UPDATED INFORMATIVE DIGEST

ADOPTION OF GREENHOUSE GAS (GHG) REGULATIONS FOR MEDIUM- AND HEAVY-DUTY ENGINES AND VEHICLES, OPTIONAL REDUCED EMISSION STANDARDS FOR HEAVY-DUTY ENGINES, AND AMENDMENTS TO THE TRACTOR-TRAILER GHG REGULATION, DIESEL-FUELED COMMERCIAL MOTOR VEHICLE IDLING RULE, AND THE HEAVY-DUTY HYBRID-ELECTRIC VEHICLES CERTIFICATION PROCEDURES

This Updated Informative Digest relates to five separate, but related regulatory actions regarding on-road medium- and heavy-duty vehicles and engines. The sections of the CCR that are affected and documents incorporated by reference are described below for each of the five regulatory actions.

Sections Affected:

Phase 1 GHG Regulations

Amendments to title 13, CCR, sections 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, and 2147, and adoption of new title 17, CCR, sections 95660, 95661, 95662, 95663, and 95664, including the following test procedures that are incorporated by reference herein: new test procedure entitled "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," incorporated by reference in title 17, CCR, 95663(c); amended test procedure "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," last amended April 18, 2013, incorporated by reference in title13, CCR, 1956.8(b); amended test procedure "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," last amended April 18, 2013, incorporated by reference in title13, CCR, 1956.8(d).

Tractor-Trailer GHG Regulation

Amendments to title 17, CCR, sections 95300, 95301, 95302, 95303, and 95305.

Optional Low NOx Standards

Amendments to title 13, CCR, sections 1956.8, and amendments to **"**California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," last amended April 18, 2013, incorporated by reference in title 13, CCR, section 1956.8(b), and amendments to "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," last amended April 18, 2013, incorporated by reference in title 13, CCR, section 1956.8(d).

Heavy-Duty Diesel Idling ATCM

Amendments to title 13, CCR, section 2485.

Hybrid-Electric Vehicle Certification Procedures
Amendments to title 13, CCR, section 1956.8, and amendments to "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," incorporated by reference in title 13 CCR sections 1956.8(b) and 1956.8(d).

Documents Incorporated by Reference:

Phase 1 GHG Regulations

The following documents are incorporated by reference in the amendments to title 13, CCR, section 1956.8:

- "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," adopted December 12, 2002, as last amended April 18, 2013.
- "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," adopted December 27, 2000, as last amended April 18, 2013.
- "California Non-Methane Organic Gas Test Procedures," adopted July 12, 1991, as last amended December 6, 2012.

The following document is incorporated by reference in the new title 17, CCR, section 95663:

- New "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles,"

The following documents are incorporated by reference in 40 CFR 1037.521(d):

- SAE J1252 Wind Tunnel Test Procedure for Trucks and Buses, Revised July 1981.
- SAE J1594 Vehicle Aerodynamics Terminology, Revised July 2010.
- SAE J2071 Aerodynamic Testing of Road Vehicles – Open Throat Wind Tunnel Adjustment, Revised June 1994.

The following documents are incorporated by reference in 40 CFR 1037.610(c):

- SAE J1321 Joint TMC/SAE Fuel Consumption Test Procedures Type II Reaffirmed 1986-10.
- SAE J1526 Joint TMC/SAE Fuel Consumption In-Service Test Procedure Type III Issued 1987-06.

The following documents are incorporated by reference in 40 CFR 1066.20:

- National Institute of Standards and Technology (NIST) Special Publication 811, 2008 Edition, Guide for the Use of the International System of Units (SI), March 2008.

The following documents are incorporated by reference in 40 CFR 1066.310(b):

- SAE J1263 Road Load Measurement and Dynamometer Simulation Using Coastdown Techniques, Revised March 2010.
- SAE J2263 Road Load Measurement Using Onboard Anemometry and Coastdown Techniques, Revised December 2008.

The following document is incorporated by reference in 40 CFR 1066.501:

- SAE J2711 Recommended Practice for Measuring Fuel Economy and Emissions of Hybrid-Electric and Conventional Heavy-Duty Vehicles, Issued September 2002.

The following documents are incorporated by reference in "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," adopted December 12, 2002, as last amended April 18, 2013, and California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," adopted December 27, 2000, as last amended April 18, 2013:

- "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," as amended December 6, 2012.
- "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as amended December 6, 2012.
- American Society for Testing and Materials (ASTM) D240-09 Standard Test Method for Head of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, approved July 1, 2009.
- ASTM D4809-09a Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method), approved September 1, 2009.
- ASTM D5291-10 Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants, approved May 1, 2010.

Tractor-Trailer GHG Regulation

None.

Optional Low NOx Standards

- "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," adopted December 12, 2002, as last amended April 18, 2013.
- "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," adopted December 27, 2000, as last amended April 18, 2013.

Heavy-Duty Diesel Idling ATCM

- "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," as last amended on April 18, 2013.
- "California Exhaust Emission Standards and Test Procedures for 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," as incorporated by reference in title 13 CCR 1961(d).

Hybrid-Electric Vehicle Certification Procedures

- "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002.

Background:

Phase I GHG Regulation

On November 14, 2011, U.S. EPA and the National Highway Traffic Safety Administration (NHTSA), on behalf of the U.S. Department of Transportation, jointly adopted GHG emission standards and fuel economy standards for 2014 through 2018 model year medium- and heavy-duty engines and vehicles, informally known as the "U.S. Phase I" GHG regulations or federal Phase I program. The U.S. Phase I GHG regulations establish the first federal GHG emission standards for medium- and heavy-duty engines and vehicles.

In this rulemaking action, ARB staff is proposing new regulations to establish GHG emission standards applicable to new vehicles and to amend existing regulations to establish GHG standards applicable to new California medium and heavy-duty vehicle engines. The proposed new regulation and related amendments would align California's GHG emissions standards and test procedures with those of the U.S. Phase I GHG regulation, provide nationwide consistency for engine and vehicle manufacturers, and allow ARB to both certify new motor vehicles and new motor vehicle engines to GHG standards and to enforce those requirements in California.

Tractor-Trailer GHG Regulation

The Board initially approved the Tractor-Trailer GHG regulation (title 17 CCR 95300-95312) on December 11, 2008, and subsequently adopted amendments to the regulation on October 26, 2011. The regulation reduces GHG emissions by requiring long-haul tractors and trailers to be equipped with specified aerodynamic technologies and low-rolling resistance tires that act to reduce the aerodynamic drag and rolling resistance forces acting on such tractors and trailers. The regulation incorporates elements of the U.S. EPA's voluntary SmartWay program, which develops test protocols

and establishes performance criteria to verify the GHG emissions reduction benefits of heavy-duty tractors and equipment associated with heavy-duty tractors and trailers. The Tractor-Trailer GHG regulation currently requires 2011 and subsequent model year sleeper-cab tractors pulling 53-foot or longer box-type trailers on California highways to be SmartWay designated tractor models, and 2011 or subsequent day-cab tractors pulling 53-foot or longer box-type trailers on California highways to be equipped with SmartWay verified low rolling resistance (LRR) tires. The Tractor-Trailer GHG regulation also requires both 2011 and newer and 2010 and older 53-foot or longer box-type trailers to either be SmartWay designated trailers or to be retrofitted with SmartWay verified aerodynamic technologies and SmartWay verified LRR tires.

To harmonize the tractor-based requirements of the federal and California regulations, staff is proposing to sunset the tractor-based requirements for 2014 and subsequent model year tractors, but will maintain all elements of the trailer-based requirements of the existing Tractor-Trailer GHG regulation. Staff is also proposing to modify the Tractor-Trailer GHG regulation to clarify the applicability of the tractor-based requirements for tractors that are subsequently retrofitted with sleeper cab compartments and to allow 2014 and newer model year heavy-duty tractors to be eligible for the existing short-haul and local-haul tractor exemptions. The trailers hauled by such short-haul and local-haul tractors would be exempted as well.

Optional Low-NOx Standards

California is the only state that is authorized to adopt and enforce emission standards for new motor vehicles and engines that differ from federal emission standards. Because of the large number of California heavy-duty trucks that travel interstate, ARB has generally aligned California's heavy-duty engine standards with federal heavy-duty engine standards. Since 1990, both California and EPA have established increasingly more stringent emission standards for heavy-duty diesel engines. Specifically, the California and federal emission standards for NOx have been reduced from 6 grams per brake-horsepower hour (g/bhp-hr) in 1990 to the current standard of 0.2 g/bhp-hr.

In addition to the primary NOx standards, California has also established several optional, lower NOx standards over the past 15 years. From 1998 to 2003, optional NOx standards ranged from 2.5 g/bhp-hr to 0.5 g/bhp-hr, at 0.5 g/bhp-hr increments, which were much lower than the mandatory 4.0 g/bhp-hr limit. Starting in 2004, engine manufacturers could choose to certify to optional NOx + non-methane hydrocarbon (NMHC) standards ranging from 1.8 g/bhp-hr to 0.3 g/bhp-hr, at 0.3 g/bhp-hr increments, which was significantly less than the mandatory 2.4 g/bhp-hr NOx+NMHC standard. These optional standards allowed local air districts and ARB to preferentially provide incentive funding to purchasers of cleaner trucks, which encouraged the development of cleaner engines.

ARB presently does not have a mechanism in place to allow heavy-duty engine manufacturers to optionally certify engines to standards more stringent than the 2010 MY standard. To encourage development of lower NOx engines and reduce emissions,

ARB staff is proposing to establish the next generation of optional NOx standards for heavy-duty engines, that would specify three optional NOx emission standards of 0.1 g/bhp-hr, 0.05 g/bhp-hr, and 0.02 g/bhp-hr, which would correspond to emission levels that are 50 percent, 75 percent, and 90 percent lower than the current mandatory standard, respectively. Several existing programs such as the Carl Moyer Program and Proposition 1B Program and ARB's Truck and Bus regulation currently provide some incentive for optionally certified engines and could be modified to provide additional incentives for engine manufacturers to certify to the proposed optional standards. To the extent that engine manufacturers elect to certify heavy-duty engines to the optional NOx standards, those optional NOx standards will provide emission benefits and pave the way for future cleaner engines.

Heavy-Duty Diesel Idling ATCM

On July 22, 2004, ARB initially adopted an Air Toxic Control Measure (ATCM) to limit diesel-fueled commercial motor vehicle idling. ARB subsequently adopted amendments to this ATCM on September 1, 2006 and October 19, 2009. This ATCM is set forth at title 13, CCR section 2485, and requires, among other things, that drivers of diesel-fueled commercial motor vehicles with gross vehicle weight ratings greater than 10,000 pounds not idle the vehicle's primary diesel engine longer than five minutes at any location.

ARB staff is proposing to expand the applicability of the idling ATCM to include the vehicle owner and the motor carrier that dispatched the vehicle. Staff is also proposing to include schools, hotels, and motels in the definition of "restricted area." "Restricted area is currently defined as "any real property zoned for individual or multifamily housing units, that has one or more of such units on it," and the existing ATCM prohibits idling of a main engine beyond five minutes or operation of a diesel-fueled auxiliary power unit longer than five minutes when located within 100 feet of a restricted area. The proposed amendments will ensure that emission benefits from the existing ATCM are realized by increasing the regulation's compliance rate and would provide those members of the public who attend schools, or work or reside at hotels and motels, additional protection from exposure to diesel particulate matter and other toxic air contaminants, and the associated potential cancer risks and other adverse health effects associated with diesel emissions.

Hybrid-Electric Vehicle Certification Procedures

On October 24, 2002, ARB approved the adoption of "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes." These interim certification procedures allow manufacturers to voluntarily certify heavy-duty hybrid-electric vehicles using a vehicle-based (as opposed to engine-based) certification. ARB staff is proposing to update the interim certification procedures to clarify and enhance certification requirements due to expanding commercialization and advancement of hybrid technology into more sectors of the heavy-duty market and the need to better quantify emission reductions from

existing and future heavy-duty hybrid vehicles. Specifically, the amendments would expand the existing applicability of the certification procedures to allow more vocational vehicles to certify, and would clarify and enhance certification requirements. The amended test procedures would remain as voluntary, interim procedures.

Objectives and Benefits:

ARB has established a comprehensive regulatory program to reduce emissions from on-road medium- and heavy-duty vehicles in California, as part of ARB's program to improve air quality and reduce the emissions that contribute to climate change. Staff has proposed five regulatory actions that all relate to on-road medium- and heavy-duty vehicles and engines. The objectives and expected benefits of each proposal include:

Phase 1 GHG Regulations: This rulemaking action establishes new GHG emissions standards for 2014 and subsequent model year medium- and heavy-duty engines and vehicles sold in California that are identical to the national GHG emission standards established by U.S. EPA in 2011, and provides California with the ability to certify new medium-and heavy-duty engines and vehicles to the new standards, and to enforce those standards in California. The proposed Phase 1 GHG regulations would not require additional compliance actions beyond those currently required by the U.S. Phase 1 GHG regulations, hence resulting in no new direct emission benefits.

In 2004, the U.S. Supreme Court clarified that a standard, as it applies to emissions from motor vehicles and motor vehicle engines under Title II of the federal Clean Air Act, relates to the emission characteristics of vehicles or engines and requires motor vehicles or motor vehicle engines to emit no more than a certain amount of a given pollutant, be equipped with a certain type of pollution-control device, or have some other design feature related to the control of emissions. *Engine Manufacturers Association v. South Coast Air Quality Management District* (2004) 541 U.S. 246, 253, 124 S.Ct. 1756, 1762 (*EMA)*. Staff is proposing that the Phase 1 GHG regulation add a definition of "emission standard" to be consistent with the definition set forth in *EMA* for purposes of clarity, consistency, and conformity and to clarify that the definition of emission standard as used in the Phase 1 GHG regulation conforms to the federal definition. For purposes of clarification and consistency, ARB staff is also adding the terms "exhaust emission standard" and "evaporative emission standard" in the definitions section to provide more specificity, where needed, to preexisting textual references to emission standards.

Staff is also proposing to add these definitions to title 13, CCR section 1900(b) to clarify that the requirements applicable to on-road motor vehicles and motor vehicle engines set forth in Article 2, Chapter 1, Division 3 of title 13, California Code of Regulations and the associated remedies provided in the Health and Safety Code for noncompliance constitute "emission standards," "evaporative emission standards," or "exhaust emission standards," and to title 13, CCR section 1956.8 to clarify that the proposed amendments to establish optional NOx emission standards for heavy-duty engines (described below) also constitute "emission standards," "evaporative emission standards," or "exhaust emission standards."

Amendments to Tractor-Trailer GHG Regulation: The proposed amendments to ARB's Tractor-Trailer GHG regulation would sunset the requirements applicable to new 2014 and subsequent model year sleeper cab tractors, and would clarify that 2013 MY tractors that are optionally certified to the U.S. Phase 1 GHG regulations are exempted from the Tractor-Trailer GHG regulation. The proposed Phase 1 GHG regulations described above would establish the GHG emission standards for new 2014 and subsequent model year heavy-duty tractors that are currently subject to existing Tractor-Trailer GHG regulation. Overall, the U.S. Phase 1 GHG program in California, including the proposed amendments to sunset the elements of the Tractor-Trailer GHG regulation applicable to 2014 and newer model year heavy-duty tractors, is expected to reduce 3.1 million metric tons carbon dioxide equivalent (MMTCO2e) in 2020 and 7.0 MMTCO2e in 2035, which corresponds to a 7.2 percent reduction in 2020 and 12.5 percent reduction in 2035.

Staff is also proposing to add a definition of "emission standard" to be consistent with the definition set forth in *Engine Manufacturers Association v. South Coast Air Quality Management District* (2004) 541 U.S. 246, 253, 124 S.Ct. 1756, 1762 (*EMA)* for purposes of clarity, consistency, and conformity. Under the federal definition, requirements to equip tractors and trailers with specified aerodynamic equipment and low rolling resistance tires relate to a requirement that a vehicle be equipped with a certain type of pollution-control device or a design feature related to the control of emissions, and are emission standards. The proposed amendments are intended to make clear that the definition of emission standard as used in the Tractor Trailer GHG regulation conforms to the federal definition.

Optional Low NOx Emission Standards: The proposed regulation would establish new, optional NOx standards for heavy-duty vehicle engines that are more stringent than the currently applicable NOx standard of 0.2 g/bhp-hr to encourage the development of new, cleaner engines. Since the proposed regulation would be entirely optional, the associated emission benefits would be dependent upon the level of participation by engine manufacturers. Estimated NOx emission benefits could be as high as 1.2 tons per day (tpd) NOx statewide in 2020, and 6.9 tpd NOx in 2035 if there is a high level of manufacturer participation.

Amendments to Diesel Idling ATCM: Currently, the compliance rate with the idling ATCM is less than desired because only the driver is responsible for an idling ATCM violation and sometimes it is impractical to issue the citation directly to the driver. The proposed amendments to ARB's existing idling ATCM are intended to improve compliance with the existing idling ATCM by (1) expanding the current responsibility for compliance to vehicle owners and motor carriers, and (2) clarifying that restricted areas, which the existing idling ATCM defines as "any real property zoned for individual or multifamily housing units that has one or more of such units on it" also include schools, hotels and motels. The existing idling ATCM prohibits idling of a main engine longer than five minutes or the operation of a diesel-fueled auxiliary power unit longer than five minutes when located within 100 feet of a restricted area. The proposed amendments would provide those members of the public who attend schools, or work or reside at

hotels and motels, additional protection from exposure to diesel particulate matter and other toxic air contaminants. The amendments do not modify the requirements of the existing ATCM by establishing additional or more stringent emission standards applicable to truck or off-road engines, but would serve to ensure that the emission benefits of the existing ATCM are realized.

Staff is also proposing to add a definition of "emission standard" to be consistent with the definition set forth in *Engine Manufacturers Association v. South Coast Air Quality Management District* (2004) 541 U.S. 246, 253, 124 S.Ct. 1756, 1762 (*EMA)* for purposes of clarity, consistency, and conformity. Under the federal definition, requirements for heavy-duty commercial motor vehicles to incorporate engine designs to limit extended idling of the main engine constitute requirements to emit no more than a certain amount of a given pollutant, to be equipped with a certain type of pollution-control device, or have a design feature related to the control of emissions, and are emission standards. The proposed amendments are intended to make clear that the definition of emission standard as used in the ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling conforms to the federal definition.

Amendments to ARB's Heavy-Duty Hybrid Electric Vehicle Certification Procedures: The proposed amendments are intended make the certification procedures more broadly applicable to additional vocational vehicles and to heavy-duty plug-in hybrid electric vehicles that have entered the market since the regulation was originally adopted. The proposed amendments would provide a more comprehensive certification process but would not generate additional emissions reductions in the short-term. In the long-term, however, the expanded procedures could enable more hybrid-electric vehicles to be certified and produced, which could provide emission benefits.

The Board's Action:

At its December 12, 2013, public hearing, the Board conducted a public hearing and received oral and written comments. At the conclusion of the hearing, the Board adopted the following resolutions:

- Resolution 13-50, that covered the proposed amendments to title 13, California Code of Regulations (CCR), sections 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, and 2147, and the proposed adoption of new title 17, CCR, sections 95660, 95661, 95662, 95663, and 95664, including the following test procedures incorporated by reference herein: proposed new test procedure entitled "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," incorporated by reference in title 17, CCR, 95663(c); proposed amended test procedure "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," last amended April 18, 2013, incorporated by reference in title13, CCR, 1956.8(b); and proposed amended test procedure "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," last amended

April 18, 2013, incorporated by reference in title13, CCR, 1956.8(d) (incorporated test procedures). These proposed amendments and adoption of new regulatory sections and associated test procedures were initially proposed by staff and described in the Notice of Public Hearing (45-Day Public Notice) and Staff Report, which were initially published on October 23, 2013. A modification was suggested by staff in a document entitled "Staff's Suggested Modifications to the Original Proposal" that was distributed at the hearing and that was Attachment E to Resolution 13-50. This substantive modification to the original proposal provides manufacturers additional lead time, until January 1, 2015, to produce California engine and vehicle labels, instead of immediately upon the effective date of the regulation, which is approximately the fall of 2014.

In accordance with Government Code section 11346.8, the Board directed the Executive Officer to adopt the proposed amendments to title 13, CCR, sections 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, and 2147, the proposed adoption of title 17, CCR, sections 95660, 95661, 95662, 95663, and 95664, the proposed amendments to "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," last amended April 18, 2013, incorporated by reference in title 13, CCR, 1956.8(b); proposed amendments to "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," last amended April 18, 2013, incorporated by reference in title 13, CCR, 1956.8(d), and proposed new test procedure "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," incorporated by reference in title 17, CCR, 95663(c); with the modifications set forth in Attachment E to Resolution 13-50, after making them and any additional supporting documents and information available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if warranted.

- Resolution 13-51, that covered the proposed amendments to title 17, CCR, sections 95300, 95301, 95302, 95303, and 95305 that were initially proposed by staff and described in the Notice of Public Hearing (45-Day Public Notice) and Staff Report, which were initially published on October 23, 2013. Modifications were suggested by staff in a document entitled "Staff's Suggested Modifications to the Tractor-Trailer Greenhouse Gas (GHG) Regulation" that was distributed at the hearing and that was Attachment B to the Resolution. The suggested modifications: streamlined the Trailer Aerodynamic Equipment Compliance (TAEC) delay process so that owners of trailers that cannot be retrofitted with existing aerodynamic equipment do not have to reapply for the delay each year, but rather may continue to use such trailers until they are notified by ARB staff that technologies are available for their trailer configuration; provided a 3 month temporary exemption from the requirements of the regulation for recently manufactured 53-foot or longer box trailers; and clarified that the TAEC delay provisions apply to 2010 and older trailers as well as 2011 and newer trailers.

In accordance with Government Code section 11346.8, the Board directed the Executive Officer to adopt the proposed amendments to title 17, CCR, sections 95300, 95301, 95302, 95303, and 95305, with the modifications set forth in Attachment B to Resolution 13-51, after making them and any additional supporting documents and information available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if warranted.

- Resolution 13-52, that covered the proposed amendments to title 13, CCR, section 1956.8, to the incorporated "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," last amended April 18, 2013, and to the incorporated "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles," last amended April 18, 2013, that were initially proposed by staff and described in the Notice of Public Hearing (45-Day Public Notice) and Staff Report, which were initially published on October 23, 2013. Modifications were suggested by staff in a document entitled "Staff's Suggested Modifications to the Original Proposal" that was distributed at the hearing and that was Attachment D to the Resolution. Staff's suggested modification was that the on-board diagnostic (OBD) requirements applicable to 2015 and later model year heavy-duty diesel and heavy-duty otto-cycle engines certified to the proposed optional NOx emission standards be the same as the OBD requirements applicable to other certified heavy-duty engines and vehicles (title 13, CCR, section 1971.1), with the exception of the NOx emission threshold malfunction criteria for all applicable monitors, in which case a malfunction criterion of 0.4 gram per brake-horsepower hour (g/bhp-hr) NOx shall be used (i.e., the OBD system is required to detect a malfunction before NOx emissions exceed 0.4 g/bhp-hr). Without such a change, meeting the existing OBD requirements would be very challenging and likely create a significant disincentive for manufacturers to certify to the optional NOx emission standards.

In accordance with Government Code section 11346.8, the Board directed the Executive Officer to adopt the proposed amendments to title 13, CCR, section 1956.8, to the incorporated "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," last amended April 18, 2013, and to the incorporated "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles," last amended April 18, 2013, with the modifications set forth in Attachment D to Resolution 13-52, after making them and any additional supporting documents and information available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if warranted.

- Resolution 13-53, that covered the originally proposed amendments to title 13, CCR, section 2485 that were initially proposed by staff and described in the Notice of Public Hearing (45-Day Public Notice) and Staff Report, which were initially published on October 23, 2013. During the hearing, the Board proposed that staff modify the existing definition of "restricted area" to also explicitly include "hospitals," "senior care facilities," and "child care facilities." Staff included that proposal in the proposed 15-day modifications to title 13, CCR, section 2485.

In accordance with Government Code section 11346.8, the Board directed the Executive Officer to adopt the proposed amendments to title 13, CCR, section 2485, after making them and any additional supporting documents and information available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if warranted.

- Resolution 13-54, that covered the originally proposed amendments to title 13, CCR, section 1956.8 and to the "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002 that were initially proposed by staff and described in the Notice of Public Hearing (45-Day Public Notice) and Staff Report, which were initially published on October 23, 2013. Modifications were suggested by staff in a document entitled "Staff's Suggested Modifications to the Proposed Regulation Order for Amendments to Heavy-Duty Hybrid-Electric Vehicle Certification Procedures" that was distributed at the hearing and that was Attachment B to the Resolution and in a separate document entitled "Staff's Suggested Modifications to the Proposed Amendments to the California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric and Other Hybrid Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes" that was distributed at the hearing and that was Attachment C to the Resolution. Staff's suggested modifications as described in Attachments B and C to Resolution 13-54 included amending the title of the proposed amendments to include "Other Hybrid" vehicles and three minor technical amendments. In addition, at the hearing the Board directed staff to work with one manufacturer to address hydraulic hybrid vehicles in the test procedure and related calculation methodology.

In accordance with Government Code section 11346.8, the Board directed the Executive Officer to adopt the proposed amendments to title 13, CCR, section 1956.8, and to the "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002, with the modifications set forth in Attachments B and C to Resolution 13-54, after making them and any additional supporting documents and information available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the

comments received, and shall present the regulations to the Board for further consideration if warranted.

Fifteen-Day Changes:

Subsequent to the hearing, staff proposed two sets of modifications to the regulatory text and incorporated certification procedures identified above. The text of the first set of modifications was made available for a supplemental 15-day comment period by issuance of a "Notice of Public Availability of Modified Text." This notice and the attachments thereto was released on May 27, 2014.

The text of the second set of modifications was made available for a supplemental 15-day comment period by issuance of a "Second Notice of Public Availability of Modified Text." This notice and the attachments thereto was released on July 17, 2104.

The most significant of both of these post-hearing modifications are described below:

Phase 1 GHG Regulations:

- Manufacturers are provided additional lead time, until January 1, 2015, to produce California engine and vehicle labels, instead of immediately upon the effective date of the regulation.

Amendments to the Tractor-Trailer Greenhouse Gas Regulation

- The compliance period for trailers identified in a Trailer Aerodynamic Equipment Compliance (TAEC) delay now remains in effect until the Executive Officer notifies the applicant that the U.S. EPA has verified an aerodynamic technology that can be installed on the affected trailers.

- The process that the Executive Officer will use to review an application for a TAEC delay was clarified and the length of the TAEC delay was clarified to extend until the Executive Officer determines that technology appropriate for the trailer exists.

- The aerodynamic technology requirements for trailers were clarified to apply to both 2011 and newer trailers and also trailers manufactured before 2011.

- All new affected box trailers are now exempted from the requirements of the regulation for a period of three months from their date of manufacture.

Proposed Optional Reduced Emission Standards for Heavy-Duty Engines

- The on-board diagnostic (OBD) system requirements were modified to clarify that the OBD requirements for 2015 and later model year heavy-duty diesel and heavy-duty Otto-cycle engines certified to the proposed optional NOx emission standards

are identical to the OBD requirements applicable to other certified heavy-duty engines and vehicles (title 13, CCR, section 1971.1), with the exception of the NOx emission threshold malfunction criteria for all applicable monitors, in which case a malfunction criterion of 0.4 gram per brake-horsepower hour (g/bhp-hr) NOx shall be used (i.e., the OBD system is required to detect a malfunction before NOx emissions exceed 0.4 g/bhp-hr).

- The provisions regarding the eligibility of heavy-duty engines certified to optional reduced NOx emission standards to generate averaging, banking, and trading (ABT) credits were modified to clarify that such engines may generate ABT credits for particulates and non-methane hydrocarbons (NMHC), but not for NOx.

Amendments to the Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

- The definition of "restricted area" was extended to also include hospitals, senior care facilities and child care facilities.

California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric and Other Hybrid Vehicles in the Urban Bus and Heavy-Duty Vehicle Classes

- Language throughout the Interim Certification Procedures were modified to clarify that the Interim Certification Procedures apply to all types of hybrid vehicles, and are not limited to hybrid-electric vehicles.

- Manufacturers may now request Executive Officer approval to use alternative test procedures or calculations to determine compliance with standards applicable to hybrid vehicles. ARB's Executive Officer will approve or disapprove the use of such alternative test procedures and/or calculations based on his or her determination that such test procedure and/or calculations will generate results that are sufficiently similar and equivalent in stringency to the results as would be generated by the applicable test procedure and/or calculations, upon all information submitted by a manufacturer and upon good engineering judgment.

- Language was modified to specify that the net energy change for types of hybrid vehicles, including hydraulic hybrid vehicles, that are not explicitly described in the test procedures, shall be proposed by manufacturers, and are subject to advance approval by the Executive Officer. The Executive Officer shall approve the use of proposed net energy change calculations based on his or her determination that such calculations accurately characterize the state of energy storage associated with the type of hybrid technology, and shall base his or her determination upon all information submitted by a manufacturer and upon good engineering judgment.

A more complete listing of the changes to the regulations and incorporated test procedures are included in the Notices of Public Availability of Modified Text. The notices and the revised regulations and test procedures in underline/strikeout format were published on ARB's website for this rulemaking action. http://www.arb.ca.gov/regact/2013/hdghg2013/hdghg2013.htm.

COMPARABLE FEDERAL REGULATIONS

California's proposed Phase 1 GHG regulation would establish GHG standards for new 2014 and subsequent model year California medium- and heavy-duty engines and vehicles that are identical to U.S. EPA's Phase 1 GHG regulation (Final Rule Greenhouse Gas Emission Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Federal Register 57106-57513, (September 15, 2011), as subsequently amended on August 16, 2013 (78 Federal Register 36, 370-36,406 (June 17, 2013). U.S. EPA's Phase 1 GHG standards establish requirements for three distinct regulatory vehicle classes: combination tractors, vocational vehicles, and heavy-duty pick-up trucks and vans, and generally begin with model year 2014 engines and vehicles and increase in stringency through 2018 model year engines and vehicles.[1]

California's existing Tractor-Trailer GHG regulation currently applies to a subset of the 2014 and newer combination tractors regulated by the U.S. Phase 1 GHG standards. The proposed amendments to the Tractor-Trailer GHG regulation would delete the requirements for 2014 and subsequent model year tractors to be SmartWay designated models and to use SmartWay verified low-rolling resistance tires, and would clarify that 2013 MY tractors that are optionally certified to the U.S. Phase 1 GHG regulations are exempted from the Tractor-Trailer GHG regulation. As described above, the proposed Phase 1 GHG regulations would establish GHG standards for new 2014 and subsequent model year California heavy-duty tractors that are essentially harmonized with the U.S. Phase 1 GHG regulations. However, the proposed amendments to the Tractor-Trailer GHG regulation would not affect elements of the Tractor-Trailer GHG regulation that apply to categories of tractors that are not subject to the U.S. EPA's Phase I GHG regulation (2011 through 2013 model year new sleeper cab and new day cab tractors, and 2010 and older model year sleeper cab and day cab tractors) or to new and used 53-foot and longer box-type trailers hauled on California highways.

California has an existing regulation (title 13 CCR section 1956.8(a)(6)) that requires new California-certified 2008 and subsequent model-year on-road diesel engines in heavy-duty diesel vehicles to be equipped with a system that automatically shuts down the engine after five minutes of continuous idling. Manufacturers may also elect to optionally certify such engines to a NOx idling emission standard of 30 grams per hour.

[1] The U.S. EPA Phase 1 GHG regulations contain a provision allowing manufacturers the option to certify 2013 model year engines and vehicles in order to obtain emissions credits. 40 CFR 1036.150(e) and 40 CFR 1037.150(a), respectively.

The U.S. Phase 1 GHG regulation contains provisions that provide credits to vehicle manufacturers that elect to utilize automatic engine shutdown systems (40 Code of Federal Regulation, Part 1037, Subpart G, section 1037.660), but does not require new vehicles to incorporate idle shutdown systems. Moreover, the federal idle shutdown system requirements are less stringent and differ from California's requirements. Specifically, the federal regulation allows an engine manufacturer to remove the automatic engine shutdown system once the vehicle has accrued 1.29 million miles whereas California's idle shutdown requirements for new engines do not allow the removal of the automatic engine shutdown system for the life of the vehicle. Therefore, California's new engine idle shutdown requirements are more stringent than the provisions of the U.S. Phase 1 GHG regulations that provide carbon dioxide emission credits to engine manufacturers certifying with automatic engine shutdown systems. The U.S. Phase 1 GHG regulations contain no provision allowing engine manufacturers to optionally certify an engine to a NOx idling emission standard.

California's Heavy-Duty Diesel Idling ATCM prohibits heavy-duty diesel-fueled commercial motor vehicles from idling longer than five minutes, and from operating diesel-fueled auxiliary power systems (APSs) longer than five minutes when located within 100 feet of a restricted area, defined as real property zoned for individual or multifamily housing units that has one or more of such units on it. There are no comparable federal provisions prohibiting the extended idling of diesel-fueled commercial motor vehicles or the extended operation of diesel-fueled APSs within designated areas.

U.S. EPA does not have any optional NOx emission standards for heavy-duty engines comparable to the proposed amendments establishing optional NOx engine emission standards. Similarly, there are no comparable federal provisions comparable to the proposed amendments to California's Interim Hybrid Test Procedures.

In 2004, the United States Supreme Court clarified the definition of standard as it applies to emissions from motor vehicles and motor vehicle engines under Title II of the federal Clean Air Act relates to the emission characteristics of a vehicle or engine and require motor vehicles or motor vehicle engines to emit no more than a certain amount of a given pollutant, be equipped with a certain type of pollution-control device, or have some other design feature related to the control of emissions. *Engine Manufacturers Association v. South Coast Air Quality Management District* (2004) 541 U.S. 246, 253, 124 S.Ct. 1756, 1762 (*EMA)*. The proposed amendments are intended to make clear that the definition of emission standard as used in the Phase 1 GHG regulations, in the Tractor Trailer GHG regulation, in the proposed amendments to establish optional NOx emission standards for heavy-duty engines, and in the requirements applicable to on-road motor vehicles and motor vehicle engines set forth in Article 2, Chapter 1, Division 3 of title 13, California Code of Regulations conform to the federal definition as interpreted.