

December 24, 2018

Mail-Out #MSC 18-23

TO: All Interested Parties

SUBJECT: PUBLIC WORKSHOP TO DISCUSS POTENTIAL CHANGES TO THE HEAVY-DUTY ENGINE AND VEHICLE EMISSION STANDARDS, TEST PROCEDURES, WARRANTY, AND OTHER RELATED HEAVY-DUTY PROGRAMS

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The California Air Resources Board (CARB or Board) invites you to participate in a public workshop to learn more about regulatory concepts to reduce oxides of nitrogen (NOx) emissions from new on-road heavy-duty vehicles with gross vehicle weight rating (GVWR) greater than 10,000 pounds. Staff will discuss various concepts including potential revisions to the heavy-duty emission standards and certification test procedures, certification and warranty requirements, and the Not-to-Exceed Heavy-Duty In-Use Testing program (HDIUT). Staff will also provide an update to the low-NOx demonstration projects currently in progress at Southwest Research Institute (SwRI).

The workshop will be held at the following location and time:

Date: Wednesday, January 23, 2018  
Time: 9:00 a.m. to 1:00 p.m.  
Location: Byron Sher Auditorium, Second Floor  
Cal/EPA Headquarters Building  
1001 "I" Street  
Sacramento, California 95814

The workshop will be available via webcast for those unable to attend in person. The broadcast can be accessed on the day of the workshop at <https://video.calepa.ca.gov/>. During the workshop, participants may submit questions or comments by email at [Auditorium@CalEpa.ca.gov](mailto:Auditorium@CalEpa.ca.gov). Staff's presentation and any associated documents will be posted prior to the workshop on CARB's website at: <https://www.arb.ca.gov/msprog/hdlownox/hdlownox.htm>.

## **Background**

Since 1990, NOx emission standards for heavy-duty on-road engines have become more stringent, decreasing from 6.0 grams per brake horsepower hour (g/bhp-hr) in 1990 to the current 0.20 g/bhp-hr standard in 2010. In addition to the increasingly tighter new engine standards, California has also adopted programs that provide substantial in-use emissions reductions such as vehicle idling restrictions and in-use fleet rules including the Drayage Truck Regulation and the Truck and Bus Regulation.

These fleet rules require the upgrade of older trucks and buses to newer, cleaner engines meeting the 2010 standards by 2023. To comply with these regulations, fleets have made substantial investments to purchase lower-emitting vehicles. However, despite all of these efforts, on-road heavy-duty vehicles are still a significant source of NO<sub>x</sub> emissions in the State and are responsible for about 33 percent of total statewide NO<sub>x</sub> emissions, a precursor to ambient ozone and secondary particulate matter formation. In order to meet our air quality goals, further reductions of heavy-duty NO<sub>x</sub> emissions are necessary.

In 2013, California established optional low-NO<sub>x</sub> standards with the most aggressive standard being 0.02 g/bhp-hr, which is 90 percent below the current standard. The optional low-NO<sub>x</sub> standards were developed to pave the way for mandatory standards by encouraging manufacturers to develop and certify low-NO<sub>x</sub> engines and incentivizing potential customers to purchase these low-NO<sub>x</sub> engines. To-date, ten natural gas or liquefied petroleum gas engines have been certified to the optional NO<sub>x</sub> standards.

A key measure described in CARB's Mobile Source Strategy document<sup>1</sup> is the establishment of national on-road heavy-duty low-NO<sub>x</sub> emission requirements that provide a 90 percent reduction in NO<sub>x</sub> emissions compared to today's requirements. To complement this measure, the Mobile Source Strategy also included a "Lower In-Use Emission Performance Level" measure which would ensure that heavy-duty vehicles remain "clean" in-use, as they were originally certified when new. These measures are critical for attaining federal health-based air quality standards for ozone in 2023 and 2031 in the South Coast and San Joaquin Valley air basins, as well as fine particulate matter standards in the next decade. Because about 60 percent of total heavy-duty vehicle miles traveled in the South Coast on any given day is accrued by trucks that were newly purchased outside of California, U.S. Environmental Protection Agency (U.S. EPA) action to establish a new national low-NO<sub>x</sub> standard for heavy-duty trucks is critical. In response to petitions for a low-NO<sub>x</sub> rulemaking from over 20 organizations including state and local air agencies from across the country, on November 13, 2018, U.S. EPA announced the "Cleaner Truck Initiative" to develop regulations to further reduce NO<sub>x</sub> emissions from on-road heavy-duty trucks and engines. U.S. EPA intends to publish a proposed rule in early 2020<sup>2</sup>. CARB plans on coordinating its regulatory efforts with U.S. EPA.

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<sup>1</sup> 2016 Mobile Source Strategy, May 2016. (<http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrsrc.pdf>)

<sup>2</sup> EPA Acting Administrator Wheeler Launches Cleaner Trucks Initiative.

<https://www.epa.gov/newsreleases/epa-acting-administrator-wheeler-launches-cleaner-trucks-initiative>

To support the development of lower heavy-duty NOx standards, CARB in partnership with the South Coast Air Quality Management District, the Manufacturers of Emission Control Association, and U.S. EPA is currently funding multi-million dollar (over \$5M) research programs with SwRI to demonstrate the feasibility of lower NOx emissions for on-road heavy-duty engines.

In addition to a new lower NOx standard, staff also plan to develop a new low load certification cycle, to strengthen engine and emission control system durability requirements, to improve reporting and corrective action of failing emission control parts covered under warranty, and to improve the in-use testing program. CARB's overall low-NOx emission standard package, which will include the amendments discussed above, is tentatively scheduled for Board consideration in December 2019. CARB staff started the public process with a kick-off public workshop on November 3, 2016. Since then, CARB staff has held six workgroup meetings to discuss proposed concepts for various elements of the rulemaking as well as updates on the SwRI low-NOx demonstration programs.

CARB staff also developed and proposed initial amendments to the California on-road heavy-duty vehicle and heavy-duty engine warranty regulations to lengthen existing warranty periods and maintenance provisions to better reflect the longevity and usage of modern vehicles (called Warranty Step 1). The Board approved the amendments for adoption on June 28, 2018. The amended warranty periods apply to California-certified diesel-fueled engines used in California-registered on-road heavy-duty vehicles greater than 14,000 pounds GVWR, and will increase the length of warranty coverage from 100,000 miles to 350,000 miles for vehicles with heavy heavy-duty engines, 150,000 miles for vehicles with medium heavy-duty engines, and 110,000 miles for vehicles with light heavy-duty engines beginning with the 2022 model year.

At the workshop, staff will discuss regulatory concepts concerning the following:

- Tighter durability demonstration requirements;
- A supplemental test cycle for certification to demonstrate emissions are controlled during low load operations, i.e., a low load cycle;
- Zero emission technology credit provisions;
- HDIUT amendments to more effectively assess in-use compliance under all operating conditions, via use of a protocol similar to the European in-service conformity-testing program, moving average window method;

- Lengthening the useful life for heavy-duty engines, i.e., the period of time or mileage during which the engine's emissions are required to remain at or below the level required by the certification standard;
- Further lengthening of warranty requirements (called Warranty Step 2);
- Warranty corrective action amendments to strengthen and enhance the current Emission Warranty and Information Reporting requirements to more readily enact corrective action on the part of the manufacturer based upon warranty claim rates;
- Lower cap on particulate matter emissions; and
- Potential use of NOx emissions tracking data (Real Emissions Assessment Logging ("REAL")).

Staff will also present an update regarding the low-NOx demonstration program at SwRI and timing and next steps for CARB's rulemaking.

### **Contact**

If you have general questions regarding potential regulatory changes to the certification standards and test procedures, the HDIUT program, and the durability demonstration provisions to be discussed at the workshop, please contact Mr. Daniel Hawelti, Staff Air Pollution Specialist, at (626) 450-6149 or via email at [Daniel.Hawelti@arb.ca.gov](mailto:Daniel.Hawelti@arb.ca.gov).

For questions regarding the proposed revisions to the heavy-duty engine warranty period and useful life requirements, please contact Dr. Nadia Richards, Air Resources Engineer, at (916) 322-8987 or via email at [Nadia.Richards@arb.ca.gov](mailto:Nadia.Richards@arb.ca.gov).

For questions on proposed amendments to the emission warranty information reporting regulations, please contact Adil Mahmood, Air Resources Engineer, at (626) 575-6842 or via email [Adil.Mahmood@arb.ca.gov](mailto:Adil.Mahmood@arb.ca.gov).

### **Special Accommodations**

If you require a special accommodation or need this document in an alternate format (i.e., braille, large print) or another language, please contact Mr. Daniel Hawelti, Staff Air Pollution Specialist, at (626) 450-6149 or via email at [Daniel.Hawelti@arb.ca.gov](mailto:Daniel.Hawelti@arb.ca.gov), as soon as possible, but no later than 10 business days before the scheduled meeting. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Please note that under the California Public Records Act (Government Code section 6250 et seq.), your written and verbal comments, submitted attachments, and

associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request.

Consecuente con la sección 7296.2 del Código de Gobierno de California, una acomodación especial o necesidades lingüísticas pueden ser suministradas para cualquiera de los siguientes:

- Un intérprete que esté disponible en la audiencia.
- Documentos disponibles en un formato alterno u otro idioma.
- Una acomodación razonable relacionados con una incapacidad.

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 324-0342 o envíe un fax a (916) 327-8524 lo más pronto posible, pero no menos de 10 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que necesiten este servicio pueden marcar el 711 para el Servicio de Retransmisión de Mensajes de California.

Sincerely,

/s/

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Mobile Source Control Division

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Staff Air Pollution Specialist  
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