

Appendix A-2

Proposed New Section to Title 13 Regulation Order

Exhaust Emission Standards and Test Procedures - 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains

[Note: The entire text of §1956.8.2 set forth below is new language in “normal type” proposed to be added to title 13, California Code of Regulations]

The Chapter and Section of title 13, CCR that is being proposed for adoption per this regulatory proposal is as follows.

Chapter 1. Motor Vehicle Pollution Control Devices

Section: 1956.8.2 Exhaust Emission Standards and Test Procedures - 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains

Proposed Regulation Order

Title 13, California Code of Regulations

Adopt new section 1956.8.2, title 13, California Code of Regulations (“CCR”), to read as follows:

§ 1956.8.2 Exhaust Emission Standards and Test Procedures - 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains

Unless and until a court of competent jurisdiction issues a final ruling that H.J. Res. 88 (119th Congress) and H.J. Res. 89 (119th Congress) are invalid or that the waivers United States Environmental Protection Agency granted California on January 6, 2025, 90 Federal Register 642 and 90 Federal Register 643, are in effect, regulated parties may choose to follow this section 1956.8.2.

However, if a court of competent jurisdiction issues a final ruling that H.J. Res. 88 (119th Congress) and H.J. Res. 89 (119th Congress) are invalid or that the waivers United States Environmental Protection Agency granted California on January 6, 2025, 90 Federal Register 642 and 90 Federal Register 643, are in effect, the regulated parties are subject to the requirements of this section 1956.8.2 to the extent consistent with the court’s final ruling. Notice of the court’s ruling will be posted on California Air Resources Board’s website, <https://arb.ca.gov>.

(a) Applicability.

(1) The provisions in this section apply to new 2027 and subsequent model year engines installed in heavy-duty vehicles over 14,000 pounds gross vehicle weight rating (GVWR).

(2) New 2027 and subsequent model year spark-ignition engines used in incomplete medium-duty vehicles from 10,001 to 14,000 pounds GVWR and all compression-ignition engines used in medium-duty vehicles from 10,001 to 14,000 pounds GVWR, may optionally certify to the exhaust emission standards in this section instead of the primary emission standards and test procedures for complete vehicles in title 13, CCR, sections 1961.2 and 1961.4, as applicable.

(3) Gas turbine heavy-duty engines and other heavy-duty engines (HDE) not meeting the definition of compression-ignition or spark-ignition engines are deemed to be compression-ignition engines for purposes of this section.

(4) For the purpose of applying the provisions of this section, engines include all emission-related components and any components or systems that should be

identified in the application for certification, such as hybrid components for engines that are certified as hybrid engines or hybrid powertrains.

(5) All medium-duty vehicles with a GVWR of less than or equal to 10,000 pounds, including engines used in such vehicles, and all complete spark-ignition medium-duty vehicles with a GVWR from 10,001 to 14,000 pounds must be certified to the chassis standards for medium-duty vehicles set forth in title 13, CCR, sections 1961.2 or 1961.4 as applicable.

(b) Exhaust Emission Standards.

Exhaust emissions shall not exceed the standards specified in this section, as follows:

(1) Criteria Pollutant Exhaust Emission Standards for Oxides of Nitrogen (NO_x), Hydrocarbons (HC), Particulate Matter (PM), and Carbon Monoxide (CO) Emissions.

(A) Medium-Duty and Heavy-Duty Compression-Ignition Engines. The exhaust emissions from new 2027 and subsequent model heavy-duty compression-ignition engines used in heavy-duty vehicles over 14,000 pounds GVWR, and compression-ignition engines used in medium-duty vehicles from 10,001 to 14,000 pounds GVWR, shall not exceed:

Table 1 to Subsection (b)(1)(A): Medium-Duty and Heavy-Duty Compression-Ignition Engine Standards for Duty Cycle Testing

Duty cycle ¹	NO _x mg/hp·hr ²	HC mg/hp·hr	PM mg/hp·hr	CO g/hp·hr ³
SET and FTP	35	60	5	6.0
LLC	50	140	5	6.0

¹ The Federal Test Procedure (FTP), Supplemental Emission Test (SET), and Low Load Cycle (LLC) are the compression-ignition engine duty cycles specified in Subpart F of the test procedures incorporated by reference in subsection (c), below.

² mg/hp·hr means milligrams per brake horsepower hour

³ g/hp·hr means grams per brake horsepower hour

(B) Medium-Duty and Heavy-Duty Spark-Ignition Engines. The exhaust emissions from new 2027 and subsequent model heavy-duty spark-ignition engines used in heavy-duty vehicles over 14,000 pounds GVWR, and spark-ignition engines used in incomplete medium-duty vehicles from 10,001 to 14,000 pounds GVWR, shall not exceed:

Table 2 to Subsection (b)(1)(B): Medium-Duty and Heavy-Duty Spark-Ignition Engine Standards for Duty Cycle Testing

Duty cycle ¹	NO _x mg/hp·hr	HC mg/hp·hr	PM mg/hp·hr	CO g/hp·hr
SET	35	60	5	14.4
FTP	35	60	5	6.0

¹ The FTP and SET are the spark-ignition engine duty cycles specified in Subpart F of the test procedures incorporated by reference in subsection (c), below.

(2) Optional Low NO_x Exhaust Emission Standards.

(A) Manufacturers may elect to certify their new 2027 and subsequent model year heavy-duty compression-ignition engines used in vehicles over 14,000 pounds GVWR to the following optional low NO_x emission standards in lieu of the primary NO_x emission standard applicable for that model year. Engines certified to the optional low NO_x emission standards must also comply with the applicable HC, PM, and CO emission standards set forth in subsections (b)(1)(A), above. In addition, engine families that are certified to the optional low NO_x emission standards are not eligible for generating any NO_x credits in the averaging, banking, and trading (ABT) programs.

Table 3 to Subsection (b)(2)(A): Optional Low NO_x Exhaust Emission Standards for 2027 and Subsequent Model Heavy-Duty Compression-Ignition Engines

Test Procedure(s)	Option 1	Option 2
FTP and SET (mg/hp·hr)	10	20
LLC (mg/hp·hr)	15	30

(B) Manufacturers may elect to certify their new 2027 and subsequent model year heavy-duty spark-ignition engines used in vehicles over 14,000 pounds GVWR to the following optional low NO_x emission standards in lieu of the primary NO_x emission standards applicable for that model year. Engines certified to the optional low NO_x emission standards must also comply with the applicable HC, PM, and CO emission standards set forth in subsections (b)(1)(B), above. In addition, engine families that are certified to the optional low NO_x emission standards are not eligible for generating any NO_x credits in the averaging, banking, and trading program.

Table 4 to Subsection (b)(2)(B): Optional Low NO_x Exhaust Emission Standards for 2027 and Subsequent Model Heavy-Duty Spark-Ignition Engines

Test Procedure	Option 1	Option 2
FTP (mg/hp·hr)	10	20
SET (mg/hp·hr)	10	20

(3) *Fuel Types.*

The exhaust emission standards specified in subsections (b)(1) and (b)(2) apply for engines using the fuel type on which the engines in the engine family are designed to operate. A manufacturer must meet the numerical emission standards for HC in this section based on the following types of hydrocarbon emissions for engines powered by the following fuels:

(A) Alcohol-fueled engines: non-methane hydrocarbon equivalent (NMHCE) emissions.

(B) Gaseous-fueled engines: Non-methane non-ethane hydrocarbon (NMNEHC) emissions.

(C) Other engines: Non-methane hydrocarbon (NMHC) emissions.

(4) *Formaldehyde Exhaust Emission Standards.*

Formaldehyde exhaust emissions for 2027 and subsequent model year medium-duty and HDEs shall not exceed, as follows:

(A) 50 mg/hp·hr for methanol-fueled HDEs used in heavy-duty vehicles over 14,000 pounds GVWR;

(B) 10 mg/hp·hr for heavy-duty spark-ignition engines used in vehicles over 14,000 pounds GVWR, and spark-ignition engines used in incomplete medium-duty vehicles from 10,001 to 14,000 pounds GVWR; and

(C) 50 mg/hp·hr for all compression-ignition engines used in medium-duty vehicles from 10,001 to 14,000 pounds GVWR.

(5) *Crankcase Emissions.*

Engines may not discharge crankcase emissions into the ambient atmosphere throughout the useful life, other than those that are routed to the exhaust upstream of exhaust aftertreatment during all operation, except as follows:

(A) 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.

(B) A manufacturer that takes advantage of the exception in subsection (5)(A) must manufacture the engines so that all crankcase emissions can be routed into the applicable sampling systems specified in Part 1065 of the applicable test procedures incorporated by reference in subsection (c). The manufacturer must also account for deterioration in crankcase emissions when determining exhaust deterioration factors as described in § 1036.240(c)(5) of the applicable test procedures incorporated by reference in subsection (c).

(6) Medium-Duty and Heavy-Duty Compression-Ignition Engine Idling Requirements.

Except as provided in subsection (b)(6)(A) below, the requirements in this subsection apply to 2027 and subsequent model compression-ignition engines used in heavy-duty vehicles over 14,000 pounds GVWR, and medium-duty vehicles from 10,001 to 14,000 pounds GVWR. Manufacturers may meet the requirements of this subsection by either demonstrating compliance with the Engine Shutdown System requirements of subsection (b)(6)(B), below or the Clean Idle NOx Emission Standard specified in subsection (b)(6)(C), below.

(A) Exempt Vehicles. The requirements of this subsection (b)(6) do not apply to new 2027 and subsequent model:

1. Natural gas or liquefied petroleum gas fueled compression-ignition engines, and
2. Compression-ignition engines used in military tactical vehicles as defined in title 13, CCR, section 1905, and authorized emergency vehicles as defined in California Vehicle Code section 165.

(B) Automatic Engine Shutdown System. The requirements in this subsection apply to engine and vehicle 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 (b)(6)(A) and (b)(6)(C), all new 2027 and subsequent model year medium-duty and heavy-duty compression-ignition 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, 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, under any of 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.

b. If the vehicle's engine coolant temperature is below 15.6°C (or 60° F). The engine shutdown system shall automatically be activated once the coolant temperature reaches 15.6°C (or 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. 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 subsection (a)(6)(B)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 subsection (b)(6)(B)1 above.

(C) *Clean Idle NOx Emission Standard.*

1. *Emission Standard.* In lieu of the engine shutdown system requirements specified in subsection (b)(6)(B) above, an engine manufacturer may elect to certify its new 2027 and subsequent model year medium-duty and heavy-duty compression-ignition engines to a Clean Idle NOx emission standard. The Clean Idle NOx emission standard shall not exceed 10.0 grams per hour as determined using the Clean Idle test specified in § 1036.525 of the test procedures incorporated by reference in subsection (c).

2. *Compliance Determination.* Compliance with the Clean Idle NOx emission standard will be determined based on testing conducted pursuant to the Clean Idle test specified in § 1036.525 of the test procedures incorporated by reference in subsection (c), below. The standard applies separately to each mode of the Clean Idle test. The manufacturer may request an alternative test procedure if the technology used cannot be demonstrated using the procedures in § 1036.525, subject to advance approval of the Executive Officer.

3. *Labeling.* An engine manufacturer certifying its engine to the Clean Idle NOx emission standard must also produce a vehicle label, as defined in subsection B.1 of § 1036.135 of the test procedures incorporated by reference in subsection (c), below.

(D) *Optional Alternatives to Main Engine Idling.* All new 2027 and subsequent model year medium-duty and heavy-duty compression-ignition engines, subject to the requirements of subsection (b)(6), may also be equipped with idling emission reduction devices that comply with the compliance requirements specified in subsection (c)(3) of title 13, CCR, section 2485.

(7). *Greenhouse Gas Emission Standards for Carbon Dioxide (CO₂), Methane (CH₄), and Nitrous Oxide (N₂O).*

Emission standards apply for engines and hybrid powertrains using the test procedures incorporated by reference in subsection (c) as follows:

(A) *CO₂ Emission Standards.*

1. Spark-Ignition Engine Emission Standards.

a. The CO₂ standard for all 2027 and subsequent model year medium-duty and heavy-duty spark-ignition engines shall not exceed 627 g/hp·hr. This standard does not apply to heavy-duty spark-ignition engines that are heavy HDEs. Spark-ignition engines that qualify as heavy HDEs under § 1036.140(b)(2) of the test procedures incorporated by reference in subsection (c) are subject to the compression-ignition engine standards for Heavy HDE-Vocational or Heavy HDE-Tractor, as applicable. Heavy-duty spark-ignition engines may optionally be certified to the compression-ignition standards for the appropriate model year specified under this subsection (b)(7). Such engines are treated as compression-ignition engines for all provisions of this section.

b. *Optional Low-CO₂ Emission Standards.* As an option, 2027 model year heavy-duty spark-ignition engines, except in all cases engines used in medium-duty vehicles, may be certified to the Optional Low-CO₂ Emission Standard of 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 (b)(7)(B) and (b)(7)(C), respectively. In addition, engines certified to the Optional Low CO₂ Emission Standard and participating in the Innovative Technology Regulation set forth in title 13, CCR, sections 2208 and 2208.1 are not eligible to participate in the averaging, banking, and trading program, or to generate credits for certification.

2. Compression-Ignition Engine Emission Standards.

a. The following CO₂ standards apply for 2027 and subsequent model year medium-duty and heavy-duty compression-ignition engines and spark-ignition engines that qualify as heavy HDEs:

Table 5 to Subsection (b)(7)(A)2.a: CO₂ Emission Standards for 2027 and Subsequent Model Medium-Duty and Heavy-Duty Compression-Ignition Engines [g/hp·hr]

Model years	Light HDE and Medium-Duty Compression-Ignition engine	Medium HDE-Vocational	Heavy HDE-Vocational	Medium HDE-Tractor	Heavy HDE-Tractor
2027 and later	552	535	503	457	432

b. *Optional Low-CO₂ Emission Standards.* As an option, 2027 model year heavy-duty compression-ignition engines, except in all cases engines used in medium-duty vehicles, may be certified to the Optional Low-CO₂ Emission Standard, shown in table 6 below. Heavy-duty compression-ignition engines certified to these Optional Low-CO₂ Emission Standards must also comply with the applicable CH₄ and N₂O emission standards set forth in subsections (b)(7)(B) and (b)(7)(C), respectively. In addition, engines certified to these Optional Low-CO₂ Emission Standards and participating in the Innovative Technology Regulation set forth in title 13, CCR, sections 2208 and 2208.1 are not eligible to participate in the averaging, banking, and trading program, or to generate credits for certification.

Table 6 to Subsection (b)(7)(A)2.b: Optional Low-CO₂ Emission Standards for 2027 Model Heavy-Duty Compression-Ignition Engines used in Heavy-Duty Vehicles [g/hp·hr]

Model Years	Light HDE-Vocational	Medium HDE-Vocational	Heavy HDE-Vocational	Medium HDE-Tractor	Heavy HDE-Tractor
2027	490	474	446	409	387

(B) *CH₄ Emission Standard.* The CH₄ emission standard is 0.10 g/hp·hr when measured over the applicable FTP transient duty cycle specified in § 1036.512 of the test procedures incorporated by reference in subsection (c). Note that this standard applies for both spark-ignition and compression-ignition engines and for all fuel types just like the other standards of this section.

(C) *N₂O Emission Standards.* The N₂O emission standard is 0.10 g/hp·hr when measured over the applicable FTP transient duty cycle specified in § 1036.512 of the test procedures incorporated by reference in subsection (c). Note that this standard applies for both spark-ignition and compression-ignition engines.

(D) *Family Certification Levels.* A CO₂ Family Certification Level (FCL) must be specified for each engine family expressed to the same number of decimal places as the emission standard. The FCL may not be less than the certified emission level for the engine family. The CO₂ family emission limit (FEL) for the engine family is equal to the FCL multiplied by 1.03. The FCL serves as the applicable CO₂ emission standard for the engine family with respect to certification and confirmatory testing instead of the standards specified in this subsection (b)(7)(A). The FEL serves as the emission standard for the engine family with respect to all other testing.

(E) *Averaging, Banking, and Trading.* Emission credits under the averaging, banking, and trading (ABT) program described in the applicable test procedures incorporated by reference in subsection (c) may be used for demonstrating compliance with CO₂ emission standards. Credits (positive and negative) are calculated from the difference between the FCL and the applicable emission standard. As described in § 1036.705 of the applicable test procedures incorporated by reference in subsection (c), CO₂ credits may be used to certify engine families to FELs for N₂O and/or CH₄, instead of the N₂O/CH₄ standards of this section that otherwise apply. Except as specified in § 1036.705 of the applicable test procedures incorporated by reference in subsection (c), credits may not be generated or used for N₂O or CH₄ emissions.

(c) Test Procedures.

The test procedures for determining compliance with standards applicable to 2027 and subsequent model heavy-duty compression-ignition and spark-ignition engines, vehicles, 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 2027 and Subsequent Model Heavy-Duty Engines, Vehicles and Hybrid Powertrains,” adopted [INSERT DATE OF ADOPTION], which are incorporated by reference herein.

(d) Use of Engines Certified to Meet Federal Emission Standards.

(1) In 2027 and later model years, the Executive Officer may authorize the use of engines certified to meet the federal emission standards, or which are demonstrated to meet the appropriate federal emission standards, in up to a total of 100 heavy-duty vehicles, including spark-ignition and compression-ignition heavy-duty vehicles, in any one calendar year when the Executive Officer has determined that no engine certified to meet the 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.

(e) 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.

(f) Definitions Specific to this Section.

The following definitions apply to this § 1956.8.2.

“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.

“Compression-ignition” means relating to a type of reciprocating, internal-combustion engine that is not a spark-ignition engine. Note that subsection (a) also deems gas turbine engines and other engines to be compression-ignition engines.

“Crankcase emissions” means airborne substances emitted to the atmosphere from any part of the engine crankcase's ventilation or lubrication systems. The crankcase is the housing for the crankshaft and other related internal parts.

“Deteriorated emission level” means the emission level that results from applying the appropriate deterioration factor to the official emission result of the emission-data engine. Note that where no deterioration factor applies, references in this part to the deteriorated emission level mean the official emission result.

“Deterioration factor” means the relationship between emissions at the end of useful life (or point of highest emissions if it occurs before the end of useful life) and emissions at the low-hour/low-mileage point, expressed in one of the following ways:

(A) For multiplicative deterioration factors, the ratio of emissions at the end of useful life (or point of highest emissions) to emissions at the low-hour point.

(B) For additive deterioration factors, the difference between emissions at the end of useful life (or point of highest emissions) and emissions at the low-hour point.

“Engine family” has the same meaning given in § 1036.230 of the test procedures incorporated by reference in subsection (c).

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

“Family emission limit” (FEL) means one of the following:

(A) For NO_x emissions, an emission level declared by the manufacturer to serve in place of an otherwise applicable emission standard under the Averaging, Banking, and Trading Program described in the applicable test procedures incorporated by reference in subsection (c). The FEL serves as the applicable emission standard for the engine family with respect to all required testing.

(B) For greenhouse gas standards, family emission limit means an emission level that serves as the standard that applies for testing individual certified engines. 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.

“Federal Test Procedure” (FTP) means the applicable transient duty cycle, described in § 1036.512 of the test procedures incorporated by reference in subsection (c), designed to measure exhaust emissions during urban driving.

“Fuel type” means a general category of fuels such as diesel fuel, gasoline, or natural gas. There can be multiple grades within a single fuel type, such as premium gasoline, regular gasoline, or gasoline with 10% ethanol.

“Gross vehicle weight rating” (GVWR) means the value specified by the vehicle manufacturer as the maximum design loaded weight of a single vehicle, consistent with good engineering judgment.

“Heavy-duty engine” (HDE) means any engine which the engine manufacturer could reasonably expect to be used to propel a heavy-duty vehicle. For purposes of this definition in this section, the term “engine” includes internal combustion engines and other devices that convert chemical fuel into motive power. For example, a gas turbine used in a heavy-duty vehicle is a heavy-duty engine.

“Heavy-duty vehicle” means any motor vehicle having a manufacturer's gross vehicle weight rating greater than 8,500 pounds, except passenger cars. An incomplete vehicle is also a heavy-duty vehicle if it has a curb weight above 6,000 pounds or a basic vehicle frontal area greater than 45 square feet. Curb weight and

basic vehicle frontal area have the meaning given in Title 40, Code of Federal Regulations, § 86.1803-01 as last amended on April 18, 2024 and incorporated by reference here.

“Heavy heavy-duty engine” (Heavy HDE) means an engine used in a vehicle that normally exceeds 33,000 pounds GVWR. Heavy HDE 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. Spark-ignition engines that are best characterized by this definition are included in the Heavy HDE primary intended service class along with compression-ignition 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 HDE.

“Hybrid” or *“Hybrid Powertrain”* means relating to an engine or powertrain that includes a Rechargeable Energy Storage System. Hybrid engines store and recover energy in a way that is integral to the engine or otherwise upstream of the vehicle's transmission. Examples of hybrid engines include engines with hybrid components connected to the front end of the engine (P0), connected to the crankshaft before the clutch (P1), or connected between the clutch and the transmission where the clutch upstream of the hybrid feature is in addition to the transmission clutch or clutches (P2). Engine-based systems that recover kinetic energy to power an electric heater in the aftertreatment are themselves not sufficient to qualify as a hybrid engine. The provisions in this part that apply for hybrid powertrains apply equally for hybrid engines, except as specified. Note that certain provisions in this part treat hybrid powertrains intended for vehicles that include regenerative braking different than those intended for vehicles that do not include regenerative braking. The definition of hybrid includes plug-in hybrid electric powertrains.

“Hydrocarbon” (HC) means nonmethane hydrocarbons (NMHC), nonmethane nonethane hydrocarbons (NMNEHC), or nonmethane hydrocarbon equivalent (NMHCE), as applicable. Hydrocarbon generally means the hydrocarbon group on which the emission standards are based for each type of fuel and engine.

“Incomplete vehicle” has the meaning given in § 1036.801 of the test procedures incorporated by reference in subsection (c).

“Light heavy-duty engine” (Light HDE) 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.

“Low-load cycle” (LLC) means the emission test procedure described in § 1036.514 of the test procedures incorporated by reference in subsection (c).

“Manufacturer” means any person who manufactures or assembles an engine, vehicle, or piece of equipment for sale in California or otherwise introduces a new engine into commerce in California. This includes importers who import engines or vehicles for resale. It also includes secondary engine manufacturers.

“Medium-duty engine” means a heavy-duty engine that is used to propel a medium-duty vehicle.

“Medium-duty vehicle” means any heavy-duty vehicle having a manufacturer's gross vehicle weight rating between 8,501 and 14,000 pounds.

“Medium heavy-duty engine” (Medium HDE) 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.

“Model year” means the manufacturer's annual new model production period, except as restricted under this definition. It must include January 1 of the calendar year for which the model year is named, may not begin before January 2 of the previous calendar year, and it must end by December 31 of the named calendar year. Manufacturers may not adjust model years to circumvent or delay compliance with emission standards or to avoid the obligation to certify annually.

“Power take-off” (PTO) means a secondary engine shaft (or equivalent) that provides substantial auxiliary power for purposes unrelated to vehicle propulsion or normal vehicle accessories such as air conditioning, power steering, and basic electrical accessories. A typical PTO uses a secondary shaft on the engine to transmit power to a hydraulic pump that powers auxiliary equipment, such as a boom on a bucket truck.

“Primary intended service class” has the meaning given in § 1036.140 of the test procedures incorporated by reference in subsection (c). In general, it means the class that best describes the vehicle for which the manufacturer designs and markets the engine.

“Secondary engine manufacturer” means anyone who produces a new engine by modifying a complete or partially complete engine that was made by a different company. For the purpose of this definition, “modifying” does not include making changes that do not remove an engine from its original certified configuration. Secondary engine manufacturing includes, for example, converting automotive engines for use in industrial applications, or land-based engines for use in marine applications. This applies whether it involves a complete or partially complete engine and whether the engine was previously certified to emission standards or not.

(A) Manufacturers controlled by the manufacturer of the base engine (or by an entity that also controls the manufacturer of the base engine) are not secondary engine manufacturers; rather, both entities are considered to be one manufacturer for purposes of this part.

(B) This definition applies equally to equipment manufacturers that modify engines. Also, equipment manufacturers that certify to equipment-based standards using engines produced by another company are deemed to be secondary engine manufacturers.

(C) Except as specified in subsection (B) of this definition, companies importing complete engines from outside the United States into California are not secondary engine manufacturers regardless of the procedures and relationships between companies for assembling the engines.

“Spark-ignition” means relating to a gasoline-fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark-ignition engines usually use a throttle to regulate intake air flow to control power during normal operation.

“Supplemental Emission Test” (SET) means the supplemental emission test procedure described in § 1036.510 of the test procedures incorporated by reference in subsection (c).

“Test Procedure” means all aspects of engine testing including, but not limited to, the cycle, preconditioning procedures, equipment specifications, calibration, calculations, and other protocols and specifications needed to measure emissions.

“Tractor” means a vehicle meeting the definition of “tractor” § 1036.801 of the test procedures incorporated by reference in subsection (c).

“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.

“*Vehicle*” has the meaning given in § 1036.801 of the test procedures incorporated by reference in subsection (c).

“*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.

“*Vocational vehicle*” means a vehicle meeting the definition of “vocational vehicle” in § 1036.801 of the test procedures incorporated by reference in subsection (c).

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.