year heavy-duty diesel engines to be used in urban buses, and 2027 through 2030 model-year hybrid-electric urban buses for carbon monoxide, particulate matter, oxides of nitrogen, and non-methane hydrocarbons hydrocarbon emissions standards, a period of use of 11 years or 600650,000 miles, or 3032,000 hours, whichever first occurs, except as provided in paragraphs (21)(B)(i) and (21)(B)(ii).~~

~~(i) The useful life limit of 30,000 hours in paragraph (21)(B) of this definition is effective as a limit to the useful life only if the manufacturer equips the engine with an hours meter that accurately records and reports the hours that the engine is operated throughout its useful life. The hours meter shall not count standby-idle time (key-on, engine-off) as engine operating time for purposes of identifying the end of the useful life period, such as on a vehicle equipped with stop-start technology.~~

~~(ii) For an individual engine, if the useful life hours limit of 30,000 hours is reached before the engine reaches 11 years or 450,000 miles, the useful life shall become 11 years or 450,000 miles, whichever first occurs.~~

~~(C) For 2031 and subsequent model-year heavy heavy-duty diesel engines, 2031 and subsequent model-year heavy-duty diesel urban buses, 2031 and subsequent model-year heavy-duty diesel engines to be used in urban buses, and 2031 and subsequent model-year hybrid-electric urban buses for carbon monoxide, particulate, oxides of nitrogen, and non-methane hydrocarbons emissions standards, a period of use of 12 years or 800,000 miles, or 40,000 hours, whichever first occurs, except as provided in paragraphs (21)(C)(i) and (21)(C)(ii).~~

~~(i) The useful life limit of 40,000 hours in paragraph (21)(C) of this definition is effective as a limit to the useful life only if the manufacturer equips the engine with an hours meter that accurately records and reports the hours that the engine~~

~~is operated throughout its useful life. The hours meter shall not count standby-idle time (key-on, engine-off) as engine operating time for purposes of identifying the end of the useful life period, such as on a vehicle equipped with stop-start technology.~~

~~(ii) For an individual engine, if the useful life hours limit of 40,000 hours is reached before the engine reaches 12 years or 600,000 miles, the useful life shall become 12 years or 600,000 miles, whichever first occurs.~~

(21.1) For 2014 ~~and subsequent~~through 2026 model-year heavy heavy-duty diesel engines certified to the Greenhouse Gas emission standards in section 1956.8(a)(7), title 13, CCR ~~and 2027 and subsequent model-year heavy heavy-duty engines certified to the Greenhouse Gas emission standards in section 1956.8.2(b)(7), title 13, CCR,~~ for carbon dioxide, nitrous oxide, and methane emission standards, a period of use of ten years or 435,000 miles, or 22,000 hours, whichever first occurs, or any alternative useful life period approved by the Executive Officer, except as provided in paragraphs (I)(21)(A)(i) and (I)(21)(B)(ii).

(22) (A) For 2004 through 2026 model-year heavy-duty Otto-cycle engines, except 2024 through 2026 model-year engines used in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds, for carbon monoxide, particulate, and oxides of nitrogen plus non-methane hydrocarbon emissions standards, a period of use of 10 years or 110,000 miles, whichever first occurs.

(B) For 2027 ~~through 2030~~and subsequent model-year ~~heavy-duty Otto-cycle~~spark-ignition engines used in heavy-duty vehicles with a GVWR greater than 14,000 pounds, for carbon monoxide, particulate matter, oxides of nitrogen, and ~~non-methane~~ hydrocarbon emissions standards, a period of use of ~~12~~15 years or ~~155~~200,000 miles, or 10,000 hours, whichever first occurs.

~~(C) For 2031 and subsequent model-year heavy-duty Otto-cycle engines used in heavy-duty vehicles with a GVWR greater than 14,000 pounds, for carbon monoxide, particulate, oxides of nitrogen, and non-methane hydrocarbon emissions standards, a period of use of 15 years or 200,000 miles, whichever first occurs.~~

~~(D) For 2024 and subsequent model-year Otto-cycle engines used in medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds, see subparagraph (I)(18) of this section.~~

(22.1) For 2014 through 2020 model-year heavy-duty Otto-cycle engines certified to the Greenhouse Gas emission standards in sections 1956.8(c)(4) and 1956.8(h)(6), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emissions standards, the useful life shall be a period of use of ten years or 110,000 miles, whichever first occurs. For 2021 ~~and subsequent~~through 2026 model-year heavy-duty Otto-cycle engines certified to the Greenhouse Gas emission standards in sections 1956.8(c)(4) and 1956.8(h)(6),

title 13, CCR, and 2027 and subsequent model-year heavy-duty spark-ignition engines certified to the Greenhouse Gas emission standards in section 1956.8.2(b)(7), title 13, CCR, for carbon dioxide, nitrous oxide, and methane emission standards, the useful life shall be a period of use of fifteen years or 150,000 miles, whichever first occurs.

(23) For 2022 ~~and subsequent~~ through 2026 model year hybrid powertrains optionally certified pursuant to 13 CCR § 1956.8, for carbon monoxide, particulate, oxides of nitrogen, and non-methane hydrocarbons emissions standards:

(A) For diesel hybrid powertrains primarily used in vehicles with a GVWR from 14,001 to 19,500 pounds, the periods of use and model year implementation schedules for light heavy-duty diesel engines in section 2112(I)(19)~~(A)~~ shall apply to the hybrid powertrains.

(B) For diesel hybrid powertrains primarily used in vehicles with a GVWR from 19,501 to 33,000 pounds, the periods of use and model year implementation schedules for medium heavy-duty diesel engines in section 2112(I)(20)~~(A)~~ shall apply to the hybrid powertrains.

(C) For diesel hybrid powertrains primarily used in vehicles with a GVWR greater than 33,000 pounds, the periods of use and model year implementation schedules for heavy heavy-duty diesel engines in section 2112(I)(21)~~(A)~~ shall apply to the hybrid powertrains.

(D) For Otto-cycle hybrid powertrains used in vehicles with a GVWR greater than 14,000 pounds, the periods of use and model year implementation schedules for heavy-duty engines in section 2112(I)(22)~~(A)~~ shall apply to the hybrid powertrains.

(E) In the case of diesel hybrid powertrains used in incomplete vehicles with a GVWR from 10,001 to 14,000 pounds, the periods of use and model year implementation schedules for heavy-duty engines in sections 2112(I)(18) ~~or (I)(19), as applicable,~~ shall apply to the hybrid powertrains.

(F) In the case of Otto-cycle hybrid powertrains used in incomplete vehicles with a GVWR from 10,001 to 14,000 pounds, the periods of use and model year implementation schedules for heavy-duty engines in section 2112(I)(~~22~~18) shall apply to the hybrid powertrains.

(23.1) For 2027 and subsequent model year hybrid powertrains certified pursuant to title 13, CCR, 1956.8.2(b)(1), for carbon monoxide, particulate matter, oxides of nitrogen, and hydrocarbon emissions standards:

(A) For compression-ignition hybrid powertrains used in vehicles with a GVWR from 14,001 to 19,500 pounds, the periods of use and model year

implementation schedules for light heavy-duty engines in section 2112(l)(19)(B) shall apply to the hybrid powertrains.

(B) For compression-ignition hybrid powertrains used in vehicles with a GVWR from 19,501 to 33,000 pounds, the periods of use and model year implementation schedules for medium heavy-duty engines in section 2112(l)(20)(B) shall apply to the hybrid powertrains.

(C) For compression-ignition hybrid powertrains used in vehicles with a GVWR greater than 33,000 pounds, the periods of use and model year implementation schedules for heavy heavy-duty engines in section 2112(l)(21)(B) shall apply to the hybrid powertrains.

(D) For spark-ignition hybrid powertrains used in vehicles with a GVWR greater than 14,000 pounds, the periods of use and model year implementation schedules for heavy-duty spark-ignition engines in section 2112(l)(22)(B) shall apply to the hybrid powertrains.

(E) In the case of compression-ignition hybrid powertrains used in vehicles with a GVWR from 10,001 to 14,000 pounds, the periods of use and model year implementation schedules for compression-ignition engines in section (l)(18.1), shall apply to the hybrid powertrains.

(F) In the case of spark-ignition hybrid powertrains used in vehicles with a GVWR from 10,001 to 14,000 pounds, the periods of use and model year implementation schedules for spark-ignition engines in section 2112(l)(18.2) shall apply to the hybrid powertrains.

(23.2) For 2027 and subsequent model year hybrid powertrains certified pursuant to title 13, CCR, section 1956.8.2(b)(7), for carbon dioxide, nitrous oxide, and methane emission standards:

(A) For compression-ignition hybrid powertrains used in vehicles with a GVWR from 14,001 to 19,500 pounds, the periods of use and model year implementation schedules for light heavy-duty engines in section 2112(l)(19.1) shall apply to the hybrid powertrains.

(B) For compression-ignition hybrid powertrains used in vehicles with a GVWR from 19,501 to 33,000 pounds, the periods of use and model year implementation schedules for medium heavy-duty engines in section 2112(l)(20.1) shall apply to the hybrid powertrains.

(C) For compression-ignition hybrid powertrains used in vehicles with a GVWR greater than 33,000 pounds, the periods of use and model year implementation schedules for heavy heavy-duty engines in section 2112(l)(21.1) shall apply to the hybrid powertrains.

(D) For spark-ignition hybrid powertrains used in vehicles with a GVWR greater than 14,000 pounds, the periods of use and model year implementation schedules for heavy-duty spark-ignition engines in section 2112(l)(22.1) shall apply to the hybrid powertrains.

(E) In the case of hybrid powertrains used in vehicles with a GVWR from 10,001 to 14,000 pounds, the periods of use and model year implementation schedules for engines in section (l)(18.3), shall apply to the hybrid powertrains.

* * * *

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39010, 39600, 39601, 43013, 43018, 43101, 43104, 43105 and 43806, Health and Safety Code; and Section 28114, Vehicle Code. Reference: Sections 38501, 38505, 38510, 38560, 39002, 39003, 39010, 39500, 39601, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43202, 43204-43205.5, 43206, 43210, 43211, 43212, 43213 and 43806, Health and Safety Code; and Section 28114, Vehicle Code.

§ 2116. Repair Label.

* * * *

(a) The manufacturer shall require those who perform the repair to affix a label to each vehicle, engine, or trailer repaired, or, when required, inspected, under the voluntary or influenced recall plan.

(b) The label shall be placed in a location approved by the Executive Officer and shall be fabricated of a material suitable for such location in which it is installed and which is not readily removable.

(c) The label shall contain the recall campaign number and a code designating the campaign facility at which the repair, or inspection for repair, was performed.

(d) In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers are exempt from the label requirements of subsections (a), (b), and (c) of this section 2116, if all of the following conditions are met:

- (1) The recall shall involve only software or software calibration repairs or changes and does not involve hardware repairs or changes,
- (2) The manufacturer shall keep a record of the VINs of all vehicles that were inspected and/or repaired, and
- (3) Upon request from the Executive Officer, the manufacturer shall provide information within 14 calendar days about running changes, field fixes, service campaigns, and recalls for any given VIN from all vehicles affected by the nonconformity.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2117. Proof of Correction Certificate.

* * * *

The manufacturer shall require those who perform the repair to provide the owner for each vehicle, engine, or trailer repaired with a certificate, in a format prescribed by the Executive Officer, which indicates that the noncomplying vehicle, engine, or trailer has been corrected under the recall program. This requirement shall become effective and applicable upon the effective date of a recall enforcement program adopted by the Department of Motor Vehicles or another state agency which requires presentation of proof of correction of a recalled vehicle or trailer prior to issuance of a smog certificate, registration renewal, or other entitlement to use. In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers will not be required to provide a proof of correction certificate to vehicle owners that have the recall repair performed over-the-air during the first six months of a recall.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 38501, 38505, 3850, 38560, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2118. Notification.

* * * *

(f) A card to be used by a vehicle, engine, or trailer owner in the event the vehicle, engine, or trailer to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle, engine, or trailer was sold or transferred. In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers may obtain new owner information electronically or using the post card with postage paid.

* * * *

(i) In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, notification letters must inform owners that they will not receive a proof of correction certificate if their vehicle or engine is reflashed during the first six months of a recall performed over-the-air. If the recall repair is performed after the first six months a proof of correction certificate will be provided in person or through the mail.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2127. Notification of Owners.

* * * *

(d) The notification of vehicle, engine, or trailer owners shall contain the following:

* * * *

(9) A card to be used by a vehicle, engine, or trailer owner in the event the vehicle, engine, or trailer to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle, engine, or trailer was sold. In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers may obtain new owner information electronically or using the post card with postage paid.

* * * *

(12) In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, notification letters must inform owners that they will not receive a proof-of-correction certificate if their vehicle or engine is reflashed during the first six months of a recall performed over-the-air. If the recall repair is performed after the first six months a proof of correction certificate will be provided in person or through the mail.

* * * *

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2128. Repair Label.

* * * *

(a) The manufacturer shall require those who perform the repair under the recall plan to affix a label to each vehicle, engine, or trailer repaired or, when required, inspected under the recall plan.

(b) The label shall be placed in a location as approved by the Executive Officer and shall be fabricated of a material suitable for such location and which is not readily removable.

(c) The label shall contain the recall campaign number and a code designating the facility at which the repair, inspection for repair, was performed.

(d) In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers are exempt from the label requirements of subsections (a), (b), and (c) of this section 2128, if all of the following conditions are met:

- (1) The recall shall involve only software or software calibration repairs or changes and does not involve hardware repairs or changes,
- (2) The manufacturer shall keep a record of the VINs of all vehicles that were inspected and/or repaired, and
- (3) Upon request from the Executive Officer, the manufacturer shall provide information within 14 calendar days about running changes, field fixes, service campaigns, and recalls for any given VIN from all vehicles affected by the nonconformity.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2129. Proof of Correction Certificate.

* * * *

The manufacturer shall require those who perform the recall repair to provide the owner of each vehicle, engine, or trailer repaired with a certificate, through a protocol and in a format prescribed by the Executive Officer, which indicates that the noncomplying vehicle, engine, or trailer has been corrected under the recall program. This requirement shall become effective and applicable upon the effective date of the recall enforcement program referred to in section 2117, above. In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers will not be required to provide a proof of correction certificate to vehicle owners that have the recall repair performed over-the-air during the first six months of a recall.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Health and Safety Code Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2139. Testing.

* * * *

After the vehicles or trailers have been accepted and restorative maintenance, if any, has been performed, the ARB or its designated laboratory shall perform the applicable emission tests pursuant to the following:

* * * *

(c) For medium-duty engines and vehicles certified according to the optional engine test procedures specified in ~~section~~sections 1956.8 and 1956.8.2, Title 13, California Code of Regulations and the documents incorporated by reference therein, in-use compliance emission tests shall be performed pursuant to one of the following procedures:

For medium-duty engines and vehicles certified to the Greenhouse Gas emission standards in sections 1956.8(a)(7), 1956.8(h)(6), and 1956.8(h)(6), 2(b)(7), Title 13, California Code of Regulations, in-use compliance emission tests shall be performed pursuant to one of the following procedures:

(1) The engines of medium-duty vehicles may be tested pursuant to the engine test procedures specified in ~~section~~sections 1956.8 and 1956.8.2, provided that the manufacturer or its designated laboratory conduct procurement and enforcement testing pursuant to Sections 2136 through 2140, Title 13, California Code of Regulation, at the manufacturer's expense.

For manufacturers that have only one engine family or test group, the manufacturer or its designated laboratory that have more than one engine family or test group, the manufacturer or its designated laboratory shall procure no more than fifteen vehicles per engine family or test group. For manufacturers that have more than one engine family or test group, the manufacturer or its designated laboratory shall procure and test at the manufacturer's expense no more than one-third of its engine families or test groups and no more than fifteen vehicles from each engine family or test group. For the purposes of this section, "one-third" of a manufacturer's engine families or test groups shall be determined by dividing the number of distinct engine families or test groups by three, adding 0.5, and truncating the result to the nearest whole number.

The specific engine families or test groups subject to enforcement testing shall be selected by the ARB. The manufacturer or its designated laboratory shall begin the engine procurement process within 10 working days of notification by the ARB and shall complete testing within 100 working days of notification by the ARB. The Executive Officer shall approve the manufacturer's procurement procedures in advance of their use by the manufacturer. The Executive Officer shall approve a manufacturer's procurement procedures if engines are screened according to the criteria specified in section 2137, Title 13, California Code of Regulations and selected randomly from registration records compiled and

prepared by R. L. Polk and Company or a comparable source. In addition, no vehicle shall be selected for enforcement testing with mileage less than 60 percent of the useful-life mileage without prior approval from the Executive Officer. The manufacturer shall permit an ARB representative to witness procurement, restorative maintenance, and enforcement testing. The Executive Officer shall have the authority to accept or reject a test engine based upon criteria specified in section 2137. Once an engine has been tested and determined to be in compliance with the current in-use emission standards, no further testing will be performed on subsequent engine families or test groups that carry-over the durability data of the tested engine family or test group.

Notwithstanding the above, if a manufacturer fails to demonstrate compliance with the emission standards after one-third of its engine families or test groups have been tested, additional engine families or test groups shall be tested, by the manufacturer or its designated laboratory, at the manufacturer's expense, until compliance is demonstrated on one-third of the engine families or test groups or all of a manufacturer's engine families or test groups have been tested. In addition, any engine family or test group which has been tested and determined to be in noncompliance shall be retested by the manufacturer each subsequent year until compliance with the applicable emission standards has been demonstrated. Notwithstanding the above, the ARB may conduct engine enforcement testing pursuant to the engine test procedures specified in ~~section~~sections 1956.8 and 1956.8.2, at their own expense.

(2) Medium-duty vehicles may be tested according to the chassis test procedures specified in section 1960.1(k), 1961, 1961.2, or 1961.4, Title 13, California Code of Regulations or section 95663, Title 17, California Code of Regulations, as applicable, if a manufacturer develops correlation factors which establish the relationship between engine and chassis testing for each engine family or test group and submits these correlation factors within one year after the beginning of production. The correlation factors shall be applied to the measured in-use engine exhaust emission data to determine the in-use engine exhaust emission levels. All correlation factors and supporting data included in a manufacturer's application must be submitted to and approved by the Executive Officer in advance of their use by a manufacturer. Correlation factors intended to apply to a specific engine family or test group shall be applicable for each vehicle model incorporating that specific engine. Manufacturers shall submit test data demonstrating the applicability of the correlation factors for vehicle models comprising a minimum of 80 percent of their engine sales for that specific engine family or test group. The correlation factors for the remaining fleet may be determined through an engineering evaluation based upon a comparison with similar vehicle models. The Executive Officer shall approve a submitted correlation factor if it accurately corresponds to other established empirical and theoretical correlation factors and to emission test data available to the Executive Officer.

A manufacturer may choose to use the results from the chassis in-use testing as a screening test. If an engine family or test group does not demonstrate compliance with any of the applicable in-use engine standards, as determined from the chassis test data and the applied correlation factors, the manufacturer shall be subject to the requirements and cost of in-use compliance engine testing, as specified in section 2139(c)(1). The manufacturer shall be subject to engine testing for any non-complying engine family or test group for each subsequent year until compliance with the engine emission standards is demonstrated.

Subsequent to approval of the correlation factors, the Executive Officer may make a determination that the original correlation factors are not valid. Such a determination may be based upon in-use emission data, including chassis and engine testing. Upon determination that the correlation factors for a specific engine family or test group are not valid, the manufacturer of the engine family or test group shall be subject to the enforcement testing requirements and costs of in-use compliance engine testing, as specified in section 2139(c)(1).

(3) The manufacturer shall choose one of the procedures specified in subsections (c)(1) through (c)(2). The Executive Officer shall permit the use of alternative test procedures if the Executive Officer determines the alternative test procedure adequately predicts the exhaust emissions from the engine test procedure specified in ~~section~~sections 1956.8 and 1956.8.2, Title 13, California Code of Regulations. Such a determination may be based upon correlation with test data from the engine test procedures.

(4) The time limits specified in subsections (c)(1) and (c)(2) may be extended by the Executive Officer if the manufacturer demonstrates that the time limits specified could not be achieved due to reasons beyond the reasonable control of the manufacturer.

(d) For heavy-duty engines and vehicles, in-use compliance emission tests shall be performed pursuant to section 1956.8, title 13, California Code of Regulations, “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~through 2026 Model Heavy-Duty Diesel Engines and Vehicles” incorporated by reference in title 13, California Code of Regulations, section 1956.8(b), and “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles” incorporated by reference in title 13, California Code of Regulations, section 1956.8(d); and “California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains” incorporated by reference in title 13, California Code of Regulations, section 1956.8.2(c). For heavy-duty vehicles and trailers certified to the GHG emission standards of section 95663, title 17, California Code of Regulations, in-use compliance emission tests shall be performed pursuant to section 95663, Title 17, California Code of Regulations.

(e) For motorcycles, in-use compliance emission tests shall be performed pursuant to section 1958, title 13, California Code of Regulations.

(f) For off-road motorcycles and all-terrain vehicles, in-use compliance tests shall be performed pursuant to section 2412, title 13, California Code of Regulations. The in-use compliance testing shall use the same test procedure utilized for the specific vehicle's original certification testing.

(g) For off-road compression-ignition engines, in-use compliance tests shall be performed pursuant to section 2423, title 13, California Code of Regulations. The in-use compliance testing shall use the same test procedure utilized for the specific engine's original certification testing.

(h) For spark-ignition sterndrive/inboard marine engines, in-use compliance tests shall be performed pursuant to section 2442, title 13, California Code of Regulations. The in-use compliance testing shall use the same test procedure utilized for the specific engine's original certification testing.

(i) For any emission in-use compliance test performed pursuant to subsections (a) through (h), the ARB may waive a specific test for subsequent vehicle or trailer samples if results from vehicle or trailer samples already tested are deemed sufficient to establish complying emission levels. The ARB shall inform the manufacturer at least 30 days prior to enforcement testing of its vehicles, engines, or trailers and shall permit a manufacturer representative to observe the enforcement testing.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 39002, 39003, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43105, 43106, 43107, 43204-43205.5 and 43211-43213, Health and Safety Code.

§ 2139.5. CARB Authority to Test for Heavy-Duty In-Use Compliance.

* * * *

The(a) For 2026 and previous model years, CARB Executive Officer is authorized to conduct Heavy Duty In-Use Compliance (HDIUC) testing using the appropriate procedures in 40 CFR § 86.1370, as amended October 25, 2016 and 40 CFR Part 86 Subpart T, as amended October 25, 2016, that are incorporated by reference in the “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” incorporated by reference in title 13, California Code of Regulations, section 1956.8(b) and “California Exhaust Emission Standards and Test Procedures for 2004 ~~and Subsequent~~through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles,” incorporated by reference in title 13, California Code of Regulations, section 1956.8(d)~~),~~.

(b) For 2027 and subsequent model years, CARB Executive Officer is authorized to conduct HDIUC testing using the appropriate procedures in the “California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains” incorporated by reference in title 13, California Code of Regulations, section 1956.8.2(c).

(c) The purpose of the HDIUC program is to identify engines that fail to conform to the applicable emission standards in title 13, California Code of Regulations, ~~section~~sections 1956.8 and 1956.8.2, and to take corrective action against the manufacturers of such vehicles and engines based on the results of this testing.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 39002, 39003, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43103, 43104, 43105, 43106, 43107, 43204-43205.5 and 43211-43213, Health and Safety Code.

§ 2140. Notification and Use of Test Results.

* * * *

(a) The Executive Officer shall notify the manufacturer in writing if the in-use vehicle or trailer enforcement test results indicate that the test fleet contains three or more failures of the same emission-related component. Upon receipt of the notification, the manufacturer shall submit an emissions information report in accordance with title 13, California Code of Regulations, sections 2146 and 2147. The engine family, test group, vehicle family, trailer family, or sub-group manufacturer shall be subject to recall when a specific emission-related failure occurred in three or more test vehicles or trailers, unless the Executive Officer determines from the emissions information report that a recall is unnecessary.

(b) If the results of the in-use vehicle or trailer emission tests conducted pursuant to section 2139 indicate that the average emissions of the test vehicles or trailers for any pollutant exceed the applicable emission standards specified in title 13, California Code of Regulations, sections 1960.1, 1961, 1961.2, 1961.3, 1961.4, 1956.8, 1956.8.2, 1958, 2412, 2423 or 2442 or in title 17, California Code of Regulations, section 95663, the entire vehicle or trailer population so represented shall be deemed to exceed such standards. The Executive Officer shall notify the manufacturer of the test results and upon receipt of the notification, the manufacturer shall have 45 days to submit an influenced recall plan in accordance with sections 2113 through 2121, title 13, California Code of Regulations. If no such recall plan is submitted, the Executive Officer may order corrective action including recall of the affected vehicles or trailers in accordance with sections 2122 through 2135, title 13, California Code of Regulations.

(c) For purposes of determining compliance with the test procedures in title 13, California Code of Regulations, section 2139.5, an engine family is considered a failure if any of the following conditions occur:

(1) for 2024 to 2026 model diesel engines, at least three vehicles tested exceed the three-bin moving average window (3B-MAW) in-use threshold for the same bin and pollutant.

(2) for 2024 to 2026 model diesel engines, the arithmetic mean of the Sum-Over-Sum emissions defined in "California Exhaust Emission Standards and Test Procedures for 2004 and ~~Subsequent~~ through 2026 Model Heavy-Duty Diesel Engines and Vehicles" ~~40 CFR section 86.1370.B.6.6, incorporated by reference in title 13, California Code of Regulations, section 1956.8(b)~~, calculated across the 10 tested vehicles for each individual pollutant and bin, exceed the in-use threshold.

(3) for 2024 to 2026 model Otto-cycle engines, at least three vehicles tested exceed the moving average window (MAW) in-use threshold for the same pollutant.

(4) for 2024 to 2026 model Otto-cycle engines, the arithmetic mean of the Sum-Over-Sum emissions defined in “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Otto-Cycle Engines and Vehicles” ~~40 CFR~~ section 86.1370.B.1.4 and section 86.1370.B.1.5 (if applicable) incorporated by reference in title 13, California Code of Regulations, section 1956.8(d), calculated across the 10 test vehicles for each individual pollutant, exceed the in-use threshold.

(5) For 2027 and subsequent model compression-ignition engines, the failure criteria and the test procedures for an engine family are specified in sections 1036.150.A.21 or 1036.425, as applicable, and section 1036.401 of the “California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains” incorporated by reference in title 13, California Code of Regulations, section 1956.8.2(c).

* * * *

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39600, 39601, 43013, 43018 and 43105, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5 and 43211-43213, Health and Safety Code.

§ 2143. Failure Levels Triggering Recall and Corrective Action.

* * * *

In the case of 2024-2026 model year California-certified heavy-duty diesel and Otto-cycle engines, and heavy-duty vehicles, vehicles or engines in an engine family or test group shall be recalled or subject to other corrective action at the following failure levels: 4 percent or 25 (whichever is greater). In the case of 2027-2030 and subsequent model year California-certified heavy-duty ~~diesel~~ compression-ignition and ~~Otto-cycle~~ spark-ignition engines, and heavy-duty vehicles using such engines, vehicles or engines in an engine family or test group shall be recalled or subject to other corrective action at the following failure levels: 4 percent or 25 (whichever is greater) for the first five years of the warranty period, ~~and 5 percent or 35 (whichever is greater) for years 6 through 7 of the warranty period.~~ In the case of 2031 and subsequent model year California-certified heavy-duty diesel and Otto-cycle engines, and heavy-duty vehicles, vehicles or engines in an engine family or test group shall be recalled or subject to other corrective action at the following failure levels: 4 percent or 25 (whichever is greater) for the first five years of the warranty period, 5 percent or 35 (whichever is greater) for years 6 through 7 of the warranty period, and 7 percent or 50 (whichever is greater) for years 8 through 10 of the warranty period.

Note: Authority cited: Sections 38501, 38505, 38510, 38560, 39500, 39600, 39601, 43000.5, 43013, 43105, 43204, 43205.5 and 43214 Health and Safety Code.

Reference: Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2148. Evaluation of Need for Recall.

* * * *

(b) Notwithstanding subsection (a) above, a recall shall not be required if the manufacturer submits information with the emissions information report which demonstrates to the satisfaction of the Executive Officer that the failure:

(1) is limited to an emission-related component on a less-than substantial percentage of vehicles or trailers and does not represent a pervasive defect in design, application, or execution which is likely to affect a substantial number of such emission-related components during the useful life of the vehicle, engine, or trailer, and

* * * *

NOTE: Authority cited: Sections 38501, 38505, 38510, 38560, 39500, 39600, 39601, 43000.5, 43013, 43018, 43105, 43204, 43205.5 and 43214 Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38560, 43000, 43009.5, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code.

§ 2169.2. Notification of Owners.

* * * *

(d) The notification of vehicle or engine owners shall contain the following:

* * * *

(10) A card to be used by a vehicle or engine owner in the event the vehicle or engine to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle or engine was sold. In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers may obtain new owner information electronically or using the post card with postage paid.

* * * *

(13) In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, notification letters must inform owners that they will not receive a proof of correction certificate if their vehicle or engine is reflashed during the first six months of a recall performed over-the-air. If the recall repair is performed after the first six months a proof of correction certificate will be provided in person or through the mail.

* * * *

Note: Authority cited: Sections, 39500, 39600, 39601, 43000.5, 43013, 43018, 43204, 43205.5 and 43214, Health and Safety Code. *Engine Mfrs Assn v. California Air Resources Board*, (2014) 231 Cal. App.4th 1022. Reference: Sections 43000, 43100, 43101, 43102, 43106, 43107 and 43806, Health and Safety Code.

§ 2169.3. Repair Label.

* * * *

(a) The manufacturer shall require those who perform the repair under the recall plan to affix a label to each vehicle or engine repaired or, when required, inspected under the recall plan.

(b) The label shall be placed in a location as approved by the Executive Officer and shall be fabricated of a material suitable for such location and which is not readily removable.

(c) The label shall contain the recall campaign number and a code designating the facility at which the repair, or inspection for repair, was performed.

(d) In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers are exempt from the label requirements of subsections (a), (b), and (c) of this section 2169.3, if all of the following conditions are met:

- (1) The recall shall involve only software or software calibration repairs or changes and does not involve hardware repairs or changes,
- (2) The manufacturer shall keep a record of the VINs of all vehicles that were inspected and/or repaired, and
- (3) Upon request from the Executive Officer, the manufacturer shall provide information within 14 calendar days about running changes, field fixes, service campaigns, and recalls for any given VIN from all vehicles affected by the nonconformity.

Note: Authority cited: Sections, 39500, 39600, 39601, 43000.5, 43013, 43018, 43204, 43205.5 and 43214, Health and Safety Code. *Engine Mfrs Assn v. California Air Resources Board*, (2014) 231 Cal. App.4th 1022. Reference: Sections 43000, 43100, 43101, 43102, 43106, 43107 and 43806, Health and Safety Code.

§ 2169.4. Proof of Correction Certificate.

* * * *

The manufacturer shall require those who perform the recall repair to provide the owner of each vehicle or engine repaired with a certificate, through a protocol and in a format prescribed by the Executive Officer, which indicates that the noncomplying vehicle or engine has been corrected under the recall program. In the case of 2027 and subsequent model year California-certified heavy-duty compression-ignition and spark-ignition engines, and heavy-duty vehicles using such engines, manufacturers will not be required to provide a proof of correction certificate to vehicle owners that have the recall repair performed over-the-air during the first six months of a recall.

Note: Authority cited: Sections, 39500, 39600, 39601, 43000.5, 43013, 43018, 43204, 43205.5 and 43214, Health and Safety Code. *Engine Mfrs Assn v. California Air Resources Board*, (2014) 231 Cal. App.4th 1022. Reference: Sections 43000, 43100, 43101, 43102, 43106, 43107 and 43806, Health and Safety Code.

§ 2485. Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

* * * *

(d) *Exceptions.*

(1) Except when a vehicle is located within 100 feet of a restricted area, subsections (c)(1)(A)1 and (c)(1)(B)1 do not apply, if the vehicle is equipped with a

(A) ~~a primary~~ 2026 and prior model year heavy-duty diesel engine
1. meeting the optional NOx idling emission standard pursuant to title 13, CCR, section 1956.8(a)(6)-(C); and
~~(B)2.~~ a label meeting the requirements pursuant to section 35.B.4 of the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent through 2026 Model Heavy-Duty Diesel Engines and Vehicles,” as incorporated by reference in title 13, CCR, section 1956.8(b).

(B) 2027 and subsequent model year heavy-duty compression-ignition engine
1. meeting the Clean Idle NOx standard pursuant to title 13, CCR, section 1956.8.2(b)(6)(C); and
2. a label meeting the requirements pursuant to section 1036.135.B.1 of the “California Exhaust Emission Standards and Test Procedures for 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains,” as incorporated by reference in title 13, CCR, section 1956.8.2(c).

* * * *

Note: Authority cited: Sections 39600, 39601, 39614(b)(6)(A), 39658, 39667, 43000.5(d), 43013(b), 43013(h), 43018(b) and 43018(c), Health and Safety Code; and Western Oil & Gas Assn. v. Orange County Air Pollution Control Dist. (1975), 14 Cal.3d.411. Reference: Sections 39002, 39003, 39027, 39500, 39600, 39650, 39655, 39656, 39657, 39658, 39659, 39662, 39665, 39674, 39675, 42400, 42400.1, 42400.2, 42400.3, 42402, 42402.1, 42402.2, 42402.3, 42402.4, 42403.5, 42410, 43013, 43018 and 43704, Health and Safety Code; Sections 305, 336, 350, 440, 445, 545, 546, 642, 680, 21400, 22452, 22515, 27153, 40001 and 40001(b) (5), California Vehicle Code; and Sections 1201, 1900, 1962 and 2480, Title 13, California Code of Regulations.