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

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. Except as provided, all powertrains listed in this section must certify in accordance with these test procedures.

1. All Model Year (MY) 2023 and subsequent MY zero-emission powertrains installed in a new battery-electric or fuel-cell electric vehicle certified to sections 9XXXX through 9XXXX, title 17, California Code of Regulations (CCR).

2. MY 2022 and previous zero-emission powertrains installed in a new battery-electric or fuel-cell electric vehicle certified to section 9XXXX through 9XXXX, title 17, CCR, for which the manufacturer optionally elects to certify in accordance with these test procedures.

3. MY 2018 and subsequent MY zero-emission powertrains used in off-road equipment with a power rating of 19 kilowatts or greater for which the manufacturer optionally elects to certify in accordance with these test procedures.

4. Zero-emission powertrains installed in aftermarket conversions after December 31, 2022 in accordance with [PLACEHOLDER].

5. Zero-emission powertrains installed in aftermarket conversions before January 1, 2023 certified in accordance with [PLACEHOLDER], for which the manufacturer optionally elects to certify in accordance with these test procedures.

B. Definitions: For the purpose of this article, the following definitions apply:

“Applicant” or “manufacturer” means the person who applies for a certification pursuant to these procedures.

“Available Energy Capacity” means the amount of energy capacity in a battery pack available to the operator during normal usage. 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.
“Battery Management System” means an electronic system used for managing a battery pack by monitoring or controlling voltage, current, temperature, state of charge or other factor within and outside of the battery pack.

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

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

“Conversion” or “Conversion System” means a zero-emission powertrain and the additional components and modifications necessary to convert a base vehicle to operate as a battery electric for fuel cell electric vehicle.

“Electric Motor/Generator” means the machine or device that converts electrical power to power.

“Electric Vehicle” means a motor vehicle that is powered solely by an electric motor drawing current from a rechargeable energy storage system, such as from storage batteries or other portable electrical energy storage devices, including hydrogen fuel cells, provided that:

(1) The vehicle is capable of drawing recharge energy from a source off the vehicle, such as residential electric service; and
(2) The vehicle does not have an onboard combustion engine/generator system as a means of providing electrical energy.

“Energy Storage System” means the 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” has the same definition as that in 40 CFR § 86.1803-01.

“Gross Vehicle Weight Rating” or “GVWR” has the same definition as that in California Vehicle Code Section 350, subdivision (a).

“Inverter” means an electronic device that converts direct current to alternating current.
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“Model year” or “MY” means the manufacturers’ 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 must end by December 31 of the calendar year for which the model year is named. Manufacturers may not adjust model years to circumvent or delay compliance to avoid the obligation to certify annually.

“Powertrain” means the energy storage system, motor, and any other power delivery subsystems involved with the transmission of energy from the energy storage system to the components within the vehicle or equipment at which the electric power is converted to mechanical power.

“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.

C. General Requirements for Powertrain Certification:

Vehicle or equipment powertrain certification will cover energy storage system, motor, and any other power delivery subsystems involved with the transmission of energy from the energy storage system to the components within the vehicle or equipment at which the electric power is converted to mechanical power.

1. Certification Families
1.1. Each battery chemistry and architecture combination (based on cell chemistry, cell construction, and thermal management system) constitutes a certification family and each family is required to obtain its own Executive Order.
1.2. Manufacturers making changes to the battery management system which do not affect the architecture of the battery pack, such as changes in monitoring of data feeds or power management strategies will be required to notify the Executive Officer of any changes and will receive a revised Executive Order.
1.3. Battery packs 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 management strategies, and battery management strategies that are functionally equivalent.
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 the potential configurations in the powertrain as well as provide the information required in section 2 for each individual component.
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2. System Monitoring and Diagnostics Requirement.

For each test group, a powertrain manufacturer is required to provide information related to the system monitoring and diagnostics components of the vehicle or equipment powertrain.

2.1. The manufacturer shall provide a description of the following subsystems:

2.1.1 Energy Storage System (ESS)
   2.1.1.1 Any inputs or outputs for the ESS (e.g., battery temperature sensors, battery voltage sensors, battery cells)
   2.1.1.2 The ranges of outputs at which the monitor will detect a malfunction or trigger a fault code

2.1.2 Inverter Thermal Management
   2.1.2.1 Any individual electronic input and output components that are monitored for inverter thermal management (e.g., heating or cooling)
   2.1.2.2 The ranges of outputs at which the monitor will detect a malfunction or trigger a fault code

2.1.3 Regenerative Braking System
   2.1.3.1 Any inputs or outputs for the regenerative braking system (e.g., temperature sensors, voltage sensors)
   2.1.3.2 The ranges of outputs at which the monitor will detect a malfunction or trigger a fault code

2.1.4 Charging System
   2.1.4.1 Any inputs or outputs for the regenerative braking system (e.g., temperature sensors, voltage sensors)
   2.1.4.2 The ranges of outputs at which the monitor will detect a malfunction or trigger a fault code

2.1.5 Motor/Generator
   2.1.5.1 Any inputs or outputs for the regenerative braking system (e.g., temperature sensors, torque limits)
   2.1.5.2 The ranges of outputs at which the monitor will detect a malfunction or trigger a fault code

2.2. The manufacturer shall provide a description of their 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. The methods for measuring those parameters and a description of how
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these data channels are aggregated to assess battery state of health shall be disclosed.

D. Certification Testing for New Battery-Electric Powertrains for Use in On-Road Vehicles

Manufacturers of battery-electric powertrains intended for use in heavy-duty on-road vehicles shall complete a usable capacity test per 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, at either the pack or module level at the time of certification in order to derive the usable energy capacity of the energy storage system.

1. Determination of usable energy capacity
   1.1. The manufacturer shall perform a constant current discharge test of the battery module or pack at a rate of C/3 per SAE J1798.
   1.2. The test shall be run within the parameters for charge depth, discharge depth, voltage, charge rates, and discharge rates that the battery pack is designed to determine usable capacity.
   1.3. Engineering analysis may be used to determine pack-level usable energy capacity.
   1.4. The test parameters, nominal energy capacity, and usable energy capacity of the module shall be included in the certification application.
   1.5. The available energy capacity must be provided for each pack configuration.
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California Environmental Protection Agency
AIR RESOURCES BOARD

CALIFORNIA STANDARDS AND TEST PROCEDURES FOR NEW 2023 AND SUBSEQUENT MODEL HEAVY-DUTY BATTERY-ELECTRIC AND FUEL-CELL ELECTRIC VEHICLES AND FOR HEAVY-DUTY BATTERY-ELECTRIC AND FUEL-CELL CONVERSION SYSTEMS

Adopted: [DATE]
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NOTE: This document is incorporated by reference in section 1956.8(j), title 13, California Code of Regulations (CCR). It contains the majority of the requirements necessary for certification of a heavy-duty battery-electric or fuel-cell electric vehicle for sale in California, in addition to containing the emission standards and test procedures for these motor vehicles. However, reference is made in these test procedures to other California Air Resources Board (CARB) documents that contain additional requirements necessary to complete an application for certification. These other documents are designed to be used in conjunction with this document. They include:

[LIST HD PHASE 2 PROCEDURE DOCUMENTS]
(e.g., AC leakage)
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CALIFORNIA EMISSION STANDARDS AND TEST PROCEDURES FOR NEW 2023 AND SUBSEQUENT MODEL HEAVY-DUTY BATTERY-ELECTRIC AND FUEL-CELL ELECTRIC VEHICLES AND FOR HEAVY-DUTY BATTERY-ELECTRIC AND FUEL-CELL CONVERSION SYSTEMS

A. Applicability. These procedures are the certification procedures that apply to the following:

1. New 2023 and subsequent model battery-electric and fuel-cell electric vehicles certifying in accordance with sections 95660 through 95664, title 13, California Code of Regulations (CCR);

2. New 2022 and previous model battery-electric or fuel-cell electric vehicles certifying in accordance with sections 95660 through 95664, title 13, CCR, for which the manufacturer optionally elects to certify in accordance with these procedures; and

3. Starting January 1, 2023, aftermarket battery-electric and fuel-cell electric conversion systems.

B. Definitions

“Applicant” or “manufacturer” means the person who applies for a certification pursuant to these procedures.

“Available Energy Capacity” means

“Battery-Electric Vehicle” means

“Battery End of Life” means

“Battery Rated Ampere-Hour Capacity” means the manufacturer-rated capacity of a battery in Ampere-hour obtained from a battery discharged at the manufacturer’s recommended discharge rate (C/1–C/6) such that a specified minimum cut-off terminal voltage is reached.

“Battery Pack” means…

“Bin” or “Certification Bin” means, for new vehicles, a defined grouping of certification families based on gross vehicle weight rating and, for conversion systems, the grouping of all conversion system certification families. For the purpose of these procedures, there are five certification bins: the medium-duty bin, the light heavy-duty bin, the medium heavy-duty bin, the heavy heavy-duty bin, and the conversion system bin.
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proposal.

“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.

“Conversion” or “Conversion System” means a zero-emission powertrain and the
additional components and modifications necessary to convert a base vehicle to
operate as a battery-electric for fuel-cell electric vehicle. For the purpose of these
procedures, “conversion” or “conversion system” does not include powertrain
replacements performed to repair a battery-electric or fuel-cell electric vehicle in
order to fulfill a warranty claim.

“Conversion System Bin” means the certification bin that contains all of the
manufacturer’s conversion systems.

“Cumulative Sales Volume” means the total number of 2023 and subsequent
model vehicles certified in accordance with these procedures that have been sold in
the United States by a manufacturer.

“Electric Vehicle” means a motor vehicle that is powered solely by an electric
motor drawing current from a rechargeable energy storage system, such as from
storage batteries or other portable electrical energy storage devices, including
hydrogen fuel cells, provided that:

(1) The vehicle is capable of drawing recharge energy from a source off the
vehicle, such as residential electric service; and

(2) The vehicle does not have an onboard combustion engine/generator system
as a means of providing electrical energy.

“End of Life Capacity”

“Energy Storage System” means the 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 Electric Vehicle” has the same definition as that in 40 CFR
§ 86.1803-01.

“Gross Vehicle Weight Rating” or “GVWR” has the same definition as that in
California Vehicle Code Section 350, subdivision (a).
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“Heavy Heavy-Duty Bin” means the certification bin that includes all vehicles with a GVWR of 33,001 lbs. or more.

“Large-Volume Bin” means a certification bin, in which the cumulative sales volume of all 2023 and subsequent model vehicles that have been certified in accordance with these procedures exceeds 250.

“Level 1 Provisions” means all provisions of these procedures, except those explicitly identified as Level 2 requirements.

“Level 2 Provisions” means all provisions of these procedures, including those explicitly identified as Level 2 requirements.

“Light Heavy-Duty Bin” means the certification bin that includes all vehicles from 14,001 lbs. through 19,500 lbs. GVWR.

“Medium-Duty Bin” means a certification bin that includes all vehicles from 8,501 lbs. through 14,000 lbs GVWR.

“Medium Heavy-Duty Bin” means a certification bin that includes all vehicles from 19,501 lbs. through 33,000 lbs GVWR.

“Model year” or “MY” means the manufacturers’ 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 must end by December 31 of the calendar year for which the model year is named. Manufacturers may not adjust model years to circumvent or delay compliance to avoid the obligation to certify annually.

“Nominal Energy Capacity” means

“Powertrain” means the energy storage system, motor, and any other power delivery subsystems involved with the transmission of energy from the energy storage system to the components within the vehicle or equipment at which the electric power is converted to mechanical power.

“Small-Volume Bin” means a certification bin of a manufacturer that has not yet achieved a cumulative sales volume, starting from the 2023 model year, of 250 vehicles.

“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.

“Warranty condition” means
“Warranty period” means the period of time or mileage (miles, hours, kw-hr) that the vehicle or part are covered by the warranty provisions.

“Warranted part” means

“Warranty station” means a service facility authorized by the vehicle, powertrain, or energy storage system manufacturer to perform warranty repairs. This shall include all of the manufacturer’s dealerships that are franchised to service the subject vehicles, powertrains, or energy storage systems.

C. GENERAL REQUIREMENTS FOR CERTIFICATION

1. The powertrain with which the vehicle or conversion is being certified pursuant to these procedures must be certified in accordance with section 1956.8, title 13, CCR, hereby incorporated by reference herein.

2. Certification Levels

   2.1 Except as provided in section C.2.4, all battery-electric certification families within a large-volume bin must be certified in accordance with Level 2 provisions.

   2.2 Battery-electric certification families within a small-volume bin may be certified in accordance with either Level 1 or Level 2 provisions, at the manufacturer’s discretion.

   2.3 Fuel-cell electric certification families shall be certified in accordance with the Level 1 provisions of these procedures.

   2.4 Once model-year sales volume reporting indicates a manufacturer’s battery-electric certification bin has achieved the large-volume bin threshold for the first time, a manufacturer has one complete model year lead time to certify families belonging to said bin to the Level 2 provisions. That is, a manufacturer may continue selling Level 1 vehicles within the bin through the current model year (model year being sold when the reporting is submitted) and again certify families within said bin to Level 1 requirements for the following model year. The manufacturer will then be required to certify all subsequent model year vehicles in that bin to Level 2 requirements.

3. Owner’s Manual

   3.1 The owner’s manual must be included with the vehicle at the time of vehicle delivery.
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3.2 Format. The owner's manual must be provided as a physical copy, as a digital file, via the on-board vehicle interface, or in another format approved by the Executive Officer.

3.3 Contents. The owner's manual must include the following:

3.3.1 Warranty and maintenance information.

3.3.1.1 Written instructions for the maintenance and use of the vehicle by the owner.

3.3.1.2 Clear Warranty Language Provisions. For warranty provided for vehicles certified pursuant to these procedures, a manufacturer shall clearly indicate the warranty coverage period for full replacement along with any prorated coverage periods.

3.3.2 Vehicle Repair and Service Network: A manufacturer shall make available to the purchaser a current list 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.

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

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

D. VEHICLE MONITORING REQUIREMENTS

1. If the manufacturer alters the monitoring system of the powertrain, such modifications must be described in detail in the application for certification.

2. Required Connector. A manufacturer is required to install 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.

3. Required Communications to a Scan Tool. A manufacturer is required to utilize a controller area network that meets the requirements in Title 13 CCR 1971.1(H)(3) On-Board Diagnostic System Requirements--2010 and Subsequent Model-Year Heavy-Duty Engines.
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4. If a vehicle is not natively designed to comply with D.3 and D.4, the manufacturer must develop and make available to the public at reasonable cost, an adapter or interpreter that facilitates the connection and communication with scan tools that comply with D.3 and D.4.

E. DIAGNOSTIC AND REPAIR MANUAL.

1. The manufacturer must develop a diagnostic and repair manual for each unique vehicle configuration within a family (a certification family could have multiple powertrains).
   1.1 The manufacturer must provide to the Executive Officer technical service bulletins and updates to the diagnostic and repair manual.
   1.2 The manufacturer must provide dealer-level diagnostic software to the Executive Officer.

2. 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.

F. VEHICLE USER INTERFACE REQUIREMENTS

1. Information that must be provided.
   1.1 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 or be approved by the Executive Officer.
   1.2 State of 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 the state of charge for the energy storage system, in a minimum of 5% increments, starting at 100%.
   1.3 Resettable kilowatt-per-trip meter.
   1.4 Resettable kilowatt-per-mile meter.
   1.5 Remaining capacity. A manufacturer must display or make readily accessible to the vehicle operator a graphical and/or numerical representation of the remaining capacity of the energy storage system as a percent of the original usable battery energy, in a minimum of 5% increments, starting at 100%.
G. WARRANTY AND RECALL

1. Warranty

1.1 Level 1 Warranty

1.1.1 Minimum Term: Three years or 50,000 miles, whichever comes first.

1.1.2 Coverage. The warranty coverage provided must warrant the vehicle to be free from defects in materials and workmanship.

1.1.3 Warranty must cover towing costs for distances over 50 miles between the vehicle’s base of operation and the nearest authorized repair facility.

1.2 General Provisions

1.2.1 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.

1.2.2 Except for powertrain replacements, replacement parts must be identical in all material respects to the part as described in the vehicle manufacturer’s application for certification.

1.2.3 Any warranted part that is not scheduled for replacement as required maintenance in the written instructions required in subdivision C.3 shall be warranted for the applicable warranty period defined in section H.1.1. If any such part fails during the period of warranty coverage, it shall be repaired or replaced by the vehicle manufacturer. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

1.2.4 Any warranted part that is scheduled only for regular inspection in the written instructions required by subdivision C.3 shall be warranted for the applicable warranty period defined in section H.1.1. 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 required or replaced under warranty shall be warranted for the remaining warranty period.

1.2.5 Any warranted part that is scheduled for replacement as required maintenance in the written instructions required by subdivision C.3 shall be warranted for the period of time, mileage, whichever first
occurs, prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part shall be repaired or replaced by the vehicle manufacturer. Any such part required or replaced under warranty shall be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

1.2.6 Repair or replacement of any warranted part under the warranty provisions of this article shall be performed at no charge to the vehicle owner at a warranty station or at the owner’s location, except in the case of an emergency when a warranted part or a warranty station is not reasonably available to the vehicle owner. In an emergency, for repairs that can be safely performed, 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 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 warranted repair and the geographically appropriate hourly labor rate. A vehicle owner may reasonably be required to keep receipts of all failed parts in order to receive compensation for warranted repairs reimbursable due to the emergency, provided the manufacturer’s written instructions required by subdivision C.3 advise the owner of this obligation.

1.2.7 Warranty services or repairs shall be provided at all of a manufacturer’s dealerships that are franchised to service the subject vehicles.

1.2.8 The vehicle owner shall not be charged for diagnostic labor that leads to the determination that a warranted part is defective, provided that such diagnostic work is performed at a warranty station.

1.2.9 The vehicle manufacturer shall be liable for damages to other vehicle components proximately caused by a failure under warranty of any warranted part.

1.2.10 Throughout the vehicle warranty period defined in section H.1.1, the vehicle 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 of vehicle is initially presented to the warranty station for repair or from
the time the owner has notified the manufacturer of the need for repair if an authorized repair facility is not within 50 miles of the location in which the vehicle is domiciled, shall constitute an emergency for purposes of this section.

1.2.11 The Executive Officer may request and, in such case, manufacturer shall provide, any documents that describe the manufacturer’s warranty procedures or policies.

1.2.12 The repair or replacement of any warranted part otherwise eligible for warranty coverage under these procedures shall be excluded from such warranty coverage if the manufacturer demonstrates that the vehicle has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for repair or replacement of the part.

1.3 Warranty-Covered Powertrain Replacements

1.3.1 A powertrain installed in a battery-electric or fuel-cell electric vehicle may be replaced with a different powertrain certified pursuant to section 1956.8(j), title 13, CCR, if the replacement is performed to satisfy a warranty claim.

1.3.2 Such replacements must be reported to the Executive Officer in accordance with the warranty reporting requirements of these procedures.

1.3.3 Powertrains replacements that are not covered by warranty must be part of a conversion system certified pursuant to these procedures.

2. Level 2 Warranty Provisions

2.1 Although not required to warrant battery energy, manufactures must provide a disclosure at the time of vehicle sale of the amount of battery energy warranted by the manufacturer.

2.2 The warranty for the energy storage system must state the warrantable battery energy, in units of kilowatt-hour, or capacity, in units of ampere-hours, and as a percentage of the original available battery energy or available capacity as tested. A manufacturer may include other metrics, such as accumulated discharge cycles per pack, gross energy discharge throughput per pack, or any other relevant metric, and make them readily accessible to the owner.

2.3 The disclosure must include:
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2.3.1 The term, in years.
2.3.2 Power throughput, in kilowatt-hours.
2.3.3 The covered capacity.
2.3.4 How warranty coverage is prorated.
2.3.5 How warranty repairs are performed.

H. LEVEL 2 IN-USE TESTING REQUIREMENTS
1. In-use testing of the usable energy capacity is required for Level 2
certifications.
2. The usable energy capacity is quantified using one of the following methods.
   2.1 SAE J1798
   2.2 Manufacturer-defined on-board strategy
3. In manufacturer opts for an on-board strategy, the same test must be
   performed at the time of certification to provide a baseline value. In addition,
   the manufacturer must describe the quantification strategy.
4. Testing must be performed within the third and sixth calendar year after a
   vehicle is sold.
5. For each certification family, the manufacturer must test 10 percent or 10
   vehicles, whichever is less.
6. The vehicle-selection strategy must be approved by the Executive Officer.

I. FUEL-FIRED HEATERS. Fuel fired heaters installed on vehicles certified in
accordance with these procedures must comply with all of the following:
   1. Comply with Low Emission Vehicle II Program’s ULEV emission standards set
      forth in section X, title 13, CCR; and
   2. Must not use a volatile fuel.

J. REPORTING
1. Annual Reporting
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1. Annual reporting for a model year must be submitted to the Executive Officer by June 1 of the calendar year following the end of said model year.

1.1 The following must be included in the manufacturer’s annual reporting:

   1.1.1 Vehicle sales.
   1.1.2 Configuration of each vehicle sold.

2. Level 2 In-Use Test Results

3. Warranty Reporting

   3.1 Warranty reporting required if the number of warranty claims for the same part or component reaches the greater of 1 percent of CA sales or ten valid claims within a certification bin.

   3.2 Reporting must be submitted by [PLACEHOLDER].

   3.3 Information

   3.3.1 Vehicle information
   3.3.2 Date of failure
   3.3.3 Mileage
   3.3.4 Nature of failure
   3.3.5 Component
   3.3.6 Repair time
   3.3.7 [PLACEHOLDER]

K. WARRANTY RECALL. If number of warranty claims for the same part or component reaches the greater of 4 percent of CA sales or 25 valid claims, the Executive Officer may require a recall.

L. LABELING

   1. Label Location [PLACEHOLDER]
   2. Label Information [PLACEHOLDER]

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

1. Application Package: For each certification family, a vehicle 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 vehicle certification.

1.2 Vehicle Model List. Provide the list of vehicle models in which the powertrain will be installed. For each vehicle model, provide the following:

1.2.1 Vehicle model number
1.2.2 Intended application (e.g., vocational vehicle, transit bus, refuse truck)
1.2.3 GVWR
1.2.4 Drivetrain Specifications
1.2.5 A manufacturer shall provide specifications for the gear box(s), transmission(s), and transaxle(s), as appropriate.
1.2.6 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.
1.2.7 Description of inverter(s)
1.2.8 Description of motor controller(s)

1.3 Powertrain.

1.3.1 Executive Order Number(s)
1.3.2 Energy Capacity, if applicable

1.4 Projected Sales. For the model year for which the certification is sought, a manufacturer shall report:

1.4.1 Projected total vehicle sales in the United States;
1.4.2 Projected total vehicle sales in California;
1.4.3 Projected sales of vehicles in family in the United States; and
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1.4.4 Projected sales of vehicles in family in California.

1.5 Sample of Vehicle Label

1.6 Battery end of life plan

1.7 Owner’s Manual

1.8 Diagnostic and Repair Manual and Diagnostic Software

2. Multi-Year Executive Orders [PLACEHOLDER]