

APPENDIX D

**PUBLIC PROCESS FOR DEVELOPMENT OF THE PROPOSED ACTION**

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DATE: December 12, 2017

Mail-Out #MSC 17-20

TO: All Interested Parties

SUBJECT: PUBLIC WORKSHOP TO DISCUSS PROPOSED AMENDMENTS TO THE CALIFORNIA EMISSION CONTROL SYSTEM WARRANTY REGULATIONS AND MAINTENANCE PROVISIONS FOR ON-ROAD HEAVY-DUTY VEHICLES WITH GROSS VEHICLE WEIGHT RATINGS GREATER THAN 14,000 LBS.

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The California Air Resources Board (CARB or Board) invites you to participate in a public workshop to discuss staff's proposed regulatory amendments to Title 13, California Code of Regulations, Section 2036 (13 CCR 2036), regarding Heavy-Duty Vehicle (HDV) emission warranty requirements, and staff's proposed modifications to the maintenance provisions in Section 86.004-25 of the incorporated "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel/Otto-Cycle Engines and Vehicles" (California Test Procedures). Specifically, the workshop will focus on the need for longer HDV emission warranty periods in California to help achieve attainment with National Air Quality Standards.

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

Date: Friday, January 12, 2018

Time: 9:00 a.m. to 12:00 p.m. (PST)

Location: South Coast Air Quality Management District, Auditorium  
21865 Copley Drive  
Diamond Bar, California 91765

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 [http://www.aqmd.gov/home/calendar\\_v2/webcasts](http://www.aqmd.gov/home/calendar_v2/webcasts). Information on submitting questions and comments will be provided during the webcast for remote participants. 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

On November 3, 2016, CARB staff held a workshop in Diamond Bar, California, to introduce its upcoming control measures for reducing NOx emissions. At that workshop, CARB presented an overview of its warranty lengthening proposal, and

announced the formation of a stakeholder warranty workgroup. At the first warranty workgroup meeting, CARB staff requested data from stakeholders, including warranties currently offered, fail rates for emissions-related components, and anticipated costs of lengthening the emissions warranty periods to various levels.

On July 12, 2017, CARB staff held a second public workshop in Diamond Bar, California. This workshop focused solely on the proposed regulatory amendments to the California Emission Warranty Regulations for On-Road Heavy-Duty Vehicles. CARB presented on the need for, and feasibility of, longer warranties for heavy-duty vehicles. CARB staff proposed a “two-step” process with the first step being lengthened warranty periods under this rulemaking, and the second step being potential changes to useful life periods along with other Low-NOx control measures at a future rulemaking currently scheduled for late 2019.

After the July 12, 2017, workshop, CARB staff explored further the entwined relationship between warranty periods, the certification process, heavy-duty vehicle on-board diagnostics (HD OBD), and the provisions by which engine manufacturers are allowed to schedule periodic maintenance for emission-related components. Of particular concern is the manner in which a component’s warranty period could be adversely affected by scheduled maintenance such that a manufacturer’s expected warranty period obligation would actually be shortened despite a lengthened warranty period. To ensure that CARB’s proposal was comprehensive with respect to these other regulatory provisions, and to afford more time to consider additional data provided by stakeholders with respect to existing warranty coverage and costs, CARB staff decided to delay proposing the warranty period amendments to the Board from December 2017, until spring 2018.

### Proposal

CARB staff proposes to amend the California on-road heavy-duty vehicle warranty regulations by lengthening existing warranty periods to better reflect the longevity and usage of modern vehicles, thus better ensuring that any defects that cause engines or vehicles to fail to conform to applicable requirements are repaired at no additional cost to the vehicle owner. Vehicle owners who do not have to pay “out-of-pocket” for repairs are more likely to repair emission-related malfunctions in a timely manner, especially when those malfunctions do not also affect vehicle performance or fuel economy.

Furthermore, Class 8 HDVs frequently remain in service up to 1,200,000 miles, and the current warranty period of 100,000 miles is insufficient to ensure that emission performance will remain effective for a meaningful portion of the vehicle’s service life.

Table 1 shows California’s current emissions warranty requirements for HDVs as well as proposed longer warranty periods for Class 4-8 HDVs. In Table 1, emissions warranties are lengthened to better coincide with the useful life of the engine typically used to power the specific class, or range of classes, for each vehicle. In addition to the longer minimum warranty periods shown below, CARB staff proposes that the 3,000 hour limit no longer be applicable under California’s amended warranty period provisions for HDVs.

**Table 1**  
**Proposed Amended Warranty Periods**

VEHICLE / ENGINE CATEGORY	CALIFORNIA CURRENT WARRANTY (miles)	CALIFORNIA PROPOSED WARRANTY (miles)
	DIESEL	DIESEL
Class 8 Heavy-Heavy GVWR > 33,000 lbs.	100,000 5 years/3,000 hours	<b>350,000</b> <b>5 years</b>
Class 6-7 Medium-Heavy 19,500 lbs. < GVWR ≤ 33,000 lbs.	100,000 5 years/3,000 hours	<b>150,000</b> <b>5 years</b>
Class 4-5 Light-Heavy 14,000 lbs. < GVWR ≤ 19,500 lbs.	100,000 5 years/3,000 hours	<b>110,000</b> <b>5 years</b>

Additionally, to ensure that existing maintenance provisions do not inadvertently shorten the proposed lengthened warranty periods, or otherwise transfer the liability for component replacement from manufacturer to vehicle owner for emissions-related components during the lengthened warranty periods, CARB staff proposes two complementary amendments. First, under staff’s proposal, the language in 13 CCR 2036 (d) that limits the warranty period to the first scheduled maintenance interval for a specific part would be amended to align with existing federal provisions that do not allow scheduled maintenance to truncate warranty. Second, the minimum scheduled maintenance intervals specified in § 86.004-25 of the “California Test Procedures” would

be revised to reflect current technological feasibility. For example, the minimum allowable replacement interval for components for which no manufacturer is currently scheduling required replacement maintenance would be set to the current applicable useful life. In addition, the minimum allowable replacement interval for components for which one or more manufacturers currently require scheduled replacement maintenance would be set to the shortest replacement interval designated by any manufacturer.

CARB staff is also considering proposing to amend the warranty regulations to include special consideration for high-cost and catastrophic emission failure-inducing components, similar to the provisions currently required for catalyst beds and diesel particulate filter elements under 86.004-25 (i) of the “California Test Procedures.” Potentially, high-cost, catastrophic emission failure-inducing components could be prohibited from being replaced during the applicable useful life period unless the manufacturer requests an allowance to do so and pays for the replacement.

Additionally, CARB staff is considering proposing to amend the “General Emissions Warranty Coverage” applicability provisions in 13 CCR 2036 (b)(2) to include any emission-related component that causes the HD OBD malfunction indicator light (MIL) to illuminate. This is currently the practice for both light- and heavy-duty vehicles; therefore, CARB intends to clarify the language for heavy-duty vehicles to be similar to that for light-duty vehicle applications.

Other minor changes to warranty information reporting and clarifying changes may also be proposed as part of this warranty period rulemaking.

At the workshop, staff also plans to share draft cost and emission benefit estimates for the warranty amendments being considered, and to field questions regarding the CARB-sponsored survey of HDVs and repair facilities in California that was recently conducted by the Sacramento Institute for Social Research for studying heavy-duty vehicle warranty cost and coverage structures.

CARB staff welcomes discussion on its proposals, and is soliciting comments and questions from interested stakeholders.

### Contact

If you have questions about the proposed workshop agenda or the topics to be discussed, please submit them to Mr. Jeff Lowry, Staff Air Pollution Specialist, at (626) 575-6841 or by email at [jeffrey.lowry@arb.ca.gov](mailto:jeffrey.lowry@arb.ca.gov), or to Mr. Ronald Haste, Manager of the Off-Road Control Section, at (626) 575-6676 or by email at [ron.haste@arb.ca.gov](mailto:ron.haste@arb.ca.gov).

### Special Accommodations

If you require a special accommodation or need this document in an alternate format (i.e., braille, large print), please visit <https://www.arb.ca.gov/html/ada/ada.htm> for assistance or contact the Americans with Disabilities Act Coordinator by telephone at (916) 323-4916 no later than 10 business days before the scheduled meeting. If you are a person who needs assistance in a language other than English, please visit <https://www.arb.ca.gov/eo/bilingual-services.htm> or contact the Bilingual Coordinator by telephone at (916) 322-0473 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/

Michael Carter  
Assistant Chief  
Mobile Source Control Division



# Air Resources Board



**Matthew Rodriguez**  
Secretary for  
Environmental Protection

**Mary D. Nichols, Chair**  
9480 Telstar Avenue, Suite 4  
El Monte, California 91731 • [www.arb.ca.gov](http://www.arb.ca.gov)

**Edmund G. Brown Jr.**  
Governor

DATE: June 9, 2017

Mail-Out #MSC-17-12

TO: All Interested Parties

SUBJECT: PUBLIC WORKSHOP TO DISCUSS PROPOSED AMENDMENTS TO THE CALIFORNIA EMISSION CONTROL SYSTEM WARRANTY REGULATIONS FOR ON-ROAD HEAVY-DUTY VEHICLES WITH GROSS VEHICLE WEIGHT RATINGS GREATER THAN 14,000 LBS.

The California Air Resources Board (CARB or Board) invites you to participate in a public workshop to discuss staff's proposed regulatory amendments to Title 13, California Code of Regulations, Section 2036, regarding Heavy-Duty Vehicle (HDV) emission warranty requirements. Specifically, staff's presentation will focus on the need for longer HDV warranty periods in California to help achieve attainment with National Air Quality Standards.

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

Date: Wednesday, July 12, 2017

Time: 10:00 a.m. – 1:00 p.m.

Location: South Coast Air Quality Management District, Auditorium  
21865 Copley Drive  
Diamond Bar, California 91765

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 [http://www.aqmd.gov/home/calendar\\_v2/webcasts](http://www.aqmd.gov/home/calendar_v2/webcasts). Information on submitting questions and comments will be provided during the webcast for remote participants. 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>.

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California Environmental Protection Agency

## Background

In 1978, CARB initially adopted emission warranty regulations for passenger cars, light-duty trucks, and medium-duty vehicles to clarify the rights of individual motor vehicle and engine owners, motor vehicle and engine manufacturers, and the service industry. The emission warranty is used to cover any repairs needed to correct defects in materials or workmanship that would cause an engine or vehicle not to meet its applicable emission standards.

In 1982, CARB adopted regulations that established California's first in-use recall program. These regulations were intended to reduce vehicular emissions by ensuring that noncompliant vehicles are identified, recalled, and repaired to comply with the applicable emission standards and regulations during customer use, and to encourage manufacturers to improve the design and durability of emission control components to avoid the expense of a recall.

In 1982 and 1984, the United States Environmental Protection Agency (U.S. EPA) promulgated HDV useful-life and warranty requirements identical to those adopted in California. Both CARB and U.S. EPA require that HDVs meet emission standards throughout their useful-life periods.

Finally, in 1988, CARB adopted the Emission Warranty Information Reporting (EWIR) regulations for tracking emission control component defects affecting on-road vehicles. The EWIR regulations require manufacturers to review all emission-related warranty claims on a quarterly basis to determine the number of repairs or replacements made for each component.

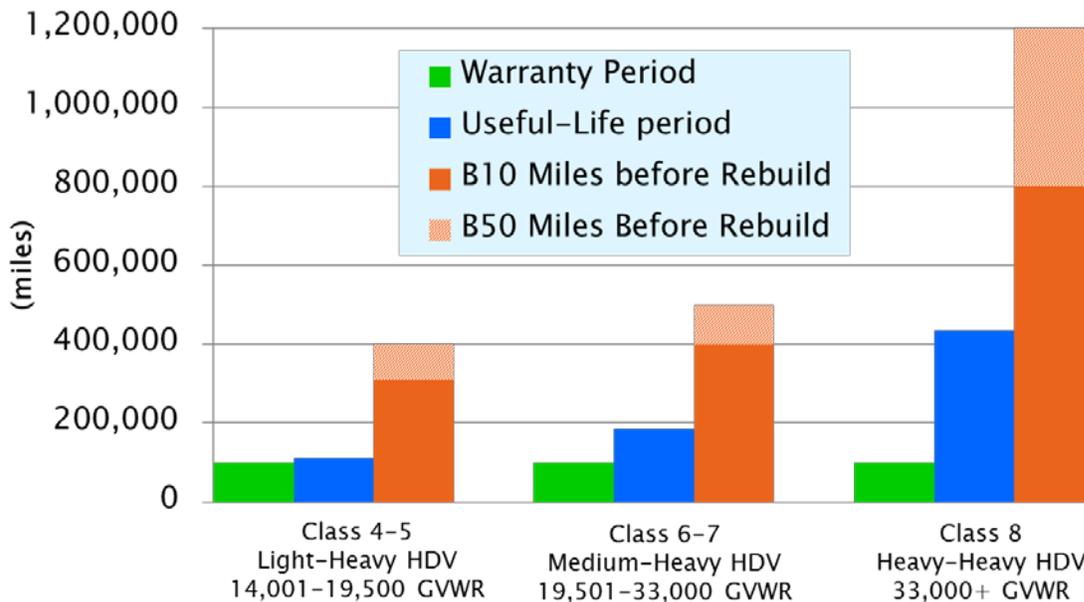
Recent and ongoing CARB studies have identified numerous HDVs with mileages within their applicable useful-life periods, but beyond their warranty period, that have oxides of nitrogen (NOx) emission levels significantly above their applicable certification standards. Also, recent CARB reviews of manufacturer warranty claims show high warranty claim rates for both diesel- and natural gas-fueled HDVs. Interviews with fleets, retrofit installers, and equipment dealers confirm these findings, and suggest that some fleets are experiencing significant vehicle downtime.

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Improving engine durability is critical to preventing component failures that can damage emission control components and result in excess emissions. Increasing the emission warranty periods would encourage manufacturers to improve the durability of their engines and emission control systems through the development and use of higher quality parts and materials. In addition, a lengthened warranty period would result in fewer incidences of tampering and mal-maintenance because the cost of repairs would be covered longer by the manufacturer, which in turn would result in a reduction of HDV emissions.

The current HDV required emission warranty period, 100,000 miles, is reached relatively early in vehicle lives and well before rebuild typically occurs. Figure 1 provides a comparison of warranty and useful-life to real-world HDV longevity.

**Figure 1**  
**Comparison of Warranty and Useful-Life to Real-World Longevity**



Warranty is 50,000 miles / 5 years for Otto-cycle engines.  
 Hourly warranty limits do not apply to Otto-cycle engines or engines certified to the greenhouse gas emission standards in 17 CCR 95663.  
 Mileage before rebuild data obtained from online industry publications (mixture of B10, B50, and other sources including manufacturers' websites).  
 Classes 4-5 warranty is 50,000 miles / 5 years for diesel engines certified to the greenhouse gas emission standards in 17 CCR 95663.

On November 3, 2016, CARB held a workshop in Diamond Bar, California to introduce its upcoming control measures for reducing NOx emissions. CARB staff presented an overview of staff's warranty lengthening proposal, and formation of a warranty workgroup was announced. The workgroup is meant to help staff better understand

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industry’s concerns and to facilitate the sharing of data. The first warranty workgroup meeting occurred on January 31, 2017, at which time CARB staff requested data from stakeholders, including, but not limited to, warranties currently offered, fail rates for emissions-related parts, and anticipated costs of lengthening the emissions warranty to various levels. CARB staff continues to seek such data; for example, we are aware some manufacturers offer commercial warranties that go beyond 100,000 miles, but are seeking further information regarding exactly what current warranties cover. We hope to continue dialogue with stakeholders at the workshop and beyond, and expect to refine our proposal based on data and insights gathered.

Proposal

Table 1 provides a summary of staff’s proposal to amend existing warranty periods for Class 4-8 HDVs. In addition to the longer minimum warranty periods shown below, CARB staff proposes that the 3,000 hour limit no longer be applicable under California’s amended warranty period provisions for HDVs. Staff welcomes discussion on its proposal, and is soliciting comments and questions from interested stakeholders.

**Table 1**  
**Proposed Amended Warranty Periods**

HEAVY-DUTY CATEGORY	CURRENT <sup>1,2</sup> WARRANTY (miles)	PROPOSED <sup>4</sup> “FIRST STEP” WARRANTY (miles)
Class 8 Heavy-Heavy GVWR > 33,000 lbs.	100,000 5 years/3,000 hours	435,000 5 years
Class 6-7 Medium-Heavy 19,500 lbs. < GVWR ≤ 33,000 lbs.	100,000 5 years/3,000 hours	185,000 5 years
Class 4-5 Light-Heavy 14,000 lbs. < GVWR ≤ 19,500 lbs.	100,000 <sup>3</sup> 5 years/3,000 hours	110,000 <sup>5</sup> 5 years

<sup>1</sup> Current Warranty is 50,000 miles / 5 years for Otto-cycle engines.

<sup>2</sup> Hourly limits are not applicable to Otto-cycle engines or the GHG emissions standards in 17 CCR 95663.

<sup>3</sup> Current Warranty is 50,000 miles / 5 years for compliance with the GHG emission standards of 17 CCR 95663.

<sup>4</sup> Proposed “First Step” Warranty limits are identical for both diesel and Otto-cycle engines.

<sup>5</sup> Proposed “First Step” Warranty limits are not applicable to the GHG emission standards of 17 CCR 95663.

Contact

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Sincerely,

/s/

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California Environmental Protection Agency

All Interested Parties  
June 9, 2017  
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Michael Carter  
Assistant Chief  
Mobile Source Control Division

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# Air Resources Board



**Matthew Rodriguez**  
Secretary for  
Environmental Protection

**Mary D. Nichols, Chair**  
1001 I Street • P.O. Box 2815  
Sacramento, California 95812 • [www.arb.ca.gov](http://www.arb.ca.gov)

**Edmund G. Brown Jr.**  
Governor

September 23, 2016

Mail-Out #MSC 16-10

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

The Air Resources Board (ARB or Board) invites you to participate in a public workshop to learn more about potential regulatory measures to reduce oxides of nitrogen (NOx) emissions from new on-road heavy-duty vehicles. Staff will discuss various potential measures including revisions to the heavy-duty emission standards, supplemental regulatory amendments to improve certification and warranty requirements, and potential revisions to the Not-to-Exceed (NTE) in-use compliance program. ARB will also provide an update on ARB sponsored heavy-duty research projects.

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

Date: Thursday, November 3, 2016  
Time: 1:00 p.m. to 5:00 p.m.  
Location: South Coast Air Quality Management District, Auditorium  
21865 Copley Drive  
Diamond Bar, California 91765

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 <http://www.aqmd.gov/home/library/webcasts>. Information on submitting questions and comments will be provided during the webcast for remote participants. Staff's presentation and any associated documents will be posted prior to the workshop on ARB'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 significantly 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

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provide substantial in-use emission reductions such as vehicle idling restrictions and in-use fleet rules including as 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 NOx emissions in the state and are responsible for about 33 percent of total statewide NOx emissions, a precursor to ambient ozone and secondary particulate matter formation. In order to meet our air quality goals, further reductions of heavy-duty NOx emissions are necessary.

In 2013, California established optional low-NOx standards with the most aggressive standard being 0.02 g/bhp-hr, which is 90 percent below the current standard. The optional low-NOx standards were developed to pave the way for mandatory standards by encouraging manufacturers to develop and certify low-NOx engines and incentivizing potential customers to purchase these low-NOx engines. Currently, Cummins has certified two natural gas engine families to the optional low-NOx standards. An 8.9 liter engine has been certified to the optional 0.02 g/bhp-hr standard, and a 6.7 liter engine has been certified to the optional 0.10 g/bhp-hr NOx standard. Both engines are currently commercially available.

A key measure described in ARB's Mobile Source Strategy document<sup>1</sup> is the establishment of national low-NOx emission standards that reflect up to a 90 percent reduction in NOx emissions compared to the current emission standards. This measure is 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. About 60 percent of total heavy-duty vehicle miles traveled in the South Coast on any given day is accrued by trucks purchased outside of California, and therefore exempt from California new engine emission standards. Thus, U.S. Environmental Protection Agency (U.S. EPA) action to establish a new national low-NOx standard for heavy-duty trucks is critical. In the preamble to the Heavy-Duty Greenhouse Gas Phase 2 Final Rule, U.S. EPA affirmed their commitment to work with ARB to develop low-NOx emission standards for heavy-duty engines. A national heavy-duty vehicle standard will benefit air quality not only in California but also in many areas across the nation that currently fail to meet air quality standards. ARB plans on coordinating its regulatory development efforts with U.S. EPA. A proposal for new low-NOx emission standards, associated revisions to the certification test cycle to account for low load urban driving conditions, and other potential revisions to account for real-world emissions, is tentatively scheduled for Board consideration in 2019.

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

In addition to lower NO<sub>x</sub> standards, other elements are being considered in an effort to improve the in-use performance of heavy-duty vehicles. Specifically, these elements are listed below followed by a more detailed discussion of each:

- Amendments to warranty provisions.
- Amendments to the NTE supplemental test procedures.
- Amendments to the certification durability demonstration and useful life provisions.

In addition to the elements listed above, staff plans to consider creative ways to encourage and credit emission reductions within the context of the new standards. For example, staff may consider ways to incentivize emerging technologies such as intelligent transportation systems and autonomous and connected vehicles, advanced zero emission technologies such as battery electric vehicles and fuel cell electric vehicles, as well as technologies such as transmission and aerodynamic improvements that may reduce vehicle emissions but not be reflected by traditional engine dynamometer testing. With the rapid development of advanced technologies in the heavy-duty sector, staff is open to considering concepts that could result in real-world quantifiable emission benefits for this sector even if they do not fit within conventional regulatory standard structures.

## **Warranty**

ARB is considering lengthening the required warranty period for heavy-duty vehicle emission control systems primarily because the warranty period does not reflect the real world longevity of heavy-duty vehicles. Class 8 vehicles frequently operate upwards of a million miles before major overhaul is needed, but they are required to be warranted for only 100,000 miles under ARB and U.S. EPA regulations. Classes 4 through 7 vehicles also have relatively short warranty periods. With longer required warranty periods, manufacturers would need to design more durable emission control systems and components. More durable components would improve the emissions performance of these vehicles, and it would also mean less vehicle down time for operators and owners.

Also, longer warranty periods would give owners greater incentive to fix nonperformance-related malfunctions that otherwise might not get repaired if the owner had to bear the cost for the fix.

As a companion to lengthening the warranty period, ARB also intends 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 rates. Current regulations require manufacturers to report warranty rates for all emission related parts throughout the engine's warranty period. When warranty rates are high for a particular component, manufacturers are often reluctant to initiate corrective action, despite the obvious failure of that component and its likely associated adverse emissions impact. Thus, the burden of proof is often placed on ARB to demonstrate an emissions exceedance which, for heavy-duty vehicles, is a time consuming, costly, and inefficient process (i.e., since the engine must be removed from the vehicle in order to be tested on an engine dynamometer). Staff is considering measures that would correct this inefficient process such as requiring corrective action when an emission related component exceeds an established trigger level. A proposal to revise both the warranty period and the warranty rates/corrective action requirements for heavy-duty vehicles is scheduled to be heard by the Board in December 2017.

### **Not-To-Exceed**

The NTE in-use compliance program is currently the primary method used for ensuring in-use compliance with the heavy-duty engine emission standards. The NTE testing requirements were first introduced as part of the 1998 Consent Decrees with U.S. EPA, ARB, and heavy-duty engine manufacturers. Manufacturers have to demonstrate compliance within the NTE control area of the engine map by measuring emissions using Portable Emissions Measurement Systems. However, the NTE control area was only designed to account for emissions from regions of engine activity representing on-highway cruising operations. As such, the NTE control area includes a number of conditions that exclude regions in the engine map associated with low load operation, including the region below 30 percent maximum torque and/or 30 percent maximum power. Engine operations within the NTE control area for fewer than 30 consecutive seconds and engine operations that result in exhaust aftertreatment temperatures below 250 degrees Celsius are also excluded from the NTE analysis. Because of these current limitations, the current in-use compliance program is not adequate for ensuring that emissions are controlled during the majority of in-use operations, including low load conditions. ARB is currently considering modifying the testing protocol in order to effectively assess in-use compliance under essentially all driving conditions.

### **Durability and Useful Life**

ARB is also considering revising the durability demonstration provisions within the certification requirements for heavy-duty engines. The durability demonstration program requires manufacturers to demonstrate compliance with emission standards over the useful life of the engine. ARB staff are concerned that the current durability demonstration program does not accurately represent the in-use deterioration of aftertreatment emission control systems. Furthermore, the useful life over which

compliance with the durability provisions is demonstrated is significantly lower than the full life or mileage before first rebuild, resulting in excess emissions due to deteriorated engines and components. Therefore, ARB is considering revising the useful life period as well, resulting in the need to revise the durability demonstration process to account for a longer useful life. Revisions to the NTE in-use compliance program, durability demonstration provisions, and the useful life period are all scheduled to be heard by the Board at the same time as the proposal for new low-NOx emission standards (i.e., 2019).

## Contact

If you have questions regarding potential regulatory changes to NOx emission standards, test cycle revisions, NTE revisions, or useful life revisions for heavy-duty vehicles to be discussed at the workshop, please contact Mr. Daniel Hawelti, Air Resources Engineer, 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 requirements, please contact Mr. Jeff Lowry, Staff Air Pollution Specialist, at (626) 575-6841 or via email at [jeffrey.lowry@arb.ca.gov](mailto:jeffrey.lowry@arb.ca.gov). For questions on proposed amendments to the emission warranty information reporting regulations, please contact Dr. Jerry Ho, Staff Air Pollution Specialist, at (626) 575-6829 or via email [jerry.ho@arb.ca.gov](mailto:jerry.ho@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. Henry Cheung, Air Resources Engineer, at (626) 575-6673 or via email at [henry.cheung@arb.ca.gov](mailto:henry.cheung@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.

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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/

Michael Carter  
Assistant Chief  
Mobile Source Control Division