State of California

Final Statement of Reasons for Rulemaking
Including Summary of Comments and Agency Response

PROPOSED 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, THE DIESEL-FUELED COMMERCIAL MOTOR VEHICLE IDLING RULE, AND THE HEAVY-DUTY HYBRID-ELECTRIC VEHICLES CERTIFICATION PROCEDURES

Public Hearing Date: December 12, 2013
Agenda Item No.: 13-11-1

October 21, 2014

This page is intentionally blank

TABLE OF CONTENTS

I. INTRODUCTION 4

A. GENERAL 4

B. MANDATES AND FISCAL IMPACTS TO LOCAL GOVERNMENTS AND SCHOOL DISTRICTS 10

C. CONSIDERATION OF ALTERNATIVES 11

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL 11

B. NON-SUBSTANTIAL MODIFICATIONS 23

D. NON-SUBSTANTIAL MODIFICATIONS 25

III. DOCUMENTS INCORPORATED BY REFERENCE 25

A. Adoption of Phase 1 Heavy-Duty Vehicle Greenhouse Gas Emission Standards and Test Procedures 25

B. Tractor-Trailer GHG Regulation 27

C. Optional Reduced Emission Standards for Heavy-Duty Engines 27

D. Heavy-Duty Diesel Idling ATCM 27

E. Heavy-Duty Hybrid-Electric Vehicles Certification Procedures 28

IV. SUMMARY OF COMMENTS AND AGENCY RESPONSES 29

A. 45-DAY COMMENTS AND AGENCY RESPONSES 29

Summary of Comments on the Phase 1 GHG Regulations 31

Summary of Comments on Amendments to the Tractor-Trailer GHG Regulation 40

Summary of Comments on Optional Reduced Emission Standards for Heavy-Duty Engines 41

Summary of Comments on Amendments to the Idling ATCM 62

Summary of Comments on the Heavy-Duty Hybrid-Electric Vehicles Certification Procedures 66

B. 15-DAY COMMENTS AND AGENCY RESPONSES 70

V. Peer Review 71

State of California
AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,
Including Summary of Comments and Agency Response**

PUBLIC HEARING TO CONSIDER PROPOSED 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, THE DIESEL-FUELED COMMERCIAL MOTOR VEHICLE IDLING RULE, AND THE HEAVY-DUTY HYBRID-ELECTRIC VEHICLES CERTIFICATION PROCEDURES

Public Hearing Date: December 12, 2013
Agenda Item No.: 13-11-1

I. INTRODUCTION

A. GENERAL

The Staff Report: Initial Statement of Reasons for Rulemaking (Staff Report), entitled "Proposed Greenhouse Gas (GHG) Regulations for Medium- and Heavy-Duty Engines and Vehicles, Optional Reduced Emissions Standards for Heavy-Duty Engines, and Amendments to the Tractor-Trailer GHG Regulation, the Diesel-Fueled Commercial Motor Vehicle Idling Rule, and the Heavy-Duty Hybrid-Electric Vehicles Certification Procedures," released October 23, 2013, is incorporated by reference herein. The Staff Report contained a description of the rationale for the adoption of the proposed GHG Regulations for Medium- and Heavy-Duty Engines and Vehicles and of the Optional Reduced Emission Standards for Heavy-Duty engines, and for the amendments to the Tractor-Trailer GHG regulation, the Diesel-Fueled Commercial Motor Vehicle Idling Rule, and the Heavy-Duty Hybrid-Electric Vehicles Certification Procedures. On October 23, 2013, all references relied upon and identified in the Staff Report were made available to the public.

In this rulemaking, the Air Resources Board (ARB or Board or CARB) approved the adoption of the following five separate regulatory proposals that are all related to on-road medium- and heavy-duty vehicles and engines and that are part of ARB's program to improve air quality and reduce the emissions that contribute to climate change:

- Adoption of new regulations to establish GHG emission standards for new vehicles, and amendments to existing regulations to establish GHG standards applicable to new California medium- and heavy-duty engines to harmonize with the existing federal GHG emission standards (Phase 1 GHG Regulations) for medium- and heavy-duty engines and vehicles. These regulations 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. (Amendments to title 13, California Code of Regulations (CCR), sections 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, and 2147, and adoption of new sections 95660 to 95664, title 17, CCR, including the following test procedures incorporated by reference therein: 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 title 13, CCR, 1956.8(b); and 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 title 13, CCR, 1956.8(d).

- Amendments to ARB's existing Tractor-Trailer GHG Regulation to align with the federal Phase 1 GHG Regulations and to clarify the requirements for tractors retrofitted with sleeper-cab compartments. (Amendments to title 17, CCR, sections 95300, 95301, 95302, 95303, and 95305).

- Adoption of new, optional oxides of nitrogen (NOx) standards for heavy-duty vehicle engines. (Amendments to title 13, CCR, section 1956.8, and 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 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.)

- Amendments to the Airborne Toxic Control Measure (ATCM) to Limit Diesel-fueled Commercial Motor Vehicle Idling (Idling ATCM) to expand compliance responsibility to include vehicle owners and motor carriers, and also modify the definition of "restricted area" to include schools, hotels, motels, hospitals, senior care facilities, and child care facilities. (Amendments to title 13, CCR section 2485).

- Amendments to the California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes to expand the applicability of the Interim Procedures to a wider range of heavy-duty hybrid vehicles, including hydraulic, turbine, flywheel, and fuel cell hybrid vehicles, and update procedures and add definitions to match current international recommended practices for measuring fuel economy and emissions. The amended procedures continue to remain voluntary, interim procedures. (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).

On October 23, 2013, ARB published a notice for a December 12, 2013, public hearing to consider the proposed regulatory actions. The Staff Report was also made available for public review and comment beginning October 23, 2013. The

Staff Report provides the rationale for the regulatory proposals and incorporated certification and test procedures. The text of each of the proposed regulatory amendments to title 13, California Code of Regulations (CCR) sections 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, 2147, and 2485, and title 17, CCR sections 95300, 95301, 95302, 95303, 95305, 95660, 95661, 95662, 95663, 95664, and the incorporated certification and test procedures were included as Appendices I-A through I-E to the Staff Report. These documents are also posted on ARB's website for the rulemaking at: http://www.arb.ca.gov/regact/2013/hdghg2013/hdghg2013.htm. All background materials relied upon to estimate air emission and public health impacts in the Staff Report were made available to the public at: http://www.arb.ca.gov/msprog/onroad/ab1085_5_truck_rule.htm.

On December 12, 2013, the Board conducted a public hearing and received oral and written comments. At the conclusion of the hearing, the Board adopted the following five resolutions approving the proposed amendments, with modifications:

- 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, as modified, after making the modifications and any other appropriate conforming modifications, as well as 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, as modified, after making the modifications and any other appropriate conforming modifications, as well as 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, as modified, after making the modifications and any other appropriate conforming modifications, as well as 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, as modified, after making the modification and any other appropriate conforming modifications, as well as 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. Additional modifications to the test procedure were developed subsequent to the hearing to improve clarity.

In accordance with Government Code section 11346.8, the Board directed the Executive Officer to adopt the proposed amendments, as modified, after making the modifications and any other appropriate conforming modifications, as well as 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.

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 were mailed on May 27, 2014, to all stakeholders, interested parties, and to other persons generally interested in ARB's rulemaking requirements applicable to GHG emission standards for medium and heavy-duty engines and vehicles, 53-foot and longer box-type trailers and Class 7 and Class 8 tractors that haul such trailers on California highways, optional emission standards for heavy-duty diesel and Otto-cycle engines, diesel-fueled commercial motor vehicles with a gross vehicle weight rating (GVWR) greater than 10,000 pounds that operate in California, and manufacturers of heavy-duty hybrid vehicles. The "Notice of Public Availability of Modified Text" listed the ARB website from which interested parties could obtain the complete text of the regulations and incorporated test procedures that would be affected by the modifications to the original proposals, with all of the modifications clearly indicated. These documents were also published on ARB's website for this rulemaking at:
http://www.arb.ca.gov/regact/2013/hdghg2013/hdghg2013.htm.
One written comment was received during this first 15-day comment period.

The text of the second set of modifications to the originally proposed amendments 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 were mailed on July 17, 2014, to all stakeholders, interested parties, and to other persons generally interested in ARB's rulemaking requirements applicable to GHG emission standards for medium and heavy-duty engines and vehicles, 53-foot and longer box-type trailers and Class 7 and Class 8 tractors that haul such trailers on California highways, optional emission standards for heavy-duty diesel and Otto-cycle engines, diesel-fueled commercial motor vehicles with a gross vehicle weight rating (GVWR) greater than 10,000 pounds that operate in California, and

manufacturers of heavy-duty hybrid vehicles. The "Notice of Public Availability of Modified Text" listed the ARB website from which interested parties could obtain the complete text of the regulation that would be affected by the modifications to the original proposal, with all of the modifications clearly indicated. These documents were also published on ARB's website for this rulemaking at: http://www.arb.ca.gov/regact/2013/hdghg2013/hdghg2013.htm. No written comments were received during this second 15-day comment period.

After considering the comments received during both the first and the second 15-day comment periods, the Executive Officer issued Executive Orders R-14-010, R-14-011, R-14-012, R-14-013, R-14-014, adopting amendments to title 13, CCR sections 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, 2147, and incorporated documents, amendments to title 13 CCR section 2485 and title 17, CCR sections 95300, 95301, 95302, 95303, and 95305, and adopting new sections title 17, CCR sections 95660 through 95664 and incorporated documents.

This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally proposed regulatory text, including non-substantial modifications and clarifications made after the close of the first and second 15-day comment periods. This FSOR also contains a summary of the comments received by the Board on the proposed amendments and the modifications and ARB's responses to those comments.

B. MANDATES AND FISCAL IMPACTS TO LOCAL GOVERNMENTS AND SCHOOL DISTRICTS

1. Adoption of Phase 1 Heavy-Duty Vehicle Greenhouse Gas Emission Standards and Test Procedures

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district whether or not the costs are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

2. Amendments to the Tractor-Trailer Greenhouse Gas Regulation

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district whether or not the costs are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

3. Proposed Optional Reduced Emission Standards for Heavy-Duty Engines

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district whether or not the costs are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

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

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district whether or not the costs are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

5. Amendments to the California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district whether or not the costs are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

C. CONSIDERATION OF ALTERNATIVES

For the reasons set forth in the Staff Report, in staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purposes for which each of the regulatory actions were proposed, or would be as effective as and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the actions taken by the Board.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

A. MODIFICATIONS APPROVED AT THE BOARD HEARING AND PROVIDED FOR IN THE FIRST 15-DAY COMMENT PERIOD

Subsequent to the December 12, 2013, public hearing, staff proposed modifications to the regulatory text and incorporated test procedures. These modifications were explained in the "Notice of Public Availability of Modified Text" that was issued for a 15-day public comment period that began on May 27, 2014, and ended on June 11, 2014. In order to provide a complete FSOR for this rulemaking, the most significant modifications and staff's rationale for proposing such modifications are summarized below:

1. Adoption of Phase 1 Heavy-Duty GHG Standards and Test Procedures

Title 17, CCR, Section 95663:

Section 95663 (a)(2)(B) contained incorrect references to (a)(2)(C)(1) and (a)(2)(C)(2); these subsections do not exist. These references were corrected to reference subsections (a)(2)(B)(1) and (a)(2)(B)(2), respectively.

California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles:

1. A new "NOTE" section, which describes other test procedures and documents to complete heavy-duty engine certification, was added that is identical to the existing "NOTE" of the California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles. The previous "NOTE," proposed as part of the originally proposed regulatory text, was therefore deleted. This modification ensures consistency between the two sets of test procedures.

2. The referenced dates of various Phase 1 regulatory sections of the Code of Federal Regulations (CFR) were updated to reflect the dates of Final Rule publication in the Federal Register, rather than the originally proposed effective dates of the Final Rule. For the CFR sections of the original, federal Phase 1 GHG regulations, the updated date is September 15, 2011, instead of the effective date of November 14, 2011. The sections updated are 40 CFR, sections 86.1, 86.016-1, 86.012-2, 86.1863-07, 1036.1, 1036.2, 1036.10, 1036.15, 1036.30, 1036.100, 1036.108, 1036.115, 1036.130, 1036.135, 1036.140, 1036.210, 1036.230, 1036.235, 1036.241, 1036.250, 1036.255, 1036.401, 1036.501, 1036.530, 1036.601, 1036.610, 1036.625, 1036.701, 1036.705, 1036.710, 1036.715, 1036.720, 1036.725, 1036.730, 1036.735, 1036.740, 1036.745, 1036.750, 1036.801, 1036.805, 1036.810, 1036.815, 1036.820, 1036.825, 1065.1, 1065.15, 1065.20, 1065.125, 1065.140, 1065.170, 1065.190, 1065.205, 1065.220, 1065.225, 1065.250, 1065.260, 1065.265, 1065.267, 1065.270, 1065.272, and 1065.602. Moreover, for the technical amendments of the Direct Final Rule to the federal Phase 1 GHG regulations, the section modified date is June 17, 2013, instead of the originally proposed August 16, 2013. The sections updated with the June 17, 2013, date are 40 CFR, sections 86.007-23, 1036.5, 1036.150, 1036.205, 1036.225, 1036.525, 1036.615, 1036.801, 1065.275, and 1065.610.

3. In 40 CFR, Part 1036, section 1036.135 was modified to provide manufacturers additional lead-time, until January 1, 2015, to produce engine labels, instead of requiring the labels to be used immediately after the regulation becomes effective.

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

1. The existing "NOTE" section was modified by adding adopted or amended dates for the referenced test procedures. The originally proposed "NOTE" section was deleted since it is unnecessary and duplicative.

2. The referenced dates of various Phase 1 regulatory sections of the CFR were updated to reflect the dates of Final Rule publication in the Federal Register, rather than the originally proposed effective dates of the Final Rule. For the CFR sections of the original federal Phase 1 GHG regulations, the updated date is September 15, 2011, instead of the effective date of November 14, 2011. The sections updated are 40 CFR sections 86.016-1, 86.012-2, 1036.1, 1036.2, 1036.10, 1036.15, 1036.30, 1036.100, 1036.108, 1036.115, 1036.130, 1036.135, 1036.140, 1036.210,

1036.230, 1036.235, 1036.241, 1036.250, 1036.255, 1036.401, 1036.501, 1036.530, 1036.601, 1036.610, 1036.625, 1036.701, 1036.705, 1036.710, 1036.715, 1036.720, 1036.725, 1036.730, 1036.735, 1036.740, 1036.745, 1036.750, 1036.801, 1036.805, 1036.810, 1036.815, 1036.820, 1036.825, 1065.1, 1065.15, 1065.20, 1065.125, 1065.140, 1065.170, 1065.190, 1065.205, 1065.220, 1065.225, 1065.250, 1065.260, 1065.265, 1065.267, 1065.270, 1065.272, and 1065.602. Moreover, for the technical amendments of the federal Phase 1 GHG regulations, the section modified date is June 17, 2013, instead of the originally proposed August 16, 2013. The sections updated with the June 17, 2013, date are: 40 CFR sections 86.007-23, 1036.5, 1036.150, 1036.205, 1036.225, 1036.525, 1036.615, 1036.801, 1065.275, and 1065.610.

3. In 40 CFR, Part 1036, section 1036.135 was has modified to provide manufacturers additional lead-time, until January 1, 2015, to produce engine labels, instead of requiring the labels to be used immediately after the regulation becomes effective.

Proposed California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles:

1. In the “NOTE” section, the referenced section of title 17 was corrected to reference section 95663(c) instead of 95662(c).

2. The referenced dates of various Phase 1 regulatory sections of the CFR were updated to reflect the dates of Final Rule publication in the Federal Register, rather than the originally proposed effective dates of the Final Rule. For the CFR sections of the original federal Phase 1 GHG regulations, the updated date is September 15, 2011, instead of the effective date of November 14, 2011; the dates updated are in the introductory paragraph to the test procedures (p. 1) and 40 CFR, section 1037.801. Moreover, for the Direct Final Rule of technical amendments to the federal Phase 1 GHG regulations, the modified date is June 17, 2013, instead of the originally proposed effective date of August 16, 2013. The sections updated with the June 17, 2013, date are 40 CFR, sections 1037.15, 1037.115, 1037.135, 1037.201, 1037.230, 1037.501, 1037.520, 1037.525, 1037.550, 1037.615, 1037.620, 1037.660, 1037.745, 1037.801, 1037.805, 1037.810, and 1066.310. Finally, the U.S. Environmental Protection Agency (U.S. EPA) issued a correction of 40 CFR, section 1037.104 in the Federal Register dated September 12, 2013. Thus, the modified date referenced for 40 CFR, section 1037.104 in these test procedures is September 12, 2013.

3. In 40 CFR, Part 1037, section 1037.135, was modified to provide manufacturers additional lead-time, until January 1, 2015, to produce vehicle labels, instead of requiring the labels to be used immediately after the regulation becomes effective.

2. Amendments to the Tractor-Trailer Greenhouse Gas Regulation

Title 17, CCR, Section 95305:

1. Sections (i)(2) through (i)(5) were renumbered to accommodate the deletion of existing sections and the addition of new sections.

2. Prior section (i)(2) that defined the compliance period for trailers identified in a Trailer Aerodynamic Equipment Compliance (TAEC) delay as one year, was deleted, and replaced with new section (i)(4)(C), which provides that the TAEC delay 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 trailer(s) to meet the requirements defined in sections 95303(b)(1)(B)2 or 95303(b)(3)(B)2 for dry-van trailers, or 95303(b)(2)(B)2 or 95303(b)(3)(C)2 for refrigerated-van trailers.

3. The response and notification process for obtaining a TAEC delay described in renumbered section (i)(4) was amended to clarify the review process and the term of the TAEC delay. As clarified in (i)(4)(A) and (B), after an application for a TAEC delay is received by the Executive Officer, the Executive Officer will review the existing list of SmartWay verified aerodynamic technologies for trailers. If a SmartWay verified aerodynamic technology that meets the requirements of the regulation can be installed, the TAEC delay application for the trailer would be denied. However, if the Executive Officer determines that a SmartWay verified aerodynamic technology cannot be installed, the application for the TAEC delay will be approved. As proposed in (i)(4)(C), the TAEC delay would be in effect indefinitely until such time as the Executive Officer determines during periodic review of SmartWay verified aerodynamic technologies that a newly verified technology exists that can be installed on the trailer. Once notified of the Executive Officer's determination, the applicant would be required to install the aerodynamic technology on the trailer within one year of notification.

4. References were added to renumbered section (i)(2)(B)(4) to clarify that the aerodynamic technology requirements of trailers include not only 2011 and newer trailers, but also include trailers manufactured before 2011. This change is necessary since the TAEC delay applies to all trailers, not just 2011 and newer trailers.

5. Former section (i)(6) was deleted. That former section required an applicant to request an extension to an approved TAEC delay no sooner than 30 days prior to its annual expiration date. Extension applications would no longer be needed because the TAEC delay would remain in effect until one year from when the applicant is notified by the Executive Officer that a suitable technology is available for their trailer.

6. New section (n) was added, exempting all new affected box trailers from the requirements of the regulation for a period of three months from their date of manufacture. Without this proposed change, trailer manufacturers needed to apply to the Board for individual Transfer of Ownership Passes for each new trailer that enters California, even those that are destined for customers outside of California.

Staff received comments that this process is burdensome and time-consuming, especially for high volume trailer manufacturers. The three month exemption would reduce the burden on trailer manufacturers and ARB rule implementation staff, by providing a "grace period" for newly manufactured trailers.

3. Proposed Optional Reduced Emission Standards for Heavy-Duty Engines

Title 13, CCR, Section 1956.8:

1. Section 1956.8(a)(2)(A) was amended by modifying footnote "O" of the "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" in response to stakeholder 45-day comments regarding the OBD requirements for engine manufacturers that elect to produce optional low NOx emission engines. In addition, a parallel modification was made to footnote "I" of the "California Emission Standards for 2005 and Subsequent Model Heavy-Duty Otto-Cycle Engines" in section (c)(1)(B). These amendments maintained the current OBD stringency level for the mandatory 0.20 g/bhp-hr standard, regardless of the optional low NOx standard to which the engine is certified. Without such a change, meeting the OBD requirements would be very challenging for manufacturers and likely create a significant disincentive for them to produce optional low NOx engines at this time.

2. The following statement was inserted in section(a)(2)(A) of footnote "N" of the "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": "A manufacturer may not include an engine family certified to the optional NOx emissions standards in the averaging, banking and trading (ABT) credit program for NOx but may include it for particulates." In addition, the statement, "ABT does not apply to optional low NOx emission standards," was deleted from footnote "F" of the "California Emission Standards for 2005 and Subsequent Model Heavy-Duty Otto-Cycle Engines" in section (c)(1)(B), and instead, the following statement was inserted in footnote "H" of the table: "A manufacturer may not include an engine family certified to the optional NOx emission standards in the ABT programs for NOx but may include it for non-methane hydrocarbon (NMHC)." This change was developed subsequent to the hearing to address the concern that not allowing manufacturers to generate ABT credits with engines certified to optional NOx standards would provide a disincentive for manufacturers to choose to certify to the optional NOx standards. Staff is maintaining the restriction on generating NOx ABT credits in order to preserve the NOx emission benefits of the proposed optional standards, but this change will allow these engines to generate ABT credits for other pollutants.

3. Several footnotes were corrected in the table of "California Emission Standards for 2005 and Subsequent Model Heavy-Duty Otto-Cycle Engines" in section (c)(1)(B). First, the originally-proposed 45-day addition of footnotes "D,F" to

"2005 through 2007, SULEV, NMHC+NOx" was deleted, because these footnotes do not apply to these standards. Secondly, footnote "I" was added to "2015 and subsequent" because the OBD requirements correctly apply to all the emission standards applicable to these engines and not just NOx standards. Lastly, footnotes "H,I" were deleted from the "2015 and subsequent, NOx" standards, because these footnotes to the NOx standards are unnecessary.

Proposed Amendments to California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines:

1. Section 10.B.1. In the table "California Emission Standards for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," footnote "F" was amended by removing the statement "ABT does not apply to optional low NOx emission standard engines." This statement was replaced in footnote "I" with "A manufacturer may not include an engine family certified to the optional NOx emissions standards in the ABT programs for NOx but may include it for NMHC." Section 15.B.1 was amended by removing the statement "Optional low NOx engines shall not be used to generate credits in the ABT program." This statement was replaced with "A manufacturer may not include an engine family certified to the optional NOx emissions standards in the ABT programs for NOx but may include it for NMHC." These changes were developed subsequent to the hearing to address the concern that not allowing manufacturers to generate ABT credits with engines certified to optional NOx standards would provide a disincentive for manufacturers to choose to certify to the optional NOx standards. Staff is maintaining the restriction on generating NOx ABT credits in order to preserve the NOx emission benefits of the proposed optional standards, but this change will allow these engines to generate ABT credits for NMHC.

Proposed Amendments to California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles:

1. Section 15.B.2 was amended by removing the statement "Optional low NOx engines shall not be used to generate credits in the ABT program." This statement was replaced with "A manufacturer may not include an engine family certified to the optional NOx emissions standards in the ABT programs for NOx but may include it for particulates." This change was developed subsequent to the hearing to address the concern that not allowing manufacturers to generate ABT credits with engines certified to optional NOx standards would provide a disincentive for manufacturers to choose to certify to the optional NOx standards. Staff is maintaining the restriction on generating NOx ABT credits in order to preserve the NOx emission benefits of the proposed optional standards, but this change will allow these engines to generate ABT credits for particulates.

4. Amendments to the ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling

Title 13, CCR, Section 2485:

1. Section (h)(23) of the current Idling ATCM restricts diesel-fueled commercial motor vehicles from either idling their main engines or operating a diesel-fueled auxiliary power source longer than five minutes when they are located within 100 feet of a "restricted area," which is currently defined as "any real property zoned for individual or multifamily housing units that has one or more of such units on it." Staff initially proposed expanding the definition of "restricted area" to include schools, hotels and motels, in order to 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. At the Board's December 12, 2013, public meeting to consider the proposed amendments to the existing Diesel-Fueled Commercial Motor Vehicle Idling Rule, a Board member proposed also including hospitals, senior care facilities and child care facilities to the existing definition of "restricted area." Because the members of the public that are employed at or that utilize such facilities would also benefit from reduced 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, staff included those categories of facilities in the definition of "restricted area" in newly renumbered section (h)(24).

2. New section (h)(5) was added to define "child care facility" as a facility that meets the definition of "child care facility" in Health and Safety Code section 1596.750. That section defines "child day care facility" as "a facility that provides nonmedical care to children under 18 years of age in need of personal services, supervision, or assistance essential for sustaining the activities of daily living or for the protection of the individual on less than a 24-hour basis. "Child day care facility" includes day care centers, employer-sponsored child care centers, and family day care homes." "Day care centers" are defined in Health and Safety Code section 1596.76,[1] "family day care homes" are defined in Health and Safety Code section 1596.78[2] and ""employer-sponsored child care centers" are defined in Health and Safety Code section 1596.771.[3]

3. New section (h)(26) was added, defining "senior care facility" as a facility that meets the definition of "residential care facility for the elderly" in Health and Safety Code section 1569.2(k) and that is subject to the requirements of the California Residential Care Facilities for the Elderly Act (Health and Safety Code sections 1569

[1] "Any child day care facility other than a family day care home, and includes infant centers, preschools, extended day care facilities, and school age child care centers."

[2] "[A] home that regularly provides care, protection, and supervision for 14 or fewer children, in the provider's own home, for periods of less than 24 hours per day, while the parents or guardians are away, and is either a large family day care home or a small family day care home."

[3] "[A]ny child day care facility at the employer's site of business operated directly or through a provider contract by any person or entity having one or more employees, and available exclusively for the care of children of that employer, and of the officers, managers, and employees of that employer."

to 1569.889). The California Residential Care Facilities for the Elderly Act (California Health and Safety Code sections 1569 to 1569.889) defines a “residential care facility for the elderly" as “a housing arrangement chosen voluntarily by persons 60 years of age or over, or their authorized representative, where varying levels and intensities of care and supervision, protective supervision, personal care, or health-related services are provided, based upon their varying needs, as determined in order to be admitted and to remain in the facility. Persons under 60 years of age with compatible needs may be allowed to be admitted or retained in a residential care facility for the elderly as specified in [Health and Safety Code section 1569.316].” (Health and Safety Code section 1569.2(k)).

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

Title 13, CCR, Section 1956.8:

Staff modified section 1956.8(d) by inserting “and Other Hybrid” in the title in order to maintain consistent titles throughout the regulation.

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

1. Section C. The title and introductory paragraph of this section were amended to explicitly include other hybrid vehicles into the certification requirements of the test procedures. This was the original intent of the amended procedures, and this change is necessary to clarify that all hybrid vehicles will need to comply with all the certification requirements as applicable and to avoid the possible misinterpretation that the stated certification requirements would only apply to hybrid-electric vehicles.

2. Subsection C.1 was amended to clarify the existing language that the Executive Order will identify the emission standard achieved by the hybrid-electric or other hybrid vehicles. This was the original intent of the amended procedures, and this change is necessary to clarify that all hybrid vehicles will be subjected to the provision stated in this subsection and to avoid the possible misinterpretation that the stated provision would only apply to hybrid-electric vehicles.

3. Subsection C.1.1 was amended to clarify that prior language requiring all “…2004 and subsequent model year hybrid electric urban transit buses (HEB) shall, by model year, meet the exhaust emission standards or optional emission standards set forth in title 13, CCR, §1956.1” is specifically applicable to 2004 through 2006 model year HEBs. This is the intent of the existing language as the requirements for 2007 and subsequent model year hybrid vehicles are specified later in this section. In addition, this subsection was amended to explicitly include other types of hybrid vehicles into the provisions of sections D and E of the test procedures, similar to existing requirements for hybrid-electric vehicles. This was the original intent of the

amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements specified in sections D and E and to avoid the possible misinterpretation that the requirements specified in sections D and E would only apply to hybrid-electric vehicles.

4. Subsection C.5 was amended to explicitly include other hybrid vehicles into the emission warranty requirements described in this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to emission warranty as applicable and to avoid the possible misinterpretation that the specified emission warranty requirements would only apply to hybrid-electric vehicles.

5. Subsections C.7, C.7.1, C.7.2, C.7.3, and C.7.4 were amended to explicitly include other hybrid vehicles. Subsections C.7.1, C.7.2, C.7.3, and C.7.4 were amended to delete the word “electric” from “hybrid-electric drive system” to extend the labeling requirement to all hybrid vehicles and hybrid drive systems. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles and hybrid drive systems will need to comply with all requirements pertaining to labeling as applicable and to avoid the possible misinterpretation that the stated labeling requirements would only apply to hybrid-electric vehicles and hybrid-electric drive systems.

6. Subsection C.8. The language in this section was amended to explicitly include other hybrid drive systems into the engine service manual and equipment maintenance signal requirements described in this section. Specifically, the phrase “or other hybrid” was added to this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid drive systems will need to comply with all requirements pertaining to engine service manual and equipment maintenance signal as applicable and to avoid the possible misinterpretation that the stated requirements would only apply to hybrid-electric drive systems.

7. Subsection C.9. The language in this section was amended to explicitly include other hybrid drive systems into the rebuild provisions and recordkeeping requirement described in this section. Specifically, the phrase “or other hybrid” was added to this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid drive systems will need to comply with all requirements pertaining to rebuild provisions and recordkeeping as applicable and to avoid the possible misinterpretation that the stated requirements would only apply to hybrid-electric drive systems.

8. Subsection C.10.2. The language in this section was amended to explicitly include other hybrid drive systems into the identification and description requirements described in this section. Specifically, the phrase “or other hybrid” was added to this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid drive systems will need to comply with all requirements pertaining to identification and description as applicable and to avoid the possible misinterpretation that the stated requirements would only apply to hybrid-electric drive systems.

9. Subsection C.10.3. The language in this section was amended to explicitly include other hybrid drive systems into the description of any modification of hardware and/or software requirements described in this section. Specifically, the phrase “or other hybrid” was added to this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid drive systems will need to comply with all requirements pertaining to the description of any modification of hardware and/or software as applicable and to avoid the possible misinterpretation that the stated requirements would only apply to hybrid-electric drive systems.

10. Subsection C.10.7. The language in this section was amended to explicitly include other hybrid vehicles into the projected number of hybrid vehicles produced and delivered for sale in California requirements described in this section. Specifically, the phrase “or other hybrid” was added to this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to the projected number of hybrid vehicles produced and delivered for sale in California as applicable and to avoid the possible misinterpretation that the stated requirements would only apply to hybrid-electric vehicles.

11. Subsection C.10.9 was amended to explicitly require a method for determining the state of charge for other types of rechargeable energy storage system, similar to the existing requirement for determining the state of charge for batteries. This was the original intent of the amended procedures and this change is necessary to clarify that a method for determining the state of charge for any rechargeable energy storage system will need to be provided and to avoid the possible misinterpretation that the stated requirements would only apply to batteries.

12. Subsection C.12 was amended in response to the Board’s direction to clarify that the certification requirements in section C would also be applicable to hydraulic, turbine, flywheel, or fuel cell hybrid vehicles. In addition, existing language pertaining to the case-by-case consideration by the Executive Officer of certification application by manufacturers of hydraulic, turbine, flywheel, or fuel cell hybrid vehicles was deleted from section C, revised to reflect the criteria governing the Executive Officer’s approval and moved with modified language, to the more relevant section D.

13. Section D. The title and introductory paragraphs of this section were amended to explicitly include other hybrid vehicles into the test procedures described in this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to test procedures as applicable and to avoid the possible misinterpretation that the stated test procedures would only apply to hybrid-electric vehicles. The introductory paragraph of this section was also amended to add a qualifying phrase pertaining to the existing reference to SAE J2711, “Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer” (Proposed Draft May 2012). Specifically, the phrase “Unless otherwise specified,” was added at the

beginning of the introductory paragraph. This change is needed to clarify that, except where specified, the test procedures still incorporate by reference the document entitled, “Recommended Practice for Measuring Energy Consumption of Conventional and Hybrid Heavy-Duty Vehicles Using a Chassis Dynamometer” (Proposed Draft, May 2012).

The second paragraph of this section was amended to expressly allow manufacturers to request 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. This change is necessary to address alternative testing and calculation methodologies for other hybrid technologies, including hydraulic hybrid technologies that are not explicitly described in the test procedures.

14. Subsection D.1.1. Language was added to clarify that although fans may be used for brake cooling during testing, such fans must be switched off for all key off dwell periods. This change, presented by staff at the hearing and approved by the Board, is necessary to ensure that brakes are not being cooled in a manner during testing that is not consistent with normal in-use conditions.

Language was also added to clarify the use of a road speed-modulated cooling fan instead of the previously specified fixed-speed cooling fan, and new language was added requiring the fan that is used for engine cooling be placed in front of the vehicle, and reference to SAE J2711, “Recommended Practice for Measuring Energy Consumption, Fuel Economy, and Emissions of Conventional and Hybrid Medium-/Heavy-Duty Vehicles using a Chassis Dynamometer (Proposed Draft September 2013) was also added. These changes are necessary to reflect the original intent of the test procedures that vehicle cooling needs to be representative of actual on-the-road operation and to ensure the engine is not being cooled in a manner during testing that is not consistent with normal in-use conditions.

15. Subsection D.1.6.(i). Language was added allowing alternative methods for battery connections to the hybrid system to be considered by the Executive Officer. This change, presented by staff at the hearing and approved by the Board, is necessary to accommodate possible differences in the design of a hybrid system and/or rechargeable energy storage system that may, for example, require the use of multiple measuring instruments to simultaneously access multiple battery connection points in order to obtain accurate measurements.

16. Subsection D.2.2.2. Language was added to clarify that the preliminary run(s) of the desired test cycle may also be conducted to precondition hybrid system components and engine aftertreatment systems. This change, presented by staff at the hearing and approved by the Board, is necessary to clarify that the preliminary test run(s) may be performed to warm up various vehicle components and/or system(s) in preparation for testing.

17. Subsection D.2.8.4. Existing language specifies measurement units of ampere-hour and voltage to be used in the determination of the state of charge. Since these measurement units are not applicable to all different types of rechargeable energy storage systems, language was added to clarify the requirements for other unit conventions to be used in the determination of the state-of-charge of other types of rechargeable energy storage systems. This was the original intent of the amended procedures and this change is necessary to clarify that appropriate measuring units are to be used in the determination of the state of charge for any rechargeable energy storage system.

18. Subsection D.3.1. The introductory paragraph of this subsection was amended to explicitly include other hybrid vehicles into the exhaust emissions and fuel economy calculation requirements described in this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to calculation methodologies as applicable and to avoid the possible misinterpretation that the stated calculation methodologies would only apply to hybrid-electric vehicles.

19. Subsection D.3.4. This section was modified to specify that the net energy change for other 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. This change is necessary to address a comment presented at the hearing requesting that staff incorporate a proposed specific equation to calculate the net energy change of a hydraulic hybrid system, similar to the equations shown in the test procedures for battery-electric, capacitor, and electromechanical flywheel hybrid systems. Staff reviewed the equation submitted by the commenter and concluded that the equation would only be applicable to a specific type of accumulator in a hydraulic hybrid system. Because there are a variety of accumulator designs that could potentially be used in a hydraulic hybrid system, and each would require a different equation to describe its net energy change, a multitude of equations would need to be included to fully cover the range of accumulators in a hydraulic hybrid system. Therefore, instead of including the equation provided by the commenter which would not be applicable to all possible hydraulic hybrid systems as a whole, staff amended this section of the test procedures to describe the process to obtain an alternative calculation methodology that a manufacturer of a hybrid technology, including a hydraulic hybrid technology, could request the Executive Officer to approve.

20. Subsection D.3.5.1. This section was amended to delete the words "hydraulic" and "flywheel" from the introductory paragraph for "Total Fuel Energy." This change is necessary because the provisions of this section refer to the fuel consumed by the internal combustion engine during a test cycle and are not relevant

to hydraulic and flywheel since these are energy storage systems**.**

21. Section E. The language in this section was amended to explicitly include other hybrid vehicles into the emission factor ratio calculation requirements described in this section. Specifically, the phrase “or other hybrid” was added to the first paragraph of this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to emission factor ratio calculation methodologies as applicable and to avoid the possible misinterpretation that the stated emission factor ratio calculation methodologies would only apply to hybrid-electric vehicles.

22. Subsection E.1. The language in this section was amended to explicitly include other hybrid vehicles into the emission factor calculation requirements described in this section. Specifically, the phrase “or other hybrid” was added to the last paragraph of this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to emission factor calculation methodologies as applicable and to avoid the possible misinterpretation that the stated emission factor calculation methodologies would only apply to hybrid-electric vehicles.

23. Subsection E.2. The language in this section was amended to explicitly include other hybrid vehicles into the emission factor ratio calculation requirements described in this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to emission factor ratio calculation methodologies as applicable and to avoid the possible misinterpretation that the stated emission factor ratio calculation methodologies would only apply to hybrid-electric vehicles.

24. Subsection E.3. The language in this section was amended to explicitly include other hybrid vehicles into the application of emission factor ratio for certification requirements described in this section. This was the original intent of the amended procedures and this change is necessary to clarify that all hybrid vehicles will need to comply with all requirements pertaining to the application of emission factor ratio for certification as applicable and to avoid the possible misinterpretation that the stated requirements would only apply to hybrid-electric vehicles.

B. NON-SUBSTANTIAL MODIFICATIONS

Subsequent to the 15-day public comment period mentioned above, staff identified the following additional non-substantive changes to the following:

Proposed Optional Reduced Emission Standards for Heavy-Duty Engines

Proposed Amendments to California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles:

1. Section 2.B Optional Low NOx Engine definition was amended by replacing the word “and” with “or” in the phrase, “2015 or subsequent model heavy-duty diesel engine” to indicate that an engine has only one model year.

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

1. Subsection D.2.8.4: Formatted the alignment and added space after this subsection’s paragraph to maintain consistent alignment throughout the certification procedures.

2. For consistency in the entire document, the hyphens (-) in the term “state of charge” were deleted.

The above described modifications constitute non-substantial changes to the regulatory text because they more accurately reflect the numbering of a section and correct spelling and grammatical errors, but do not materially alter the requirements or conditions of the proposed rulemaking action.

C. MODIFICATIONS PROVIDED FOR IN THE SECOND 15-DAY COMMENT PERIOD

Subsequent to the first 15-day public comment period, staff proposed further modifications to the regulatory text. These modifications were explained in the “Notice of Public Availability of Modified Text” that was issued for a 15-day public comment period that began on July 17, 2014, and ended on August 1, 2014. In order to provide a complete FSOR for this rulemaking, the most significant modifications and staff’s rationale for proposing such modifications are summarized below:

Adoption of Phase 1 Heavy-Duty Vehicle Greenhouse Gas Emission Standards and Test Procedures

Title 13, CCR, Section 1900

1. Title 13, CCR, section 1900(a) was modified to clarify that the definitions in section 1900(b) supplement and are governed by the definitions set forth in chapter 2 (commencing with section 39010), part 1, division 26 of the Health and Safety Code, unless a definition in section 1900(b) revises a definition of the Health and Safety Code to conform to federal law pursuant to Health and Safety Code section 39601(b). The modification corrects an inherent inconsistency in the initially proposed amendments between sections 1900(a) and (b), the former of which indicated that the statutory definitions of the Health and Safety Code govern the definitions of section 1900(b) even if subsequently revised by ARB pursuant to

section 39601(b). The proposed modification effectuates the Board's finding in Resolution 13-50 that the proposed definitions of emission standard, exhaust emission standards, and evaporative emission standards are necessary for purposes of clarity, consistency, and conformity with federal laws.

D. NON-SUBSTANTIAL MODIFICATIONS

Subsequent to the second 15-day public comment period mentioned above, staff made the following non-substantive change to the Adoption of Phase 1 Heavy-Duty Vehicle Greenhouse Gas Emission Standards and Test Procedures.

The proposed amendments to title 13, CCR section 1900 included identifying section 39010 of Health and Safety Code as a new statute being implemented, interpreted, or made more specific by those amendments. However, title 13, CCR section 1900 currently identifies Health and Safety Code section 39010 as a reference, so staff therefore deleted the proposed underlined formatting for purposes of consistency. This modification constitutes a non-substantial change to the regulatory text because it merely aligns the statutes being implemented, interpreted, or made more specific by those amendments with existing regulatory text, but does not materially alter the requirements or conditions of the proposed rulemaking action.

Also subsequent to the second 15-day public comment period mentioned above, while finalizing the California Department of Finance Form 399 Economic and Fiscal Impact Statement (Regulations and Orders) for the optional Low NOx program, staff reviewed and slightly modified the estimated anticipated costs for complying with the Optional Reduced Emission Standards for Heavy-Duty Engines. The total costs reported on the Form 39 are slightly lower than those presented in the Staff Report; the current estimate is now $35-$203 million versus $36-$279 million as reported in the Staff Report. The reduced cost estimate is a result of two changes. First, staff corrected the life of the regulation from 20 to 21 years. Correcting the regulation life to 21 years resulted in a decrease in the projected compliance costs. Second, for ease of incorporation into the Form 399, two options mentioned in the Staff Report for the high adoption scenario were merged into one high adoption scenario, with alternative fuel use increasing in 2028, when the engine families with NOx emissions cleaner than average are assumed to be certified to the new standards. Overall, staff believes the new estimated range of costs to be a better estimate than that presented in the Staff Report.

III. DOCUMENTS INCORPORATED BY REFERENCE

A. Adoption of Phase 1 Heavy-Duty Vehicle Greenhouse Gas Emission Standards and Test Procedures

The following documents are incorporated by reference in the proposed 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 proposed new title 17, CCR, section 95663:

- New "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," adopted October 21, 2014.

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 Heat 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.

B. Tractor-Trailer GHG Regulation

None.

C. Optional Reduced Emission Standards for Heavy-Duty Engines

- "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.

D. 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).

E. Heavy-Duty Hybrid-Electric Vehicles 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.

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not needed because the interested audience for these documents is limited to the technical staff, most of whom are already familiar with these methods and documents. Also, the incorporated documents were made available by ARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries, or may be purchased directly from the publishers.

IV. SUMMARY OF COMMENTS AND AGENCY RESPONSES

A. 45-DAY COMMENTS AND AGENCY RESPONSES

Written comments were received during the 45-day comment period in response to the October 23, 2013, public hearing notice, and written and oral comments were presented at the December 12, 2013, Board Hearing. Listed below, in the order of submission, are the organizations and individuals that provided comments to one or more of the regulatory proposals during the 45-day comment period:

45-Day Written Comments:

Commenter	Affiliation
Wortman, Chris (10/29/13	CW
Rodgers, Kevin (11/15/13)	Allison Transmission Inc. (ATI)
Zaben, Jim (11/25/13)	Kings Oil Tools (KOT)
Thomas, James (11/25/13)	Nabors Completion & Production Services (NCPS)
Van Allen, Doug (12/3/13)	Baker Hughes Oilfield Services Inc. (BHOSI)
Johnston, Brian (12/9/13)	Lightning Hybrids (LH)
Song, Jamie (12/10/13)	Manufacturers of Emission Controls Association (MECA)
Blubaugh, Timothy (12/10/13)	Truck and Engine Manufacturers Association (EMA)
Tunnell, Michael (12/11/13)	American Trucking Associations (ATA)
Norberg, Tracey (12/11/13)	Rubber Manufacturers Association (RMA)
Harper, Adam (12/11/13)	California Construction and Industrial Materials Association (CalCIMA)
Shimoda, Chris (12/11/13)	California Trucking Association (CTA)
Morrow, Colby (12/11/13)	Southern California Gas Company (SCGas)
Kopin, Amy (12/11/13)	Daimler Trucks North America (DTNA)
Dassa, Ira (12/11/13)	New West Technologies, LLC (NWT)

The following individuals submitted written comments at the Board Hearing:

Jeffries, Darin (12/11/13)	General Production Services (GPS)
Lewis, Michael (12/10/13)	Construction Industry Air Quality Coalition (CIAQC)

The following individuals, listed in the order in which they spoke, provided oral testimony on one or more of the regulatory proposals at the Board Hearing:

Commenter	Affiliation
Hogo, Henry	South Coast Air Quality Management District (SCAQMD)
Wortman, Chris	CW
Thomas, James	NCPS
Van Allen, Doug	BHOSI
Lopez Mendoza, Jerilyn	SCGas
Blubaugh, Timothy	EMA
Johnston, Brian	LH
Norberg, Tracey	RMA
Kubsh, Joe	MECA
Shaffer, Jeff	Volvo Group Trucks (VGT)
Martinez, Adrian	Earth Justice (EJ)
Anair, Don	Union of Concerned Scientists (UCS)
Bailey, Diane	Natural Resources Defense Council (NRDC)
Barrett, Will	American Lung Association of California (ALA)
Mertens, Chris	CALSTART
Carmichael, Tim	California Natural Gas Vehicle Coalition (CNGVC)
Tunnell, Michael	ATA
Magavern, Bill	Coalition for Clean Air (CCA)

One person provided written comments during the 15-day comment period, pertaining to the Heavy-Duty Idling ATCM:

Commenter	Affiliation
Garabedian, Harold (6/11/14)	Energy and Environmental Analytics (EEA)

Set forth below are the comments regarding each of the five regulatory proposals and the agency response to those comments, including an explanation of how the regulations were changed to accommodate the comment or the reason(s) for not making a change to the regulations. Comments not involving objections or recommendations specifically directed at one or more of the rulemakings or to the procedures followed by ARB in this rulemaking are not included. Comments have been grouped by topic whenever applicable. If comments have been grouped, a brief summary of the comments is provided. All other comments are taken verbatim or summarized for succinctness from the written documents submitted or from the December 12, 2013, Board Hearing transcript.

Summary of Comments on the Phase 1 GHG Regulations

Support

1. Comment: ARB received comments of general support for the proposed Phase 1 GHG regulations and incorporated test procedures. (ATA, CTA, SCAQMD, EMA)

Agency Response: ARB appreciates the support for the proposed regulation and test procedures.

Alignment with Federal Program

2. Comment: ARB should fulfill the goal and expectation of a single national GHG program in adopting and implementing its GHG program. Even before the federal GHG program has been fully implemented, U.S. EPA has already begun developing a new, more stringent second phase of the program. We are encouraged that CARB will actively participate with U.S. EPA in developing the "Phase 2" program. Maintaining a single national GHG program is essential as it evolves into its second phase. (EMA)

Agency Response: The proposed Phase 1 GHG regulations align California's GHG emissions standards and test procedures with those of the U.S. EPA Phase 1 GHG regulations, and provide nationwide consistency for engine and vehicle manufacturers.

Consistent with the commenter's recommendation, ARB staff continues to work with U.S. EPA and National Highway Traffic Safety Administration (NHTSA) staff in the development of a national Phase 2 GHG program.

Labeling

3. Comment: One of the deviations from the U.S. EPA program that ARB proposes to require is that vehicle manufacturers add a California specific statement to their GHG certification labels. Modifying certification labels is never as easy as simply typing in new language. Manufacturers utilize many different and complex vehicle specification and manufacturing systems to provide information that defines what language is included on each label. Additionally, typically there is very little space on a vehicle to affix a certification label where it will be both visible and protected from damage. As such, adding even a few words to a certification label can require manufacturers to reprogram many affected systems, and may require redesigning the label itself.

Moreover, adding language would create a burden for manufacturers that does not provide any corresponding environmental benefit. ARB should maintain complete alignment of certification labels with its "deemed to comply" certification process and not require any additional language. If California specific language is necessary,

manufacturers will need sufficient lead time to implement the new requirement. At a minimum, we recommend that ARB require manufacturers to add the proposed California specific statement to the GHG certification labels effective no earlier than January 1, 2015. (EMA)

4. Comment: We understand the ARB's proposed regulations to require compliance, such as labeling vehicles as compliant to California GHG emission standards (§1037.135(b)(8)), starting with vehicles of model year 2014. This is not possible for manufacturers such as DTNA who have been manufacturing model year 2014 vehicles, and labeling them as compliant to the federal program, since early in calendar year 2013, consistent with longstanding industry practice. Rather, we recommend that the ARB's regulatory language provide for California compliance labeling to begin only after the regulations are enacted (which, we presume, is what the ARB intended). (DTNA)

5. Comment: ARB proposes to require that manufacturers change GHG certification labels. Currently, the labels state that a vehicle complies with federal GHG emission standards, but ARB proposes to require manufacturers to include a statement of compliance with California standards on the same label. This is both unnecessary and burdensome. First, with California adopting the federal standards, a statement of compliance with both federal and California standards is redundant. Second, with California adopting its standards two years after the federal standards, we (and potentially other manufacturers) have long since completed our design and implementation of the GHG labels. Reopening and revising the labels' designs may seem trivial, but it is actually rather complicated and time-consuming. In turn, we request that ARB accept the federal labels, which have worked perfectly since early 2012. (DTNA)

Agency Response to Comments 3-5: U.S. EPA currently requires manufacturers to affix a permanent, legible label to a certified engine. This label must state that the engine conforms to U.S. EPA regulations and contains important engine information such as the model year, date of manufacture, manufacturer name, and engine displacement. For current criteria pollutant certification, ARB requires manufacturers to follow the federal labeling requirements for heavy-duty engines, but additionally requires that the labels contain a statement that the engine conforms to California regulations.

The GHG Phase 1 regulation similarly requires that heavy-duty engines and heavy-duty vehicles be labeled as compliant with California Phase 1 GHG requirements. This California-specific language on engine and vehicle labels is important for enforcement purposes as it will assist ARB staff to determine whether a heavy-duty engine or vehicle is California-certified, or federally-certified, or 50-state-certified.

After considering the comments above related to necessary lead time for changing labels, ARB staff amended the Phase 1 GHG regulations to delay the effective date of the labeling requirements until January 1, 2015. This modification was identified in Attachment E to Resolution 13-50 and was identified in the "Notice of Public Availability of Modified Text" that was issued for a 15-day public comment period that began on May 27, 2014 and ended on June 11, 2014.

6. Comment: Another deviation from the U.S. EPA program that ARB proposes is for manufacturers to submit to ARB all of the GHG data that they submit to U.S. EPA. The required data is contained in the manufacturer's certification application, end-of-year reports, and final ABT report. ARB must ensure that the requirement to send the U.S. EPA reports to ARB does not become unnecessarily burdensome or expensive. Specifically, ARB should accept the data as it is submitted to U.S. EPA on VERIFY system templates. Any requirement to modify, expand, or reformat the data would consume manufacturer resources for no added benefit, and it would deviate further from the goal of a single national program. We realize that ARB may not be able to accept VERIFY data electronically, but ARB can and should accept the data in .pdf or other similar form based on the VERIFY format and limited to the VERIFY data. (EMA)

Agency Response: Currently ARB and U.S. EPA utilize separate and distinct electronic data systems to receive and process certification applications for new heavy-duty engines. ARB utilizes the Document Management System (DMS) and U.S. EPA utilizes the VERIFY system; however, both DMS and VERIFY accept common file systems such as .pdf, .docx, and .xlsx, which eliminates the need to reformat files. Furthermore, ARB will modify DMS so that it is capable of accepting certification data and required reports for both criteria and GHG pollutants.

7. Comment: In addition to the U.S. EPA reports, ARB is proposing to require manufacturers to "provide the Executive Officer separate numbers for each family of heavy-duty engines produced and delivered for sale in California each model year." See ARB's proposed amendments to §1036.108. Additionally, ARB proposes to require similar information "for each subfamily of heavy-duty vehicles." See ARB's proposed amendments to §1037.101. We understand that ARB intends for manufacturers to determine the numbers of engines and vehicles in California in the same manner that they have determined the numbers of California engines and vehicles for the purpose of calculating ARB certification fees. Specifically, ARB requires manufacturers to calculate their total certification fee obligation by multiplying the per-vehicle or per-engine fees by the total number of "*vehicles or engines produced for California sale*." See 13 CCR §1993 (emphasis added). However, ARB's proposed GHG rule uses slightly different language to define the same population of engines or vehicles.

The difference between the proposed language in the new GHG regulation and the existing language in the certification fee calculation regulation could lead to different interpretations. To avoid such uncertainty and inconsistency, and to streamline manufacturers' reporting requirements, ARB should modify the language in the proposed GHG regulations to match the existing language in the certification fee calculation regulation. (EMA)

Agency Response: No change was made in response to this comment. The Phase 1 GHG regulation's deemed-to-comply provision (section 1036.108 of the California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles) requires manufacturers to provide ARB with the number of heavy-duty engines and vehicles *produced and delivered* for sale in California each model year for each heavy-duty engine family and each heavy-

duty vehicle subfamily, respectively. The use of the term "produced and delivered" is necessary because a manufacturer may produce an engine or vehicle with an intention of sending it to California, but that engine or vehicle may never enter California. The term "produced and delivered" is commonly used in the light-duty Low Emission Vehicle regulations, effectively ensuring that a vehicle that is produced for California is actually delivered to California. While the use of this term may potentially differ from that used in title 13, CCR § 1993, which is only "produced," section 1993 also contains language that permits a manufacturer to adjust the "produced" number for those vehicles sold outside of California, which in essence may equal a "produced and delivered" number. To ensure that engines and vehicles intended for California are also delivered to the State, the term "produced and delivered" was retained in the proposed regulations.

8. Comment: ARB proposes to generally accept U.S. EPA's and NHTSA's paperwork, but ARB's proposed certification procedures involve several significant differences (e.g., requiring manufacturers to submit data on each subfamily of vehicles). ARB's proposed additions will supply no additional value, insofar as all pertinent data is already included in the federal agencies' certification application. Subfamily data is not relevant to certification, as we can describe more fully in future meetings. We recommend that ARB simply accept a manufacturer's submissions to U.S. EPA and NHTSA without change. (DTNA)

Agency Response: No change was made in response to this comment. Although the Phase 1 GHG regulations are generally aligned with the federal Phase 1 GHG regulations, they do incorporate differences from the federal Phase 1 GHG regulations, as discussed in section IV.A.2.d of the Staff Report. One such difference is in the ARB allowance to optionally certify through the "deemed-to comply" path rather than through traditional ARB certification. Typically, ARB certification is independent of U.S. EPA certification, and ARB staff separately reviews the certification applications and issues an Executive Order when approved. Utilizing the optional "deemed-to-comply" path, a manufacturer, after advanced notice to ARB, may subsequently receive ARB approval for an engine family or vehicle family after its certification is approved by U.S. EPA, without an independent ARB review. As part of the "deemed-to comply" requirements, a manufacturer must submit California sales numbers based on engine family for engine certification and based on vehicle subfamily for vehicle certification. Vehicle subfamily, which is a subcategory of vehicle family, was chosen because each vehicle subfamily has a separate family emission limit (FEL), which acts as the emission standard. Furthermore, the ABT calculations are made based on a vehicle subfamily basis. Thus, the requirement for a manufacturer utilizing the optional deemed-to-comply path to report California sales using vehicle subfamily remains unchanged because ARB needs the California-specific data to determine each manufacturer's compliance with the Phase 1 GHG regulations and the GHG emissions reductions achieved in California.

9. Comment: Similar to the certification procedures described above, ARB proposes to slightly modify the federal innovative technology procedures. We are uncertain as to the impact of this change. Rather, we suggest that ARB accept

federal innovative technology certification, because doing otherwise would cause the ARB program to diverge from the federal program. (DTNA)

Agency Response: This comment relates to a proposed change to 40 CFR section 1037.610, "Vehicles with innovative technologies," as incorporated in the proposed "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles." This change, made to subsection (e), is necessary to delete the CFR reference that specifies the procedural provisions under which U.S. EPA may seek public comments, since those provisions do not apply to ARB. With that exception, 40 CFR section 1037.610 as modified, remains incorporated in the Phase 1 GHG regulations and therefore retains the substantive provisions of the federal innovative technology procedures.

10. Comment: We understand that ARB proposes a credit balance program that aligns with the federal program, and we appreciate that alignment. However, there are certain aspects that appear out of alignment. For example, by creating California-specific carbon dioxide (CO2) credit balances, ARB appears to diverge. On the other hand, ARB's proposal allows a manufacturer to carry all federal credits over to the California program. This too appears to diverge, in that it would involve carrying over 50 states' worth of credits for use in California. In short, we are uncertain how the California CO2 credit program works and whether it is actually aligned with the federal program. (DTNA)

Agency Response: To establish and maintain California's Phase 1 GHG program that is essentially harmonized with the federal Phase 1 GHG program, the Phase 1 GHG regulations utilize the federal ABT program, which uses the 50-states sales numbers, beginning in the 2014 model year, rather than creating a separate California ABT program. Thus, the carryover of federal credits to the California program is appropriate.

However, because California's Phase 1 GHG program begins in the 2014 model year, it does not retroactively acknowledge previous model year generated credits. Thus, any federal early credits generated by manufacturers under 40 CFR section 1037.150 for the 2013 model year will not be acknowledged in California. By modifying 40 CFR section 1037.150, "Interim provisions," as incorporated in the proposed "California Greenhouse Gas Exhaust Emission Standards and Test Procedures for 2014 and Subsequent Model Heavy-Duty Vehicles," an equal amount of California credits as the federal early 2013 credits will be granted to those manufacturers that have participated in the program, such that the ABT programs under both the federal and California programs are equivalent. Similar regulatory changes for heavy-duty Otto-cycle and diesel engines were also made to the respective test procedures.

Tire Labeling

11. Comment: RMA is interested in how ARB plans to enforce the Phase 1 requirements for MY 2014 and beyond. Vehicle labels contain tire designations such as "LRRS", "LRRD", or "LRRA," but, currently, this type of information does not

exist that is available to consumers that would enable them to compare the rolling resistance (a measure of a tire's energy efficiency) of different tire models that would allow the vehicle owner to replace the worn tire with a new tire or retread that meets the descriptions above. Vehicle manufacturers, who are required to provide owners with information about tire replacement, are providing information in operator's manuals such as "…Replacement tires must be of equal or lower rolling resistance level (TRRL or Crr). Consult with your tire supplier(s) for appropriate replacement tires…"

While the SmartWay program identifies low-rolling resistance tires for long haul Class 8 tractors and trailers, information is not available for tires for other classes of vehicles affected by the Phase 1 rules. As well, SmartWay targets are more stringent than the criteria for designating a tire as low rolling resistance under the Phase 1 rule. It is unclear to RMA how new and retread tires will be evaluated during an in-use compliance audit.

RMA advocates that ARB adopt the same approach as is outlined in the preamble to the federal Phase 1 final rule: the rule requires truck manufacturers to identify the original equipment tire as low rolling resistance (LRR), if it is in fact LRR, and provide information to truck owner operators such as is shared above about how to maintain the performance of the original equipment components but not require owners and operators to maintain the vehicle using specific tires, recognizing that "owner/operators may not have a sound knowledge of which replacement tires to purchase to retain the as-certified fuel efficiency of their vehicle." 76 Federal Register at 57278. (RMA)

Agency Response: As the commenter notes, the primary sources of LRR tire information for vehicle owners will be from the vehicle maintenance instructions and vehicle label, both provided by the vehicle manufacturer. U.S. EPA or ARB enforcement staff have the ability to check and verify that vehicle maintenance instructions and labels are adequate for this purpose, and through these sources, vehicle owners will know if the original vehicle is equipped with LRR tires as an emission control strategy. However, the commenter cited examples of the vehicle manufacturer LRR tire instructions in owner manuals that lacked information needed by vehicle owners to independently determine which replacement tire models were LRR. Instead, the owner manuals recommend consultation with the tire manufacturers or dealers. Tire manufacturers, however, do not label tires with LRR designations or levels, and thus tire dealers may not have that knowledge to provide recommendations to customers.

Furthermore, staff agrees that SmartWay verified tire and retread requirements are not necessarily equivalent to the LRR designations in Phase 1, which may have tire LRR levels that are either lower or higher than SmartWay requirements. In addition, since the SmartWay Program only covers Class 7 and 8 tractors and 53-foot and longer box-type trailers hauled by such tractors, SmartWay will not provide needed LRR tire information for all vehicles, such as vocational vehicles.

Hence, staff agrees that truck owners currently do not have an easy way to determine tire rolling resistance and therefore to ensure that replacement tires have

the same rolling resistance as the tires they are replacing. As discussed in the Staff Report, the use of LRR tires is proven to reduce the operating expense of a truck, and thus, owners will be incentivized to replace original equipment LRR tires with replacement LRR tires. Truck owners have several options for doing this. One option for an owner would be to replace the vehicle tires with the same make and model of the original equipment vehicle tires, in order to retain the vehicle's original fuel economy. Another option for an owner would be to utilize SmartWay tires whenever possible, to capitalize on maximum fuel savings. However, at this time, staff agrees that many owners may not have sufficient knowledge of which replacement tires to purchase when replacing the original LRR tires. ARB staff will continue to work with U.S. EPA staff during the certification process to help ensure that vehicle manufacturers supply sufficient information in the operator's manual to allow the owner to select LRR tires that meet the LRR performance of the original equipment tires.

ARB staff will seek to resolve this issue as it works with U.S. EPA and NHTSA to develop the second phase of GHG regulations for heavy-duty engines and vehicles.

Clarification of Definition of Emission Standard

12. Comment: ARB's proposal to redefine and to greatly expand the definition of the term "emissions standard" is unlawful and invalid, and also attempts to circumvent two pending lawsuits in the California Superior Court for the County of Sacramento. See EMA v. CARB, Case No. 34-2013-00150733 (Sac. Cty.); Alliance of Automobile Manufacturers v. CARB, Case No. 34-2013-00152974 (Sac. Cty.). "CARB asserts that its authority to amend statutory definitions for regulatory purposes is found at Health and Safety Code ("HSC") section 39601(b), which provides that CARB may revise the definition of certain statutory terms solely in order "to conform those definitions to federal laws and rules and regulations." However, ARB's proposed multi-faceted definition of the term "emission standard" does not, in fact, conform with any federal law or rule or regulation. As a result, it is invalid.

ARB's lone basis for its new definition of "emission standard" (as well as the sub-definitions of "evaporative emission standards" and "exhaust emission standards") is dicta from a 2004 U.S. Supreme Court case that addressed the scope of preemption under section 209(a) of the federal Clean Air Act ("CAA"). See EMA v. SCAQMD, 541 U.S. 246 (2004). Significantly, dicta is not a federal law or rule or regulation, and reliance on dicta is not a proper basis for a conforming definition under HSC section 39601(b).

Moreover, the 2004 Supreme Court decision did not address the specific federal definition of the term "emission standard" as utilized in the CAA. Rather, that case addressed the scope of federal preemption, which, in turn, is governed by the following statutory phrase: "No State or any political subdivision thereof shall adopt or attempt to enforce **any standard relating to the control of emissions** from new motor vehicles or new motor vehicle engines." (Emphasis added.) 42 U.S.C. §7543(a). It is obvious that the phrase "standard relating to the control of emissions" is both fundamentally broader than and different from the specific term "emission

standard." Indeed, in stark contrast to the expansive definition of "emission standard" (and thus regulatory authority) that ARB is seeking to adopt for itself, the relevant portion of the federal definitions in the CAA narrowly define "emission standard" to mean a "requirement established by the State [of California] or the Administrator [of EPA], which limits the quantity, rate, or concentration of emissions of air pollution." 42 U.S.C. § 7602(k). The federal regulations, as adopted by U.S. EPA, are similarly narrow. For example, 40 CFR section 60.21(f) defines the term "emission standard" to mean "a legally enforceable regulation setting forth an allowable rate of emissions, into the atmosphere…or proscribing equipment specifications for the control of air pollution emissions."

Thus, ARB's proposed re-definition of the term "emission standard" does not conform to any federal law or regulation, and is not justified by the U.S. Supreme Court's consideration of the much broader statutory phrase "standards relating to the control of emissions." In that regard, it is important to note that Congress utilized the broader statutory phrase in CAA section 209(a) for a reason. Specifically, Congress sought to preempt all of the States and their political subdivisions from adopting or enforcing any sort of measure with any connection to motor vehicle emissions – to stave off a potentially impracticable patchwork of emissions-related regulations that could cripple the ability of motor vehicles to operate in interstate commerce – and so inserted an expansive phase in section 209(a) to suit that purpose. The fact that the Supreme Court gave due deference to the breadth of that statutory phrase for preemption purposes does not create or amount to a new federal definition of the different and much more narrow term, "emission standard."

The net result is that ARB's attempt to redefine and greatly expand the definition of "emission standard" is not in accordance with HSC section 39601(b), and so is unlawful and invalid. As a consequence, so are the revised definitions that are included in multiple places throughout the HD Rulemaking Package (see CCR, title 13, section 1900(b)(3)-(5), 1956.8(i)(2)- (4), 95662(a)(4), 95302(a)(19.1)-(19.3), 2485(h)(7)-(9)). (EMA)

Agency Response: No modifications were made in response to this comment.

As an initial matter, ARB disagrees with the commenter's statement that ARB proposed to redefine the term "emission standard" in part to circumvent two specific lawsuits that have been filed in the California Superior Court for the County of Sacramento (EMA v. CARB, Case No. 34-2013-00150733 (Sac. Cty.), and Alliance of Automobile Manufacturers v. CARB, Case No. 34-2013-00152974 (Sac. Cty.). The plaintiffs in those lawsuits are seeking judicial declarations that ARB exceeded its authority in revising the definition of "emissions standard" as that term is used in or applies to California's OBD system regulations applicable to heavy-duty or light- and medium-duty vehicles, and are additionally seeking judicial declarations that ARB regulations providing for the recall of heavy-duty, or light- and medium-duty vehicles for noncompliance with applicable OBD requirements exceed ARB's statutory authority. However, the regulatory actions that comprise this rulemaking action do not involve amendments to the preexisting definitions of emission standard, exhaust emission standard or evaporative emissions standard in California's OBD regulations or their associated enforcement provisions, and consequently do not affect the issues presented in those lawsuits.

ARB also disagrees with the commenter's assertion that the ARB's proposed definition of the term "emission standard" does not conform with any federal law or rule or regulation. As explained in the Staff Report on pages 27–28, ARB adopted the revised definition of "emission standard" as set forth in Health and Safety Code (HSC) section 39027, pursuant to the statutory authority of HSC sections 39010 and 39601(b), which provide that ARB may revise certain definitions of terms set forth in Chapter 2 of the HSC (commencing with section 39010) in order "to conform those definitions to federal laws and rules and regulations."

In 2004, the U.S. Supreme Court clarified that the definition of "standard" as it applies to emissions from motor vehicles and motor vehicle engines under Title II of the federal CAA, 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 v. SCAQMD)*.

ARB has determined that a revised definition of "emission standard," which conforms to the definition expounded by the Supreme Court in *EMA v. SCAQMD*, is both prudent and within ARB's legal authority, and has accordingly added a definition of "emission standard" to the Phase 1 GHG regulation, title 13, CCR, section 1900(b), the Tractor-Trailer GHG regulation, and the Idling ATCM, to be consistent with the definition set forth in *EMA* for purposes of clarity, consistency, and conformity. The new definition is needed to ensure that California's authority to adopt and to enforce emission standards and other emission-related requirements for mobile sources is coextensive with those provisions of section 209 of the federal CAA that establish the parameters of California's unique authority to regulate new on-road and off-road mobile sources.

Section 209(a) of the CAA preempts states and local governments from enacting any standard related to the control of emissions from new motor vehicles and engines. However, Section 209(b) of the CAA specifically provides a special exception for California that allows it to request a waiver from section 209(a)'s preemption, which must be granted unless the Administrator of the U.S. EPA makes certain findings. The authority of ARB, acting on behalf of California, to adopt standards related to control of emissions (i.e., emission standards) is effectively circumscribed by the waiver authority of CAA. Amending the definition to conform to the Supreme Court's interpretive definition of standard as it applies to emissions from motor vehicles and motor vehicle engines appropriately recognizes the interplay between federal and state law and the breadth of California's authority.

It is also appropriate to revise and update the definition of "emission standard" from that set forth at section 39027 because the latter definition was enacted by the Legislature in 1975, before significant advancements in vehicular and engine emission control technologies, such as on-board computers and OBD systems, had occurred. Also significant developments in law have also occurred since 1975, including the enactment of the California CAA of 1988 (AB 2595, Sher), which

directed ARB to continue to achieve substantial reductions in new vehicle emissions and substantial improvement in durability of vehicle emission systems, and the U.S. Supreme Court's decision in *Massachusetts v. EPA* (2007) 549 U.S. 497, that greenhouse gases are pollutants subject to regulation under the federal CAA.(549 U.S. at 1460).

The new, federally conforming definition effectively recognizes the present state of engine technology and the need to clarify that emission discharges into the atmosphere are more than quantitative emission limits, but also include pollution control equipment and other design features of the engine that ensure that emission reductions are achieved. For purposes of consistency and clarity, ARB also added new definitions of the terms "exhaust emission standards" and "evaporative emission standards" to clarify, where needed, previous references to emission standards. These proposed terms are subcategories of emission standards and are used to specifically identify the specified subcategories, as opposed to the broader term of emission standard that encompasses all standards.

The amended definition of emission standard fully conforms to the decisional law of the Supreme Court in *EMA v. SCAQMD* where, as previously stated, the Court fully considered and addressed the meaning of "any standard relating to the control of emissions of motor vehicles" (i.e., emission standard), and found the term as interpreted to be consistent with Congress' use of the term throughout Title II of the CAA. The definition of the term was central to the Court's decision, and in interpreting the term, the Court found that it was either not appropriate or not necessary to address the applicability of either 42 U.S.C. sections 7602(k) or 40 CFR 60.21(f) in the context of Title II of the CAA.

Summary of Comments on Amendments to the Tractor-Trailer GHG Regulation

1. Comment: As far as the tractor-trailer in-use requirements, having alignment eliminates the possibility of buying a new truck and having it not compliant with California standards. So it just makes everything in sync and eases travel for trucking companies throughout North America. (ATA)

2. Comment: ATA supports the proposed amendment to harmonize the new tractor requirements of the Tractor-Trailer GHG regulation with the existing federal Phase 1 GHG program. This amendment will bring further harmonization with the federal program by recognizing in-use compliance for tractors which meet the federal Phase 1 GHG standards. Fleets will no longer have to ensure they purchase the correct type of sleeper cab tractors in order to operate in California (i.e., SmartWay certified tractors). Instead, fleets will be able to purchase, operate and maintain model-year 2014 and newer tractors – those meeting the federal GHG standards – to comply with the California in-use requirements. This change will ease implementation and enforcement by relying on the manufacturer-focused federal program which eliminates the opportunity to purchase noncompliant tractors while at the same time providing greater reductions in GHG emissions. (ATA)

3. Comment: RMA believes that streamlining regulatory requirements benefits regulated entities, the economy and the environment. (RMA)

Agency Response to Comments 1-3: ARB appreciates the support for the proposed alignment.

4. Comment: CTA supports the recommendation to sunset the requirements applicable to new 2014 sleeper cab and day cab tractors, however, we must reiterate our opposition to this regulation as the underlying analysis to justify its initial passage was flawed. (CTA)

Agency Response: ARB appreciates the commenter's support for the proposed alignment but notes that the commenter's comments related to ARB's adoption of the initial regulation are beyond the scope of this rulemaking as they do not constitute objections specifically directed at the proposed action or to the procedures followed by ARB in proposing or adopting the amendments.

Summary of Comments on Optional Reduced Emission Standards for Heavy-Duty Engines

Support

1. Comment: Should the Board choose to establish optional NOx engine emission standards, the proposal to include three distinct levels (0.1, 0.05 and 0.02 g/bhp-hr) would be preferable to a more limited approach. With uncertainty over the feasibility and cost-effectiveness of achieving the optional standards, a greater degree of flexibility will help support a technology neutral policy. (ATA)

Agency Response: The Board approved the optional low NOx engine emission standards to include three distinct levels (0.1, 0.05, and 0.02 g/bhp-hr).

NOx-CO2 Tradeoff

2. Comment: CARB proposes new ultra-low NOx standards that are up to 90 percent below CARB's and EPA's current low standards. Since selective catalytic reduction (SCR) systems are near the limits of their NOx conversion capabilities, engine manufacturers likely will need to further reduce engine-out NOx, and /or provide additional heat to the SCR catalyst to maintain optimum temperature, to meet the new ultra-low emissions standards. The physics and thermodynamics associated with those changes will result in worse fuel efficiency and increased GHG emissions. CARB must consider the implications of the NOx/GHG tradeoff when adopting optional, or mandatory, lower NOx emission standards. (EMA)

3. Comment: Decreased NOx will likely require increased CO2, relative to 0.20 g/bhp-hr engines, because of engines' inherent NOx-CO2 tradeoff. Additionally, decreased NOx will likely require increased diesel exhaust fluid (DEF) consumption. As we understand, the ARB accepts that ultralow NOx engines will have higher CO2

emissions and DEF consumption than other engines, on the condition that a manufacturer complies with federal GHG emission standards (i.e., compensating for increased CO2 emissions in California by ensuring that non-California engines are lower emitting in order to generate necessary CO2 credits). Although this approach may achieve a nationwide balance for GHG emissions, it could also upset the balance of the nationwide program by preventing sales of (or greatly increasing the cost of) vehicles required commercially to do work in other areas of the country, which is of questionable equity. Rather, California should consider approaches that absorb disbenefits as well as benefits within its own boundaries. (DTNA)

4. Comment: It's important that the Board also recognize the long-standing condition that engine NOx reductions are traditionally associated with the detrimental effect on engine fuel efficiency, which means the pursuant of this ultra-low NOx emitting engine is in direct conflict with other important goals of the Board, that of addressing climate change. (VGT)

Agency Response to Comments 2-4: Manufacturers that choose to certify to the optional NOx standards will still need to meet the Phase 1 standards for GHGs, which will keep CO2 emissions in check. In addition, there are other technologies/strategies that reduce both NOx and GHGs (e.g., engine efficiency and exhaust aftertreatment catalyst improvements, reducing engine and drivetrain friction, reducing load/lighter vehicle, aerodynamic technologies), where there is no trade-off.

OBD

5. Comment: The ARB's proposed regulations incorporate the 13 CCR § 1971.1 language, with faults being emissions increases that (e.g.) "cause an engine's NOx emissions to exceed any of the applicable standards by more than 0.20 g/bhp-hr (e.g., cause emissions to exceed 0.4 g/bhp-hr if the exhaust emission standard is 0.20 g/bhp-hr) as measured from an applicable cycle emission test (i.e., federal test procedure or supplemental emissions test)." Thus, the thresholds are increasingly more stringent for the ultralow NOx engines. Manufacturers currently face significant challenges in meeting OBD threshold requirements for numerous NOx related monitors for today's 0.20 g/bhp-hr NOx certified engines. Essentially, manufacturers are developing monitors at the limits of today's monitoring methods' and NOx sensors' capabilities. The ARB recently approved modifications to OBD regulations recognizing the needs of manufacturers to have additional time to reach current requirements for certain NOx monitors. Since the ARB recognizes that manufacturers are already at maximum capacity to reach existing standards, it is not logical to expect that lower OBD monitor thresholds associated with reduced levels of voluntary NOx standards would be attainable.

That said, ARB has proposed an option, available at the ARB's discretion, to relax the OBD thresholds on ultralow NOx engines up to the absolute thresholds applicable to 0.20 g /bhp-hr engines, provided a manufacturer makes a showing (A) of good engineering judgment in selection of a proposed threshold, (B) that the relaxed thresholds will result in equally timely detection of failures for the ultralow NOx engine's components as do the thresholds for 0.20 g /bhp-hr engines' components, (C) the

malfunction thresholds are as stringent as technologically feasible but no lower than 2.0 times the applicable ultralow NOx FEL, (D) the malfunction threshold is not so low as to cause false positive MIL-on events, and (E) the manufacturer has demonstrated an ability to measure malfunctions at the proposed threshold level. While we appreciate the ARB's proposed option, we are concerned that we cannot plan and develop engines in advance with expectation that the ARB will exercise its discretion to relax its OBD standards. We cannot plan to spend the money necessary to comply with the more stringent OBD levels of an ultralow NOx program if other manufacturers may be able to more cost-effectively certify ultralow engines to higher OBD thresholds. Given the very challenging technical nature of OBD development and the enormous resources it requires, the "race to the bottom" approach to OBD approval based on other manufacturers' solutions is simply untenable.

In summary, the ARB's proposed OBD targets are not only questionably achievable, but also too uncertain to allow a manufacturer to effectively plan a development project. Given that it is uncertain whether a manufacturer can attain ultralow NOx OBD targets (as evidenced by the ARB's recognition of the need for the discretionary relaxation option), we recommend that ultralow NOx engines be subject to the same absolute OBD thresholds as applied to 0.20 g/bhp-hr engines, which as stated above are already posing significant challenges to manufacturers. Finally, the fact that ARB refuses to allow carryover certification of OBD consumes an incredible amount of time each year and provides enormous disincentive to take on another OBD program especially one where the bar changes continuously for actual certification. (DTNA)

6. Comment: The current OBD requirements have NOx emission malfunction thresholds of plus 0.20 g/bhp-hr above the tailpipe standard, or 2.0 times the tailpipe standard. Based on the proposed regulatory language, it appears that the OBD thresholds for engines certified to the optional lower NOx standards would be the same additive or multiplicative values above the 0.10 g/bhp-hr, 0.05 g/bhp-hr, or 0.02 g/bhp-hr standards. Current state-of-the-art OBD sensing technologies, however, are likely unable to properly detect potential malfunctions down to those ultra-low levels. Furthermore, in the HD Rulemaking Package, CARB proposes to condition the use of any alternative OBD thresholds on the Executive Officer's approval of individual manufacturer's requests to use alternative thresholds. Such an approach is unduly burdensome and fails to provide manufacturers the necessary certainty to invest in the development of technologies to meet the optional NOx standards. Manufacturers are unlikely to invest the significant resources required to achieve the ultra-low NOx levels when they have no certainty that they will be able to obtain OBD approval from the Executive Officer.

Even more problematic than the uncertainty associated with achieving initial certification, a manufacturer faces the potential that CARB will frequently change the OBD requirements based on evolving levels of what the Executive Officer determines is technologically feasible. Such potential year-after-year changes in a regulatory requirement are untenable. OBD is therefore another major, if not prohibitive, barrier to implementation of the proposed optional lower NOx standards. Alternatively, CARB could actually promote certification to the lower NOx standard by setting the OBD thresholds based on the current mandatory 0.2 g/bhp-hr standard. (EMA)

7. Comment: The introduction of a robust OBD system that meets the Board's system expectations while avoiding false detections in the field has proven to be an immense challenge to our industry, compelling the deployment of vast resources at a great financial burden. To comply with these requirements in the context of ultra low NOx emission engine is sure to be all the more challenging. Staff's proposed practice of pushing manufacturers to do the best that they can, rather than complying with requirements already demonstrated to be feasible by the time of rulemaking, is an unacceptable practice. (VGT)

Agency Response to Comments 5-7: ARB staff modified the proposal to address this concern. Staff noticed for 15-day comment a change to maintain the current OBD stringency level for the mandatory 0.20 g/bhp-hr standard regardless of the optional low NOx standard to which the engine is certified. Without such a change, meeting the OBD requirements for engines certified to the optional low NOx standard would have been very challenging for manufacturers and likely would have created a significant disincentive for them to produce optional low NOx engines at this time.

Atmospheric Effect of Reduced NOx Emissions

8. Comment: Although the low NOx standards are presented as an optional program to reduce NOx (and thereby ozone emissions), there is nonetheless an underlying assumption, confirmed by CARB Staff, that these voluntary standards are likely to be proposed as mandatory standards, and that such mandatory NOx reductions would yield corollary reductions in ambient ozone levels. Two key factors impact the validity of that assumption: the projection of future atmospheric NOx emissions levels; and the modeling of how those NOx emission level interact chemically with Volatile Organic Compounds ("VOC") concentrations to form ozone. The first of those factors is typically estimated and projected through ARB's EMFAC model. It has been some time since ARB has held workshops to review the inputs to EMFAC, especially with respect to those inputs that most heavily determine future emissions levels (e.g., malfunction rates and deterioration). EMA would appreciate an opportunity to review the estimates of heavy- duty vehicle population growth, average VMT/vehicle, the change in deterioration factors, rates of tampering and malfunction, rebuild practices for future model years, 'zero hour' gram per mile emission rates, as well as other factors for the future heavy-duty vehicles that most influence future emission levels. Accordingly, EMA requests that ARB provide a forum for the detailed review of those key emission inventory factors.

The second aspect of this modeling effort – assessing how NOx emissions interact chemically with VOC levels to form ozone – is typically estimated utilizing the Community Multiscale Air Quality ("CMAQ") Model. Critical to the results of that type of modeling is whether the regional atmosphere at issue is "NOx-limited" or "VOC-limited." In a VOC-limited environment (i.e., where lower VOC/NOx ratios prevail), marginal decreases in NOx can actually cause increases in ozone.

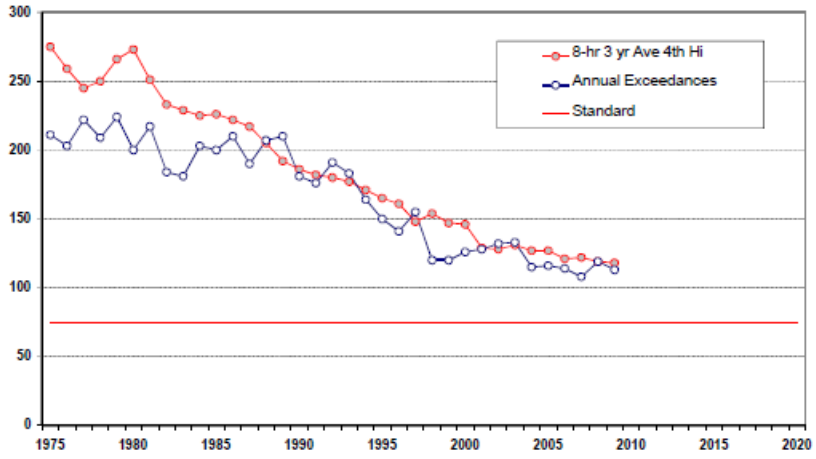
Given the foregoing, there is a fundamental public policy issue that is embedded in CARB's pursuit of an ultra-low NOx standard for heavy-duty on-highway ("HDOH") engines and vehicles, regardless of whether that standard is styled as "optional" or

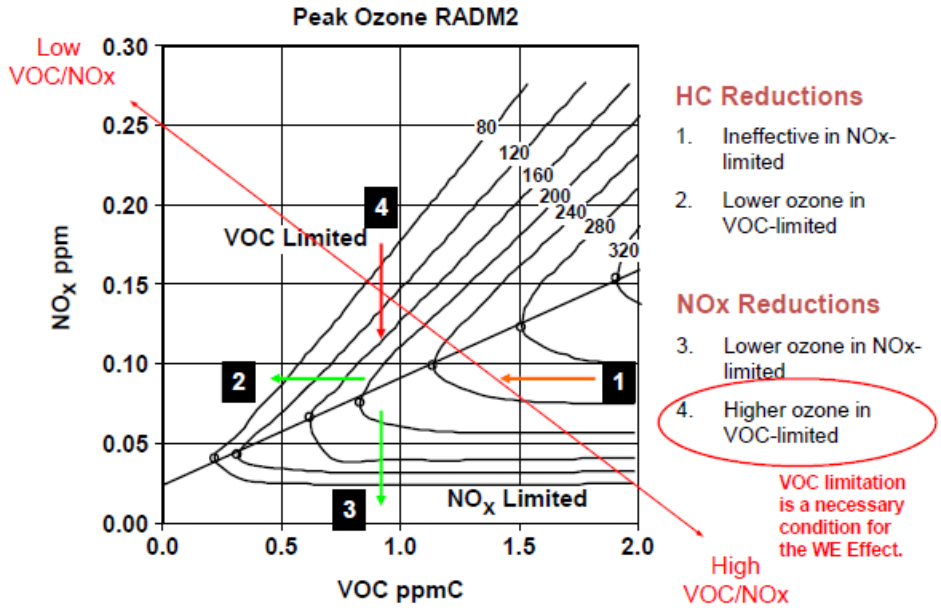
not. CARB's motivating public policy assumption is that reducing NOx emissions from HDOH vehicles in California by up to an additional 90 percent will yield corresponding reductions in ambient ozone concentrations. Unfortunately, given the "VOC-limited" nature of the prevailing atmospheric chemistry in California, most especially in the South Coast Air Basin ("SoCAB"), CARB's assumption is very likely incorrect. The net result, as summarized below, is that CARB's quest for a new ultra-low NOx standard for HDOH vehicles and engines is likely to cause significant increases in ambient ozone levels for a significant period of time.

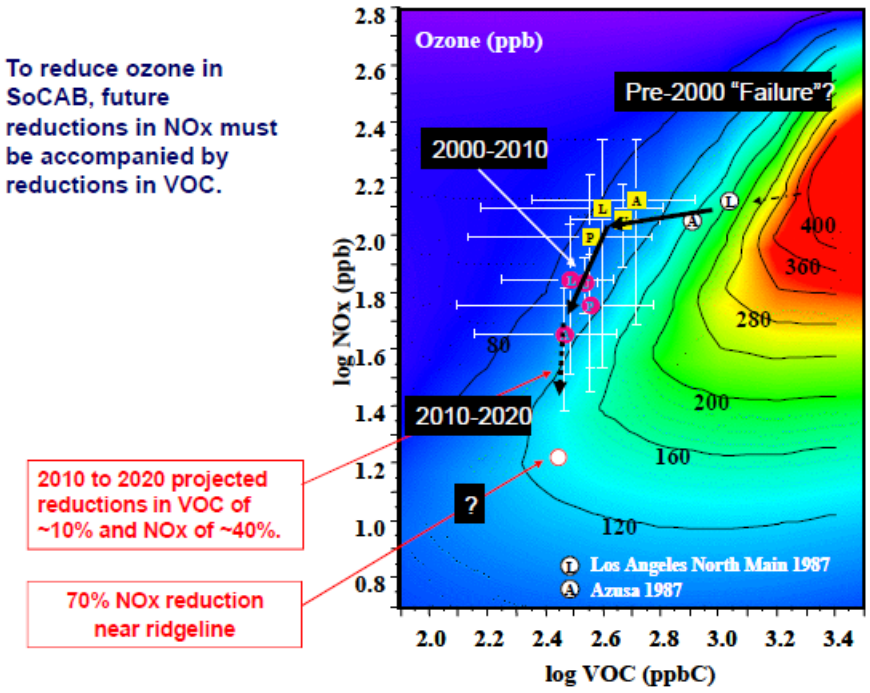
Extensive research has been conducted on the chemistry of ozone formation in California over the past twenty years. That work has been performed by Drs. Eric Fujita, Doug Lawson, Bill Stockwell, and others. See, e.g., Fujita, et al. (2013), "Past and future ozone trends in California's South Coast Air Basin," Journal of Air & Waste Manag. Ass'n., 63:1, 54-59. Taken together, that work (including the well-established weekday/weekend ozone phenomenon, and the prevailing ozone trends in the SoCAB) demonstrates that at low VOC/NOx ratios (i.e., in "VOC-limited" environments) unilateral reductions in NOx cause an increase, not a decrease, in ambient ozone levels. The ozone contour plots depicted on the following pages show how a reduction in NOx levels (on the vertical axis) is likely to cause significant ozone increases as higher ozone concentration contour lines are crossed (levels could rise from approximately 110 parts per billion (ppb) to approximately 200 ppb, or even higher under certain scenarios). Similarly, the ozone formation graph (the fourth of the four charts) depicts how ozone levels are likely to increase in the SoCAB (moving from right to left on the graph's horizontal axis) as ambient NOx levels are reduced.

Thus, in light of the prevailing science, it is incumbent on CARB to thoroughly investigate and publicly discuss the ozone "disbenefits" that are likely to result from any proposed reductions in NOx emissions. Simply stated, since ozone reductions are a function of both NOx and VOCs, unilateral reductions in NOx, as CARB is pursuing, are much more likely to increase ozone levels, especially in the SoCAB. This fundamental issue of public policy and atmospheric chemistry needs to be addressed in a comprehensive manner *before* CARB takes any final action on any new standards for HDOH vehicles and engines that either incentivize lower NOx standards, or that mandate them. Otherwise, the unintended consequences of CARB's rulemakings may be significantly detrimental. In that regard, and as CARB Staff is aware, the Coordinating Research Council (CRC) is sponsoring an update to the work of Dr. Fujita and his colleagues to assess the potential impacts of unilateral NOx reductions in the SoCAB based on current assessments of the prevailing NOx/VOC ratios. (See CRC Project A-91, Exploration of Potential Ozone Disbenefits.) Any further action by CARB pertaining to this regulatory matter should, at a minimum, be informed by the results of that CRC project.

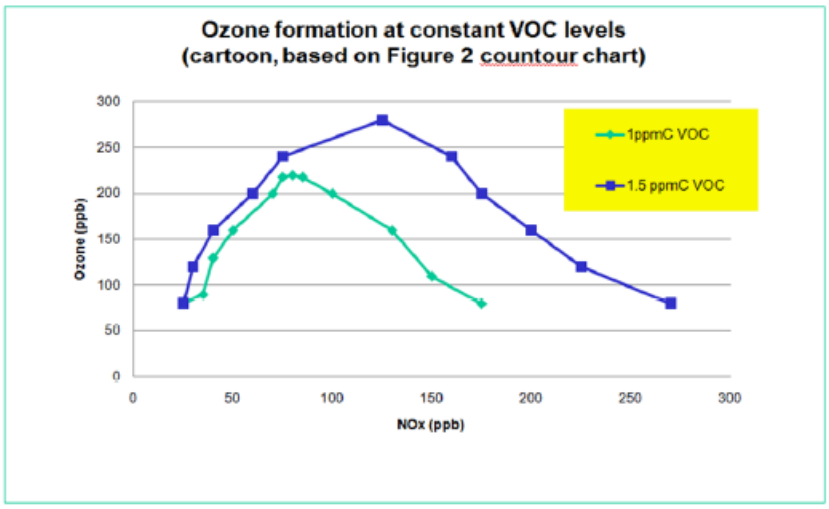
Ozone Trends from 1975 to 2009 in the South Coast Air Basin (SoCAB)







Ozone is a function of NOx and VOCs (not NOx alone)
Figure 3



(EMA)

9. Comment: The most foundational of these concerns is linked to the basic question of whether introducing even more stringent NOx standards will, in fact, contribute to reduction in the ambient ozone. Recent studies have raised important questions about the chemical interactions between ambient ozone, NOx, and VOC, measuring in some cases surprising increases in ozone under reduced ambient NOx levels. So until the science has satisfactorily demonstrated that even lower emitting engines will further reduce ambient ozone levels, rather than increasing them, the

ARB should not adopt NOx standards more stringent than exist today voluntarily or mandatory. (VGT)

Agency Response to Comments 8-9: The South Coast and San Joaquin Valley are the only two extreme ozone nonattainment areas in the nation. Both areas will require significant emission reductions in order to attain the 0.08 parts per million (ppm) 8-hour ozone standard by 2023, and the more stringent 0.075 ppm standard by 2032. The overall control approach for meeting these standards is developed through air quality modeling of a comprehensive strategy that reflects all precursors and all emission sources. This approach reflects the science of ozone chemistry in each region, and informs the magnitude of emission reductions needed and the appropriate precursors to control that provide the most effective pathway towards attainment.

The air quality modeling included in the federally approved State Implementation Plans (SIPs) for the 0.08 ppm 8-hour ozone standard for both the South Coast and the San Joaquin Valley demonstrates that large NOx reductions are needed in order to meet the standard. These NOx reductions are also coupled with strategies for further VOC reductions in the South Coast. (See ARB's Staff Report on Proposed Revisions to the PM2.5 and Ozone State Implementation Plans for the South Coast Air Basin, released January 13, 2013, approved January 25, 2013, at: http://www.arb.ca.gov/planning/sip/planarea/2012scaqmp_final_staff_report.pdf). This dual pollutant approach in the South Coast recognizes the need for a mix of reductions in order to address the differing nature of the ozone problem throughout the air basin. The approved control strategies in these SIPs underwent a comprehensive public process at the local, state, and federal level. Analysis conducted by ARB staff indicates that even greater reductions in NOx will be required to meet the 0.075 ppm standard. As with the 2023 attainment strategy, additional VOC reductions will also continue to be essential in the South Coast.

Given the magnitude of these emission reductions, the strategy to bring both regions into attainment will need to include the cleanest technologies for NOx across all source sectors. The optional low-NOx standard cannot be considered in isolation, but rather as one important element of the broader comprehensive NOx and VOC attainment strategy and the overall benefits this strategy will provide. This strategy must also consider emission reductions needed to meet fine particulate matter (PM2.5) standards. As with ozone, the air quality modeling included in the approved SIPs for the annual PM2.5 standard of 15 micrograms per cubic meter (ug/m3) demonstrates the effectiveness of NOx reductions in reducing the ammonium nitrate fraction of PM2.5 in both the South Coast and San Joaquin Valley. Further NOx reductions will continue to be critical for meeting the more stringent annual PM2.5 standard of 12 ug/m3 that must be attained between 2021 and 2025.

The commenters also raised a concern that the "weekend effect" is an indicator that further NOx control is not effective. The weekend effect is a phenomenon that occurs in some areas of the State where ozone concentrations are typically higher on weekends compared to weekdays. The weekend effect has been observed in the South Coast, but not in the San Joaquin Valley. However, over time, the magnitude of the weekend effect has been diminishing in the South Coast.

While VOC emissions are generally similar between weekdays and weekends, NOx emissions tend to be lower on weekends. This increase in weekend ozone concentrations has therefore been suggested as evidence that NOx control is counter-productive. However, there are many factors in addition to the change in VOC and NOx levels between weekdays and weekends that may also help explain the weekend effect, and thus the presence of a weekend effect does not necessarily indicate that a long-term NOx control program is not an effective control strategy. As discussed above, a comprehensive attainment strategy that reflects the response to the aggregate control program is the most appropriate approach to ensure continuing improvement in ozone concentrations.

The commenters also stated that, "It has been some time since ARB has held workshops to review the inputs to EMFAC…" This is not correct. ARB held two public workshops on EMFAC in 2013. On June 5, 2013, ARB held a public workshop on improving mobile source planning tools, including EMFAC. (http://www.arb.ca.gov/msei/public-workshop-june-5-2013-sacto.pdf) On October 8, 2013, ARB held a public workshop on updates to the EMFAC model. (http://www.arb.ca.gov/msei/emfac2013_oct_workshop_meeting_notice_final-agenda.doc) In addition to these publicly noticed workshops, ARB held several meetings in 2013 with EMA to discuss ARB's mobile source emission inventory and the EMFAC model; the most recent meeting took place on Friday, December 6, 2013, specifically to discuss truck emission factors.

Measurement

10. Comment: Measurement of NOx levels for 0.20 g/bhp-hr engines is already difficult due to the low signal and the signal to noise ratio aspect of the analyzer methodology. This is one of the primary reasons manufacturers tend to target certification levels lower than the standard– to protect against the variability that is inherent in the measurement process at the current near-zero emission levels. The measurement of ultralow NOx levels will only compound the difficulty level in achieving a quality measurement with current technology, a difficulty level that may not have technical solutions.

The measurement system and process variability deviations are significant at the current NOx standard levels. At the ultralow NOx levels proposed, this will pose a greater challenge to the current measurement technologies' capabilities; at the lower proposed levels it is unknown if quality measurements are achievable. Consequently, tests such as selective enforcement audits (SEA), deterioration factor (DF) determination, and in-use testing, all of which require NOx measurement, will incur unmanageably higher uncertainty per unit signal on ultralow NOx engines than on 0.20 g/bhp-hr engines. Any research ARB completes on ultralow NOx must mimic an engine manufacturer's entire certification process to properly account for and understand the impacts of ultralow NOx on certification. (DTNA)

11. Comment: EMA has significant concerns about the technological feasibility of certifying engines to the 0.10 g/bhp-hr, 0.05 g/bhp-hr, or 0.02 g/bhp-hr optional NOx standards proposed by CARB. For example, the currently acceptable level of

variability for emissions measurement is plus or minus five percent of the standard, which helps to ensure the stability and repeatability of measuring the very low emissions from today's aftertreatment-equipped engines. That level of accuracy represents the current state-of-the-art for emissions control and measurement technologies for a 0.2 g/bhp-hr standard. However, the variability associated with that degree of accuracy likely is unworkable for measuring to a 0.10 g or 0.05 g, let alone a 0.02 g NOx standard. Moreover, the level of accuracy may be ever greater at the lower emissions levels. Therefore, a new benchmark of engine emissions testing stability and measurement accuracy will be necessary to certify engines to the new optional lower NOx standards. Even if achieving those levels were feasible, the measurement costs alone may be prohibitively high. Before CARB considers such new ultra-low NOx standards, it should validate that measurement technologies have been developed to a point of being commercially available, cost effective, accurate and repeatable enough for the new emissions levels at issue – particularly the most stringent levels. (EMA)

12. Comment: Even if there were a technology known to be capable of complying with all aspects of the ultra-low NOx standards throughout the regulated useful life, the lack of instruments capable of accurately measuring NOx at such low levels make it extremely difficult, if not impossible, to refine and calibrate engines deploying capable technology. This measurement accuracy issue is a concern, not only for the development and calibration of these engines, but even more so for the delicate job of demonstrating deterioration factors, as well as calibration of OBD monitors. (VGT)

Agency Response to Comments 10-12: No changes were made in response to these comments. Current certification emission measurements are adequate to measure NOx levels down to the proposed optional low NOx emission standards for heavy-duty engines. Measuring NOx emissions has been and will continue to be performed by following the procedures in 40 CFR 1065.270. These procedures require NOx emissions to be measured with a chemiluminescence detector (CLD). Typical CLD measurements are in the 0 to 10 ppm range with a lower detection limit down to less than one ppb. For reference, a 500 horsepower diesel engine emitting 0.02 g/bhp-hr NOx would have an exhaust concentration of about 1.41 ppm, which is well within the range of a standard CLD instrument. However staff acknowledges improvements in instrumentation to increase its sensitivity, specificity and linearity over a wide NOx dynamic range would make such measurements more robust.

In-Use Testing / Compliance Margins

13. Comment: CARB's current method of in-use compliance testing utilizing an engine dynamometer raises the same repeatability and accuracy questions noted above (see Measurement comments10-12 above). As such, manufacturers may not be able to achieve sufficient certainty that engines certified to the optional lower NOx standards would pass an in-use compliance audit. In-use compliance testing is one more barrier to the implementation of the proposed optional lower NOx standards.

We understand that CARB will require that manufacturers certifying engines to the optional low NOx standards must estimate the deterioration of the emissions level of

an engine over its useful life and apply a deterioration factor (DF) to the measured emissions level of a new engine for the purposes of demonstrating compliance to the engine's full useful life at certification. Establishing a DF for the proposed lower NOx standards and applying it to the NOx emissions of an engine may serve as another insurmountable obstacle to certification. Indeed, the issues relating to emissions repeatability and measurement accuracy may be too large to make it possible to certify to the lower NOx levels, and ensure compliance over the useful life of the engine, with any reasonable degree of confidence and compliance margin. Consequently, DFs stand as a significant barrier to implementation of the proposed optional lower NOx standards.

Compounding our questions and concerns about achieving, and measuring, emissions to the proposal optional low NOx standards, are the necessary compliance margins that manufacturers must obtain. Because of the variability in production and measurement tolerances, manufacturers must certify their engines significantly below the compliance requirement. Often, that compliance margin is 50 percent below the standard. Only if a manufacturer is able to certify an engine to some target like 50 percent below the standard will the manufacturer have an acceptable degree of confidence that no engines produced under the engine family certification will be found to exceed the standard. Because the current mandatory standard already is so close to zero, and so challenging to achieve, the data CARB provides in the Initial Statement of Reasons (ISOR) for the HD Rulemaking Package confirms that less than 20 percent of current engines are actually achieving a 50 percent compliance margin for the existing 0.2 g/bhp-hr NOx standard. Achieving such a compliance margin with the proposed optional lower NOx standards may not be feasible, and therefore would serve as another barrier to manufacturers choosing to certify to them. Nonetheless, if CARB persists in implementing the optional lower NOx standards despite this barrier, CARB should recognize the increasingly difficult task of certification at such low NOx levels by increasing the flexibility associated with procedures such as assembly-line testing (13 CCR § 2065) and in-use testing (13 CCR §§ 2100 et seq.). Specifically, with assembly-line testing, CARB should define an acceptable quality level larger than that applicable to 0.2 g/bhp-hr NOx engines. And with in-use testing, CARB should define a larger multiplication factor between the applicable emission standard or FEL and the not-to-exceed standard. (EMA)

Agency Response: The low NOx engine emission standards are optional. Therefore, if a manufacturer determines that it cannot meet the in-use compliance, deterioration, or assembly-line testing requirements, the manufacturer may choose not to certify to the optional standards. The aforementioned requirements are necessary for ensuring that low NOx engines comply with the NOx emission standard throughout their useful life.

ABT

14. Comment: In the HD Rulemaking Package CARB, proposes to exclude engines certified to the optional low NOx standards from generating credits in the ABT program. That limitation is overly restrictive and would discourage manufacturers from certifying engines to the optional low NOx standards. CARB

should eliminate the restriction and allow manufacturers to generate emissions credits from such engines. At a minimum, CARB should only restrict engines certified to the 0.10 g optional low NOx standard from generating NOx credits. (EMA)

15. Comment: One point in EMA's comments where we do not align is the EMA suggestion to allow NOx credit accumulation from ultralow NOx certified engines. We are not convinced that allowing NOx credits to be generated from ultralow NOx engines wouldn't undermine the very nature of the program by allowing continued and potentially increased sales of credit consuming high NOx engines in California; engines that would also more easily comply with stringent CO2 standards. (DTNA)

16. Comment: In Appendix I-C ("Proposed Regulation Order for Optional Low NOx Emission Standards"), CARB makes clear that for HD Otto-cycle engines, "ABT [averaging, banking, and trading] does not apply to [the] optional low NOx emission standards." CARB reiterates this prescriptive language in Appendix I-C-2 ("Proposed Optional Low NOx Emission Standard Amendments to California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines").

For HD diesel engines, New West observes that CARB has *not* included an ABT prescription in 13 CCR section 1956.8(a)(2)(A). Arguably, then, it follows that CARB does not intend for such a prescription to apply to HD diesel engines. Prescriptive language, however, does appear in Appendix I-C-1 ("Proposed Optional Low NOx Emission Standard Amendments to California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles").

In New West's view, it is not entirely clear whether HD engines certified to the optional low NOx standards would be able to generate NOx emission credits. We therefore suggest that CARB take the necessary steps to ensure greater clarity as well as consistency between the regulatory language in section 1956.8(a)(2)(A) and the HD diesel engine test procedures that are incorporated in the regulations through section 1956.8(d). (NWT)

Agency Response to Comments 14-16: Staff inadvertently left language out of title 13, CCR, section 1956.8(a)(2)(A) clarifying the generation of NOx emission credits, and appreciates NWT pointing out this oversight. The correction was noticed for 15-day comment.

Staff's intent is to disallow generation of NOx emission credits for either Otto cycle or diesel engines and has corrected the regulatory language to indicate this. Staff agrees with Commenter DTNA that allowing engines certified to the optional NOx standards to generate NOx ABT credits would undermine the very nature of the program.

Labeling of Engines Certified to Optional Low NOx Emissions Standards

17. Comment: In the HD Rulemaking Package, CARB also proposes adding language to the certification label stating that the engine is certified to an optional

low NOx engine emissions standard and stating the specific standard. Since the certification label already must include the NOx standard or FEL to which the engine is certified, the additional statement is redundant and unnecessary. Requiring it would impose a burden on manufacturers without providing any environmental benefit. CARB should remove the additional labeling requirements from the proposed low NOx certification requirements. (EMA)

Agency Response: No change was made in response to this comment. The optional NOx regulations require the following statement on the labels of engines certified to the optional NOx standards, "This engine conforms to California regulations applicable to XXXX model year heavy-duty diesel engine and is certified to Optional Low NOx Engine emission standard of XXX g/bhp-hr." The statement is necessary to distinguish engines certified to optional NOx standards from engines certified to an FEL of 0.1, 0.05, or 0.02 g/bhp-hr NOx. ARB staff believes that this requirement is not overly burdensome and is needed to clearly inform initial and subsequent purchasers that the engine is certified to an optional low NOx emissions standard.

Incentive Funding

18. Comment: In the proposal the words 'voluntary', 'optional', 'harmonize' are used consistently throughout the proposal. This gives the notion that we as stakeholders have an option. However, starting in 2004 manufacturers met an 'optional emission standards' for NOx and NMHC that were substantially lower than the primary NOx + NMHC emission standard. Local air districts were able to 'preferentially' provide funding to the purchasers (stakeholders) of cleaner trucks. Regardless of preferential funding we were mandated to comply with the 'optional emission standard'. (KOT) (BHOSI)

Agency Response: The commenter is correct that local air districts may choose to target their clean air incentive monies to trucks with engines certified to the optional standards. Indeed, that is one of the main means by which staff foresees an incentive for fleets to purchase and manufacturers to provide such engines may be provided.

However, any decision by local air districts to provide preferential funding for trucks powered by engines that are certified to optional lower emission standards is distinct from the issue whether engine manufacturers must demonstrate their heavy-duty engines comply with the low NOx emission standards in order to certify those engines in California. The optional standards are optional; none will be mandatory in any sense.

19. Comment: Staff did not make this comment, that there are several engines at the .1 level. And we do need to find ways to maximize funding for the cleaner engines. What we've seen in the past is that manufacturers come to that first level, but don't see any reason to go beyond that. So we want to work closely with your staff on proposals to maximize funding and incentives for cleaner engines. (SCAQMD)

Agency Response: ARB staff looks forward to working with South Coast and other air districts to find ways to incentivize as many low emitting engines as possible.

20. Comment: Also, the proposal introduced the reason someone would want to purchase the optional lower NOx engines was the Carl Moyer grant program which would fund the incremental cost of cleaner than required engines. Most of the larger fleets cannot take advantage of the grant funding. (KOT, BHOSI)

21. Comment: For trucking companies, equipment costs are a top expense. The higher cost of low NOx vehicles, plus the added risks associated with unproven technology, such as potential fuel economy trade-offs, additional downtime and uncertain resale values, will require purchasers to weigh these risks versus the financial incentives offered. One means of trying to reduce higher vehicle costs would be to maintain statewide oversight of the financial incentive program in order to promote the largest demand pool while working with manufacturers on the development of cost-effective, technology neutral low NOx vehicles. (ATA)

22. Comment: We would suggest that staff provide more detail regarding its vision of how lower NOx engines will be incentivized. Manufacturers will be reluctant to utilize an optional certification if they do not believe market demand will materialize for these engines. Staff provided some initial concepts for incentivization (Carl Moyer Attainment Program Funding, Proposition 1B, and Truck and Bus Regulation). (CTA)

23. Comment: Ultralow NOx engines will carry higher technology costs than 0.20 g/bhp-hr engines, because of the technology necessary to comply with the lower NOx emission limits, because of the added OBD costs, and because of the cost of additional development and certification. Additionally, ultralow NOx engines will require higher fuel and DEF consumption, because of the NOx-CO2 tradeoff and the increased DEF necessary to meet ultralow NOx levels, respectively. ARB should consider that any incentive funding offered to ultralow NOx engine customers covers not only the upfront technology upcharge but also the lifetime operational cost upcharge. (DTNA)

Agency Response to Comments 20-23: ARB staff will continue to work with Carl Moyer Program and other incentive funding staff to increase as much as possible incentive funding for owners that choose to purchase engines with optional NOx emissions.

24. Comment: SoCalGas understands CARB's intent with the proposed optional low-NOx standards. We previously recommended and have discussed with staff the development of a stakeholder group to solicit ideas from manufacturers, vendors, fuel suppliers and operators to offer ideas for designing an integrated approach including updating incentive program guidelines to achieve the goals. (SCGas)

Agency Response: No change was made in response to this comment. ARB staff are always available to meet with stakeholders to discuss improving our clean air incentive programs. As discussed further on the Carl Moyer Program webpage, the

Moyer program regularly holds public meetings to discuss changes to the program (http://www.arb.ca.gov/msprog/moyer/moyer.htm).

Benefit of Optional Standards

25. Comment: The proposal lowers the current 2010 NOx emission certification standard of 0.2 g/bhp-hr to the "optional" emission standard of 0.1 g/bhp-hr in 2015, 0.05 g/bhp-hr in 2016, and 0.02 g/bhp-hr in 2017. This suggests a reduction in NOx emissions from 50 percent to 90 percent from the current standard, for a net reduction of 3 percent or 0.18 g/bhp-hr. However, let's look at the year 1990. The NOx engine certification standards were at 6 g/bhp-hr., and the current standard at .2 g/bhp-hr, engine manufacturers have reduced NOx emissions by 97 percent. Essentially, the new proposal suggests this reduction in NOx emissions since 1990 of 97 percent appears to be of no value. (KOT, BHOSI)

26. Comment: In the Staff Report, staff stated the NOx standards for heavy-duty on-road engines have dramatically decreased from the 6.0 g/bhp-hr in 1990 to 0.2 g/bhp-hr in the 2010 MY standard which is a 96.67 percent decrease in NOx emissions. The Staff Report states the proposed regulation would certify engines to standards more stringent than the 2010 standards by establishing the next generation of NOx emission standards to 0.1 g/bhp-hr, 0.05 g/bhp-hr and 0.02 g/bhp-hr. The Staff Report goes on to state this is 50 percent, 75 percent and 90 percent lower than the current primary 2010 MY standard which is a true statement. NCPS' suggestion is for the Board to recognize the optional low NOx emission standards as only an additional 3 percent reduction from the 1990 standards, and after the final standard is achieved the total reduction will be 99.67 percent. The cost-benefit analysis and the cost-effectiveness analysis should note the cost is for an additional 3 percent reduction or 0.18 g/bhp-hr. (NCPS)

Agency Response to Comments 25-26: No changes were made in response to these comments. The optional standards are just that, optional. Some engines may meet the optional standards now, other engines may require some additional technology or modifications along with testing. Without the lower NOx standards in place, which this regulatory modification establishes, engine manufacturers would not have a standard to meet beyond the current 0.2 g/bhp-hr NOx engine emission standard.

Lowering the NOx standard from 0.2 to 0.02 represents an important further reduction in NOx levels from heavy-duty engines. Staff acknowledges Commenter NCPS's point that NOx emissions from heavy-duty engines have already been greatly reduced, and that on a per engine basis, further reductions will be small compared to the reductions already achieved. However, as described on p. 9 of the staff report, due to the continuing poor air quality in many regions of California, especially in the South Coast and San Joaquin Valley, significant further NOx emission reductions are needed. Hence, ARB must pursue all cost-effective means for reducing NOx emissions further, including lower NOx standards for new heavy-duty engines.

However, ARB disagrees with NCPS' comment that the cost-benefit analysis and cost-effectiveness analysis of the optional NOx standards should be based on the NOX reductions compared to the NOx emissions standards applicable to 1990 model year

engines. As NCPS itself notes, the optional NOx standards constitute an alternative to the NOx standards currently applicable to 2010 and later model year engines.

27. Comment: In the proposal it was noted that the diesel engine manufacturers are certifying to a level below the 2010 NOx standard, which is less than 0.03 to 0.14 g/bhp-hr. This is a true fact and here is a small list to document the fact: Cummins certified to 0.12 g/bhp-hr, Volvo certified to 0.09 g/bhp-hr, Detroit Diesel certified to a 0.09 g/bhp-hr, and Ford Motor certified to 0.07 g/bhp-hr. In effect, engines manufactured today are certified by CARB to have NOx emission 30 percent to 65 percent below the 2010 standard. CARB does not recognize their own certified values listed on the executive orders. Therefore, based on the aforementioned information what is the need for new 'optional emission standards'? (KOT, BHOSI)

28. Comment: A review of on-road certification Executive Orders between 10.8L and 16.1L shows that NOx emissions range from 0.19 to 0.09 g/bhp-hr. For years, stakeholders have attempted to convince staff to allow fleet owners to utilize the certification levels in all the fleet average calculations. If staff recognized the certification levels in the Staff Report, the stakeholders are requesting that the Board allow fleet owners to utilize the same certification levels in the fleet average calculations. (NCPS)

29. Comment: In addition, CARB stated fleets would have incentives for purchasing trucks with lower NOx engines to comply with the 2023 turnover requirement. The question becomes why not extend incentives for 2010 engines that are certified to values below the standard? (KOT, BHOSI)

Agency Response to Comments 27-29: No change was made in response to these comments. The commenters are correct that many manufacturers are currently certifying engines that have demonstrated the ability to emit NOx emissions below the 0.20 g/bhp-hr standard. However, it is important to distinguish this demonstrated ability (i.e., providing certification emissions data indicating an engine family complies with an emissions standard of 0.2 g/bhp-hr), from actually certifying an engine family to an emissions standard of 0.2 g/bhp-hr. As shown in Appendix IV to the Staff Report, many engine families currently have NOx certification levels below 0.20 g/bhp-hr; however, none of the engine families shown in Appendix IV are certified to a NOx emission standard or family emission limit (FEL) below 0.2 g/bhp-hr.[4] As discussed in earlier comments and on page 52 of the Staff Report, manufacturers submit data demonstrating their engines emit below an emission standard in order to provide a compliance margin to account for emissions increases resulting from in-use operation and to ensure that their engines meet the mandatory 0.20 g/bhp-hr standard for their full lives. As described in earlier comments and on page 52 of the Staff Report, manufacturers certify below the standard to provide a compliance margin and be certain all engines meet the mandatory 0.20 g/bhp-hr

[4] No engine families are currently certified to an FEL below 0.2 g/bhp-hr. If an engine family were certified to an FEL below 0.2 g/bhp-hr, engines in such an engine family would be certified to meet the FEL for their full lives and hence would be required to be cleaner than other engines certified to the 0.2 standard. However, manufacturers would be able to generate NOx ABT credits through production of such engines and hence, unlike engines certified to the proposed optional NOx standards, they would provide no net NOx emission reduction benefit.

standard for their full lives. As described in the Staff Report, further NOx reductions are necessary in California to help meet ambient air quality standards for ozone and fine particulate matter. To achieve such NOx reductions, California needs engines that emit less NOx emissions than current engines and are certified to do so for their full lives, which is the rationale for developing the current optional NOx standards, as well as the rationale for considering lower mandatory NOx standards in the future.

ARB disagrees with the proposal by KOT, BHOSI to provide incentives for engines that have demonstrated an ability to emit NOx emissions below the 0.2 g/bhp-hr certification standard (i.e., that have NOx certification levels below 0.2 g/bhp-hr) but are nevertheless certified to the current mandatory NOx standard of 0.2 g/bhr-hr. These engines are not required to remain any cleaner than any other engine certified to the 0.2 g/bhp-hr standard, so providing incentive funding is not warranted.[5]

Formaldehyde

30. Comment: The ARB proposes to require that ultralow NOx engines comply with a formaldehyde standard of 0.5 g/bhp-hr. The formaldehyde standard is entirely new; we have not tested formaldehyde in certification testing. While, based upon data from the "ACES II" program, we expect that formaldehyde emissions on a hot federal test procedure emissions engine cycle will likely be below the proposed 0.5 g/bhp-hr standard, we are not certain about the cold- and hot-weighted federal test procedure emissions. Moreover, if the weighted emissions were close to the 0.5 g/bhp-hr standard, the ultralow NOx program could involve significantly more research and development than originally expected. Consequently, we recommend that the ARB adopt formaldehyde standards only after ensuring that those standards form no more than a backstop against increased emissions relative to today's engines, with appropriate considerations for measurement capability and variability. (DTNA)

Agency Response: The formaldehyde requirement was the result of a typographical error in the draft regulatory language. The language has since been corrected to reflect no change to the formaldehyde emission requirements. The correction was noticed for 15-day comment.

Truck and Bus Regulation

31. Comment: As the regulatory Compliance officer for our company, I wanted to address the issue of financial responsibility that is incurred to all companies that do not have the luxury of a grant. We have met or exceeded the requirements of the Bus and Truck regulations. This has been an expensive process. Finding ways to help support these costs are extremely hard because we cannot pass the costs associated along to the downstream customer. There costs are essentially an investment that makes profitability a longer termed goal. Repowering existing

[5] It similarly would not be warranted to provide incentive funding to engines certified to an FEL below 0.2 g/bhp-hr, because, as discussed in the previous footnote, unlike engines certified to the proposed optional NOx standards, they would provide no net NOx emission reduction benefit.

vehicles that comply with the 2010 requirements at this time appears to be unnecessary.

We address the proposal to usher in new generations of lower emitting trucks at this time. If standards are changed or made too expensive to adhere to, than this is not doing the environment any good because businesses will not comply. Fines would be incurred but the air quality would diminish. The act of putting these safeguards in place is to ensure that air quality improves. Making it to hard or too expensive just ensures that our air quality goals will not be met.

Please accept this letter as intent to leave the emissions requirements as they are. We have been given guidelines to comply until the year 2025 and if you want the industry to trust the decisions of the EPA and the ARB in the future with more conservative measures, than you should stand by your initial consultation to maintain your fleets efficiency to emission levels until the year 2025. (GPS)

32. Comment: Our concern however with this proposal is that the optional standard today becomes tomorrow's requirement. This concern is not unfounded as ARB also has a history of adopting regulatory schemes that are disruptive to those that own and use older technologies that met state and federal standards when they were originally purchased. The Off-Road Equipment and Truck and Bus Regulations are examples of this. Older construction equipment and trucks that were purchased in good-faith now have a limited life in California with replacement costs in the billions of dollars borne on the backs of thousands of contractors still trying to survive economically. The loss of equity companies experience due to the loss of value (of functioning and paid for equipment) for regulatory driven forced obsolescence affects the ability of California contractors to compete on a level playing field. These California companies are no longer able to secure the same level of bonding they could prior to the loss of equipment value. The loss of bonding capacity provides an upper hand to large, out-of-state companies that can consolidate compliant equipment in California, without the need to turn over its national fleet, having no impact to their ability to bond a job. Future new In-Use requirements for today's optional standards will further exacerbate this downward cycle of loss of equipment value and bonding capacity and place additional hardships on California companies and their employees. (CIAQC)

33. Comment: Although the words 'optional' or 'voluntary' were mentioned many times as cited before, the future of the Truck and Bus Regulation could be amended to make the rule more stringent. KOT's concern is that the rule will be modified with no inference to fleet owners as the costs increase to reach a higher standard and the regulation is mandated.

Relating to the years 2004 and 2006 the proposal stated (several times) that fleets should attain 100 percent compliance with the 2010 MY standard in 2023; fleet compliance would therefore be complete. With the adoption of the regulation in 2008 fleet owners have been developing strategies to comply with the regulation. Secondly obtaining this goal, millions of dollars will have been spent on diesel particulate filters and the purchase of new vehicles to be compliant by 2023. (KOT) (BHOSI)

34. Comment: NCPS is concerned that staff will modify the Truck and Bus regulation in the future to mandate fleet owners to move to the lower NOx emission standards. Between 2004 and 2006 in the development of the Truck and Bus regulations, staff stated several times that fleets should achieve 100 percent compliance with the 2010 MY standard the fleet compliance would be complete. Since the adoption of the Truck and Bus regulation in 2008, fleet owners have been developing strategies to comply with the requirement of the Truck and Bus regulations. These strategies have required millions of dollars to be invested in diesel particulate filters and the purchase of new vehicles. NCPS is requesting that the Board provide assurances to fleet owners that the Truck and Bus regulation will not be amended to mandate the new optional low NOx emission standards in the future. (NCPS)

35. Comment: The concerns which arise from this voluntary approach involve the potential for mandatory standards. While ATA applauds the Board for aligning with the federal Phase 1 GHG program, avoiding the creation of California-only standards should be a priority. Creating a California-only emissions standards will not only result in higher overall manufacturing costs which will be passed along to new truck purchasers, but will also result in the California new truck market being the most expensive in the nation.

The development of further in-use emission rules should also be avoided. As the Board is well aware, implementation of the current Truck and Bus rule, with its carve-outs, exemptions, amendments, and limited enforcement, has created a chaotic environment for trucking companies operating in California. The in-use rule has forced the industry to spend billions of dollars to replace trucks earlier than normal and threatens the livelihood of many of the state's small trucking companies. Alternative approaches, such as incentive programs, should be designed to avoid, not support, the development of more onerous statewide mandates. (ATA)

36. Comment: In the staff report, they utilize the word 'optional' and 'voluntary' and state that this is an optional and voluntary program. We are concerned that they will modify the bus and truck regulation in the future to mandate these optional low NOx standards. All we're asking is that there would be a natural flow of these engines into our system over a period of time. We've developed these strategies, and we want to make sure that we're not mandated to change them all at one time. (NCPS)

37. Comment: We were told by staff once we got to 2010, we were done with our fleets. We spent a lot of money to get to the 2010 standards with our fleet right now. We were told during the truck and bus regulation building a lot of it was going to be optional or voluntary. And then it was mandated we had to reach that 2010 standard. Basically, we're looking for the same assurance from staff and from the Board that this won't be changed in the future. (BHOSI)

Agency Response to Comments 31-37: No change was made in response to these comments. ARB is not planning on amending the Truck and Bus regulation to require optional NOx engines. If ARB does propose mandatory lower NOx emission standards for original equipment manufacturers in the future, any associated amendments to the

Truck and Bus rule would undergo the normal regulatory development process, including evaluating costs and benefits and soliciting stakeholder input through workshops and public/private meetings.

Compliance Costs

38. Comment: The proposal states that the associated cost of engine manufacturing is dependent on emission levels of the base engine. The cost will range anywhere from $0-$6,000 per engine and it was mentioned this cost is minimal. As a matter of fact, when the 2010 MY on-road engine standards were changed to the current standard, stakeholders experienced a 45 percent increase in the cost of new trucks. This increase was the result of engine emission changes to the current emission standard of 0.2 g/bhp-hr NOx. Also, as a consequence of the NOx Emission levels, some on-road engine manufacturers have stopped producing on-road engines and or just got out of the market. Other manufacturers are using credits to remain in the marketplace for now. What will be the future cost to reduce emission levels to an additional 0.18 g/bhp-hr? The Staff Report did not mention the cost of mark-up by the manufactures; so to mention that the proposed regulations will have minimal economic impact on business due to the voluntary option of the proposed regulation is disingenuous. (KOT, BHOSI)

39. Comment: The degree of modification and associated cost will depend on the emission levels of the base engine with an estimated range of $0-$6,000 per engine. The problem with the cost analysis is that staff calculated the cost of engine manufacturing and did not include the engine manufacturers' mark-up. The engines will be sold to a chassis manufacturer and they will have additional cost plus their mark-up. Staff did not calculate the total cost to the end-user. (NCPS)

40. Comment: As engine manufacturers participate in the Optional Low NOx Standards, the cost of engines will increase and the cost of new vehicles will increase. These activities will increase businesses' cost and will have an economic impact on businesses' activities. (NCPS)

41. Comment: I'd like to point out about the cost analysis on this program. They say it's minimal cost and has no economic impact on the economy. Well, I read the EMA's comments, and they did generate a lot of barriers that's going to generate additional cost. So what we're requesting that staff work with the EMA and develop what is the true cost of this regulation. And then one of the things that they did not include is all of these costs are going to be transmitted to the chassis manufacturers and the chassis manufacturers to us. (NCPS)

42. Comment: The Engine Manufacturers Association was talking about don't think staff really considered the research and development cost for the new engines, because it's not just the engines. It's the aftermarket stuff like the DPF's and the SCR systems. They don't create those. Those are created by other manufacturers. So they're going to have to work with them to make everything work. So we'd like to know that the cost is there. (BHOSI)

Agency Response to Comments 38-42: No change was made in response to these comments. The Staff Report evaluates the additional total costs to develop engines certified to the optional standards, including costs of aftertreatment, whether supplied by the OEM or by a chassis manufacturer as an approved aftermarket component. The optional standards would only impose costs on those engine manufacturers that elected to certify engines to the optional standards. Furthermore, chassis manufacturers and fleets are not required to purchase such engines. ARB cannot control engine manufacturers' pricing policies in the retail market, but it is likely they would pass on any associated costs to end users.

Warranty

43. Comment: Delaying introducing a longer engine warranty will hurt introduction of low NOx-certified engines. The warranty issue serves as a surrogate for the underlying issue regarding the importance of engine reliability for the trucking industry. Low NOx-certified engine technology will need to prove reliable to find wide acceptance among fleet operators as upfront incentives may not adequately mitigate motor carrier costs (real or perceived) associated with maintenance and downtime. (CTA)

Agency Response: To encourage participation in the optional NOx standard program, staff decided to forgo requiring extended warranty coverage to provide engine manufacturers more time to focus on NOx emission reduction technologies. However, for any future mandatory standards, it is foreseeable that staff would propose coverage beyond 100,000 miles.

2010 Standards

44. Comment: During the 2010 MY standard rollout, some engine manufacturers stopped producing on-road engines because it was not technically feasible to obtain the 2010 MY standard and it was a sizeable increase in cost. These engine manufacturers have not returned to market as of 2013. Another engine manufacturer is using the ABT program to certify on-road engines using banked credits. After the 2010 MY standard rollout, end-users observed a reduction in options for on-road engines because manufacturers produced fewer types of engines. (NCPS)

Agency Response: No change was made in response to this comment. Staff acknowledges the challenges manufacturers faced in complying with the 2010 standard. Manufacturers can elect to certify to any of the optional NOx engine emission standards, since it is an optional standard, or instead certify to the existing mandatory 0.2 g/bhp-hr NOx standard.

45. Comment: The proposal that was presented in March 2013 by staff discusses the need to "harmonize" with the federal government's emission standards in order to have more nationwide consistency. However, California may see a need to exercise its authority to make California regulations for 'medium and heavy-duty' diesel vehicles more stringent than the U.S. EPA's standards. In-so-far-as the Staff wanting to harmonize with the federal standard; it should be noted that

the current 2010 MY Certified Standard for NOx [e.g., Detroit Diesel is certified to 0.09 g/bhp-hr] exceeds Federal Standard of 0.1 g/bhp-hr which begins in 2014. (BHOSI, KOT)

Agency Response: No change was made in response to this comment. The federal and state mandatory NOx standards are currently harmonized at 0.2 g/bhp-hr. The optional NOx standard will be effective in California only.

Summary of Comments on Amendments to the Idling ATCM

Expanding Responsibility to Vehicle Owners and Motor Carriers

1. Comment: As to the Idling ATCM putting the onus on vehicle owners and motor carriers, KOT agrees that the current 'idling' regulation has helped greatly in reducing emissions. And KOT has instituted a training program for all employees which include idling of vehicles. We also have documents in the vehicle and placed stickers on the vehicles that jog the memory of what the law is. KOT does not put up with violations of the idling policy or speeding in company vehicles; KOT does not pay for speeding tickets. Therefore KOT believes that the 'idling policy' should have the same end result as a speeding ticket. (KOT)

2. Comment: Staff is proposing amendments to the existing Idling ATCM by expanding the current responsibility to the vehicle owners and motor carriers. NCPS agrees that limiting the idling of vehicles is a great solution in reducing emissions. NCPS has a training program for all employees, which includes the idling policy. In addition, NCPS has installed a sticker on the dash of each vehicle to remind drivers of the idling policy. NCPS does not condone violations of the idling policy or speeding in company vehicles. NCPS does not pay drivers' speeding tickets. NCPS believes the idling violation should be treated like a speeding violation. (NCPS)

3. Comment: As to the Idling ATCM putting the onus on vehicle owners and motor carriers, BHI agrees that the current 'idling' regulation has helped greatly in reducing emissions. And BHI has instituted a program for reduction of idling of vehicles. However, BHI believes the responsibility of obeying the policy should also be the drivers' responsibility. As an example of how wrong fining the company would be: If you rented a car and ran through several photo enforced red lights, they would send the tickets to the rental agency. Should they be responsible for the fines or should you the person that rented the car be responsible for the fines? (BHI)

4. Comment: When we hire drivers to drive our vehicles, they should be responsible. If they get a ticket for speeding, they're held responsible. They get the ticket. If they get a ticket for running a red light, it comes back to me. I see, because it's on our license plate. I look at the driver and I give it to him. We do not pay their speeding tickets. We don't pay their fines. We shouldn't be held responsible for them not following our idling policies. (BHI)

5. Comment: The proposal to extend the applicability of the Idling ATCM to include owners and motor carriers that dispatch affected vehicles and assign compliance responsibility to them is not sound public policy. Owners and motor carrier dispatchers of commercial trucks have no direct way to control the actions of drivers even when appropriate education and guidance about ATCM idling limitations is provided. There is simply no justification to hold owners and dispatchers liable for exceeding an idling limit in addition to the vehicle driver, nor any likely increase in compliance. A driver that exceeds a speed limit is responsible for their actions, not the owner of the vehicle. There is no difference here. (CIAQC)

Agency Response to Comments 1-5: No change was made in response to these comments. ARB appreciates the commenters' acknowledgment that the existing idling ATCM has resulted in reduced emissions and that vehicle owners and motor carriers should train their drivers on the requirements of the ATCM and ensure that they comply with the regulation. ARB also appreciates those owners and motor carriers that provide training and sleeper cab comfort amenities to their drivers to help them comply with California's idling restrictions. Such actions go a long way in increasing compliance with the regulation. However, ARB also believes that owners and motor carriers who hire drivers should bear some of the responsibility for violations of the Idling ATCM committed in company vehicles, especially in situations where the owner or motor carrier does not provide the needed equipment or other provisions for drivers to avoid idling the engine to provide the driver needed cab comfort during mandatory layover rest periods. As indicated in the agency response to comment number 8 below, enforcement personnel will determine the responsible party when issuing idling citations.

Expanding Responsible Parties Complicates ARB's Enforcement Process

6. Comment: Expanding the number of responsible parties under the idling control measure will require changes to the enforcement process to ensure a fair and reasonable process. In expanding the number of parties responsible for idling violations, as many as three parties may receive a copy of an idling citation. While ATA acknowledges the difficulties the agency is having collecting penalties from unidentified drivers, the administrative process for collecting fines under the proposed amendments will create new complexities. For example, truck leasing companies and motor carriers who utilize owner-operators – companies or carriers whose names are listed on the truck cab door – may receive copies of citations for operators who are leasing vehicles and operating outside the direct control of the company or carrier. In some cases, these leases (and business relationships) may expire before the lessor or carrier has been notified of the violation.

Resolving citations may require the coordination of as many as four parties – CARB enforcement, the vehicle owner, the motor carrier, and the unidentified driver. A streamlined process which removes parties who are not responsible for the citation, such as a leasing company or a motor carrier that provided idle reduction technology which was not used, needs to be established. Modifications to the enforcement process to ensure that all affected parties have the ability to resolve a citation in a fair and reasonable manner needs to accompany the proposed amendments. (ATA)

7. Comment: CTA would like to echo the American Trucking Associations' comments on the proposed anti-idling amendments. While CTA supports compliance with CARB rules, we are concerned that ARB's proposed amendments may add unnecessary levels of complexity to the idling enforcement process. We are happy to see that initial concepts which would have held facilities responsible for idling on their property have been removed, but would suggest that some additional amendments may need to be considered to accomplish CARB staff goals without causing more unnecessary confusion and wasting of extremely limited CARB enforcement resources. (CTA)

Agency Response to Comments 6-7 No change was made in response to these comments. ARB anticipates that its enforcement staff will investigate open citations on a case-by-case basis and depending on the information gathered in each specific case, will determine which party is ultimately responsible for settling the citation. This approach could result in ARB finding one or more parties responsible for violation of the rule. However, even if ARB determines that more than one party is responsible for a violation, it would close the citation once the citation has been settled by any one of those parties.

8. Comment: We oppose the extension of compliance responsibility in the proposed amendments to the Idling ATCM. We understand and appreciate that CARB's inspectors have had difficulty where they have been unable to find the drivers of vehicles to collect on citations issued. However, this strikes us as an issue likely much more applicable to fleets and vehicles outside of our industry. Our industry operates on a daily delivery schedule with drivers often delivering multiple loads to job sites each day. As a result, our drivers are not engaged in overnighting activities where the Driver may not be locatable to be issued the citation. (CalCIMA)

Agency Response: The Agency Response to Comments 1-5, 6 and 7 above are incorporated by reference herein. As discussed in the Staff Report, the responsibility for compliance with the idling requirements primarily falls on the driver and the citation will be issued to the driver if the driver is present at the time of the violation. However, if the driver fails to settle the citation, then ARB will hold the owner and/or motor carrier responsible to settle the citation because the violation took place in the company's vehicle.

9. Comment: We are also concerned that by removing the driver's obligation, CARB could harm compliance with the Idling ATCM. The drivers who operate in an unsupervised fashion upon the roads are in the end the only ones who have full control of whether they comply with the rule. Indeed CARB staff in the ISOR note no problems with having citations paid where the driver is locatable and issued the citation and instead defines the problem attempting to be addressed by the rule change as those situations where the driver is unavailable to be issued the citation. We are therefore very concerned that the fix proposed applies to all citations not simply those where the driver was unavailable to receive the citation. Vehicle owners and Motor Carriers lack the ability and authority to change the driver's behavior in the field as they are beyond the management's direct control. (CalCIMA)

Agency Response: No change was made in response to these comments. The proposed amendments do not remove the driver's obligation to comply with the Idling ATCM but rather improve compliance with the ATCM by having the owner and motor carrier share some of the compliance responsibility. See also agency responses to comments 1 through 5, and 8.

10. Comment: We disagree that the rule is similar to other extended compliance obligation provisions included in other rules. In the truck and bus rule liability occurs for not hiring a truck that meets that rules standards or failing to modify trucks you own. In the Tractor Trailer GHG Rule it is for brokers that fail to ensure trucks have been modified or meet standards and in the Transport Refrigeration Rule a violation can occur for not specifying a compliant truck within your contract. In all of these cases the party that has a compliance obligation can control whether they incur a violation directly by either their contract language or by verifying the physical modifications year model of hired vehicles. In this proposal, third parties have compliance liability for items beyond their control, the behavior of the driver. The Board should not create violations for activities beyond a company's control. (CalCIMA)

Agency Response: No change was made in response to these comments. The Agency response to comments 5 through 9 are incorporated by reference herein. ARB disagrees with the commenter's statement that the provisions of the amendments that extend the applicability of the idling ATCM to vehicle owners and motor carriers differ from the cited compliance provisions of ARB's Truck and Bus rule, the Tractor-Trailer GHG regulation or the Transport Refrigeration Unit regulation. Both the cited provisions and the amendments to the idling ATCM regulate entities that own, operate, or use trucks or regulated equipment. ARB also disagrees with the commenter's statement that vehicle owners and motor carriers have no ability to require drivers to comply with the provisions of the idling ATCM. As commenters KOT, NCPS and BHI note above in comments 1 through 3, respectively, vehicle owners have instituted training programs for their employees regarding the idling ATCM and placed documents and stickers reminding drivers of the idling ATCM requirements. Furthermore, ARB believes that vehicle owners and motor carriers do in fact have sufficient leverage to require drivers to comply with the idling ATCM, similar to the leverage they possess to require drivers to comply with other laws and company policies.

11. Comment: We think that enforcement of the idling regulation is very important to public health and that it's appropriate to hold the owners as well as the drivers responsible. So we urge your adoption of that. (CCA)

Agency Response: ARB appreciates the support for the proposed amendments.

Summary of Comments on the Heavy-Duty Hybrid-Electric Vehicles Certification Procedures

Support

1. Comment: EMA generally supports ARB's proposed amendments to its Hybrid Certification Procedures. Specifically, we support expanding the applicability of those procedures to all heavy-duty vehicles above 14,000 pounds Gross Vehicle Weight Rating. Additionally, EMA supports expanding the procedures to other types of hybrid vehicles such hydraulic, turbine, flywheel and fuel cell. EMA further appreciates that the amended procedures would provide more information about how to certify vehicles with energy storage devices such as electromechanical flywheels and capacitors. Finally, EMA supports amending the procedures to reference the May 2012 draft of the SAE International Recommended Practice for Measuring Fuel Economy and Emissions of Hybrid-Electric and Conventional Heavy-Duty Vehicles (J2711). (EMA)

Agency Response: ARB appreciates the comments.

2. Comment: As a manufacturer of planetary fully-automatic transmissions and hybrid systems for medium- (MD) and heavy-duty (HD) on-road vehicles, Allison understands the need for and supports the goals for MD and HD vehicles that fully comply with ARB's Heavy Duty GHG Phase 1 and, specifically the Notice of Public Hearing To Consider The Proposed Greenhouse Gas (GHG) Regulations for MD and HD 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 rulemaking requirements. Allison welcomes the opportunity to comment on the draft documents of this proposed regulation and appreciates the ongoing exchange of dialogue between ARB and Allison. We also commend ARB for harmonizing with MD/HD emissions requirements beginning in 2014 enacted by the U.S. Environmental Protection Agency (U.S. EPA). (ATI)

Agency Response: ARB appreciates the comments.

Terminology

3. Comment: Throughout this document (including the title), the document uses the term Hybrid-Electric Vehicle (HEV) to describe hybrid vehicles generically. The term Hybrid Vehicle should be used to describe the general class, and the term Hybrid-Electric Vehicle should only be used to describe specific vehicles whose motive power and storage systems are in fact, electric. (LH)

Agency Response: Staff addressed this comment by adding the phrase "and other hybrid" into the title of the proposed amendments to the interim test procedures, and also clarified in the applicability section of the test procedures that "[r]equirements specified for hybrid-electric vehicles also apply to other hybrid vehicles, as appropriate." These modifications were noticed for 15-day comment.

4. Comment: This document is described and titled as Interim. It has been in place for 11 years and will remain in place following this amendment. This is not an interim measure. (LH)

Agency Response: It is staff's intent that the amended test procedures will remain voluntary, interim procedures because alternative testing methodologies such as powerpack and powertrain, as well as the designs of heavy-duty hybrid vehicles for different vocational applications are still developing and/or not yet widely commercialized. Staff believes that it is prudent to continue to consider these test procedures as interim, until both hybrid technologies and testing methods are more developed. However, staff envisions that further revisions to these procedures will likely be included as part of the Phase 2 GHG Program currently being developed, which may have a requirement for mandatory certification.

5. Comment: This procedure is also described as optional for the manufacturer of heavy-duty hybrid vehicles yet it offers no alternative procedure. What is the other option for certification? This appears to be a mandatory procedure, and fails to address the actual cost of ARB certification and testing to the manufacturer. (LH)

Agency Response: Currently, a manufacturer of heavy-duty hybrid vehicles could sell heavy-duty hybrid vehicles in California without having to use the interim certification procedures to certify the vehicles, as long as the engines used in such vehicles are certified using the test procedures for conventionally fueled Otto-cycle or diesel fueled heavy-duty engines. Alternatively, a manufacturer could elect to use the interim certification procedures, which prescribe testing of a complete heavy-duty vehicle on a chassis dynamometer. In addition to the process described in the interim certification procedures, alternatives that are equivalent to the interim procedures for certifying heavy-duty hybrid vehicles are allowed and will be considered by the Executive Officer on a case-by-case basis.

Definitions

6. Comment: The "baseline vehicle" definition should be clarified to ensure that the Executive Officer selects a vehicle for the baseline substantially similar to a vehicle a customer would normally buy if the customer were not selecting a hybrid vehicle such that it would be configured with the routine engine, transmission, and axle combination that would occur in most instances of a conventional vehicle purchase. (ATI)

Agency Response: The Heavy-Duty Hybrid-Electric Vehicles Certification Procedures specify that the Executive Officer shall select a baseline vehicle that is representative of a conventional vehicle for chassis dynamometer testing. There is no need to further clarify the definition of "baseline vehicle" because the definition sufficiently provides the criteria by which the Executive Officer will select a representative baseline vehicle for any specific hybrid-electric vehicle and/or any groups of vehicles or vocations.

Certification Requirements

7. Comment: The interim procedures should be amended to provide more guidance to manufacturers on how to certify and test hydraulic hybrid vehicles. (LH)

Agency Response: No change was made in response to this comment. The interim procedures provide detailed instructions for certifying heavy-duty hybrid-electric vehicles, since this technology is the most mature and technical information for testing such vehicles is available. However, many of the provisions in the interim certification procedures can be used for other types of hybrid vehicles. If there are specific testing needs due to the design and/or type of a specific hybrid vehicle, the interim procedures provide for a process where a specific testing protocol can be considered by the Executive Officer on a case-by-case basis.

Chassis Dynamometer Test Preparations

8. Comment: The current wording in the “test site” section appears to imply that the fan would be directed perpendicular to the side of the bus to help with cooling; however this direct airflow would cause artificial cooling of the engine compartment. The fan’s purpose is to simulate airflow while the vehicle is travelling, such that the fan should blow air along the side of the bus in parallel with the sides of the bus, not directly at the side of the bus. The wording should describe that the airflow of the fans should mimic airflow that would be observed while the vehicle is travelling down the road such that the engine compartment is not cooled to a level that is not realistic to typical operating conditions. (ATI)

Agency Response: Staff believes that sufficient instructions are included in the proposed amendments to address this comment, including references to test conditions as specified in 40 CFR, Part 86 and Part 1065. To additionally clarify this requirement, staff has amended the language of this section to specify that a road speed-modulated cooling fan shall direct cooling air to the front of the vehicle (i.e., in a direction parallel to the sides of the vehicle) to maintain the engine operating temperature as specified by the manufacturer during testing, and shall be operated only when the vehicle is in operation and shall be switched off for all key off dwell periods.

9. Allison also suggests adding the instruction that brake cooling fans should be shut off during the dwell (temperature conditioning) phase of the test. (ATI)

Agency Response: Staff agrees with the comments on brake cooling and changed the regulatory proposal in response. Staff noticed the following change to section D.1.1 for 15-day comment: "Fans for brake cooling may be utilized during testing and shall be switched off for all key off dwell periods."

10. Comment: The battery connection instructions in the “test instrumentation” section are not implementable because Allison hybrid systems have multiple connection points for the battery where several would need to be accessed simultaneously for accurate measurements. Allison recommends that this

description should be amended to state that “multiple meters must be used if there are multiple connections to the Energy Storage Systems”. (ATI)

Agency Response: Staff agrees with the comments and changed the regulatory proposal in response. Staff noticed the following change to section D.1.6 for 15-day comment: "Alternative methods for battery connections to the hybrid system shall be considered by the Executive Officer on a case-by-case basis."

Chassis Dynamometer Test Procedure

11. Comment: Section 2, Chassis Dynamometer Test Procedure, of the proposed amendments to the Hybrid Certification Procedures includes paragraph 2.2.2 requiring at least one preliminary run of the desired test cycles. That requirement fails to recognize the preconditioning that hybrid system components and engine aftertreatment systems need to achieve consistent results that reflect real world operation. Accordingly, we recommend that CARB modify paragraph 2.2.2 as follows:

The test vehicle shall be operated through at least one preliminary run of the desired test cycles to familiarize the driver with vehicle operation, precondition the hybrid system components and engine aftertreatment systems, and verify function of laboratory instrumentation. (EMA)

Agency Response: Staff agrees with the comments and changed the regulatory proposal in response. Staff noticed the suggested modifications to section D.2.2.2 for 15-day comment.

12. Comment: The driving cycles provided by ARB in the draft mirror city transit bus usage but are less reflective of certain vocational applications such as delivery vehicle or utility bucket truck. Providing options for using other test cycles that reflect other typical “vocational truck/vehicle” usage would capture more accurate and “real world” data reflective of fuel usage and emissions for that vocation. (ATI)

Agency Response: No change was made in response to this comment. The proposed Orange County bus cycle was specified in the proposed amendments since it closely reflects the duty cycles of many vocational operations. However, the proposed amendments already have a provision that allows an applicant to request for the use of a different vocation-specific drive cycle to substitute for one of the two required cycles.

13. Comment: There is no “preparation cycle” listed or described to be implemented before the test begins (other than coast-down). For adaptive purposes, describing those “preparation cycle” protocols would establish uniformity in the test setup by the dynamometer technicians and would also conserve, consolidate, and even template the time required for set-up of the test. (ATI)

Agency Response: No change was made in response to this comment. The proposed amendments section D.1.4 already provides instructions for vehicle preparation and preconditioning via reference. Vehicle preparation is described in

40 CFR sections 86.1231-90, as referenced. Vehicle preconditioning is described in 40 CFR sections 86.1232-96, as referenced.

14. Comment: Allison's past testing of MD/HD systems yielded that it took more than three "OCTA-cycle" test runs in order to get the dynamometer fully warmed-up and the emissions/fuel economy data stream stabilized. Allison recommends instructions to include that steps should be taken to ensure that the dynamometer is fully warmed-up and data streams are stabilized before the start of the test is commenced. (ATI)

Agency Response: No change was made in response to this comment. The proposed amendments to section D.2.5.1 contain the requirement that the dynamometer be brought to operating temperature and provides guidance for doing so.

B. 15-DAY COMMENTS AND AGENCY RESPONSES

On May 27, 2014, a "Notice of Public Availability of Modified Text" was issued for a supplemental 15-day comment period. One written comment was received during the 15-day comment period. Listed below is the organization and individual that provided comments, specifically pertaining to the Idling ATCM:

Commenter	Affiliation
Garabedian, Harold (6/11/14)	Energy and Environmental Analytics (EEA)

1. Comment: The proposed regulations would exempt ambulances from the idle control regulations while in the course of providing services for which the vehicle is designed. No definition is included for the term "providing services".

Section 2485 would benefit from a definition of 'providing service', and a definition that excluded ambulance idling while on hospital campuses advances the objectives of the ATCM. Hospital campuses have some unique considerations when developing these standards of performance. Ambulances idling at these locations are releasing their toxic contaminants in close proximity to sensitive individuals and there are cases where engine exhaust becomes entrained into the buildings air intake systems or infiltrates the building by virtue of the constant opening and closing of emergency room doors leading to a build-up on contaminants within a building and a greater exposure to these unhealthful contaminants. The alternative identified results in fewer emissions (both toxic and greenhouse gases), less cost overall and more efficient use of energy. (EEA)

Agency Response: No change was made in response to this comment since the comment is outside the scope of the proposed amendments. However, the provisions to exempt authorized emergency vehicles including ambulances were explicitly stated in title 13, CCR, section 2485 simply to clarify the applicability of the requirements of the regulation since California Vehicle Code Sections 27156.2 and

27156.3 already exempt publically owned authorized emergency vehicles used by emergency medical technician paramedics and ambulances used by private entities under contract with a public agency from California's motor vehicle emission control device requirements.

In other words, ambulances would be exempt from the Idling ATCM, regardless of the language in the ATCM. Ambulances could only be regulated if there were a statutory change by the California Legislature to the vehicle code.

On July 17, 2014, a second "Notice of Public Availability of Modified Text" was issued for a supplemental 15-day comment period. No written comments were received during the second 15-day comment period.

V. Peer Review

Health and Safety Code Section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including ARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process. Here, ARB determined that the rulemaking at issue does not contain a scientific basis or scientific portion subject to peer review, and thus no peer review as set forth in Section 57004 was or needed to be performed.