

## **Appendix V – Summary and Rationale for each Regulatory Provision**

### **A. Proposed Phase 1 Regulations and Test Procedures**

#### **Proposed Amendments to the Proposed Regulation Order**

##### **Title 13**

##### **Section 1900(b): Definitions**

###### Subsection (b)(3)

The addition of this definition, “emission standard,” is needed to clarify the criteria used to determine if the requirements applicable to on-road motor vehicles and motor vehicle engines that are set forth in Article 2, Chapter 1, Division 3 of Title 13, California Code of Regulations are emission standards. The proposed definition revises the definition of “emission standard” set forth at Health and Safety Code section 39027 consistent with the express authorization of the Board to make such a revision in Health and Safety Code sections 39010 and 39601.

###### Subsection (b)(4)

The addition of this new definition, “evaporative emission standards,” is needed to identify a subcategory of the new definition of emission standard.

###### Subsection (b)(5)

The addition of this new definition, “exhaust emission standards” or “tailpipe emission standards,” is needed to identify a subcategory of the new definition of emission standard.

###### Subsection (b)(6) through (b)(25)

The renumbering of these subsections is necessary due to the addition of the proposed subsections (b)(3) through (b)(5).

##### **Section 1956.8. Exhaust Emission Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles.**

###### Subsection (a)(7)

This new subsection is added to establish greenhouse gas (GHG) emission standards equivalent to the federal Phase 1 GHG standards for

new 2014 and subsequent model heavy-duty (HD) diesel engines, HD natural gas-fueled and liquefied-petroleum-gas (LPG)-fueled engines derived from diesel-cycle engines, and HD methanol-fueled diesel engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (a)(7)(A)

This new subsection establishes CO<sub>2</sub> emission standards equivalent to the Phase 1 CO<sub>2</sub> standards from new 2014 and subsequent model HD diesel engines, HD natural gas-fueled and LPG-fueled engines derived from diesel-cycle engines, and HD methanol-fueled diesel engines. It specifies equivalent FEL requirements; averaging, banking, and trading (ABT) program and credits requirements, alternate phase-in emission standards, and alternate emission standards based on 2011 MY engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (a)(7)(B)

This new subsection establishes a methane (CH<sub>4</sub>) emission standard equivalent to the Phase 1 CH<sub>4</sub> standard from new 2014 and subsequent model HD diesel engines, HD natural gas-fueled and LPG fueled engines derived from diesel-cycle engines, and HD methanol-fueled diesel engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (a)(7)(C)

This new subsection establishes a nitrous oxide (N<sub>2</sub>O) emission standard equivalent to the Phase 1 N<sub>2</sub>O standard from new 2014 and subsequent model HD diesel engines, HD natural gas-fueled and LPG fueled engines derived from diesel-cycle engines, and HD methanol-fueled diesel engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (b) Test Procedures

The existing subsection (b) is modified to update the reference to the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles." This referenced document is being modified as part of this rulemaking. As

such, the “last amended” date has been updated with a blank placeholder that will be updated to reflect the date the document is formally amended. The addition of this section is necessary in order to establish California GHG emission standards and test procedures for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (c)(4)

This new subsection is added to establish GHG emission standards equivalent to the Phase 1 GHG standards for new 2016 and subsequent model HD Otto-cycle engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (c)(4)(A)

This new subsection establishes CO<sub>2</sub> emission standards equivalent to the Phase 1 CO<sub>2</sub> standards from new 2016 and subsequent model HD Otto-cycle engines. It specifies equivalent family certification level FEL requirements; ABT program and credits requirements. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (c)(4)(B)

This new subsection establishes a CH<sub>4</sub> emission standard equivalent to the Phase 1 CH<sub>4</sub> standard from new 2016 and subsequent model Otto-cycle engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (c)(4)(C)

This new subsection establishes a nitrous oxide (N<sub>2</sub>O) emission standard equivalent to the Phase 1 N<sub>2</sub>O standard from new 2016 and subsequent model Otto-cycle engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (d)

The existing subsection (d) is modified to update the reference to the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines.” This referenced document is being modified as part of this rulemaking. As such, the “last amended” date has been updated with a blank placeholder

that will be updated to reflect the date the document is formally amended. In addition, a comma was removed from the later referenced document's title to reflect a similar change in the actual document's title. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (h)(6)

This new subsection is added to establish GHG emission standards equivalent to the Phase 1 GHG standards for new 2014 and subsequent model heavy-duty diesel engines and 2016 and subsequent heavy-duty Otto-cycle engines used in medium-duty low-emission vehicles, ultra-low emission vehicles, and super-ultra-low emission vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (h)(6)(A)

This new subsection establishes CO<sub>2</sub> emission standards equivalent to the Phase 1 CO<sub>2</sub> standards from new 2014 and subsequent model Otto-cycle engines used in medium-duty low emission vehicles, ultra-low emission vehicles, and super-ultra-low emission vehicles. It specifies equivalent FEL requirements; ABT program and credits requirements, alternate phase-in emission standards, and alternate emission standards based on 2011 MY engines. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (h)(6)(B)

This new subsection establishes a CH<sub>4</sub> emission standard equivalent to the Phase 1 CH<sub>4</sub> standard from new 2014 and subsequent model HD diesel engines and new 2016 and subsequent heavy-duty Otto-cycle engines used in medium duty low emission vehicles, ultra-low emission vehicles, and super-low emission vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (h)(6)(C)

This new subsection establishes a N<sub>2</sub>O emission standard equivalent to the Phase 1 CH<sub>4</sub> standard from new 2014 and subsequent model HD diesel engines and new 2016 and subsequent heavy-duty Otto-cycle

engines used in medium duty low emission vehicles, ultra-low emission vehicles, and super-low emission vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty engines and for harmonization with federal Phase 1 GHG regulations.

Subsection (i)

This new subsection contains the definition of terms used in this section; these terms, except for the ones noted below, are identical to those adopted in the federal Phase 1 GHG regulations. The addition of this section is necessary for harmonization with federal Phase 1 GHG regulations.

The addition of the definition in subsection (i)(2) “emission standard” is needed to clarify the criteria used to determine if the standards set forth in 13 CCR section 1956.8 and the remedies provided for in the Health and Safety Code for noncompliance, are emission standards. The proposed definition revises the definition of “emission standard” set forth at Health and Safety Code section 39027 consistent with the express authorization of the board to make such a revision in Health and Safety Code sections 39010 and 39601. The addition of the new definition in subsection (i)(3) “evaporative emission standards” is needed to identify a subcategory of the new definition of emission standard. The addition of the new definition in subsection (i)(4) “exhaust emission standards” or “tailpipe emission standards” is needed to identify a subcategory of the new definition of emission standard.

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

Subsection (c)(4.1)

The existing subsection (4) describes the warranty period of diesel-powered heavy-duty vehicles and engines used in such vehicles. The new subsection (4.1) adds the warranty period requirements, which are identical to the federal Phase 1 regulations, of diesel-powered heavy-duty vehicles below 19,500 pounds GVWR that are certified to the GHG emission standards. The addition of this new subsection is necessary to ensure that manufacturers provide an emission warranty for diesel heavy-duty vehicles certified to GHG emission standards.

#### Subsection (c)(4.2)

The existing subsection (4) describes the warranty period of diesel-powered heavy-duty vehicles and engines used in such vehicles. The new subsection (4.1) adds the warranty period requirements, which are identical to the federal Phase 1 regulations, of diesel-powered heavy-duty vehicles at or above 19,500 pounds GVWR that are certified to GHG emission standards. The addition of this new subsection is necessary to ensure that manufacturers provide an emission warranty for diesel heavy-duty vehicles certified to GHG emission standards.

#### Subsection (c)(8.1)

The existing subsection (8) describes the warranty period of non-diesel-powered heavy-duty vehicles and engines used in such vehicles. The new subsection (8.1) adds the warranty period requirements, which are identical to the federal Phase 1 regulations, of non-diesel-powered heavy-duty vehicles that are certified to GHG emission standards. The addition of this new subsection is necessary to ensure that manufacturers provide and emission warranty for non-diesel heavy-duty vehicles certified to GHG emission standards.

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

#### Subsection (a.1)

The existing subsection (a) describes applicability of this section's warranty requirements to passenger cars, light-duty trucks, and medium-duty vehicles, and engines used in such vehicles. The new subsection (a.1) adds the applicability of medium-duty vehicles that are certified to the GHG emission standards to the warranty requirements of this section. The addition of this new subsection is necessary to ensure that manufacturers provide an emission warranty for the medium-duty vehicles certified to GHG emission standards.

### **Section 2112. Definitions**

#### Subsection (l)(19.1)

This new subsection adds the useful life criteria for 2004 and subsequent model-year light heavy-duty diesel engines certified to the emission standards in section 1956.8, which are the Phase 1 GHG emission standards. This modification is necessary because the existing language

does not reference the Phase 1 GHG emission standards and is necessary for harmonization with federal Phase 1 GHG regulations.

Subsection (l)(20.1)

This new subsection adds the useful life criteria for 2004 and subsequent model-year medium heavy-duty diesel engines certified to the emission standards in section 1956.8, which are the Phase 1 GHG emission standards. This modification is necessary because the existing language does not reference the Phase 1 GHG emission standards and is necessary for harmonization with federal Phase 1 GHG regulations.

Subsection (21)

The references to paragraphs (20)(A) and (20)(B) are incorrect and are modified to instead cite paragraphs (21)(A) and (21)(B).

Subsection (l)(21.1)

This new subsection adds the useful life criteria for 2004 and subsequent model-year heavy heavy-duty diesel engines and urban buses certified to the emission standards in section 1956.8 or 1956.1, which includes the Phase 1 GHG emission standards. This modification is necessary because the existing language does not reference the Phase 1 GHG emission standards and is necessary for harmonization with federal Phase 1 GHG regulations.

Subsection (l)(22.1)

This new subsection adds the useful life criteria for 2004 and subsequent model-year heavy-duty Otto-cycle engines certified to the emission standards in section 1956.8, which includes the Phase 1 GHG emission standards. This modification is necessary because the existing language does not reference the Phase 1 GHG emission standards and is necessary for harmonization with federal Phase 1 GHG regulations.

Subsection (l)(25)

This new subsection establishes the useful life criteria for 2014 and subsequent MY heavy-duty vehicles at or below 19,500 pounds GVWR certified to the GHG emission standards of section 95663, title 17. The addition of this subsection is necessary for harmonization with federal Phase 1 GHG regulations.

Subsection (l)(26)

This new subsection establishes the useful life criteria for 2014 and subsequent model-year heavy-duty vehicles above 19,500 pounds and at or below 33,000 pounds GVWR certified to the GHG emission standards of section 95663, title 17. The addition of this subsection is necessary for harmonization with federal Phase 1 GHG regulations.

Subsection (l)(27)

This new subsection establishes the useful life criteria for 2014 and subsequent model-year heavy-duty vehicles above 33,000 pounds GVWR certified to the GHG emission standards of section 95663, title 17. The addition of this subsection is necessary for harmonization with federal Phase 1 GHG regulations.

**Section 2139. Testing.**

Subsection (b.1)

This new subsection adds the requirement for in-use compliance emission testing of chassis-certified medium-duty vehicles certified to the GHG emission standards of section 95663, Title 17 and that these tests are performed pursuant to section 95663, Title 17. The modification of this subsection is necessary in order to allow ARB to conduct GHG in-use compliance testing of medium-duty vehicles.

Subsection (c.1)

This new subsection adds the requirements for in-use compliance emission testing of engine-certified medium-duty vehicles certified to the GHG emission standards and that these tests are performed pursuant to section 1956.85, Title 13. The modification of this subsection is necessary in order to allow ARB to conduct GHG in-use compliance testing of engine-certified medium-duty vehicles.

Subsection (c)(2)

This subsection allows engine-certified medium-duty vehicles to be in-use compliance tested on chassis test procedures. The reference is added to include section 95663, Title 17, which contains the GHG test procedures incorporated by reference.



#### Subsection (d)

The existing subsection is modified by adding the requirement that in-use compliance emission tests for heavy-duty vehicles certified to the GHG emission standards of section 95663, title 17 be performed pursuant to section 95663, title 17. The modification of this subsection is necessary in order to allow ARB to conduct GHG in-use compliance testing of heavy-duty engines and vehicles.

### **Section 2140. Notification and Use of Test Results**

#### Subsection (b)

The existing subsection is modified by adding a reference to 17 CCR 95663 to the list of applicable emission standards to which the in-use vehicle emission test results are compared, resulting in notification of standards exceedance to the manufacturer. The newly referenced section contains the GHG emission standards for 2014 and newer heavy-duty vehicles. The modification of this subsection is necessary in order to apply this section to the GHG emission standards of Section 95663.

### **Section 2147. Demonstration of Compliance with Emission Standards**

#### Subsection (b)

The existing subsection is modified by adding a reference to 17 CCR 95663 to the list of applicable certification emission tests. The newly referenced section contains the GHG certification emission test requirements for 2014 and newer heavy-duty vehicles. The modification of this subsection is necessary in order to apply this section to the GHG emission standards of Section 95663.

#### Subsection (b)(3)

The existing subsection is modified by adding a reference to 17 CCR 95663 to the list of applicable certification emission tests that can be used to generate in-use data on which deterioration factors can be based. The newly referenced section contains the GHG certification emission test requirements for 2014 and newer heavy-duty vehicles. The modification of this subsection is necessary in order to apply this section to the GHG emission standards of Section 95663.

## **Title 17. Public Health**

### **Division 3. Air Resources**

#### **Chap 1. Air Resources Board**

##### **Subchapter 10. Climate Change**

##### **Article 4. Regulations to Achieve Greenhouse Gas Emission Reductions.**

##### **Subarticle 12. Greenhouse Gas Emission Requirements for New 2014 and Subsequent Model Heavy-Duty Vehicles.**

New subarticle 12 of 17 CCR, is added to establish emission standards and test procedures to control GHG emissions from on-road medium-and heavy-duty vehicles. These emission standards will reduce CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, and other GHG emissions, resulting in more efficient, lower GHG emitting engines and vehicles. It is necessary to control and reduce GHG emissions in California because GHG emissions contribute to climate change.

#### **Section 95660. Purpose**

New section 95660 describes the purpose of the regulation codified under new subarticle 12, which is to reduce GHG emissions of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> and HFCs from new medium- and heavy-duty vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### **Section 95661. Applicability.**

New section 95661 describes the applicability of subarticle 12 to all new 2014 and subsequent model medium- and heavy-duty vehicles, including vehicles fueled by conventional and alternative fuels, and electric vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### **Section 95662. Definitions.**

This new subsection is added to define terms used in subarticle 12. In addition, it incorporates by reference the definitions provided in 13 CCR 1900(b). The addition of this section is necessary for harmonization with federal Phase 1 GHG regulations.

## **Section 95663. Greenhouse Gas Exhaust Emission Standards and Test Procedures for New 2014 and Subsequent Model Heavy-Duty Vehicles.**

New section 95663 provides GHG exhaust emission standards and test procedures applicable to new 2014 and subsequent model heavy-duty vehicles.

### Subsection (a)

This new subsection provides GHG exhaust emission standards applicable to new 2014 and subsequent model heavy-duty vehicles over 14,000 pounds GVWR. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

### Subsection (a)(1)

This subsection provides CO<sub>2</sub> exhaust emission standards for new 2014 and subsequent model diesel and Otto-cycle vocational heavy-duty vehicles with a GVWR greater than 14,000 pounds. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

### Subsection (a)(1)(A)

This subsection provides CO<sub>2</sub> exhaust emission standards for new 2014 and subsequent model diesel and Otto-cycle vocational heavy-duty vehicles with GVWR greater than 14,000 pounds. In addition, the subsection provides the requirements for the optional ABT program and for generating credits (subsection (a)(1)(A)1). Moreover, the subsection specifies the useful life that heavy-duty vocational vehicles must comply with the emission standards of this subsection (subsection (a)(1)(A)2). The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

### Subsection (a)(2)(A)

This subsection provides CO<sub>2</sub> exhaust emission standards for new 2014 and subsequent model tractors with a GVWR greater than 26,000 pounds. In addition, the subsection provides the requirements for the optional ABT program and for generating credits applicable to heavy-duty tractors (subsection (a)(2)(A)1). Moreover, the subsection defines the useful life requirements (subsection (a)(2)(A)2) that tractors must comply with the emission standards specified in this subsection. The addition of

this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (a)(2)(B)

Subsection (a)(2)(B) specifies the refrigerant leakage requirements from air conditioning systems from 2014 and later heavy-duty tractors. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (b)

This subsection provides GHG exhaust emission standards applicable to new 2014 and subsequent model diesel and Otto-cycle medium-duty vehicles between 8,501 to 14,000 pounds GVWR. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (b)(1)(A)

This subsection provides the methodology to calculate the national-fleet average CO<sub>2</sub> emission standard that a manufacturer must meet for each model year of diesel medium-duty vehicles. To provide manufacturers added compliance flexibility, the subsection also provides two phase-in provisions to choose from for phasing in the diesel fleet average CO<sub>2</sub> targets. Moreover, the subsection provides the useful life that the diesel medium-duty vehicle must comply with the emission standards specified in subsection 95663(b)(1)(A). Furthermore, the subsection specifies the in-use CO<sub>2</sub> standards that will be used for selective enforcement audits and in-use testing. This subsection also provides the N<sub>2</sub>O and CH<sub>4</sub> emission standards for new 2014 and later model medium-duty vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (b)(1)(B)

This subsection provides the methodology to calculate the national-fleet average CO<sub>2</sub> emission standard that a manufacturer must meet for each model year of its Otto-cycle medium-duty vehicles. To provide manufacturers added compliance flexibility, the subsection also provides two phase-in provisions to choose from for phasing-in the Otto-cycle fleet average CO<sub>2</sub> targets. Moreover, the subsection provides the useful life

that the Otto-cycle medium-duty vehicle must comply with the emission standards specified in subsection 95663(b)(1)(B). Furthermore, the subsection specifies the in-use CO<sub>2</sub> standards that will be used for selective enforcement audits and in-use testing. This subsection also provides the N<sub>2</sub>O and CH<sub>4</sub> emission standards for new 2014 and later model medium-duty vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (b)(1)(C)

This subsection specifies the refrigerant leakage requirements from air conditioning systems from 2014 and later medium-duty vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Subsection (c)

This subsection incorporates by reference the test procedures for determining compliance with GHG emission standards applicable to 2014 and subsequent model medium- and heavy-duty vehicles. The addition of this section is necessary in order to establish California GHG emission standards and test procedures for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

### **Section 95664. Severability.**

This subsection discusses the severability of any section, paragraph, subparagraph, sentence, clause, phrase, or portion of the subarticle. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

### **Proposed Amendments to the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles”**

#### **List of Documents to be used in Conjunction with this Document**

Three documents are referenced in this section. It is necessary to include them to indicate the documents that are referred to and are used in conjunction with these test procedures for the certification of heavy-duty diesel engines.

## Introductory paragraph

The purpose of this paragraph is to reference the sections of the CFR that are incorporated by reference and amended in the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles.” The change to this paragraph is necessary to add Subpart A through I of Part 1036, which contains the Phase 1 GHG federal regulations.

## Subsection I. 86.1

86.1 was updated as part of U.S. EPA’s Phase 1 Final Rule and describes the reference material of Subpart A, Part 86. Addition of this section is needed to allow harmonization with federal regulations.

## **Part 86, Subpart A**

### Subsection 1.A.3.

86.016-1 is a new CFR section, added as part of the federal Phase 1 GHG Final Rule and updated the previous 86.005-1, which describes the general applicability of Subpart A, Part 86. Addition of this section is needed to allow harmonization with federal regulations. Moreover, the changes to this section are necessary to maintain existing California requirements as shown in 86.005-1 and 86.001-1 and with existing California on-board diagnostic requirements.

### Subsection 2.A.

86.012-2 is a new CFR section added as part of the U.S. EPA Phase 1 Final Rule, which describes definitions. This new section 86.012-2 redefines the term “urban bus.” Addition of this section is needed to allow harmonization with federal regulations. Moreover, the changes to the definition of urban bus are necessary to maintain this new definition of urban bus for the Phase 1 GHG federal regulations while maintaining the previous definition of urban bus to apply to other existing ARB regulations.

### Subsection 2.B.

This subsection contains California definitions that apply to this subpart. The change to this subsection is needed to define additional terms that are used in the subpart. In addition, corrections are made to two existing definitions. Finally, quotations are added to one definition to maintain consistent format in this subsection.

#### Subsection 17.

This section deletes the federal on-board diagnostic provisions for engines less than or equal to 14,000 pounds GVWR and replaces them with requirements from the CCR. The title change of this section and the addition of 86.007-17 were made in a previous federal rulemaking and are necessary to be updated for consistency with the federal requirements.

#### Subsection 18.

This section deletes the on-board diagnostics for engines used in applications greater than 14,000 pounds GVWR and replaces them with requirements from the CCR. This section was modified as part of the federal Phase 1 GHG Final Rule, and the change in the title is necessary to maintain consistency with the federal requirements.

#### Subsection 23.A.

This subsection, which describes the required data for the submission of an engine certification for application, was updated in the federal Phase 1 GHG Final Rule. The updated date in this section is needed to allow harmonization with federal regulations. Moreover, the address modification is necessary because the mailing address of ARB has changed.

### **Part 86, Subpart S**

#### Section 86.1863-07

This subsection, which describes the optional chassis certification for diesel vehicle from 8,500 to 14,000 pounds GVWR, was updated in the federal Phase 1 GHG Final Rule. The updated date in this section is needed to allow harmonization with federal regulations. In addition, the corrections in subsection 4 are necessary for harmonization with the federal regulations.

### **Part 1036**

The federal Phase 1 GHG emission standards and requirements are incorporated by reference in this part, and it is necessary to add this part in order to include these emission standards and requirements for California certification. Unless otherwise noted below, the CFR sections are incorporated by reference without change. The CFR date next to the section is either November 14, 2011, which is the original federal Phase

1 GHG Final Rule effective date, or August 16, 2013, which is the subsequent Phase 1 GHG Technical Amendment effective date.

#### Section 1036.1

This section is added to describe the engine model years and engine fuel types subject to the requirements of part 1036, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.2

This section describes the parties that are responsible for compliance with the requirements of this part. It specifies engine manufacturers as the main party responsible for compliance. Its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.5

This section is added to describe the type of engines that are excluded from the requirements of this part, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.10

This section describes the various subparts that make up this part 1036, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.15

This section describes other regulation parts (such as parts 86, 1037, 1065, 1068) that affect engines that are subject to this part 1036. Its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.30

This section provides ARB's designated person and address to whom the certifying manufacturer has to submit all reports and requests for approval. Its addition is necessary to provide the correct mailing address.



#### Section 1036.100

This section provides an overview of the exhaust emission standards to which engines subject to the requirements of this part must comply, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.108

This section specifies exhaust emission standards for CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> that affected engines must meet to comply with the requirements of this part, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations. Moreover, it provides an additional, optional compliance path for manufacturers referred to as the “Optional Compliance Via the 2014 MY National Heavy-Duty Engine and Vehicle Greenhouse Gas Program,” which is necessary for added compliance flexibility for manufacturers.

#### Section 1036.115

This section describes other requirements, such as warranty, that engine manufacturers must comply with, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.130

This section contains engine installation instructions for vehicle manufacturers, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations. Moreover, the change to subparagraph (b)(2) is needed to reference California regulatory authority for penalties.

#### Section 1036.135

This section describes the engine labeling requirements, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations. Moreover, changes to the introductory paragraph are needed to ensure that labels contain California provisions as provided in 86.007-35(a)(3), as modified by these test procedures.

#### Section 1036.140

This section defines the primary intended service class of the applicable engines into the following categories: light heavy-duty engines, medium heavy-duty engines, and heavy heavy-duty engines. Its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.150

This section describes interim provisions such as banking GHG emission for early compliance, 2014 model year nitrous oxide standards, and alternate phase-in standards. Its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations. Moreover, changes to subparagraph (a) allow manufacturers to generate emission credit for 2013 and earlier model year compliance, equivalent to the federal ABT program. This change is necessary in order to establish an equivalent California ABT program to the federal ABT program.

#### Section 1036.205

This section describes the information that must be included in a certification application, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.210

This section described the process to provide preliminary approval before submitting an application for certification, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.225

This section contains the procedures for amending an application for certification once it has been submitted for certification, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.230

This section contains the instructions for how to select engine families, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations

Section 1036.235

This section describes the emission testing requirements to show compliance with the GHG emission standards, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

Section 1036.241

This section shows how to demonstrate compliance with the GHG emission standards, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

Section 1036.250

This section describes the reporting and recordkeeping requirements for certification, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

Section 1036.255

This section describes the decisions that the U.S. EPA (or ARB) may make regarding certification and issuing of an Executive Order, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

Section 1036.401

This section describes how in-use testing will be performed by U.S. EPA (or ARB) as well as the manufacturer's obligation to test in-use engines, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations

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#### Section 1036.501

This section specifies how to run a valid certification emission test using the standard or special equipment and procedures, and its addition is necessary for establishing GHG test procedures for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.525

This section contains requirements for testing hybrid engines, and its addition is necessary for establishing GHG test procedures for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.530

This section describes how to calculate official emission test results for GHG emissions, and its addition is necessary for establishing GHG test procedures for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.601

This section contains compliance provisions for engine manufacturers as well as owners, operators, and rebuilders of engines, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.610

This section specifies the provisions for generating innovative technology credits of powertrain technologies that were not in common use with heavy-duty engines before 2010 model year. Its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations. In addition, changes are made to subparagraph (d) to remove the reference to 40 CFR 86.1866 and are necessary because this federal reference is not applicable to California law.

#### Section 1036.615

This section describes how to generate advanced technology-specific emission credits for hybrid powertrains and for engine with Rankine

cycle waste heat recovery systems. Its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.620

This section describes an alternative schedule for compliance with the CO<sub>2</sub> emission standards based on the model year 2011 diesel engines, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.625

This section describes the process to apply a higher in-use FEL based on forfeiting an appropriate number of emission credits, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.701

This section describes the general provisions of the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.705

This section contains the provisions for calculating emission credits for each GHG pollutant in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.710

This section specifies how to average emission credits for an averaging set in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.715

This section specifies how to bank excess credits in the ABT program, and its addition is necessary for establishing GHG emission standards

for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.720

This section specifies how to trade excess emission credits between manufacturers, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.725

This section describes the information to include in the application for certification if the manufacturer participates in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.730

This section describes the requirements to submit end-of-year and final reports if the manufacturer participates in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.735

This section describes the recordkeeping provisions for manufacturers, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.740

This section specifies the restrictions for using emission credits, such as defining the averaging set, applying credits to prior year deficits, credits from hybrid engine and other advanced technologies, and credit life. The addition of this section is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.745

This section contains the provisions for remedying end-of-year CO<sub>2</sub> credit deficits, and its addition is necessary for establishing GHG

emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.750

This section specifies the consequences for not complying with the provisions of this subpart, such as voiding the Executive Order, and its addition is necessary for establishing GHG emission standards for heavy-duty diesel engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.801

This section contains the definitions that apply to this part and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, the addition of subparagraph B. is needed to incorporate California-specific definitions into these test procedures.

#### Section 1036.805

This section explains the symbols, acronyms, and abbreviations that are used in this part, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.810

This section describes the material that is incorporated by reference in Part 1036, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.815

This section references existing provisions to apply for submitted information to be considered confidential, and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, the addition of subparagraph B. is needed in order to reference California regulatory authority to consider confidential information.

#### Section 1036.820

This section contains the requirements for requesting a hearing, and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, the changes to subparagraphs (a) and (c) are needed in order to reference California regulatory authority to request a hearing.

## Section 1036.825

This section describes the reporting and recordkeeping requirements of the engine manufacturer, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

### **Part 1065**

All changes to Part 1065 update the incorporated CFR sections to the most current versions; the amended date has been updated to either November 14, 2011, which is the original federal Phase 1 GHG Final Rule effective date, or August 16, 2013, which is the subsequent Phase 1 GHG Technical Amendment effective date. These changes are needed to allow harmonization with federal regulations.

### **Proposed Amendments to the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines”**

#### **Title Modification**

**The title was updated to add “and Vehicles” because these test procedures currently apply to medium-duty vehicles that use Otto-cycle engines.**

#### **List of Documents to be Used in Conjunction with this Document**

Three documents are referenced in this section. It is necessary to include them to indicate the documents that are referred to and are used in conjunction with these test procedures for the certification of heavy-duty Otto-cycle engines.

##### Introductory paragraph

The purpose of this paragraph is to reference the sections of the CFR that are incorporated by reference and amended in the “California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines.” The change to this paragraph is necessary to add Subparts A through I of Part 1036 and Subparts A through K of Part 1065, which contains the Phase 1 GHG federal regulations.

#### Part 86, Subpart A

##### Subsection 1.A.3.

86.016-1 was a new CFR section added as part of the federal Phase 1 GHG Final Rule and updated the previous 86.005-1, which describes



the general applicability of Subpart A, Part 86. Addition of this section is needed to allow harmonization with federal regulations. Moreover, the changes to this section are necessary to maintain existing California requirements as shown in 86.005-1 and 86.001-1.

#### Subsection 2.A.3.

86.012-2 was a new CFR section added as part of the U.S. EPA Phase 1 Final Rule, which describes definitions. This new section 86.012-2 redefines the term “urban bus.” Addition of this section is needed to allow harmonization with federal regulations. Moreover, the changes to the definition of urban bus are necessary to maintain this new definition of urban bus for the Phase 1 GHG federal regulations while maintaining the previous definition of urban bus to apply to other existing ARB regulations.

#### Subsection 2.B.

This subsection contains California definitions that apply to this subpart. The change to this subsection is needed to define additional terms that are used in the subpart. In addition, corrections are made to two existing definition. Finally, quotations are added to one definition to maintain consistent format in this subsection.

#### Subsection 10.B.1.footnote in table

This modification corrects the footnote for the NO<sub>x</sub> emission standard of 2008 and subsequent Otto-cycle engines to refer to the same footnote as the NMHC emission standard. This modification is necessary to correct the mistake.

#### Subsection 23.

This subsection, which describes the required data for the submission of an engine certification for application, was updated in the federal Phase 1 GHG Final Rule. The change in this section is needed to allow harmonization with federal regulations.

#### Subsection 35 A

This subsection contains the emission label requirements for Otto-cycle engines. This modification clarifies the emission label requirements to include a statement of conformity to California regulations and is necessary for the enforcement of engines certified to the GHG regulations.

## Part 1036

The federal Phase 1 GHG emission standards and requirements are incorporated by reference in this Part, and it is necessary to add this part in order to include these emission standards and requirements for California certification. Unless otherwise noted below, the CFR sections are incorporated by reference without change. The CFR date next to the section is either November 14, 2011, which is the original federal Phase 1 GHG Final Rule effective date, or August 16, 2013, which is the subsequent Phase 1 GHG Technical Amendment effective date.

### Section 1036.1

This section is added to describe the engine model years and engine fuel types subject to the requirements of part 1036, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

### Section 1036.2

This section describes the parties that are responsible for compliance with the requirements of this Part. It specifies engine manufacturers as the main party responsible for compliance. Its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

### Section 1036.5

This section is added to describe the type of engines that are excluded from the requirements of this part, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

### Section 1036.10

This section describes the various subparts that make up this part 1036, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

### Section 1036.15

This section describes other regulation parts (such as parts 86, 1037, 1065, 1068) that affect engines that are subject to this part 1036. Its

addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.30

This section provides ARB's designated person and address to whom the certifying manufacturer has to submit all reports and requests for approval. Its addition is necessary to provide the correct mailing address.

#### Section 1036.100

This section provides an overview of the exhaust emission standards to which engines subject to the requirements of this part must comply, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.108

This section specifies exhaust emission standards for CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> that affected engines must meet to comply with the requirements of this part, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations. Moreover, it provides an additional, optional compliance path for manufacturers referred to as the "Optional Compliance Via the 2014 MY National Heavy-Duty Engine and Vehicle Greenhouse Gas Program," which is necessary for added compliance flexibility for manufacturers.

#### Section 1036.115

This section describes other requirements, such as warranty, that engine manufacturers must comply with, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.130

This section contains engine installation instructions for vehicle manufacturers, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations. Moreover, the change to subparagraph (b)(2) is needed to reference California regulatory authority for penalties.

#### Section 1036.135

This section describes the engine labeling requirements, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations. Moreover, changes to the introductory paragraph are needed to ensure that labels contain California provisions as provided in 86.007-35(a)(3), as modified by these test procedures.

#### Section 1036.140

This section defines the primary intended service class of the applicable engines into the following categories: light heavy-duty engines, medium heavy-duty engines, and heavy heavy-duty engines. Its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.150

This section describes interim provisions such as banking GHG emission for early compliance, 2014 model year nitrous oxide standards, and alternate phase-in standards. Its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.205

This section describes the information that must be included in a certification application, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.210

This section described the process to provide preliminary approval before submitting an application for certification, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.225

This section contains the procedures for amending an application for certification once it has been submitted for certification, and its addition

is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.230

This section contains the instructions for how to select engine families, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.235

This section describes the emission testing requirements to show compliance with the GHG emission standards, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.241

This section shows how to demonstrate compliance with the GHG emission standards, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.250

This section describes the reporting and recordkeeping requirements for certification, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.255

This section describes the decisions that the U.S. EPA (or ARB) may make regarding certification and issuing of an Executive Order, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.401

This section describes how in-use testing will be performed by U.S. EPA (or ARB) as well as the manufacturer's obligation to test in-use engines, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.501

This section specifies how to run a valid certification emission test using the standard or special equipment and procedures, and its addition is necessary for establishing GHG test procedures for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.525

This section contains requirements for testing hybrid engines, and its addition is necessary for establishing GHG test procedures for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.530

This section describes how to calculate official emission test results for GHG emissions, and its addition is necessary for establishing GHG test procedures for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.601

This section contains compliance provisions for engine and equipment manufacturers as well as owners, operators, and rebuilders of engines, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.610

This section specifies the provisions for generating innovative technology credits of powertrain technologies that were not in common use with heavy-duty engines before 2010 model year. Its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations. Moreover, changes are made to subparagraph (d) to remove the reference to 40 CFR 86.1866 and are necessary because this federal reference is not applicable to California law.

#### Section 1036.615

This section describes how to generate advanced technology-specific emission credits for hybrid powertrains and for engine with Rankine

cycle waste heat recovery systems. Its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.620

This section describes an alternative schedule for compliance with the CO<sub>2</sub> emission standards based on the model year 2011 engines, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.625

This section describes the process to apply a higher in-use FEL based on forfeiting an appropriate number of emission credits, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.701

This section describes the general provisions of the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.705

This section contains the provisions for calculating emission credits for each GHG pollutant in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.710

This section specifies how to average emission credits for an averaging set in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.715

This section specifies how to bank excess credits in the ABT program, and its addition is necessary for establishing GHG emission standards

for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.720

This section specifies how to trade excess emission credits between manufacturers, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.725

This section describes the information to include in the application for certification if the manufacturer participates in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.730

This section describes the requirements to submit end-of-year and final reports if the manufacturer participates in the ABT program, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.735

This section describes the recordkeeping provisions for manufacturers, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations

#### Section 1036.740

This section specifies the restrictions for using emission credits, such as defining the averaging set, applying credits to prior year deficits, credits from hybrid engine and other advanced technologies, and credit life. The addition of this section is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.745

This section contains the provisions for remedying end-of-year CO<sub>2</sub> credit deficits, and its addition is necessary for establishing GHG



emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.750

This section specifies the consequences for not complying with the provisions of this subpart, such as voiding the Executive Order, and its addition is necessary for establishing GHG emission standards for heavy-duty Otto-cycle engines and for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.801

This section contains the definitions that apply to this part and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, the addition of subparagraph B. is needed to incorporate California-specific definitions into these test procedures.

#### Section 1036.805

This section explains the symbols, acronyms, and abbreviations that are used in this part, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.810

This section describes the material that is incorporated by reference in Part 1036, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

#### Section 1036.815

This section references existing provisions to apply for submitted information to be considered confidential, and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, the addition of subparagraph B. is needed in order to reference California regulatory authority to consider confidential information.

#### Section 1036.820

This section contains the requirements for requesting a hearing, and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, the changes to subparagraphs (a) and (c) are needed in order to reference California regulatory authority to request a hearing.

## Section 1036.825

This section describes the reporting and recordkeeping requirements of the engine manufacturer, and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, the deletion of subparagraphs (e) is needed in order to delete a reference to the federal regulations.

## **Part 1065**

All changes to Part 1065 update the incorporated CFR sections to the most current versions; the amended date has been updated to either November 14, 2011, which is the original federal Phase 1 GHG Final Rule effective date, or August 16, 2013, which is the subsequent Phase 1 GHG Technical Amendment effective date. These changes are needed to allow harmonization with federal regulations.

## **Proposed Amendments to the “California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles”**

The new document, “California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles”, contain the proposed GHG emission standards and test procedures for heavy-duty vehicle certification beginning in the 2014 model year. These emission standards will reduce CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, and other GHG emissions, resulting in more efficient, lower GHG emitting engines and vehicles. It is necessary to control and reduce GHG emissions in California because GHG emissions contribute to climate change.

## **List of Documents to be used in Conjunction with this Document**

Two documents are referenced in this section. It is necessary to include them to indicate the documents that are referred to and are used in conjunction with the HDV TPs for the certification of heavy-duty vehicles.

### Introductory Paragraphs

The two introductory paragraphs describe the format of the HDV TPs. The first paragraph establishes the provisions of the CFR that are incorporated by reference in the HDV TPs. These provisions use the version of the CFR as adopted by the U.S. EPA on November 14, 2011 (the original federal Phase 1 GHG Final Rule effective date), unless otherwise noted next to the subsection (The CFR date next to some sections may be August 16, 2013, which is the Phase 1 GHG Technical Amendment effective date.).

The second paragraph shows the notations used in the document to indicate whether a change is made or not to the cited CFR section as well as other notations. These explanatory paragraphs are necessary to be added in order to clarify how to accurately read and understand the HDV TPs.

## **Part 1037.**

### Section 1037.1

This section describes the applicability of this part to six types of GHG emissions and to all new heavy-duty vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

In addition, California-specific provisions were added to this section to show applicability to medium- and heavy-duty vehicles. Moreover, references to the national vehicle sales are redefined as California sales, except in the ABT program. Furthermore, any references to U.S. EPA hearings, inspections, and the like are not applicable. These California-specific provisions are necessary in order to establish an effective California program to control GHG emissions from heavy-duty vehicles.

### Section 1037.5

This section is added to describe the type of vehicles that are excluded from the requirements of this part, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

### Section 1037.10

This section describes the various subparts that make up this part 1037, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

### Section 1037.15

This section describes other regulation parts (such as parts 1065 and 1066) that affect vehicles that are subject to this part 1037. Its addition is necessary for harmonization with federal Phase 1 GHG regulations.

### Section 1037.30

This section directs all reports and requests for approval to be sent to the Designated Compliance Officer. Its addition is necessary for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.101

This section provides an overview of emission standards for heavy-duty vehicles, including criteria exhaust, GHG exhaust, and fuel evaporative emissions. Its addition is necessary for harmonization with federal Phase 1 GHG regulations. In addition, changes are made in subparagraphs (b)(1) and (b)(4) to show that references to criteria exhaust and fuel evaporative emissions are not applicable to these procedures. The addition of these changes is needed for consistency that the HDV TPs are applicable only to GHG emissions. Moreover, changes to subparagraph (b)(2) provide an additional, optional compliance path for manufacturers referred to as the "Optional Compliance Via the 2014 MY National Heavy-Duty Engine and Vehicle Greenhouse Gas Program," which is necessary for added compliance flexibility for manufacturers.

#### Section 1037.102

This section references 40 CFR part 86 for the criteria exhaust emission standards. Its addition is necessary to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, it was modified to reference California's exhaust emission standards in the applicable test procedures (these documents are listed in "List of Documents to be Used in Conjunction with this Document" at the beginning of the HDV TPs.) This modification is necessary to establish an effective California program to control emissions from heavy-duty vehicles.

#### Section 1037.104

This section contains the GHG exhaust emission standards for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O for heavy-duty vehicles at or below 14,000 pounds GVWR. It describes the methodology to calculate the national-fleet average CO<sub>2</sub> emission standard that a manufacturer must meet for each model year of diesel and Otto-cycle medium-duty vehicles. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.105

This section establishes CO<sub>2</sub> exhaust emission standards for new 2014 and subsequent model diesel and Otto-cycle vocational heavy-duty vehicles with GVWR greater than 14,000 pounds. Moreover, it specifies the useful life requirements for compliance with the emission standards. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.106

This subsection provides CO<sub>2</sub> exhaust emission standards for new 2014 and subsequent model tractors with GVWR greater than 26,000 pounds. Moreover, it specifies the useful life requirements for compliance with the emission standards. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.115

This section describes other requirements, such as adjustable parameters, prohibited controls, and air condition leakage requirements, that vehicle manufacturers must comply with. The addition of the section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.120

This section specifies the warranty requirements that the vehicle manufacturer must provide to the ultimate purchaser and the components that would be covered in the warranty. The addition of the section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.125

This section specifies the requirements that the vehicle manufacturer must provide to the ultimate purchaser regarding maintenance instructions and allowable maintenance. The addition of the section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.135

This section describes the engine labeling requirements, and its addition is necessary for harmonization with federal Phase 1 GHG regulations. Moreover, changes to the subsection (b)(8) ensure that labels contain California provisions, and are necessary in order to establish California GHG emission standards for heavy-duty vehicles.

#### Section 1037.140

This section describes how to determine a vehicle's curb weight and roof height. The addition of the section is necessary to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.150

This section describes interim provisions such as banking GHG emission credits for early compliance, phase-in provisions, and provisions for small manufacturers. The addition of this section is necessary to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, changes to subparagraph (a) allow manufacturers to generate emission credit for 2013 and earlier model year compliance, equivalent to the federal ABT program. This change is necessary in order to establish an equivalent California ABT program to the federal ABT program.

#### Section 1037.201

This section describes the general requirements for obtaining a certificate of conformity (or Executive Order), and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.205

This section describes the information that must be included in a certification application, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, changes made to subparagraph (r) are needed in order to reference California regulatory authority when a manufacturer submits its application.

#### Section 1037.210

This section describes the process to provide preliminary approval before submitting an application for certification, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.220

This section describes the process to amend maintenance instructions, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.225

This section contains the procedures for amending an application for certification once it has been submitted for certification, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.230

This section contains the instruction for how to select vehicle families, sub-families, and configurations, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.241

This section shows how to demonstrate compliance with the GHG emission standards, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.250

This section describes the reporting and recordkeeping requirements for certification, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.255

This section describes the decisions that ARB may make regarding certification and issuing of an Executive Order, and its addition is

necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.401

This section describes how in-use testing will be performed by U.S. EPA (or ARB), and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.501

This section describes the general testing and modeling provisions, such as the reference for criteria exhaust emission testing, the type of test fuel and use of a standard trailer for testing, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. In addition, changes are made to subparagraph (d) to specify California test fuels found in the applicable test procedures, and are necessary in order to establish California GHG emission standards and test procedures for heavy-duty vehicles.

#### Section 1037.510

This section specified how to perform GHG exhaust emission testing for vehicles where such testing is required. GHG emissions are measured when the vehicle is tested on a chassis dynamometer over specified test cycles. The addition of this section is needed in order to establish California GHG test procedures for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.520

This section shows how to use the Greenhouse Gas Emission Model (GEM) to model CO<sub>2</sub> emissions to show compliance with the heavy-duty vehicle GHG emission standards. Inputs, such as coefficient of aerodynamic drag and tire rolling resistance, are determined by the manufacturer and are entered into the GEM to show vehicle emission compliance. The addition of this section is needed in order to establish California GHG emission standards and test procedures for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.521



This section describes how to determine the aerodynamic drag area of the test vehicle using a coastdown or alternate procedure. The addition of this section is needed in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.525

This section describes the procedure for quantifying the reduction in GHG emissions as a result of running power take-off devices on a hybrid-electric vehicle. The addition of this section is needed in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.550

This section describes the procedure for simulating a chassis test with a post-transmission hybrid system to determine the emission credit given to innovative technologies. The addition of this section is needed in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.601

This section contains compliance provisions for engine and vehicle manufacturers as well as owners, operators, and rebuilders of engines, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. In addition, changes are made to subparagraphs (c) and (d) to delete references to federal law and to replace them with the applicable California law. These changes are necessary to establish California authority for compliance provisions.

#### Section 1037.610

This section specifies the provisions for generating innovative technology credits of vehicle technologies that were not in common use with heavy-duty vehicles before 2010 model year that are not reflected in the GEM simulation tool. Its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. In addition, changes are made to subparagraph (e) to remove the reference to 40 CFR 86.1866 and are necessary because this federal reference is not applicable to California law.

#### Section 1037.615

This section describes how to generate advanced technology-specific emission credits for hybrid electric vehicles with regenerative braking, vehicles with Rankine-cycle engines, and electric vehicles. Its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.620

This section specifies how manufacturers may introduce partially complete vehicles into commerce, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.630

This section describes how a vehicle manufacturer may reclassify certain tractors as vocational tractors, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.631

This section provides an exemption from the GHG standards for certain vocational vehicles intended to be used extensively in off-road environments, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.640

This section specifies provisions that apply for vehicle speed limiters that are modeled in the GEM simulation tool, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.645

This section describes the provisions to apply a higher in-use FEL for certain in-use vehicles, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.650

The section describes the requirements of tire manufacturers that choose to provide test data or emission warranties to the vehicle manufacturer, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.655

This section specifies vehicle modifications that may occur after a vehicle reaches the end of its regulatory useful life, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.660

This section specifies requirements that apply for certified automatic engine shutdown systems that are modeled in the GEM simulation tool, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, the addition of subparagraph B describes how to comply with existing California requirements for automatic engine shutdown systems. The addition of this subparagraph is needed to conform section 1037.660 to existing California requirements for automatic engine shutdown systems.

#### Section 1037.701

This section describes the general provisions of the ABT program, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.705

This section contains the provisions for calculating emission credits for each GHG pollutant in the ABT program, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.710

This section specifies how to average emission credits for an averaging set in the ABT program, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.



#### Section 1037.715

This section specifies how to bank excess credits in the ABT program, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.720

This section specifies how to trade excess emission credits between manufacturers, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.725

This section describes the information to include in the application for certification if the manufacturer participates in the ABT program, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.730

This section describes the requirements to submit end-of-year and final reports if the manufacturer participates in the ABT program, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.735

This section describes the recordkeeping provisions for manufacturers, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.740

This section specifies the restrictions for using emission credits, such as defining the averaging set, applying credits to prior year deficits, credits from hybrid electric vehicles and other advanced technologies, and credit life. The addition of this section is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.745

This section contains the provisions for remedying end-of-year CO<sub>2</sub> credit deficits, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.750

This section specifies the consequences for not complying with the provisions of this subpart, such as voiding the Executive Order, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.801

This section contains the definitions that apply to this part and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, the addition of subsection B. is needed to incorporate California-specific definitions into these test procedures.

#### Section 1037.805

This section explains the symbols, acronyms, and abbreviations that are used in this part, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.810

This section describes the material that is incorporated by reference in Part 1037, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations.

#### Section 1037.815

This section references existing provisions to apply for submitted information to be considered confidential, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, deletion and replacement of the paragraph is needed in order

to reference California regulatory authority to consider confidential information.

#### Section 1037.820

This section contains the requirements for requesting a hearing, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, the changes to subparagraphs (a) and (c) are needed in order to reference California regulatory authority to request a hearing.

#### Section 1037.825

This section describes the reporting and recordkeeping requirements of the manufacturer, and its addition is necessary in order to establish California GHG emission standards for heavy-duty vehicles and for harmonization with federal Phase 1 GHG regulations. Moreover, the deletion of subparagraph (e) results in the removing the requirements of the Paperwork Reduction Act and is needed because this Act is not part of California law.

#### Appendix I to Part 1037

This appendix contains the second by second versus vehicle velocity trace of the heavy-duty transient chassis test cycle, and its addition is necessary for testing the vehicle to determine compliance with the GHG emission standards.

#### Appendix II to Part 1037

This appendix contains the power take-off test cycle for utility and refuse trucks, and its addition is necessary for testing the vehicle to determine compliance with the GHG emission standards.

#### Appendix III to Part 1037

This appendix identifies abbreviations for emission control system labels, and its addition is necessary for properly complying with the emission label requirements of these HDV TPs.

## Part 1066

### Section 1066.1

This section describes the applicability of this part to model year 2014 and later heavy-duty on-road vehicles that are not subject to chassis testing for exhaust emission, i.e., vehicles with engines that were engine-certified. The addition of this section is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

### Section 1066.2

This section describes the information and statements required in the application for certification that pertain to vehicle testing, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations. Moreover, changes are made to subparagraphs (b) and (f) to delete the references to federal statutes. Furthermore, in subparagraph (e), a reference to the California statutes is added for provisions related to confidential information. These changes are necessary for consistency with California statutes.

### Section 1066.5

This section provides an overview of this part and its relation to the standard-setting part (part 1037) for testing various categories of vehicles, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

### Section 1066.10

This section generally describes other procedures that the manufacturer and regulatory agency may use for testing, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

### Section 1066.15

This section outlines the procedures to test vehicles that are subject to vehicle emission standards, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.



#### Section 1066.20

This section discusses the units of measure used throughout the test procedures, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.25

This section describes the recordkeeping provisions, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.101

This section provides an overview of test equipment, test fuels, and analytical gas for heavy-duty vehicle testing. Its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations. In addition, changes are made to subparagraph (b) to refer to the California test procedures for diesel and Otto-cycle engines. The addition of these changes is needed for establishing California test procedures.

#### Section 1066.201

This section describes an overview of the dynamometer provisions in this subpart, its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.210

This section describes the specifications of the chassis dynamometer, such as accuracy and precision, test cycle simulation ability, and component requirements, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.215

This section describes the overall process for verifying and calibrating the performance of chassis dynamometers, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.220

This section describes the linearity verification required upon initial installation of the chassis dynamometer, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.225

This section describes the verification procedure for roll runout and roll diameter of the chassis dynamometer upon initial installation and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.230

This section describes how to verify the accuracy of the dynamometer's timing device upon initial installation and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.235

This section describes how to verify the accuracy and resolution of the dynamometer speed determination upon initial installation and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.240

This section references 40 CFR 1065.30 to calibrate torque-measurement systems and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.245

This section describes how to verify the dynamometer's response time upon initial installation and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.250

This section describes how to verify the dynamometer's base inertial upon initial installation and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.255

This section describes how to verify and correct the dynamometer's parasitic loss upon initial installation, within 7 days of testing, and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.260

This section describes how to verify the accuracy of the dynamometer's friction compensation upon initial installation, within 7 days of testing, and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.265

This section describes how to verify the dynamometer's ability to achieve targeted acceleration and deceleration rates upon initial installation and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.270

This section describes how to use force measurements to verify the dynamometer's settings based on coastdown procedures upon initial installation, within 7 days of testing, and after major maintenance, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.280

This section specifies the use of good engineering judgment to provide a driver's aid, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.301

This section describes coastdown procedures to determine the load coefficients for the simulated road load equation, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.310

This section describes coastdown procedures that are unique to heavy-duty vehicles, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.401

This section provides an overview of the vehicle preparation and conducting an emission test, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.407

This section describes steps to take before measuring exhaust emissions for vehicles that are subject to evaporative or refueling emission tests, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.410

This section describes how to run the test cycle on the dynamometer, such as cooling fan specifications and recording the vehicle speed trace, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.420

This section describes the pre-test verification procedures and the pre-test data collection, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.425

This section describes the vehicle's engine starting and restarting procedures, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.430

This section describes how to perform the emission tests, such as the prescribed sequence of fueling, parking, and driving at specified test conditions, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.501

This section describes how to correct emission results for the net energy change of the energy storage systems in hybrid electric vehicles, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.601

This section provides an overview of this subpart for calculations, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.610

This section describes how to calculate the total mass-based and molar-based GHG exhaust emissions over a test cycle, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations.

#### Section 1066.701

This section defines the terms used in this part, and its addition is necessary for establishing vehicle certification test procedures and for harmonization with federal Phase 1 GHG regulations. In addition, the change to add the definition of "EPA" to mean the "ARB or Executive Officer" is needed to give ARB the same authority as EPA in executing these heavy-duty test procedures.

## Section 1066.705

This section explains the symbols, acronyms, and abbreviations that are used in this part, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

## Section 1066.710

This section describes the material that is incorporated by reference in Part 1066, and its addition is necessary for harmonization with federal Phase 1 GHG regulations.

### **B. Tractor-Trailer GHG Regulation Amendments**

The proposed amendments to the Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation (also known as the Tractor-Trailer GHG regulation) are primarily designed to harmonize the tractor-related requirements of the Tractor-Trailer GHG regulation with the requirements of the Phase 1 regulations<sup>1</sup>. This section discusses the requirements and the rationale for each provision of the proposed amendments to the Tractor-Trailer GHG regulation.

#### **Subarticle 1: Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation**

##### **Section 95300 Purpose**

Summary of Section 95300.

Existing section 95300 is modified to clarify the purpose of the regulation.

Rationale of Section 95300

The change is needed to reaffirm and clarify the objectives of the regulation consistent with the longstanding expressed intent when the regulation was first adopted and subsequently amended.

##### **Section 95301. Applicability**

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<sup>1</sup> “Phase 1 regulations” refers to both the 2014 MY National Heavy-Duty Engine Greenhouse Gas Program, as adopted by the U.S. EPA (76 Fed. Reg. 57106 (September 15, 2011)); and the Greenhouse Gas Emission Requirements for New 2014 and Subsequent Model Heavy-Duty Vehicles, as adopted by the California Air Resources Board, sections 95660 to 95664, Subarticle 12, title 17, California Code of Regulations. A “Phase 1 certified tractor” is a tractor certified to either the 2014 MY National Heavy-Duty Engine Greenhouse Gas Program or the Greenhouse Gas Emission Requirements for New 2014 and Subsequent Model Heavy-Duty Vehicles.

Summary of Section 95301(b).

Existing section 95301 is modified to clarify the vehicles exempted from this subarticle.

Rationale of Section 95301(b).

The change is needed for clarity. The existing language lists trailer types and vehicles that are exempt, but does not clearly state that the tractors that pull them are also exempt.

## **Section 95302. Definitions**

Summary of Section (a)(19.1)

New section (a)(19.1) is added to provide a definition of “emission standard.”

Rationale of Section (a)(19.1)

The addition of this definition is needed to clarify that the Tractor-Trailer GHG regulation includes emission standards. The definition revises the definition set forth at Health and Safety Code section 39027 consistent with the express authorization of the Board to make such a revision in Health and Safety Code sections 39010 and 39601.

Summary of Section (a)(19.2)

New section (a)(19.2) is added to provide a definition of “evaporative emission standards.”

Rationale of Section (a)(19.2)

The addition of this definition is needed to identify a subcategory of the new definition of emission standard that had previously been identified merely as an emission standard.

Summary of Section (a)(19.3)

New section (a)(19.3) is added to provide a definition of “exhaust emission standards or tailpipe emission standards.”

Rationale of Section (a)(19.3)

The new proposed definition is needed to identify a subcategory of the new definition of emission standard that had previously been identified merely as an emission standard.

Summary of Section 95302(a)(43.1).

New section 95302(a)(43.1) is added to provide a definition of “Phase 1 Certified Tractor.”

Rationale of Section 95302(a)(43.1).

This definition of a “Phase 1 Certified Tractor” is needed because new section 95305(m) exempts these tractors from the requirements of section 95303(a).

Summary of Section 95302(a)(53).

Existing section 95302(a)(53) is modified to change the definition of “sleeper cab” to “sleeper-cab tractor”, which is defined as a heavy-duty tractor originally manufactured with a tractor body that has a sleeping compartment.

Rationale of Section 95302(a)(53).

The change is needed to clarify that a heavy-duty tractor originally manufactured without a sleeper cab, and subsequently retrofitted with a sleeper cab, is not considered a sleeper-cab tractor for purposes of this regulation.

### **Section 95303. Requirements and Compliance Deadlines**

Summary of Section 95303(a)(1).

Existing section 95303(a)(1) is modified to limit the applicability of this section to 2011 through 2013 MY sleeper cab tractors. The term “sleeper-cab HD tractor” is replaced with the term “sleeper-cab tractor.”

Rationale of Section 95303(a)(1).

The changes are needed to both harmonize the requirements of this regulation with the requirements of the Phase 1 regulations, which establish GHG certification emission standards for 2014 and subsequent tractors, and to reflect the changes to section 95302(a)(53) discussed above.

Summary of Section 95303(a)(2).

Existing section 95303(a)(2) is modified to limit the applicability of this section to 2011 through 2013 MY heavy-duty tractors. The term “sleeper-cab heavy-duty tractor” is replaced with the term “sleeper-cab tractor.”

Rationale of Section 95303(a)(2).

The changes are needed to both harmonize the requirements of this regulation with the requirements of the Phase 1 regulations, which establish GHG certification emission standards for 2014 and subsequent tractors, and to reflect the changes to section 95302(a)(53) discussed above.

### **Section 95305. Exemptions**

Summary of Section 95305(a).

Existing section 95305(a) is modified to remove the phrase “To qualify, the following must be met.”

Rationale of Section 95305(a).

The change is needed for clarity to remove superfluous and inaccurate language.



Summary of Section 95305(a)(1).

Existing section 95305(a)(1) is modified by adding the phrase “, as applicable.”

Rationale of Section 95305(a)(1).

The change is needed to clarify that the requirements of sections 95303(a)(1), 95303(a)(2), and 95303(a)(3) do not apply to all short-haul tractors.

Summary of Section 95305(a)(9).

New section 95305(a)(9) is added to clarify that a 2014 or subsequent MY tractor can be registered as a short-haul tractor.

Rationale of Section 95305(a)(9).

The new section is added to remove any uncertainty as to whether a 2014 or subsequent model tractor is eligible for registration as a short-haul tractor.

Summary of Section 95305(b)(1).

Existing section 95305(b)(1) is modified by adding the phrase “, as applicable.”

Rationale of Section 95305(b)(1).

The change is needed to clarify that the requirements of sections 95303(a)(1), 95303(a)(2), and 95303(a)(3) do not apply to all local-haul tractors.

Summary of Section 95305(b)(8).

New section 95305(b)(8) is added to clarify that a 2014 or subsequent MY tractor can be registered as a local-haul tractor.

Rationale of Section 95305(b)(8).

The new section is added to remove any uncertainty as to whether a 2014 or subsequent model tractor is eligible for registration as a local-haul tractor.

Summary of Section 95305(d)(1).

Existing section 95305(d)(1) is modified by adding the phrase “, as applicable.”

Rationale of Section 95305(d)(1).

The change is needed to clarify that the requirements of sections 95303(a), and 95303(b) do not apply to all drayage tractors.

Summary of Section 95305(f)(1)(A).

Existing section 95305(f)(1)(A) is modified to add the phrase “that is located further than 100 miles from its current local-haul base.”

Rationale of Section 95305(f)(1)(A).

The change is needed to clarify that a registered local-haul trailer traveling under a Relocation Pass to a new local-haul base, may only do so if the new local-haul base is located further than 100 miles from the old local-haul base. This was the intent of the original language.

Summary of Section 95305(m).

New section 95305(m) is added to exempt 2013 MY Phase 1 Certified Tractors from the requirements of section 95303(a).

Rationale of Section 95305(m).

Although the Phase 1 regulations establish GHG certification emission standards for 2014 and subsequent MY tractors, some tractor manufacturers may elect to certify 2013 MY tractors to these standards to obtain early compliance credits. Without the exemption, those Phase 1 certified 2013 MY tractors would be subject to both the Phase 1 regulations and the amended Tractor-Trailer GHG regulation. To harmonize the requirements of both regulations, the exemption is needed.

### **C. Proposed Optional NO<sub>x</sub> Standards**

The primary purpose of the proposed amendments to the Title 13, section 1956.8 and the diesel and Otto cycle standards and test procedures listed is to give ARB a mechanism in place to allow heavy-duty engine manufacturers to optionally certify engines to standards more stringent than the 2010 model year standard. The proposed regulation contains the next generation of optional NO<sub>x</sub> standards for heavy-duty engines, three optional NO<sub>x</sub> emission standards of 0.1 g/bhp-hr, 0.05 g/bhp-hr, and 0.02 g/bhp-hr (i.e., 50 percent, 75 percent, and 90 percent lower than the current mandatory standard). Under staff's proposal, manufacturers could choose whether to certify to one of the optional NO<sub>x</sub> levels or to certify to the mandatory 0.2 g/bhp-hr standard. This section discusses the proposed modifications and the rationale for each modification to the following regulations.

- Title 13, section 1956.8 Exhaust Emission Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles,
- California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles, and
- California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines

**Title 13, section 1956.8 - Exhaust Emission Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles**

**Section (a)(2)(A) Table: Exhaust Emission Standards for 2004 and Subsequent Model Heavy-Duty Engines, and Optional, Reduced Emission Standards for 2002 and Subsequent Model Heavy-Duty Engines Produced Beginning October 1, 2002, Other than Urban Bus Model-Year Engines produced from October 1, 2002 Through 2006**

This table has been amended to include 2015 and subsequent model years and a column which includes Optional Oxides of Nitrogen standards at 0.1 g/bhp-hr, 0.05 g/bhp-hr, and 0.02 g/bhp-hr. Two footnotes were added. The first is footnote “N” which explains that a manufacturer may choose to offer an engine that is 50 percent, 75 percent, or 90 percent below the current 0.20 g/bhp-hr engine emission standard. The second added footnote is footnote “O” which describes the On Board Diagnostic (OBD) requirements can be found in 13 CCR 1971.1 and 1971.5. In addition, a manufacturer may request Executive Officer approval of manufacturer-proposed malfunction criteria instead of the OBD regulation requirements if specific criteria are met. For example, the manufacturer must use good engineering judgment. The malfunction criteria must provide similar timeliness in detection of malfunctioning systems as on a medium-duty diesel vehicles certified on a dynamometer. The malfunction criteria must be set as stringently as technologically feasible, but not lower than 1.5 times the chassis dynamometer standard to which the engine is certified. All the while, the manufacturer should consider the best available monitoring technology. The malfunction criteria must work for the components it is designed to work with for the full useful life. The manufacturer must provide emission data showing emission levels where the malfunctions are detected.

**Section (c)(1)(B) Table: California Emission Standards for 2005 and Subsequent Model Heavy-Duty Otto-Cycle Engines**

This table has been amended to correct certain existing footnotes labels that were incorrect. In a previous rulemaking that amended this table, a footnote (B) was added, resulting in subsequent footnotes to be relettered. However, in the previous rulemaking, several footnote labels in the table were not updated to account for this relettering.

This table has also been amended to include model years 2015 and subsequent to include Optional Oxides of Nitrogen standards at 0.1 g/bhp-hr, 0.05 g/bhp-hr, and 0.02 g/bhp-hr. In addition the emission category now includes “optional”.

**Footnote F**

This footnote clarifies that engines certified to optional low NOx emission standards cannot be used to generate averaging, banking, and trading (ABT) credits.

**Footnote N**

This footnote explains that a manufacturer may choose to offer an engine that is 50 percent, 75 percent, or 90 percent below the current 0.20 g/bhp-hr engine emission standard.

**Footnote O**

This footnote describes that OBD requirements can be found in 13 CCR 1971.1 and 1971.5. A manufacturer may request Executive Officer approval of manufacturer-proposed malfunction criteria instead of the OBD regulation requirements if specific criteria delineated in this footnote are met.

**California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles****Section B California Provisions**

This section defines optional low NOx engine as a 2015 and subsequent model heavy-duty diesel engine certified to the optional low NOx emission standards, which are below the 0.20 g/bhp-hr emission standard for 2007 and subsequent model engines. The optional low NOx engine emission standards are 0.10, 0.05, and 0.02 g/bhp-hr.

**Section B7 Table**

Optional low NOx standards are inserted in this table; this table also identifies additional exhaust emission standards for non-methane hydrocarbon (NMHC), carbon monoxide (CO), and particulate matter (PM).

**Section 2. §86.007-15 California Provisions 2.**

Inserted that optional low NOx engines shall not be used to generate credits in the ABT program.

**Section 17.**

OBD shall be installed on all engines used in applications less than or equal to 14,000 pounds GVWR.

**Section 18.**

This section states that OBD must be installed on all engines used in applications greater than 14,000 pounds GVWR.

**Section 35. Labeling B California Provisions**

This section states that engine manufacturers that choose to certify an engine to one of the optional low NOx emission standards must label the engine as

follows: “This engine conforms to California regulations applicable to XXXX model year heavy-duty diesel engines and is certified to the Optional Low NOx Engine emission standard of XXX g/bhp-hr.”

## **California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles**

### **Section B. California Provisions**

This section defines optional low NOx engine as a 2015 and subsequent model heavy-duty otto-cycle engine certified to the optional low NOx emission standards, which are below the 0.20 g/bhp-hr emission standard for 2007 and subsequent model engines. The optional low NOx emission standards are 0.10, 0.05, or 0.02 g/bhp-hr.

#### **Section B. 1.**

This table has been amended to correct certain existing footnotes labels that were incorrect. In a previous rulemaking that amended this table, a footnote (B) was added, resulting in subsequent footnotes to be relettered. However, in the previous rulemaking, several footnote labels in the table were not updated to account for this relettering.

In addition, optional low NOx standards are inserted in this table; this table also identifies additional exhaust emission standards for non-methane hydrocarbon (NMHC), carbon monoxide (CO), and particulate matter (PM).

#### **Section B. 1. Footnote F**

This footnote states that ABT does not apply to optional low NOx emission standard engines.

#### **Section B. 1. Footnote I**

This footnote states that engine manufacturers may choose to produce heavy-duty engines that emit less NOx than standard 0.20 g/bhp-hr engines.

### **Section 15. B. California Provisions**

Inserted that optional low NOx engines shall not be used to generate credits in the ABT program.

### **Section 35. B. 2. California Provisions**

This section states that engine manufacturers that choose to certify an engine to one of the optional low NOx emission standards must label the engine as follows: “This engine conforms to California regulations applicable to XXXX model year heavy-duty Otto-cycle engines and is certified to the Optional Low NOx Engine emission standard of XXX g/bhp-hr.”

## **D. Anti-Idling Amendments**

The primary purpose of the proposed amendments to the idling ATCM, 13 CCR 2485, is to extend the applicability of the regulation to include vehicle owners and motor carriers that dispatch affected vehicles to share some of the responsibilities of compliance with the existing requirements of the regulation. This section discusses the proposed modifications and the rationale for each modification to the idling ATCM.

### **Section 2485(a) Purpose**

The “Purpose” clause of the regulation has been amended to reaffirm and clarify the objectives of the regulation consistent with the longstanding expressed intent when the regulation was first adopted and subsequently amended.

### **Section 2485(b) Applicability**

Existing subsection 2485(b) specifies the applicability of the regulation to the vehicle driver only.

The modifications to this subsection would expand the applicability of the regulation to include any person, business, or government entity that owns, operates, or causes to operate diesel-fueled commercial motor vehicles and alternative idle reductions technologies installed on these vehicles. This would include drivers, owners, and motor carriers.

#### Subsection (b)(2)

The existing applicability section specifies only diesel-fueled commercial motor vehicles to be subject to the requirements of the regulation. Although, the existing regulation includes emission performance requirements applicable to alternative idle reduction technologies, these technologies are not included in the applicability section. Subsection (b)(2) would clarify the applicability section by adding alternative idle reductions technologies as equipment subject to the requirements of this section. However, the proposed amendments do not impose any new requirements to alternative idle reduction technologies.

### **Section 2495(c) Requirements**

Subsections (c)(1)(A) and (c)(1)(B)

Currently, subsection (c)(1) specifies that the driver shall comply with the existing idling restriction requirements as of January 1, 2008. However, the proposed amendments would extend the applicability to the owner and motor carrier effective January 1, 2015.

Because of the mismatch between the effective date in the existing regulation applicable to the driver and the new effective date in the proposed amendments applicable to the owner and motor carrier, the existing driver requirements in subsection (c)(1), now referenced as (c)(1)(A), is modified to expire by January 1, 2014 and a new subsection (c)(1)(B) is added that would specify the requirements to any person including the driver, owner and motor carrier effective January 1, 2015. Subsection (c)(1)(B) would impose the existing requirements not only to the driver, but also to the owner and motor carrier to comply with the vehicle and diesel-fueled APS idling restriction requirements beginning January 1, 2015.

#### Subsection (c)(1)(C)

Subsection (c)(1)(C) is new and would require the vehicle driver subject to the requirements of the regulation to provide to enforcement personnel his or her driver's license, vehicle registration, and business name and contact information of the motor carrier that is dispatching the vehicle. This information is needed for the purposes of issuing citations to one or all of the responsible parties (the driver, vehicle owner, and motor carrier) when a violation of the regulation occurs.

#### Subsection (c)(1)(D)

This is also a new subsection and would require the motor carrier to provide his or her business name and contact information to the dispatched driver. This would be needed because when a violation of the regulation occurs, the driver would be required to provide to enforcement personnel the motor carrier's name and contact information.

#### Subsections (c)(2)(A), (c)(2)(B), and (c)(2)(C)

Currently, subsection (c)(2)(A), (c)(2)(B), and (c)(2)(C) specify that the driver shall not operate non-compliant vehicles and non-compliant alternative idle reduction technologies beginning January 1, 2008. However, the proposed amendments would extend the applicability to the owner and motor carrier effective January 1, 2015.

Because of the mismatch between the effective date in the existing regulation applicable to the driver and the new effective date in the proposed amendments applicable to the owner and motor carrier, the existing driver requirements in subsection (c)(2)(A), (c)(2)(B), and (c)(2)(C) are modified to expire by December 31, 2014 and a new subsection (c)(2)(D) is added that is applicable to any person including the driver, owner and motor carrier effective January 1, 2015. Subsection (c)(2)(D) would impose the existing requirements not only to the driver, but also to the owner and motor carrier to

comply with the vehicle and alternative idle reduction requirements beginning January 1, 2015.

#### Subsections (c)(2)(D)

This is a new subsection that is added to require any person including the driver, vehicle owner, and motor carrier that dispatched the vehicle to comply with the existing diesel-fueled APS and fuel-fired heater requirements beginning January 1, 2015 (see above for rationale). This subsection would replace subsections (c)(2)(A), (c)(2)(B), and (c)(2)(C) effective January 1, 2015.

#### Subsection (c)(3)

“Idle Reduction Technology” is added to the subtitle of subsection (c)(3) to add clarity to the subsection’s applicability. In addition, the term “diesel engines/vehicles” was modified to “diesel-fueled engines/vehicles” to add clarity and make it consistent with the term used in the rest of the regulatory language. Also, for clarity purposes the term “(c)(3)” is added to the existing references “(A)”, “(B)”, and “(C)”.

#### Subsection (c)(3)(B)

The modification to subsection (c)(3)(B) updates the title of the test procedures document for fuel-fired heaters incorporated by reference in 13 CCR 1961(d). The existing title “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light Duty Trucks, and Medium-Duty Vehicles” was replaced by “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” to reflect the recent changes made to the light duty vehicle exhaust emission standards and test procedures, incorporated by reference in 13 CCR 1961(d). The modification does not impose any new requirements to fuel-fired heaters.

#### **Subsection (d) Exceptions**

Subsection (d)(1) is modified to include the applicability of the exceptions to the new subsection (c)(1)(B)(1) which would extend the compliance requirements to owners and motor carriers.

#### Subsection (d)(2)(H)

This subsection is modified to add the word “diesel” between the words “primary” and “engine.” This modification is made for clarity and consistency purposes.



### **Subsection (e) Relationship to Other Laws**

#### Subsection (e)(2)

In this subsection, the capitalization of the words “title” and “section” were changed for consistency purposes. In addition, for consistency purposes, “California Code of Regulations” was replaced by its acronym “CCR” which was first defined in subsection (b)(2)(A)2.

#### Subsection (e)(3)

Subsection (e)(3) is new and is added to indicate the relationship that exists between this regulation (13 CCR 2485) and the heavy-duty diesel engine standards specified in 13 CCR 1956.8. 13 CCR 1956.8 specifies idling emission standards for new heavy-duty diesel engines.

#### Subsection (e)(4)

In this subsection, the capitalization of the word “section” was changed for consistency purposes.

### **Subsection (g) Penalties**

The modification to this subsection adds an expiration date of January 1, 2015 to the existing penalties section applicable to the driver. A new paragraph is added that specifies the penalties applicable to any person beginning January 1, 2015. The new paragraph also provides Health and Safety code citations under which penalties may be assessed for violations with the requirements of this regulation.

### **Subsection (h) Definitions**

#### Subsection (h)(7)

The proposed addition of the definition “Emission standards” is needed to clarify that the idling ATCM includes emission standards. The definition revises the definition set forth at Health and Safety Code section 39027 consistent with the express authorization of the Board to make such a revision in Health and Safety Code sections 39010 and 39601.

#### Subsection (h)(8)

The proposed addition of the definition of “Evaporative emission standards” is needed to identify a subcategory of the new definition of emission standard that had previously been identified merely as an emission standard.

#### Subsection (h)(9)

The proposed addition of the definition “Exhaust emission standards” or “tailpipe emission standards” is needed to identify a subcategory of the new definition of emission standard that had previously been identified merely as an emission standard.

#### Subsection (h)(10)

The existing subsection does not include a definition for Executive Officer although it is referenced in subsection (c)(3)(D).

The proposed modifications would add a definition to Executive Officer (subsection (h)(10)). The proposed amendments would also define new terms introduced in the proposed amendment such as “motor carrier” (subsection (h)(15)), “owner” (subsection (h)(19)), and “person” (subsection (h)(20)). Furthermore, the proposed amendments would modify the definition of “restricted area” to include “schools”, “hotels”, and “motels” (subsection (h)(23)).

In subsections (h)(1), (h)(2), (h)(4), (h)(5), (h)(6), (h)(12), (h)(13), (h)(17), (h)(18), and (h)(26), the word “California” is added to “Vehicle Code” to clarify that “Vehicle Code” refers to “California Vehicle Code”.

In subsections (h)(4), (h)(25), and (h)(27), “California Code of Regulations” is replaced by its acronym “CCR” for consistency purposes.

#### **Subsection (i) Severability**

Staff is adding a new subsection, “Severability”, to indicate that if for any reason a portion of the section becomes invalid by a court, then that portion would be considered a separate provision and such decision would not affect the validity of the remaining portions of the sections.

### **E. Heavy-Duty Hybrid-Electric Vehicles Certification Procedures**

#### **Amendments to Section A**

##### Summary

This section states the applicability of the certification procedures. This section was amended to revise the applicability and reference dates.

##### Rationale

These changes are needed to clarify that these procedures are applicable to other hybrid vehicles, in addition to hybrid-electric urban buses, and to specify the applicable condition and vehicle weight rating for these vehicles. Additional changes were also made to update the dates of referenced sections of the California Code of Regulations and last amended date of the interim test procedures.

## **Amendments to Section B**

### Summary

This section states the definitions and abbreviations of the certifications procedures as incorporated in various references. Certain existing definitions were modified and new definitions were added.

### Rationale

These changes are needed to increase clarity and consistency or to expand the scope of the interim test procedures and to incorporate new references and latest amendment dates.

1. “Auxiliary Power Unit” The proposed addition of the word “flywheels” to this definition is necessary to clarify that flywheels are included in the examples. Additionally, the acronym “APU” was deleted to clarify that “APU” refers to “auxiliary power unit” and was reformatted for consistency with other definitions.
2. “Average Loaded Vehicle Weight” This new proposed definition is needed to complement the amendments to the vehicle preparation requirements, where this definition is used. Additionally, it has been added to be consistent with the definition contained in the latest version of “SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer”.
3. “Baseline Conventional Engine” This new proposed definition is needed to understand the terminology where it is used such as, but not limited to, the calculation of emission factor.
4. “Baseline Hybrid-Electric Drive System Engine” This definition has been modified because of the expansion of applicable hybrid vehicles. Additionally, it was reformatted for consistency with other definitions.
5. “Baseline Vehicle” This new proposed definition has been modified because of the expansion of applicable hybrid vehicles. Additionally, has been modified to add flexibility in determining a representative baseline vehicle.
6. “Battery” There is no change to this definition.
7. “Battery Current Throughput” This new proposed definition is needed to complement the amendments to the test procedure requirements. Additionally, it has been added to be consistent with the definition contained in the latest version of “SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer”.

8. "Battery Rated Ampere-hour Capacity" This definition has been reformatted for consistency with other definitions. No substantive changes were made.
9. "Battery State of Charge" The acronym "SOC" and "Ah" were deleted to clarify that "SOC" refers to "state of charge" and "Ah" refers to Ampere-hours respectively.
10. "Capacitor" There is no change to this definition.
11. "Capacitor State of Charge" The acronym "SOC" was deleted to clarify that "SOC" refers to "state of charge".
12. "CCR" There is no change to this definition.
13. "CFR" There is no change to this definition.
14. "Charge-Depleting Actual Range (Rcda)" This new proposed definition is needed to complement the amendments to the test procedures. Additionally, it has been added to align with the definition contained in the latest version of "SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer" and "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes".
15. "Charge-Depleting Cycle Range (Rcdc)" This new proposed definition is needed to complement the amendments to the test procedures. Additionally, it has been added to align with the definition contained in the latest version of "SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer" and "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes".
16. "Charge-Depleting Hybrid-Electric Vehicle" This definition has been modified because of the expansion of applicable hybrid vehicles. Additionally, the acronym "RESS" was spelled out to clarify that "RESS" refers to "rechargeable energy storage system".
17. "Charge-Depleting Mode" This new proposed definition is needed to complement the amendments to the test procedures. Additionally, it has been added to be consistent with the definition contained in the latest version of "SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer".

18. “Charge-Sustaining Hybrid-Electric Vehicle” This definition has been modified because of the expansion of applicable hybrid vehicles. Additionally, the acronym “RESS” was spelled out to clarify that “RESS” refers to “rechargeable energy storage system”.
19. “Charge-Sustaining Mode” This new proposed definition is needed to complement the amendments to the test procedures. Additionally, it has been added to be consistent with the definition contained in the latest version of “SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer”.
20. “Consumable Fuel” This new proposed definition is needed to complement the amendments to the test procedures requirements. Additionally, it has been added to align with the definition contained in the latest version of “SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer” and “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes”.
21. “Curb Weight” This new proposed definition is needed to complement the amendments to the certification and test procedure requirements, where this definition is used. Additionally, it has been added to be consistent with the definition contained in the latest version of “SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer”.
22. “Electric Drive Components” This definition has been modified to add the phrase “on board charge” as an example of electric drive components. Additionally, it was reformatted for consistency with other definitions.
23. “Electromechanical Flywheel” This definition has been reformatted for consistency with other definitions. No substantive changes were made.
24. “Electromechanical Flywheel State of Charge” The acronym “SOC” was deleted to clarify that “SOC” refers to “state of charge”. Additionally, it was reformatted for consistency with other definitions.
25. “Emission Factor” This definition has been modified because of the expansion of applicable hybrid vehicles. Additionally, it was reformatted for consistency with other definitions.
26. “Emission Factor Ratio” This definition has been modified because of the expansion of applicable hybrid vehicles.

27. "End of Test" This new proposed definition is needed to complement the amendments to the test procedure requirements. Additionally, it has been added to be consistent with the definition contained in the latest version of "SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer".
28. "Flywheel" This new proposed definition is needed to understand the terminology where it is used.
29. "Full Charge Test" This new proposed definition is needed to complement the amendments to the test procedure requirements. Additionally, it has been added to be consistent with the definition contained in the latest version of "SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer".
30. "Gross Vehicle Weight Rating (GVWR)" This new proposed definition is needed to complement the amendments in the applicable hybrid vehicles and to be consistent with the definition contained in the latest amended version of 40 CFR, section 86.1803-01.
31. "Hybrid-Electric Drive System" This definition has been modified to spell out the acronym "APU" which refers to "auxiliary power unit". Additionally, it was reformatted for consistency with other definitions.
32. "Hybrid-Electric Urban Transit Bus (HEB)" This definition has been modified, because previous definition is no longer relevant to the proposed test procedures. The proposed new definition is the same as the hybrid-electric vehicle definition because of the expansion of applicable vehicles.
33. "HEB Family" There is no change to this definition.
34. "Hybrid-Electric Vehicle" This new proposed definition is needed to complement the amendments to the test procedures requirements specifically because the applicable hybrid vehicles are expanded. Additionally, it has been added to align with the definition contained in the latest version of "SAE J2711, Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer".
35. "Hybrid Engine Family" This new proposed definition is needed to complement the amendments to the test procedures requirements. Additionally, it has been added to align with the terminology used in the Executive Orders for hybrid vehicle certification.

36. "Net Energy Change" This definition has been modified to delete the acronyms "NEC" and "RESS" and use the spell out the words "net energy change" and "rechargeable energy storage system" respectively for easy identification.
37. "Plug-In Hybrid-Electric Vehicle" This new proposed definition is needed to complement the amendments in the applicable hybrid vehicles and to be consistent with the definition contained in the latest amended version of 40 CFR, section 86.1803-01.
38. "Propulsion Energy" This definition has been modified to spell out "RESS" which refers to "rechargeable energy storage system". Additionally, it was reformatted for consistency with other definitions.
39. "Propulsion System" This definition has been reformatted for consistency with other definitions. No substantive changes were made.
40. "Rechargeable Energy Storage System" This definition has been modified because of the expansion of applicable hybrid vehicles. Additionally, the acronym "RESS" was spelled out to clarify that "RESS" refers to "rechargeable energy storage system".
41. "Regenerative Braking" This definition has been modified to align with the definition contained in "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes".
42. "State of Charge" This definition has been modified to include different types of state of charge. Additionally, it has been modified to spell out "state of charge".
43. "State of Charge delta" This definition has been modified to replace the word "delta" to the phrase "the change in" to clarify the definition. Additional unit of measurement are added to be consistent with the other related definitions. Further, the acronym "SOC" was deleted to clarify that it refers to "state of charge".
44. "State of Charge final" The acronyms "SOC" and "Ah" were deleted to clarify that "SOC" and "Ah" refer to "state of charge" and ampere-hours" respectively.
45. "State of Charge initial" The acronyms "SOC" and "Ah" were deleted to clarify that "SOC" and "Ah" refer to "state of charge" and ampere-hours" respectively.

46. “Urban Bus” This new definition is necessary to clarify and be consistent with the definition contained in the latest amended version of 13 CCR 2023.
47. “Total Fuel Energy” This definition has been modified to include the meaning of the acronym (kWh). No substantive changes were made.

### **Amendments to Section C**

The following changes were made to the introductory paragraphs of Section C:

- (1) Section title, “Heavy-Duty Hybrid-Electric Drive System and Vehicle Certification Requirements”;
- (2) First paragraph, “Compliance with the heavy-duty hybrid-electric vehicle criteria pollutant standards requires the development of an emission factor ratio ...” and
- (3) Second paragraph, “For 2007 and subsequent model years, only one Executive Order shall be granted identifying the emission standard achieved by the hybrid-electric drive system or vehicle”.

The first change is needed to clarify the intent and scope of the certification procedures. The second change is needed to clarify that the procedures are to be used to obtain certification only for criteria pollutants. The third change is needed to clarify that complete heavy-duty hybrid vehicles could be certified using these procedures.

Subsection C.1, “One Party Responsibility”, changed from “HEB” to hybrid-electric vehicle. This change is needed to improve readability and to emphasize the applicability of these procedures are not limited to hybrid-electric urban buses.

Subsection C.1.1, “Certification Standards”, added new language “All 2007 and subsequent model year hybrid-electric vehicles shall, by model year, meet the exhaust emission standards set forth in title 13, CCR, 1956.8” in addition to other clarification changes already discussed above. The new language is needed to correctly reference the appropriate CCR section for heavy-duty vehicles.

Subsection C.2, “Two Party Responsibility”, added new language “For model years 2004 through 2006,...” to emphasize that two-party certification is only allowed for those model year vehicles. Even though that allowance has been sunset, the added language is intended to clarify that historical provision.

Subsection C.2.1, “Certification Standards”, delete language “All 2004 and subsequent model year hybrid-electric drive systems shall, by model year, meet the exhaust emission standards or optional emission standards set forth in title



13, CCR, section 1956.1” to eliminate redundancy since this provision is already specified in section C.1.1.

Subsection C.3, “25 Percent reduction Claim” editorial change to correct for section citations.

Subsection C.4, “Useful Life”, several changes are made to this section. The first change is “~~After that time~~ For the 2007 and subsequent model years, the useful life of the engine and hybrid-electric drive system in a hybrid engine family shall meet the useful life requirements as required for a conventional engine certified to the same intended service class as the hybrid engine family ~~for urban transit buses as set forth in title 13, ...~~”. This change is to clarify that the useful life of the engine certified in a hybrid engine family must meet the useful life of the intended service class of a conventional engine used in a comparable conventional vehicle as intended for the hybrid engine family. This is needed to ensure that the useful life requirements that are specified for a conventional engine in an intended service class also apply to the engine that is certified for a hybrid vehicle application if both engines are certified for the intended same service class. The second change in this subsection is editorial to update for section citations and reference dates.

Subsection C.5, “Emissions Warranty”. Changes in this subsection are mainly editorial (non-substantive) and to update reference citation dates.

Subsection C.6, “Durability and Emission Testing”. Changes in this subsection are mainly editorial (non-substantive) and to update reference citation dates.

Subsection C.7, “Labeling Requirements”. The change in this subsection is needed for editorial (non-substantive) purposes.

Subsection C.7.1. The changes in this subsection are needed for editorial (non-substantive) purposes.

Subsection C.7.2. The changes in this subsection are needed for editorial (non-substantive) purposes.

Subsection C.7.3. The changes in this subsection are needed for editorial (non-substantive) purposes.

Subsection C.7.4. This new section is needed to extend the existing labeling requirements for urban buses to other heavy-duty vehicles and to specify new applicability dates.

Subsection C.8, “Engine Service Manuals and Equipment Maintenance Signals”. Changes in this subsection are mainly to update reference citation dates.

Subsection C.9, “Rebuild Provisions and Recordkeeping Requirement”. Changes in this subsection are mainly to update reference citation dates.

Subsection C.10, “Information Requirements”. The changes in this subsection are to update for 40 CFR, §86.1843-01(c) reference citation and to include additional information that a manufacturer is already required to provide, but was not explicitly provided for in the existing interim certification procedures. The explicit inclusion of the required information in the proposed amendments is intended to clarify those requirements and to assist the manufacturers in understanding what information would be required when they apply for certification of a hybrid vehicle.

Subsection C.12. This section was added to specify that other hybrid vehicles would be subject to the same information requirements as those provided specifically for hybrid-electric vehicles.

#### **Amendments to Section D**

Editorial (non-substantive) changes were made to the section title, and SAE J2711 reference along with other editorial changes. In addition, electric and flywheel hybrid vehicles are added to allow for case-by-case evaluation, similar to the requirements for turbine and fuel cell hybrid vehicles under the existing certification procedures.

Subsection D.1.1, “Test Site”. New language was added to clarify test site capabilities for cooling the battery that is representative of in-use operation and require that the cooling fan shall be switched off for all key off dwell periods. These changes are needed to ensure that the thermal conditions of the battery when being tested are similar to when it is in actual in-use operation and to prevent laboratory personnel to overcooling the battery during testing. In addition, new language was added to specify that test conditions specified in 40 CFR, Part 86 and Part 1065 shall apply, as appropriate. This is needed to clarify that test sites need to be conformed to the requirements specified in those two parts of 40 CFR.

Subsection D.1.2, “Pre-Test Data Collection”. New language was added to include collection of additional data, such as certified engine family, torque, manufacturer, model, lock-up converter. These changes are needed to ensure that the needed data are collected prior to testing. In addition, new language was added to specify that the chassis test laboratory shall be used to measure

actual cycle distance during a test. This change is needed to ensure uniformity in the determination of distance traveled during a test.

Subsection D.1.4, "Vehicle Preparation". Editorial changes were made to update for reference citation date.

Subsection D.1.4.1. New language was added to specify that the rechargeable energy storage system has to be fully recharged prior to testing as well as specifications concerning the charging frequency during the test. This is needed to ensure that the charging conditions of the rechargeable energy storage system during the test resemble the charging conditions under normal operation.

Subsection D.1.4.2. This section was amended to specify the test weight for light heavy-duty, medium heavy-duty and heavy heavy-duty vehicles. This change is needed to supplement the test weight specification for urban buses in the existing interim certification procedures.

Subsection D.1.4.3. This section was amended to require that the manufacturer's recommended tire pressures be used when testing the vehicle on the dynamometer. This change is needed to ensure vehicle parameters as recommended by the vehicle manufacturers are consistently followed by all test facilities.

Subsection D.1.4.5. This section was added to require that all vehicles are to be tested with normal appendages, except for certain items, which need to be removed for safety reasons. This section is needed to align with standard test chassis dynamometer test procedures.

Subsection D.1.4.8. Changes were made in order to ensure a consistent testing process, including replacing the word "may" with the word "shall."

Subsection D.1.4.9. Editorial changes were made to replace the acronym "HEVs" with "hybrid-electric vehicles". This change is needed for better readability.

Subsection D.1.4.10. This section was added to require that the conditions of the battery during testing be monitor to detect possible damages or compromised charging capability and require any abnormalities to be repaired or stabilized prior to continuing with testing. This change is needed to ensure that the battery charging capability is within manufacturer's specifications to ensure that test results are accurate and valid.

Subsection D.1.5, "Chassis Dynamometer Specifications". This section added new language to recommend using a 40 CFR, §1066 compliant chassis

dynamometer, if available. This change is needed to conform as closely as possible the latest federal test procedures with the recognition that not all chassis dynamometer currently have the capability to be 40 CFR, §1066 compliant.

Subsection D.1.6, "Testing Instrumentation". This section was amended by adding new language that specifies required testing instruments along with accuracy and precision tolerances, detection limits and measurement errors. New language was also added to require the instruments to comply with specifications presented in SAE1634, SAE 2263, SAE 2265, 40 CFR, §86.1309-90, and 40 CFR, Part 1065, as applicable. These changes are needed to ensure that appropriate instruments with acceptable accuracy and precision levels are being used and that the proper use of instruments is being followed via SAE and CFR references, to ensure test results are accurate and repeatable.

Subsection D.2.2. Editorial changes were made to add the words "heavy-duty" to clarify that the specified test cycle is a heavy-duty test cycle and to update the citation reference date. These changes are needed for better clarity and update.

Subsection D.2.2.1. This section was deleted because it is no longer applicable.

Subsection D.2.2.1. This section was re-numbered from "D.2.2.2." due to deletion of subsection D.2.2.1 as discussed above. In addition, editorial (non-substantive) changes were made to this section to improve readability.

Subsection D.2.2.5. This section was deleted because it is already included in another section of the test procedures.

Subsection D.2.3, "Charge-Sustaining Vehicle Evaluation Procedure". This section was added to reference SAE J2711. This change is needed to follow the latest recommended practice from SAE for testing charge-sustaining hybrid vehicles.

Subsection D.2.3, "Charge-Depleting Vehicle Evaluation Procedure". This section was added to reference SAE J2711. This change is needed to follow the latest recommended practice from SAE for testing charge-depleting hybrid vehicles.

Subsection D.2.5.1. This section was amended to specify the cold-soak temperature range and to allow for the use of "good engineering judgment" to comply with the requirements of this section where needed. These changes are needed to require the standard cold soak temperature range is used and to allow for the use of good engineering judgment concerning other parameters specified

in this section that may not be possible to achieve by all testing laboratories due to differences in facility designs and available equipment and instrumentation.

Subsection D.2.6, “Intra-test Pauses”. This section was amended to specify the cooling fan be switched off between tow test events. This change is needed to more accurately duplicate real-world conditions that the vehicle would experience and to be consistent with other accepted test procedures and recommended practices.

Subsection D.2.8.4. This section was amended to replace the acronyms with written-out words. These changes are needed to improve readability.

Subsection D.3.1, “Exhaust Emissions and Fuel Economy”. This section was amended to specify that the total exhaust emissions of the hybrid-electric vehicle shall be reported as the sum of the emissions from the charge-sustaining portion and the emissions from the non-charge-sustaining portion of the full charge test. This change is needed to be consistent with SAE J2711. Other changes in this section are editorial (non-substantive) and are needed to improve clarity and readability.

Subsection D.3.2, “Fuel Consumption Calculations”. This section was added to reference SAE J2711. This change is needed to follow the latest recommended practice from SAE for testing charge-sustaining hybrid vehicles.

Subsection D.3.3, “State of Charge Difference”. This section was amended to replace the acronyms with written-out words. These changes are needed to improve readability.

Subsection D.3.4, “Net Energy Change”. This section was amended to replace the acronyms with written-out words. These changes are needed to improve readability.

Subsection D.3.4.1, “Batteries”. This section was amended to replace the acronyms with written-out words and other editorial (non-substantive) changes. These changes are needed to improve clarity and readability.

Subsection D.3.4.2, “Capacitors”. This section was amended to replace the acronyms with written-out words and other editorial (non-substantive) changes. These changes are needed to improve clarity and readability.

Subsection D.3.4.3, “Electromechanical Flywheels”. This section was amended to replace the acronyms with written-out words and other editorial (non-substantive) changes. These changes are needed to improve clarity and readability.

Subsection D.3.5, This title of this section was amended to replace the acronyms with written-out words. This change is needed to improve readability.

Subsection D.3.5.1, “Total Fuel Energy”. This section was amended to add hydraulic and flywheel to the list of other hybrid vehicles in addition to one other editorial change. These changes are needed to be more inclusive of the types of hybrid vehicles that could use the specified procedures for determining total fuel energy and to improve readability.

Subsection D.3.4.2, “Total Cycle Energy”. This section was deleted since it is no longer needed.

Subsection D.3.5.2, “Determination Procedure”. This section was amended to change the acceptable net energy change variance to 1% from 2% and to provide for a correction procedure to follow if the net energy change is greater than 1% but less than 5%. These changes are needed to be consistent with SAE J2711 specifications. Other editorial changes in this section are needed to improve readability.

Subsection D.5. This section was amended to replace “urban transit buses” with “vehicles”. This change is needed to expand the types of heavy-duty hybrid vehicles that could certify using these test procedures.

## **Amendments to Section E**

“Certification by Emission Factor Ratio Application”. This section was amended to state that when calculating an emission factor the larger of the two test results are to be used. This change is needed to clarify the existing method used by ARB certification staff to calculate the emission factors when reviewing test results provided by an applicant as required by the test procedures.

Subsection E.1, “Emission Factor”. This section was amended to replace acronyms with written-out words and to replace “urban transit buses” with “vehicles”. These changes are needed to improve readability and to expand the types of heavy-duty hybrid vehicles that could certify using these test procedures.

Subsection E.2, “Emission Factor Ratio”. This section was amended to replace “urban transit buses” with “vehicles”. These changes are needed to expand the types of heavy-duty hybrid vehicles that could certify using these test procedures.

Subsection E.3, “Application of Emission Factor Ratio for Hybrid-Electric Vehicle Certification”. This section was amended to replace acronyms with written-out words and to replace “buses” with “vehicles”. These changes are needed to improve readability and to expand the types of heavy-duty hybrid vehicles that could certify using these test procedures.