State of California
AIR RESOURCES BOARD

MODIFICATIONS TO THE LEV III CRITERIA POLLUTANT REQUIREMENTS FOR LIGHT- AND MEDIUM-DUTY VEHICLES, THE HYBRID ELECTRIC VEHICLE TEST PROCEDURES, AND THE HEAVY-DUTY OTTO-CYCLE AND HEAVY-DUTY DIESEL TEST PROCEDURES

Resolution 14-34

October 23, 2014

Agenda Item No.: 14-8-1

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (ARB or Board) to adopt standards, rules and regulations and to do such acts as may be necessary for the proper execution of the powers and duties granted to and imposed upon the Board by law;

WHEREAS, in section 43000 of the Health and Safety Code, the Legislature has declared that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State, and sections 39002 and 39003 of the Health and Safety Code charge the Board with the responsibility of air pollution control from motor vehicles;

WHEREAS, sections 43013, 43101, and 43104 of the Health and Safety Code authorizes the Board to adopt emission standards and test procedures to control air pollution caused by motor vehicles;

WHEREAS, section 43018(a) of the Health and Safety Code directs the Board to endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of State ambient air quality standards at the earliest practicable date;

WHEREAS, section 43018(c) of the Health and Safety Code provides that in carrying out section 43018, the Board shall adopt standards and regulations that will result in the most cost-effective combination of control measures on all classes of motor vehicles and motor vehicle fuel, including but not limited to reductions in motor vehicle exhaust and evaporative emissions, and reductions in in-use vehicular emissions through durability, performance improvements, and specification of vehicular fuel composition;

WHEREAS, section 39667 of the Health and Safety Code directs the Board to consider revisions to ARB's emissions standards for vehicular sources to achieve the maximum possible reduction in public exposure to substances that the Board has identified as toxic air contaminants pursuant to section 39662 of the Health and Safety Code; such

regulations affecting new motor vehicles are to be based on the most advanced technology feasible for the model-year and may include, but are not limited to, the required installation of vehicular control measures on new motor vehicles;

WHEREAS, the Board's California State Implementation Plan (SIP) for ozone establishes the State strategy for attaining the ambient air quality standard for ozone in all areas of the State as required by federal law; as part of the mobile source element developed by ARB, the SIP relies on the California Low-Emission Vehicle (LEV) program to provide significant reductions of ozone precursor pollutant emissions from passenger cars and light-duty trucks; and to reach the 1997 ozone standard by the attainment date in 2023, oxides of nitrogen (NOx) emissions in the greater Los Angeles region must be reduced by two-thirds, even after considering all of the regulations in place today with the most significant share of needed emission reductions coming from long-term advanced clean air technologies;

WHEREAS, in a January 2012 rulemaking, the Board approved the "LEV III" amendments to the California Low-Emission Vehicle (LEV) regulations, which include both criteria pollutant regulations and second generation greenhouse gas regulations, as part of the Advanced Clean Cars program;

WHEREAS, the "LEV III" amendments to the LEV III criteria pollutant regulations include two primary elements: (1) tiers of exhaust emission standards for increasingly more stringent categories of low-emission light- and medium-duty vehicles; and (2) a mechanism requiring each manufacturer to phase-in a progressively cleaner mix of vehicles from year to year with the option of credit trading;

WHEREAS, the LEV III criteria pollutant regulations are contained primarily in title 13, California Code of Regulations (Cal. Code Regs.,) section 1961.2, which incorporates by reference the "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" and the "California Non-Methane Organic Gas Test Procedures"; section 1956.8, which incorporates by reference the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles" and the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles"; section 1976, which incorporates by reference the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles"; and section 1978 which incorporates by reference the "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles";

WHEREAS, under the LEV III regulations there are seven low-emission vehicle categories to which a passenger car and light-duty truck are certified: Low-Emission Vehicle 160 (LEV160), Ultra-Low-Emission Vehicle 125 (ULEV125), Ultra-Low-Emission Vehicle 70 (ULEV70), Ultra-Low-Emission Vehicle 50 (ULEV50), Super-Ultra-Low-

Emission Vehicle 30 (SULEV30), Super-Ultra-Low-Emission Vehicle 20 (SULEV20), and Zero-Emission Vehicle (ZEV);

WHEREAS, under the LEV III regulations there are seven low-emission vehicle categories to which a medium-duty vehicle of 8,501 – 10,000 pounds gross vehicle weight rating (GVWR) are certified: LEV395, ULEV340, ULEV250, ULEV200, SULEV170, SULEV150, and ZEV;

WHEREAS, under the LEV III regulations there are seven low-emission vehicle categories to which a medium-duty vehicle of 10,001 – 14,000 pounds GVWR are certified: LEV630, ULEV570, ULEV400, ULEV270, SULEV230, SULEV200, and ZEV;

WHEREAS, the LEV III regulations include combined standards for non-methane organic gas (NMOG) emissions and oxides of nitrogen (NOx) emissions and establish fleet average NMOG+NOx requirements to reduce emissions from new passenger cars and light-duty trucks;

WHEREAS, the full useful life durability requirement for LEV III vehicles is 150,000 miles;

WHEREAS, the LEV III regulations establish supplemental federal test procedure (SFTP) standards for passenger cars, light-duty trucks, and medium-duty vehicles, which account for more aggressive real-world driving;

WHEREAS, after the adoption of the LEV III program, the U.S. Environmental Protection Agency (U.S. EPA) finalized the federal Tier 3 program designed to reduce criteria pollutants from light-duty vehicles from model years 2017 through 2025;

WHEREAS, the Tier 3 program essentially mirrors California's LEV III program in both structure and requirements and was developed in a cooperative effort with ARB;

WHEREAS, Tier 3 also restructures and updates the exhaust and evaporative emission test procedures in the Code of Federal Regulations (CFR), which are extensively referenced by California's test procedures to assure that manufacturers can use the same test procedures to certify both their federal and California vehicles;

WHEREAS, California's certification fuels are designed to represent commercial fuels;

WHEREAS, the current specifications for California E10 (10% ethanol and 90% gasoline) certification gasoline used for testing exhaust and evaporative emissions for LEV III passenger cars, light-duty trucks, medium-duty vehicles, and 2020 and subsequent model heavy-duty gasoline engines and vehicles include a range for the allowable total oxygen content and the ethanol content of 3.3-3.7 weight percent and 9.8-10.2 volume percent, respectively;

WHEREAS, given typical values for gasoline density, meeting the current specifications for oxygen and ethanol content simultaneously is difficult;

WHEREAS, historically, manufacturers have been allowed to certify vehicles using federal certification fuel as an alternative to California certification fuel;

WHEREAS, at the time LEV III was adopted, there was no reasonably equivalent federal certification gasoline to LEV III certification gasoline and no federal E85 (85% ethanol and 15% gasoline) certification fuel;

WHEREAS, currently, all new vehicles sold in California must include a California Environmental Performance Label, as set forth in the "California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles," incorporated by reference in title 13, Cal. Code Regs., section 1965, which provides consumers with a user-friendly scoring system for comparing the relative smog emissions and global warming emissions from comparable vehicles;

WHEREAS, the California Environmental Performance Label cannot be used on LEV III vehicles at this time, because the scoring system does not currently include the LEV III vehicle emission categories;

WHEREAS, all new 2018 and subsequent model year hybrid electric vehicles (HEV) that will be sold in California will be subject to the testing requirements in the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in title 13, Cal. Code Regs., section 1962.2;

WHEREAS, in 2009, these HEV test procedures were modified to address Off-vehicle Charge Capable HEVs (also called "plug-in hybrids" or "PHEVs") before any of these types of vehicles actually existed;

WHEREAS, since 2009, manufacturers have introduced new configurations of PHEVs that are difficult to test using the existing test procedures;

WHEREAS, ARB's regulatory program that involves the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans has been certified by the Secretary for Natural Resources under Public Resources Code section 21080.5 of the California Environmental Quality Act (CEQA; California Code of Regulations, title 14, section 15251(d)), and ARB conducts its CEQA review according to this certified program (California Code of Regulations, title 17, sections 60000-60007);

WHEREAS, staff determined that for the proposed amendments, ARB can rely on the environmental analysis prepared under its certified regulatory program included in the Staff Report released in 2011, and no additional environmental review is required

because the record evidence shows that the amendments will not result in new significant adverse environmental impacts or a substantial increase in severity of previously identified significant adverse impacts, as described in Chapter VII of the Staff Report;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of Chapter 3.5 (commencing with § 11340), part 1, division 3, title 2 of the Government Code;

WHEREAS, in conjunction with a public hearing notice dated September 2, 2014, the staff has proposed a set of amendments to the low-emission vehicle regulations and incorporated documents, as set forth in Attachments A through J hereto, these amendments include the following primary elements:

LEV III Criteria Pollutant Exhaust Emission Regulations

- Incorporation of 40 CFR Part 1066 into the California test procedures;
- Establishment of an oxides of nitrogen (NOx) cap for the medium-duty vehicle LEV395, ULEV340, LEV630, and ULEV570 emission categories and sunset of these categories after the 2021 model year;
- Establishment of LEV III NMOG + NOx 150,000-mile mass emission exhaust standards that apply at high-altitude conditions for the LEV160, ULEV125, ULEV70, ULEV50, SULEV30, and SULEV20 emission categories;
- Establishment of an NMOG+NOx fleet average phase-in for medium-duty LEV III vehicles as an alternative to the current phase-in requirement that relies on percentages of LEV III vehicles being sold each year;
- Establishment of more stringent NMOG+NOx fleet average requirements for small volume manufacturers;
- Elimination of less stringent in-use SFTP NMOG+NOx standards for light-duty vehicles;
- Requirement that LEV II vehicles included in the LEV III SFTP NMOG+NOx fleet average certify to bins and be subject to their bin value at full-useful life;
- For fuel-flexible vehicles, requirement for SFTP testing on all fuels they are designed to use;
- Requirement that medium-duty vehicle test groups that certify to a LEV III NMOG+NOx emission category for federal test procedure (FTP) compliance also certify to the equivalent LEV III emission category for SFTP compliance;
- Alignment with federal SFTP fuel enrichment limitations;
- Establishment of more stringent SFTP particulate matter standards for light-duty vehicles to reflect current test data;
- Clarification that exhaust emission standards that apply at 50 degrees Fahrenheit only apply at 4,000 miles;
- Clarification that Direct Ozone Reduction technology credits can only be used to demonstrate compliance with FTP exhaust emission standards;

- Clarification of how the NMOG+NOx Contribution Factor for off-vehicle charge capable hybrid electric vehicles (also known as plug-in hybrid electric vehicles or PHEVs) should be calculated for LEV II vehicles and for 2018 and subsequent model year vehicles;
- Incorporation of a methodology for calculating fleet average credits and debits for medium-duty vehicles including conversion of credits and debits from the current Vehicle Equivalent Credits to fleet average credits;
- Clarification that, for in-use verification testing, any vehicle tested to demonstrate compliance with FTP particulate matter standards must also be tested to demonstrate compliance with SFTP particulate matter standards;
- Clarification of how to use FTP test values in place of SC03 test values in SFTP particulate matter composite value calculations for medium-duty vehicles;
- Clarification that the non-methane hydrocarbon to NMOG conversion factor for SFTP applies only to gasoline-fueled vehicles;
- Clarification that the LEV III SFTP carbon monoxide standard does not apply to LEV II vehicles or cleaner federal vehicles included in the LEV III SFTP NMOG+NOx fleet average;
- An allowance for ARB to participate in the selection process of the emission data vehicles chosen for LEV III PM testing by a manufacturer; and
- Exemption of a federal Bin 8, Bin 85, or Bin 110 vehicle that is sold in California as an alternative to a LEV II vehicle under the Cleaner Federal Vehicle provisions from 50 degrees Fahrenheit testing requirements.

Evaporative Emission Regulations

- Incorporation of 40 CFR Part 1066 into the California test procedures;
- Adoption of an effective diameter leak standard and test procedure;
- Adoption of evaporative canister bleed test in-use requirements;
- Extension of the carry-over period for LEV II zero-evaporative emission certified vehicles;
- Adoption of evaporative emission testing provisions for vehicles equipped with an auxiliary (non-road) engine;
- Amendments to the alternate phase-in compliance basis; and
- Clarification of the fuel requirements for evaporative emission durability mileage accumulation.

Refueling Emission Regulations

- Expansion of On-board Refueling Vapor Recovery applicability to include complete vehicles over 14,000 lbs. GVWR;
- Allowing federal test fuel for fuel-flexible vehicles; and
- Modifications to the exemption criteria for diesel refueling emission testing.

Reporting Requirements

- Requirement that manufacturers provide additional vehicle-specific information when reporting projected future sales of hydrogen vehicles in California that is used for infrastructure planning purposes; and
- Requirement that manufacturers provide information on projected future sales of battery electric and plug-in hybrid electric vehicles, along with additional technical information, approximately three years prior to certification.

Certification Fuel

- A change in the ethanol limit for LEV III certification gasoline to expand the overlap between the allowable ethanol limit and the allowable total oxygen content;
- An allowance for the use of federal Tier 3 certification gasoline as an alternative to both California LEV III certification gasoline for LEV III passenger cars, light-duty trucks, and medium-duty vehicles and to California certification gasoline for LEV II passenger cars, light-duty trucks, and medium-duty vehicles; and
- An allowance for the use of federal E85 certification fuel as an alternative to California LEV III E85 certification fuel for LEV III passenger cars, light-duty trucks, and medium-duty vehicles.

Non-Methane Organic Gas Test Procedures

- A division of the "Non-Methane Organic Gas Test Procedure" into two separate test procedures to correspond with the incorporation of 40 CFR Part 1066 beginning with the 2017 model year.

Heavy-Duty Engine and Vehicle Test Procedures

- An update of both the Heavy-Duty Otto-Cycle Test Procedures and the Heavy-Duty Diesel Test Procedures to incorporate revisions to the CFR on April 28, 2014;
- A change in the allowable ethanol content for certification gasoline for 2020 and subsequent model year heavy-duty Otto-cycle engines and vehicles to expand the overlap between the allowable ethanol content and total oxygen content and to match the proposed changes to LEV III certification gasoline;
- An allowance for the use of Tier 3 certification gasoline as an alternative to California certification gasoline for heavy-duty Otto-cycle engines and vehicles; and
- An allowance for the use of federal E85 certification fuel as an alternative to California E85 certification fuel for heavy-duty engines and vehicles.

Environmental Performance Label

- Changes to the Environmental Performance Label to include LEV III vehicles.

Hybrid Electric Vehicle Test Procedures

- Incorporation of 40 CFR Part 1066 into the California test procedures;
- Reduction of certification test burden for vehicle manufacturers by the establishment of more efficient emission test procedures for qualifying PHEVs;
- Clarification that the PHEV test procedures continue to require worst case operation mode for emission testing as originally adopted in 2008; and
- Establishment of alternatives to meet the state-of-charge criterion that currently must be satisfied before a PHEV emission test is considered valid.

WHEREAS, the Board finds that:

It is necessary for California to continue to maintain its own motor vehicle program, which includes maintaining strong certification, in-use compliance, and enforcement programs specific to California for the LEV III program to ensure critical emission reductions are achieved;

Allowing 50-state compliance is not in California's best interest as it may create difficulties in implementing and enforcing the LEV III program and ensuring that the full air quality benefits of this program are achieved in California;

The amendments proposed herein to the LEV III regulations are necessary and appropriate to assure that California continues to receive the cleanest light- and medium-duty vehicles available;

Based on the analyses performed for the Staff Report, the proposed amendments to the LEV III regulations are necessary, appropriate, cost-effective, and technologically feasible;

Incorporation of selected features of the Tier 3 program into LEV III will allow manufacturers to produce vehicles that can meet both California and federal emission requirements;

It is not appropriate for California's air quality needs to relax the stringency of the LEV III program solely for the purpose of harmonizing with federal Tier 3 requirements;

Updating the references to the CFR in California's test procedures (including the light- and medium-duty test procedures, the non-methane-organic gas test procedures, the heavy-duty Otto-cycle and heavy-duty diesel test procedures, and the hybrid electric vehicle test procedures) to incorporate the current

versions of the CFR sections will assure that manufacturers can use the same test procedures to certify both their federal and California vehicles;

Revisions to the reporting requirements for hydrogen vehicles, battery electric vehicles, and plug-in electric vehicles are necessary in order to better facilitate California's infrastructure planning for these vehicles; and

Revisions to the hybrid electric vehicle test procedures are needed to facilitate testing of current PHEV configurations.

WHEREAS, the Board further finds that:

The proposed amendments were developed in an open public process, in consultation with affected parties, through numerous public workshops, individual meetings, and other outreach efforts, and these efforts are expected to continue;

No reasonable alternatives to the amendments considered to date, or that have otherwise been identified and brought to the attention of ARB, would be more effective at carrying out the purpose for which the regulation is proposed or would be as effective and less burdensome to affected entities than the proposed regulation;

The proposed amendments are consistent with ARB's environmental justice policies and do not disproportionately impact people of any race, culture, or income; and

The proposed amendments, are covered by the prior environmental analysis prepared to comply with CEQA, and no additional environmental review, or revisions to the prior environmental analysis, are required because substantial evidence in the records shows there are no changes that will result in new significant adverse environmental impacts or a substantial increase in severity of previously identified significant adverse impacts.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves for adoption sections 1900, 1956.8, 1961.2, 1962.2, 1965, 1976, and 1978, title 13, Cal. Code Regs., as set forth in Attachment A, and the proposed amendments to (and adoption of) the documents incorporated by those regulations, as set forth in Attachments B through J hereto, with the modifications set forth in Attachment K hereto.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to make the modified regulatory language in Attachment K, and any additional conforming modifications that are appropriate, available for public comment, with any additional supporting documents and information, for a period of at least 15 days. The Executive Officer shall consider written comments submitted during the public review period and make any further modifications that are appropriate available for public comment for at least 15 days. The Executive Officer may present the regulation to the Board for further

consideration if warranted, and if not, the Executive Officer shall take final action to adopt the regulation after addressing all appropriate modifications.

BE IT FURTHER RESOLVED that if there is a possibility that any modifications to the regulation made available for one or more 15 day public comment periods may affect the conclusion of the environmental analysis, the Executive Officer shall prepare and circulate any additional environmental analysis to the extent required by ARB's regulations at California Code of Regulations, title 17, sections 60000-60007, and prepare written responses to any comments received raising significant environmental issues as necessary, to present to the Board for approval along with the final regulation.

BE IT FURTHER RESOLVED that the Board hereby determines that the regulations adopted herein will not cause California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards.

BE IT FURTHER RESOLVED that the Board hereby finds that separate California emission standards and test procedures are necessary to meet compelling and extraordinary conditions.

BE IT FURTHER RESOLVED that the Board finds that the California emission standards and test procedures as adopted herein will not cause the California requirements to be inconsistent with section 202(a) of the Clean Air Act and raise no new issues affecting previous waiver determinations of the Administrator of the Environmental Protection Agency pursuant to section 209(b) of the Clean Air Act.

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, forward the regulations to the Environmental Protection Agency with a request for a waiver or confirmation that the regulations are within the scope of an existing waiver of federal preemption pursuant to section 209(b) of the Clean Air Act, as appropriate.

I hereby certify that the above is a true and correct copy of Resolution 14-34 as adopted by the Air Resources Board.

Tracy Jensen, Clerk of the Board

Resolution 14-34

October 23, 2014

Identification of Attachments to the Board Resolution

Attachment A: Proposed Modifications to the Regulation for "Modifications to the LEV III Criteria Pollutant Requirements for Light- and Medium-Duty Vehicles, the Hybrid Electric Vehicle Test Procedures, and the Heavy-Duty Otto-Cycle and Heavy-Duty Diesel Test Procedures," California Code of Regulations, title 13, sections 1900, 1956.8, 1961.2, 1962.2, 1965, 1976, and 1978, as set forth in Appendix A to the Initial Statement of Reasons, released September 2, 2014.

Attachment B: Proposed Amendments to the "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 set forth in Appendix B to the Initial Statement of Reasons, released September 2, 2014.

Attachment C: Proposed Amendments to the "California Non-Methane Organic Gas Test Procedures," as set forth in Appendix C to the Initial Statement of Reasons, released September 2, 2014.

Attachment D: Proposed New "California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles," as set forth in Appendix D to the Initial Statement of Reasons, released September 2, 2014.

Attachment E: Proposed Amendments to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as set forth in Appendix E to the Initial Statement of Reasons, released September 2, 2014.

Attachment F: Proposed Amendments to the "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as set forth in Appendix F to the Initial Statement of Reasons, released September 2, 2014.

Attachment G: Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," as set forth in Appendix G to the Initial Statement of Reasons, released September 2, 2014.

Attachment H: Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," as set forth in Appendix H to the Initial Statement of Reasons, released September 2, 2014.

Attachment I: Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as set forth in Appendix I to the Initial Statement of Reasons, released September 2, 2014.

Attachment J: Proposed Amendments to the "California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles," as set forth in Appendix J to the Initial Statement of Reasons, released September 2, 2014.

Attachment K: Staff's Suggested Modifications to the Original Proposal (Distributed at the October 23, 2014 ARB hearing)