

## UPDATED INFORMATIVE DIGEST

### AMENDMENTS 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

**Sections Affected:** Proposed amendments to California Code of Regulations, title 13, sections 1900, 1956.8, 1961.2, 1962.2, 1965, 1976, and 1978; and to the following documents incorporated by reference therein: "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 last amended December 6, 2012; "California Non-Methane Organic Gas Test Procedures," as last amended December 6, 2012; "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as last amended December 6, 2012; "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as last amended March 22, 2012; "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," as last amended October 21, 2014; "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles," as last amended October 21, 2014; "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 last amended May 30, 2014; and "California Environmental Performance Label Specifications for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles," as last amended March 22, 2012.

Proposed adoption of new "California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles," incorporated by reference in title 13, CCR, section 1961.2.

#### **Background**

##### **Overview**

In order to address the need to further reduce vehicle emissions and achieve California's goals of meeting ambient air quality standards and reducing climate changing greenhouse gas emissions (GHG), in January 2012, California developed the Advanced Clean Cars (ACC) program. The ACC program incorporates three elements that combine the control of smog-causing (criteria pollutant) emissions and GHG into a single coordinated package of requirements for model years 2015 through 2025. These three elements include: the Low-Emission Vehicle III (LEV III) regulations, the Zero-Emission Vehicle (ZEV) regulations, and the Clean Fuels Outlet regulations. (Ultimately, the Clean Fuels Outlet regulation update was not finalized by the Board because of the passage of legislation, Assembly Bill 8 (Chap. 401, Stats 2013), which

included dedicated funding for hydrogen fueling infrastructure to support the market launch of hydrogen fuel cell vehicles).

Subsequent to the adoption of the ACC program, the U.S. Environmental Protection Agency (U.S. EPA) finalized the federal Tier 3<sup>1</sup> program designed to reduce criteria pollutants from light-duty vehicles from model year 2017 through 2025. 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. Consistent with ARB's comments on the Tier 3 program as originally proposed by U.S.EPA, staff is proposing to align with a number of features of the Tier 3 program.

Tier 3 also restructures and updates the exhaust and evaporative emission test procedures in the Code of Federal Regulations (CFR). California's test procedures extensively reference the CFR to assure that manufacturers can use the same test procedures to certify both their federal and California vehicles. Accordingly, staff is proposing to update the references to the CFR in California's test procedures.

Staff is also proposing to update the Hybrid Electric Vehicle Test Procedures to accommodate new configurations of plug-in hybrid electric vehicles, modify manufacturer reporting requirements to include additional information on advanced vehicles, revise the California Environmental Performance Label Specifications to accommodate LEV III vehicles, and update the Heavy-Duty Otto-Cycle and Heavy-Duty Diesel Test Procedures to incorporate the currently applicable versions of the CFR.

### **The Board's Regulatory Action:**

At its October 23, 2014 public hearing, the Board approved for adoption the following major modifications to the LEV III program and the Hybrid Electric Vehicle Test Procedures. In addition, a limited number of modifications to the Heavy-Duty Engine and Vehicle test procedures to parallel the changes being proposed to the LEV III regulations were approved. Minor modifications to the regulations are not listed here but are identified in the Staff Report.

The major modifications are identified below.

### **LEV III Criteria Pollutant Exhaust Emission Regulations**

- Incorporate 40 CFR Part 1066 into the California test procedures;
- Establish an oxides of nitrogen (NOx) cap for the medium-duty vehicle LEV395, ULEV340, LEV630, and ULEV570 emission categories and sunset these categories after the 2021 model year;

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<sup>1</sup> Federal Register, Volume 76, No. 129 / Wednesday, July 6, 2011 / Final Rule, Environmental Protection Agency and National Highway Traffic Safety Administration, "Revisions and Additions to Motor Vehicle Fuel Economy Label." <http://www.gpo.gov/fdsys/pkg/FR-2011-07-06/pdf/2011-14291.pdf>

- Establish LEV III non-methane organic gas (NMOG) plus NO<sub>x</sub> 150,000-mile mass emission exhaust standards that apply at high-altitude conditions for the LEV160, ULEV125, ULEV70, ULEV50, SULEV30, and SULEV20 emission categories;
- Establish a NMOG+NO<sub>x</sub> 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;
- Establish more stringent NMOG+NO<sub>x</sub> fleet average requirements for small volume manufacturers;
- Eliminate less stringent in-use supplemental federal test procedure (SFTP) NMOG+NO<sub>x</sub> standards for light-duty vehicles;
- Require LEV II vehicles included in the LEV III SFTP NMOG+NO<sub>x</sub> fleet average to certify to bins and be subject to their bin value at full-useful life;
- For fuel-flexible vehicles, require SFTP testing on all the fuels that they are designed to use;
- Require medium-duty vehicle test groups that certify to a LEV III NMOG+NO<sub>x</sub> emission category for federal test procedure (FTP) compliance to also certify to the equivalent LEV III emission category for SFTP compliance;
- Align with federal SFTP fuel enrichment limitations;
- Establish more stringent SFTP particulate matter standards for light duty vehicles to reflect current test data;
- Clarify that exhaust emission standards that apply at 50 degrees Fahrenheit only apply at 4,000 miles;
- Clarify that Direct Ozone Reduction technology credits can only be used to demonstrate compliance with FTP exhaust emission standards;
- Clarify how the NMOG+NO<sub>x</sub> 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;
- Incorporate 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;
- Clarify 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;
- Clarify how to use FTP test values in place of SC03 test values in SFTP particulate matter composite value calculations for medium-duty vehicles;
- Clarify that the non-methane hydrocarbon to NMOG conversion factor for SFTP applies only to gasoline-fueled vehicles;
- Clarify 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+NO<sub>x</sub> fleet average;
- Allow ARB to participate in the selection process of the emission data vehicles chosen for LEV III PM testing by a manufacturer; and
- Exempt 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**

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

## **Refueling Emission Regulations**

- Expand On-board Refueling Vapor Recovery applicability to include complete vehicles over 14,000 lbs. gross vehicle weight rating (GVWR);
- Allow federal test fuel for fuel-flexible vehicles; and
- Modify the exemption criteria for diesel refueling emission testing.

## **Reporting Requirements**

- Require manufacturers to provide additional vehicle-specific information when reporting projected future sales of hydrogen vehicles in California that is used for infrastructure planning purposes.
- Require manufacturers to 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**

- Change the ethanol limit for LEV III certification gasoline to expand the overlap between the allowable ethanol limit and the allowable total oxygen content;
- Allow 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
- Allow 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**

- Split 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**

- Update both the Heavy-Duty Otto-Cycle Test Procedures and the Heavy-Duty Diesel Test Procedures to incorporate the most current revisions to the CFR;
- Change 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;
- Allow the use of Tier 3 certification gasoline as an alternative to California certification gasoline for heavy-duty Otto-cycle engines and vehicles; and
- Allow the use of federal E85 certification fuel as an alternative to California E85 certification fuel for heavy-duty engines and vehicles.

## **Environmental Performance Label**

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

## **Hybrid Electric Vehicle Test Procedures**

- Incorporate 40 CFR Part 1066 into the California test procedures.
- Reduce certification test burden for vehicle manufacturers by establishing more efficient emission test procedures for qualifying PHEVs.
- Clarify that the PHEV test procedures continue to require worst case operation mode for emission testing as originally adopted in 2008.
- Provide alternatives to meeting the state-of-charge (SOC) criterion that currently must be satisfied before a PHEV emission test is considered valid.

At the hearing, the staff also presented, and the Board approved, modifications to the amendments originally proposed in the Staff Report released on September 2, 2014, in response to comments received after the Staff Report was published, with direction to the Executive Officer to make modifications available for comment. These modifications included a number of changes to the original proposed amendments made in response to comments received after the Staff Report was published and other modifications needed to correct errors in the original proposal. These modifications also included changes to the incorporated sections of the CFR to align with recent updates to the CFR published after the release of the Staff Report, clarifying changes and corrections to the dates of applicability for medium-duty LEV II categories, and Supplemental Federal Test Procedure interim in-use compliance emission standards.

Subsequent to the hearing, staff identified additional conforming modifications in response to public comments received during the 45-day comment period. These post-hearing modifications were incorporated into the text of the proposed regulation, along with the modifications specifically identified at the hearing, and were made available for a 15-day comment period, beginning on December 23, 2014 (First Notice).

Based on the comments received in response to the First Notice, staff identified additional conforming modifications that were made available for a second 15-day comment period, beginning on June 9, 2015 (Second Notice).

Subsequent to the close of the comment period for the Second Notice, staff determined that further modifications were needed to delete references to five documents because these documents did not constitute technical, theoretical, or empirical studies, reports or similar documents that the Board relied upon in approving for adoption the proposed amendments. These modifications were made available for a third 15-day comment period, beginning on August 6, 2015 (Third Notice).

Since none of the 15-day changes affects the stringency of the standards, there is no impact of these changes on the effect of the original proposal.