

POTENTIAL DRAFT REGULATORY LANGUAGE FOR STAKEHOLDER REVIEW: This document provides potential draft regulatory language for the Zero-Emission Powertrain Certification Procedures measure. This document is only intended to encourage public feedback, is incomplete, and should not be construed as a formal regulatory proposal.

California Environmental Protection Agency
AIR RESOURCES BOARD

CALIFORNIA STANDARDS AND TEST PROCEDURES FOR NEW 2019 AND
SUBSEQUENT MODEL HEAVY-DUTY ZERO-EMISSION POWERTRAINS

Draft Release Date: July 18, 2018

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NOTE: This document is incorporated by reference in section 1956.8, title 13, California Code of Regulations. This document contains the requirements for certification of a battery-electric or fuel-cell powertrain used in heavy-duty and incomplete medium-duty vehicles for sale in California, in addition to containing the emission standards and test procedures for these motor vehicles. This document does not apply to powertrains used in combustion hybrids.

PART I: Heavy-Duty Zero-Emission Powertrain Certification Requirements

A. General Applicability. All Model Year (MY) 2019 and subsequent MY zero-emission powertrains may be voluntarily certify to these procedures. Other regulations may require zero-emission powertrains certify to the requirements in these test procedures.

B. Definitions: For the purpose of these procedures, the following definitions apply:

“Applicant” or “manufacturer” means the person or entity who applies for a certification pursuant to these procedures. The applicant shall be responsible for the requirements set forth in these test procedures.

“Available Energy Capacity” means the amount of energy capacity in a fully charged battery pack available to the operator during normal usage of the powertrain in which it is installed. It does not include the energy of the battery pack that is not accessible due to a manufacturer-programmed decrease in energy capacity for battery pack protection. A manufacturer may elect to re-rate the available energy capacity when used in a secondary application or market.

“Battery Cell” means a system consisting of an anode, a cathode, and an electrolyte, plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy.

“Battery-Electric Vehicle” has the same definition “Electric Vehicle” in Title 40, Code of Federal Regulations (CFR) § 1037.801, last amended [PLACEHOLDER], hereby incorporated by reference herein.

“Battery Management System” means an electronic system used to monitor and/or control charge and discharge voltage, current, temperature, state of charge or other factors within the battery pack and connected components.

“Battery Module” means a group of battery cells grouped together in series or parallel and packaged together. A battery module may, but does not necessarily, include a battery management system or active thermal management.

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“Battery Pack” means multiple battery modules packaged together in series and/or parallel with integrated battery management and/or thermal management systems.

“Battery State of Health” means the assessment of battery performance relative to its original, new condition, as characterized by the manufacturer. It may be based upon parameters such as maximum power, internal resistance, self-discharge rate, and overall capacity.

“Electric Motor/Generator” means a machine or device that can generate power for or consume power from a battery or energy storage system.

“Energy Storage System” or “ESS” means a system that is designed to store the energy on a vehicle or piece of equipment, such as the battery pack.

“Executive Officer” means the Executive Officer of the California Air Resources Board or his or her authorized representative.

“Fuel-Cell Vehicle” means an electric vehicle propelled solely by an electric motor where energy for the motor is supplied by an electrochemical cell that produces electricity via the non-combustion reaction of hydrogen.

“Inverter” means an electronic device that converts either direct to alternating current or vice versa.

“Model Year” or “MY” has the same definition set forth in title 13, California Code of Regulations (CCR) § 2208, last amended [PLACEHOLDER], hereby incorporated by reference herein.

“Power Take-Off (PTO) Unit” has the same definition set forth in title 13, California Code of Regulations (CCR) § 1968.2, hereby incorporated by reference herein.

“Powertrain” has the same definition as “zero-emission powertrain” in title 13, CCR § 1956.8.

“Thermal Management System” means any device incorporated into the powertrain designed to control the temperature of the battery pack. This could be active cooling, such as through liquid or gas coolant flow, or passive cooling, such as through natural convection from a component to a heat sink.

“Usable Energy” means the amount of energy that can be extracted from a fully charged ESS, based on or derived from the results of testing or analysis. The usable energy capacity includes the energy of the battery pack that is not accessible due to a manufacturer-programmed decrease in energy capacity for battery pack protection.

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C. General Requirements for Powertrain Certification:

Zero-emission powertrain certification will cover the energy storage system, motor, power delivery subsystems, thermal control management systems, and other control and monitoring systems involved with the transmission of energy from the energy storage system to the components within the vehicle or equipment or the interface at which the electric power is converted to tractive mechanical power or power to a PTO system.

1. Certification Families

1.1. Battery-Electric Powertrains

1.1.1 Each battery chemistry and architecture combination based on cell chemistry, module construction (e.g., cylindrical, prismatic, pouch), and thermal management system (e.g., air cooling, indirect liquid cooling) constitutes a certification family and each family is required to obtain its own Executive Order, except as provided in C.1.3 and C.1.4. This includes batteries designed to directly accept electric power from off-board the vehicle that are integrated into fuel-cell powertrains.

1.1.2 For a powertrain designed to have with two or more unique battery types as described in C.1.1.1 within a single powertrain, the manufacturer may apply to have all of battery types included in a single certification family. The powertrain manufacturer shall describe the potential combinations of battery types. Each unique battery type shall be responsible for the requirements set forth in subsection C.2 and section D.

1.2. Fuel-Cell Powertrains. For fuel-cell powertrains, each fuel-cell stack type, as defined by the chemistry (e.g., anode layer, cathode layer, electrolyte chemistry) and hardware components of the stack, constitutes a certification family and each family is required to obtain its own Executive Order. In addition, batteries designed to directly accept electric power from off-board the vehicle that are integrated into the fuel-cell powertrain will be treated as independent battery packs and will subject to the requirements of battery-electric powertrains as well as fuel-cell powertrains. If a battery is used as an energy storage buffer for a fuel-cell powertrain and is not designed to directly accept charge from off-board the vehicle, the battery shall not be considered part of the battery pack.

1.3. Energy storage systems with different rated capacities may be grouped together in one Executive Order if they have identical components at a modular level, as well as cell construction, thermal

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management strategies, and battery management strategies that are functionally equivalent. This may encompass a battery pack with scalable number of battery modules or a powertrain with multiple identical battery packs installed in series or parallel.

- 1.4. With the exception of the battery pack, a manufacturer may certify multiple configurations of a powertrain with interchangeable components together in one Executive Order. During the certification process, the manufacturer must describe all potential configurations as well as provide the information required in section 2 for each individual component. Manufacturers may add additional components to the powertrain configuration mid-MY, without recertifying, provided that the components are not part of the battery pack. In such cases, the manufacturer will be required to notify the Executive Officer of these changes within 30 days of the completion of the MY in which the changes took place. Manufacturers will be required to distinguish the powertrain configurations by powertrain serial number.

2. **System Monitoring and Diagnostics Information.**

For each test group, a powertrain manufacturer must provide information (i.e., a detailed description) related to the system monitoring and diagnostics components of the vehicle or equipment powertrain. The requirements in this section do not dictate the monitoring or diagnostics systems that manufacturers must implement.

- 2.1. Manufacturers making changes to the monitoring and diagnostics systems that do not affect the hardware or physical components, such as changes in monitoring of data feeds, sensors, or power management strategies or changes to the architecture or hardware of the battery pack that do not affect the powertrain performance, such as substituting in an identically specified component made from a different manufacturer or with a different part number, to vehicles in an existing certification group will be required to notify the Executive Officer of these changes within 30 days of the completion of the MY in which the changes took place. The manufacturers shall describe the changes, the date each change took place, and the serial numbers or other information that can be used to identify the specific powertrains within the certification family affected by each change.
- 2.2. The manufacturer shall provide a list of the system monitoring and diagnostics components of the following powertrain subsystems as well as a description of the function of each, if present:

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- 2.2.1 Energy Storage System (ESS) - Any individual electronic inputs or outputs for the ESS (e.g., battery temperature sensors, battery voltage sensors, battery cell monitors, pressure sensors)
 - 2.2.2 Inverter Thermal Management - Any individual electronic inputs or outputs that are monitored for inverter thermal management (e.g., powertrain heating or cooling)
 - 2.2.3 Regenerative Braking System - Any inputs or outputs for the regenerative braking system (e.g., temperature sensors, voltage sensors)
 - 2.2.4 Charging System - Any inputs or outputs for the charging system (e.g., temperature sensors, voltage sensors)
 - 2.2.5 Electric Motor/Generator - Any inputs or outputs for the motor/generator system (e.g., temperature sensors, torque limits)
 - 2.2.6 Fuel Cell Stack - Any inputs or outputs for the fuel cell stack (e.g., voltage sensors, temperature sensors, pressure sensors)
- 2.3 The manufacturer shall provide the range of outputs in addition to the thresholds at which the monitor of any subsystem will indicate a malfunction. In addition, the manufacturer shall describe the situations (e.g., multiple measurements outside of a specific range) in which the vehicle will be commanded to illuminate the malfunction indicator.
- 2.4 The manufacturer shall provide a description of the manufacturer's method for monitoring and calculating the battery state of health including the parameters monitored (e.g., power capacity, internal resistance, self-discharge rate, overall capacity) and associated fault triggers. A description of how these data channels are aggregated to assess battery state of health shall be disclosed.

D. Certification Testing for New Battery Packs

Manufacturers of battery-electric powertrains must complete a usable capacity test per the "Static Capacity Test (Constant Current Method)" set forth in Society of Automotive Engineers (SAE) J1798, "Recommended Practice for Performance Rating of Electric Vehicle Battery Modules," last revised on July 8, 2008, which is hereby incorporated by reference herein with modifications as follows:

1. The manufacturer shall provide attestation that the test conditions conform to the requirements in section 5.2 to 5.9 of SAE J1798.

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2. The manufacturer shall perform the steps described in 6.1.2.1 to 6.1.2.6 of the “Static Capacity Test (Constant Current Method)” as described in SAE J1798 of either the battery module or battery pack. The battery modules or packs tested shall be representative of those manufactured and delivered to the market.
3. The default rate for the test shall be “C₃/3” the constant current required to discharge modules in 3 hours as recommended by the battery manufacturer per SAE J1798.
4. The test for battery modules or battery packs shall be run within the design parameters for charge depth, discharge depth, voltage, charge rates, and discharge rates of the battery pack to determine usable capacity.
5. During module or pack testing, should the battery temperature increase beyond the recommended limits for safe performance by the manufacturer, cooling strategies may be used as long as they are representative of the cooling strategies and hardware of the batteries manufactured and delivered to market.
6. Should the test be deemed unsafe to run at the recommended limit of “C₃/3” and with the cooling strategies implemented in D.5 of this subsection, the manufacturer may run the test at the limit of the battery manufacturer’s recommended discharge rate.
7. If the test is run at the module level, engineering analysis must be used to determine pack-level usable energy capacity.
8. The test parameters (e.g., module conditioning, sampling frequency, C₃/3, testing battery temperature profile, manufacturer-specified battery charge and discharge limits, number of test samples), measured usable energy capacity as measured in the test must be included in the certification application.
9. The available energy capacity must be provided for each pack configuration. If only module-level testing was performed, engineering analysis may be used to determine the values for each individual pack configuration.

E. LABELING

- 1.1. Label Location [PLACEHOLDER]
- 1.2. Label Information [PLACEHOLDER]

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F. CERTIFICATION PROCEDURAL REQUIREMENTS

1. Application Package: For each certification family, a powertrain manufacturer is required, at a minimum, to submit to the Executive Officer an application package, which includes the following:
 - 1.1 Letter of Intent: A manufacturer must include in its application package a letter requesting powertrain certification.
 - 1.2 Powertrain Configuration List. Provide the list of powertrain models and the different configurations. For each powertrain model, provide the following:
 - 1.2.1 Powertrain model number
 - 1.2.2 System Monitoring and Diagnostics Information as specified in section C.2
 - 1.2.3 Intended application (e.g., vocational vehicle, transit bus, refuse truck)
 - 1.2.4 A manufacturer shall provide specifications for the gear box(s), transmission(s), and transaxle(s), as appropriate.
 - 1.2.5 A manufacturer shall indicate the type, number, mounting location, along with the peak and continuous power ratings, in units of kilowatts, of the electric motor(s) that will provide tractive effort.
 - 1.2.6 Description of inverter(s) including technical specifications, make, and model
 - 1.2.7 Description of motor controller(s), including technical specifications, make, and model
 - 1.3 Powertrain.
 - 1.3.1 Executive Order Number(s)
 - 1.3.2 Powertrain test group and configuration
 - 1.3.3 Battery model name and technical specifications
 - 1.4 Certification Test Data

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- 1.4.1 Usable Energy Capacity
- 1.4.2 Available Energy Capacity
- 1.4.3 Battery Chemistry
- 1.4.4 Test Parameters
- 1.5 Projected Sales. For the model year for which the certification is sought, a manufacturer shall report:
 - 1.5.1 Projected total powertrain sales in the United States;
 - 1.5.2 Projected total powertrain sales in California;
 - 1.5.3 Projected sales of powertrain in family in the United States; and
 - 1.5.4 Projected sales of powertrain in family in California.
- 1.6 Sample of Powertrain Label
- 1.7 Battery end of life plan
- 1.8 Diagnostic and Repair Manual and Diagnostic Software
- 2. Multi-Year Executive Orders [PLACEHOLDER]

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PROPOSED Battery-Electric and Fuel-Cell Vehicle Certification Procedures

Draft Date: July 18, 2018

Note: The existing language, as adopted October 21, 2014, is shown in plain text. The proposed amendments to this document are shown in double underline to indicate additions and ~~strikeout~~ to indicate deletions, compared to the test procedures as adopted October 21, 2014. “[No change]” indicates federal provisions that are incorporated herein without change.

Date of Draft Release: July 18, 2018

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NOTE: This document is incorporated by reference in section 95663(d), title 17, California Code of Regulations (CCR). It contains the majority of the requirements necessary for greenhouse gas certification of a heavy-duty vehicle for sale in California. However, reference is made in these test procedures to other ARB documents that contain certification requirements for heavy-duty engines and vehicles. Note that this list of documents is not inclusive of all necessary requirements to complete an application for certification. The following documents are designed to be used in conjunction with this document. They include:

1. "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," as last amended ~~October 21, 2014~~ _____ (incorporated by reference in sections 1956.8(b), title 13, CCR);
2. "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles," as last amended ~~October 21, 2014~~ _____ (incorporated by reference in sections 1956.8(d), title 13, CCR)
3. "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as last amended _____ (incorporated by reference in section 1961.2(d), title 13, CCR)
4. "California Certification and Installation Procedures for Medium and Heavy-Duty Vehicle Hybrid Conversion Systems," as adopted September 1, 2017 (incorporated by reference in section 2208.2(a), title 13, CCR)
5. "California Standards and Test Procedures for New 2019 and Subsequent Model Heavy-Duty Zero-Emission Powertrains," as adopted [PLACEHOLDER] (incorporated by reference in section 1956.8(a), title 13, CCR)

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1. Amend 40 CFR §1037.115, to read as follows:

1037.115. Other requirements.

* * * *

Amend 1037.115 by adding the following:

(f) *Alternative Battery-Electric and Fuel-Cell Electric Vehicle Certification Procedures*

(1) Vehicles certifying to the Alternative Battery-Electric and Fuel-Cell Electric vehicle certification procedures in subpart 1037.615 (i) shall meet the following requirements:

(i) *Zero-Emission Powertrain.* A vehicle may only be built with a powertrain certified to the “Voluntary Zero-Emission Powertrain Certification Requirements” in 1956.8, title 13, CCR and specified as required in subpart 1037.615(i).

(ii) *Malfunction information.* A manufacturer shall include the required optical tell-tales that inform the operator of either correct operation or malfunctioning of the zero-emission powertrain components. The tell-tales must either conform with SAE J2402, published January 7, 2010, which is incorporated by reference herein, or be approved by the Executive Officer.

(iii) *System Monitoring and Diagnostics.* If the manufacturer alters the system monitoring or diagnostic thresholds system of the powertrain, as described in, “California Standards and Test Procedures for New 2019 and Subsequent Model Heavy-Duty Zero-Emission Powertrains,” Section C.2, such modifications must be described in detail in the application for certification.

(iv) *Remaining Charge.* A manufacturer must display or make readily accessible without the need for additional tools, codes, etc. to the vehicle operator a graphical and/or numerical representation of either the state of charge or remaining range of the vehicle. The state of charge for the energy storage system shall be displayed a percent of available capacity, in a maximum of 5% increments, starting at 100%. The remaining range shall be displayed as the remaining miles in maximum increments of one mile, that the vehicle can be driven until reaching the manufacturer-recommended discharge limit. The manufacturer may design their own symbol, gauge, or digital gauge for displaying

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the state of charge or remaining range, but must disclose them to the Executive Officer.

(v) *Trip Meter.* A resettable kilowatt-hour-per-mile meter shall be made accessible to the vehicle owner. This information is not required to be displayed on the vehicle dashboard and may be accessible through communications to a scan tool or other manufacturer-chosen method.

(vi) *Required Diagnostic Communications Tools.* A manufacturer must have installed a connector meeting the requirements in title 13, CCR 1971.1(h)(2), On-Board Diagnostic System Requirements--2010 and Subsequent Model-Year Heavy-Duty Engines, in the vehicle controller area network communications that is capable of connection and communication with scan tools that meet the requirements in Title 13, CCR §1971.1(h)(3), On-Board Diagnostic System Requirements--2010 and Subsequent Model-Year Heavy-Duty Engines, unless they have a device permanently installed in the vehicle capable of displaying the information required in subpart (vi) without the need for additional diagnostic tools.

(vii) *Required Monitoring Parameters.* The diagnostic communications specified tools in subpart (v) must be capable of communicating the readings from any voltage and temperature sensors monitoring the battery that are useful for repair or diagnosis, cumulative kilowatt-hours of throughput on the battery pack, the default percentage charge and discharge limits, and the vehicle or equipment average charge rates (in kilowatt-hours), and the current estimate of the usable energy capacity. In addition, the tools must be capable of communicating any confirmed fault code that is referenced in the diagnostic and repair manual. The manufacturer may design the communication network such that the accessibility of the monitoring parameters in this subpart is limited to those who have undergone manufacturer authorized service training.

(viii) *Remaining Usable Capacity.* A manufacturer must display or must make readily accessible via a dashboard display, through a scan tool communication or other manufacturer method, to the vehicle operator a graphical and/or a numerical representation of the remaining usable capacity of the energy storage system as a percent of the original usable battery energy, in a maximum of 5% increments, starting at 100%. This value may be derived from an on-board testing method active during normal operation (e.g., measuring the maximum energy accepted during charge). The same test must be performed at the time of vehicle certification to provide a baseline value and the manufacturer must describe the quantification strategy.

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(2) *Owners Manual.* Vehicles certifying to the Alternative Battery-Electric and Fuel-Cell Electric vehicle certification requirements in subpart 1037.615 (i) shall include an Owner's Manual with the vehicle at the time of vehicle delivery that meets the following requirements.

(i) Format. The owner's manual must be provided as a physical copy, as a digital downloadable file online at the manufacturer's website, via the on-board vehicle interface, or in another format approved by the Executive Officer.

(ii) The owner's manual must include instructions for the maintenance and use of the vehicle by the owner.

(iii) The owner's manual must include warranty provisions. A manufacturer shall clearly indicate the warranty coverage period for full replacement along with any prorated coverage periods.

(iv) The owner's manual shall make available to the purchaser a current list or online reference of repair and service locations capable of servicing, diagnosing, and repairing vehicles certified to these procedures. For physical copies, more current vehicle repair and service network information may be provided as an attachment.

(v) If mobile repair service is provided by the manufacturer in addition to or in lieu of a physical service location, a the manufacturer shall provide a description of the services that can be performed in the field along with anticipated response times.

(vi) If a manufacturer provides or offers remote/wireless diagnostic and repair services, the applicability and limitations of this service type shall be clearly described.

(3) *Diagnostic and Repair Manual.* The manufacturer must develop a diagnostic and repair manual for each unique vehicle model within a family (a certification family could have multiple powertrains). If the same manual is applicable to multiple vehicle models, the manufacturer shall indicate to which models each manual is applicable.

(i) The manufacturer must provide to the Executive Officer technical service bulletins and updates to the diagnostic and repair manual upon request.

(ii) The manufacturer must provide dealer-level diagnostic software and access to the Executive Officer upon request.

(iii) The manufacturer must make the diagnostic and repair manual, manual updates, technical service bulletins, and the diagnostic software available to third party repair facilities at reasonable cost. The manufacturer may require technical training for access.

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(4) *Fuel-Fired Heaters. Fuel fired heaters installed on vehicles certified in accordance with these procedures must comply with all of the following:*

(i) Comply with Low Emission Vehicle II Program's ULEV emission standards set forth in section X, title 13, CCR; and

(ii) The heater is demonstrated to have zero fuel evaporative emissions under any and all possible operational modes and conditions.

1037.135 [LABELING PLACEHOLDER]

1037.205

1. Amend subparagraph (w) by adding the following: When applicable, describe any changes required in §1037.115.

1037.250

1. Subparagraph (a) through (e). [No change.]

2. Amend subparagraph (f) by adding the following: Manufacturers of vehicles certified to the Alternative Battery-Electric and Fuel-Cell Electric Vehicle Certification Procedures must notify the Executive Officer of any additional components added to a vehicle within 30 days of the completion of the MY in which the changes took place. Manufacturers will be required to distinguish the vehicle configurations by serial number and specify which powertrain certification families certified to Voluntary Zero-Emission Powertrain Certification Standards in Title 13, CCR 1956.8 (a)(8) may be installed in their Alternative Battery-Electric and Fuel-Cell Electric Vehicles Certification Procedures family.

1037.615

1. Amend subparagraph (i) by adding the following: Electric vehicles and hydrogen fuel-cell vehicles may be certified to the "Alternative Battery-Electric and Fuel Cell Vehicle Certification Standards," by meeting the requirements specified in all subparts. A vehicle manufacturer certifying to these standards shall specify the specific powertrains certified to the "Voluntary Zero-Emission Powertrain Certification Requirements" in 1956.8, title 13, CCR. The vehicle manufacturer shall be responsible for all components of the vehicle not included in the powertrain. This shall also include components related to integration of the powertrain into the vehicle.

1037.801

B. California Provisions

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1. Add the following: “Available Energy Capacity” has the same definition as in “California Standards and Test Procedures for New 2019 and Subsequent Model Heavy-Duty Zero-Emission Powertrains.” [insert adopted date]
2. Add the following: “Battery Pack” has the same definition as in “California Standards and Test Procedures for New 2019 and Subsequent Model Heavy-Duty Zero-Emission Powertrains.” [insert adopted date]
3. Add the following: “Certification Family” or “Family” means, for new vehicles, the vehicle groupings of the HD Phase 2 program. No family shall include vehicles from multiple certification bins. Also includes conversion system families. If manufacturer opts to use own on-board strategy to quantify usable energy, different quantification strategies require different families.
4. Add the following: “End of Life Capacity” has the same definition as in “California Standards and Test Procedures for New 2019 and Subsequent Model Heavy-Duty Zero-Emission Powertrains.” [insert adopted date]
5. Add the following: “Energy Storage System” has the same definition as in “California Standards and Test Procedures for New 2019 and Subsequent Model Heavy-Duty Zero-Emission Powertrains.” [insert adopted date]
6. Add the following: “Executive Officer” means the Executive Officer of the California Air Resources Board or his or her authorized representative.
7. Add the following: “Fuel-Cell Electric Vehicle” has the same definition as that in 40 CFR § 86.1803 01 amended on July 1, 2011, incorporated by reference herein.
8. Add the following: “Fuel-Fired Heater” has the same definition as that in 13 CCR § 2485.
9. Add the following: “Nominal Energy Capacity” means the battery energy capacity specified by the battery manufacturer. This may be based on the battery manufacturer’s testing, methodology, or engineering analysis.
10. Add the following: “Powertrain” has the same definition as in “California Standards and Test Procedures for New 2019 and Subsequent Model Heavy-Duty Zero-Emission Powertrains.” [insert adopted date].
11. Add the following: “Usable Energy Capacity” means the amount of energy capacity that can be extracted from a battery pack after it is fully charged based on the results of testing or analysis.
12. Add the following: “Vehicle integration component” means any component of the vehicle that involves the interfacing of components between the vehicle and the zero-emission powertrain.”
13. Add the following: “Zero-Emission Powertrain” means the same as “Powertrain” in California Voluntary Standards and Test Procedures for New 2023 and Subsequent model Heavy-Duty Battery-Electric and Fuel-Cell Electric Powertrains, adopted XXX.