## UPDATED INFORMATIVE DIGEST

## ADOPTION OF AMENDMENTS TO CALIFORNIA EMISSION CONTROL SYSTEM WARRANTY REGULATIONS AND MAINTENANCE PROVISIONS FOR 2022 AND SUBSEQUENT MODEL YEAR ON-ROAD HEAVY-DUTY DIESEL VEHICLES AND HEAVY-DUTY ENGINES WITH GROSS VEHICLE WEIGHT RATINGS GREATER THAN 14,000 POUNDS AND HEAVY-DUTY DIESEL ENGINES IN SUCH VEHICLES

### Sections Affected:

Amendments to California Code of Regulations (CCR), title 13, sections 1956.8, 2035, 2036, and 2040.

### Documents Incorporated by Reference (Cal. Code Regs., tit. 1, § 20, subd. (c)(3)):

The following document is incorporated by reference in CCR, title 13, section 1956.8(b):

- "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 on April 18, 2019.

### Background and Effect of the Proposed Regulatory Action:

Heavy-duty trucks with a gross vehicle weight rating (GVWR) over 14,000 pounds are one of the largest sources of air pollution in California. They contribute approximately 45 percent of total statewide mobile source oxides of nitrogen (NOx) emissions and 19 percent of total mobile source particulate matter (PM 2.5) emissions.[1] Most of the NOx emissions from heavy-duty trucks come from diesel-cycle engines, especially in the higher weight classes.

A key measure in the California Air Resources Board (CARB) Mobile Source Strategy is the “Lower In-Use Emission Performance Level” measure, which seeks to ensure that in-use heavy-duty vehicles continue to operate at their cleanest possible level.[2] These amendments are one element of that measure, amending the current warranty provisions and associated maintenance provisions for heavy-duty diesel vehicles. The Lower In-Use Emission Performance Level measure is critical for attaining federal health-based air quality standards for ozone in 2023 and 2031 in the South Coast and San

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[1] CEPAM: 2016 SIP – Standard Emission Tool, BY2012, Oxides of Nitrogen, and PM2.5, Annual Average, Year: 2016, grown and controlled, All Sources except Natural, Stationary, and Area Wide, https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php

[2] Mobile Source Strategy, California Air Resources Board, May 2016. https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf

Joaquin Valley air basins, and fine particulate matter standards in the next decade.

California is the only state with the authority to adopt and enforce emission standards and test procedures for new motor vehicles and new motor vehicle engines that differ from federal emission standards and test procedures (Federal Clean Air Act, 209(b)(1) [42 U.S.C. § 7543(b)(1)]). In 1978, CARB initially adopted emission warranty regulations, which require manufacturers to cover repairs needed to correct defects in materials or workmanship that would cause an engine or vehicle not to meet its applicable emission standards. Throughout the 1980's CARB adopted several regulations, such as the vehicle in-use recall program and the Emission Warranty Information Reporting program, which work in conjunction with the warranty regulations to identify malfunctioning emission control components and encourage repair. In 1982 and 1984, the United States Environmental Protection Agency (U.S. EPA) promulgated heavy-duty engine "useful life"[3] and emissions warranty requirements identical to those adopted in California (FR, 1982; FR, 1984). Both CARB and U.S. EPA require that heavy-duty engines meet emission standards throughout their useful life periods.

Although CARB has adopted regulations that require certified engines to meet applicable emissions standards throughout their useful lives (13 CCR §§ 1956.8, 1971, 1976), the normal engine aging and wear over time contributes to an increase in the engine-out emissions. Manufacturers must take into account this deterioration in emission performance in the initial design of the engine and aftertreatment technology/strategy.

Since the 2007 model year, all on-road heavy-duty diesel vehicles and engines have been subject to stringent PM and NOx emission standards (13 CCR § 1956.8). Manufacturers have met these standards by equipping new heavy-duty diesel engines with diesel particulate filters (DPF) for control of PM, and beginning with the 2010 model year have also included systems for controlling NOx using exhaust gas recirculation (EGR) and selective catalytic reduction (SCR) systems. These emission control systems can reduce NOx emissions by more than 95 percent and PM emissions by more than 99 percent[4]. Therefore, if they fail, an individual engine's exhaust emissions can dramatically increase. It is therefore crucial that these emission control systems continue to function as designed throughout a vehicle's life to ensure emissions remain low. The California State Implementation Plan (SIP) is relying on the emission benefits from the 2007/10 on-road heavy-duty engine and vehicle standards to attain the federal ambient air quality standards in California.

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[3] During the emission certification process, "useful life" means the period during which the engine is required to demonstrate compliance with applicable emission standards.

[4] Emission Control Technologies for Diesel-Powered Vehicles, Manufacturers of Emission Controls Association, December 2007. http://www.meca.org/galleries/files/MECA_Diesel_White_Paper_12-07-07_final.pdf

On-road heavy-duty diesel vehicles are currently required to be covered by only a 5 year, 100,000 mile, or 3,000-hour emissions warranty period, whichever first occurs. This requirement has not changed substantially in California in almost 40 years. Emissions warranties provide a level of assurance to the vehicle owner that the engine and its associated emission control systems are unlikely to experience defects in materials and workmanship that could result in the engine not performing as required. If such defects do occur during the warranty period, the manufacturer is liable for fixing them.

These amendments to the California on-road heavy-duty vehicle and heavy-duty engine warranty regulations lengthen existing warranty periods and minimum maintenance intervals to reflect better the longevity and usage of modern heavy-duty vehicles. This will help ensure adequate durability and proper maintenance of the engine and emission controls. Evidence supporting the need for longer minimum warranties comes from manufacturers' warranty claim data for heavy-duty vehicles, as well as from recent CARB testing of in-use heavy-duty vehicles. Specifically, CARB's test programs have identified numerous heavy-duty vehicles with mileages within their applicable regulatory useful life periods, but beyond their warranty period, that have NOx emission levels significantly above their applicable certification standards.

**Objectives and Benefits of the Proposed Regulatory Action**:

The amendments to the California emission control system warranty regulations and maintenance provisions for on-road heavy-duty diesel vehicles and engines accomplish the following:

- Lengthen emissions warranty periods to better match the longer service lives of modern heavy-duty vehicles and engines. This protects vehicle owners from excessive repair costs, incentivizes better vehicle maintenance and more timely repairs by the vehicle owners, while also encouraging manufacturers to make more durable parts, and reduce NOx and PM emissions;
- Update minimum allowable maintenance intervals so that they do not inadvertently negate lengthened warranty periods;
- Explicitly link the heavy-duty On-Board Diagnostic (HD OBD) system to the definition of a warranted part, as has been the case for light- and medium-duty vehicles since the 1990 model year. This enhances in-use compliance by providing another tool for ensuring the control of in-use emissions, and establishes consistency with the long established link between OBD and warranty for light- and medium-duty vehicles.
- Require manufacturers to be liable for the repair or replacement of turbochargers and EGR systems throughout the useful life of the engine because of the relative high cost and severe emission impacts under failure of these emission control devices. Manufacturers are already liable

for repairing or replacing catalyst beds and diesel particulate filter elements throughout an engine's useful life based on similar reasoning.

- Revise existing regulatory language that unintentionally truncates warranty periods, and make other clarifications.

In addition to directly reducing emissions, the amended warranty periods are needed in the near-term to protect heavy-duty vehicle owners from potentially high future repair costs under the requirements of CARB's Periodic Smoke Inspection Program (PSIP) and Heavy-Duty Vehicle Inspection Program (HDVIP), which was amended by the Board on May 25, 2018. The PSIP and HDVIP amendments include much stricter opacity limits, which will spur more vehicle owners to make timely engine repairs and replace DPFs, beginning in 2019[5].

Lengthened warranty periods may also reduce incidences of tampering and mal-maintenance. For example, there would be little incentive for a vehicle owner to tamper with the vehicle's emission control system, such as by coring out a DPF or bypassing a catalyst, when the manufacturer is obligated to pay for any defect-related repairs. Further, vehicle owners would also have more of an incentive to perform timely scheduled maintenance so as not to void their lengthened warranty.

The applicability of the amendments is limited to new diesel vehicles and new heavy-duty diesel engines only. Additionally, there are no modifications to the warranty periods specific to greenhouse gas components[6]. In addition to not being applicable to heavy-duty vehicles powered by spark-ignition engines, staff's proposal does not include heavy-duty vehicles powered by battery electric systems, fuel cells, dedicated hybrid-electric systems, or any other dedicated hybrid systems. The amendments apply only to California-certified and registered (13 CCR § 2035(b)) vehicles and engines only. Federally certified heavy-duty vehicles operating in California are not subject to the new warranty period requirements.

The environmental and health benefits from the amendments include 0.75 tons per day reductions in NOx and 0.008 tons per day reductions in PM2.5 emissions Statewide in 2030. Lowering NOx emissions reduces ozone levels, which thereby reduces the premature aging of lungs and instances of chronic

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[5] Staff Report: Initial Statement of Reasons: "Proposed Amendments to the Heavy-Duty Vehicle Inspection Program and Periodic Smoke Inspection Program," California Air Resources Board, April 3, 2018. Scheduled for Consideration: May 25, 2018

[6] Proposed California Phase 2 Greenhouse Gas Standards (CA Phase 2 GHG) and Potential Amendments to the Tractor-Trailer GHG Regulation – Second Public Workshop, California Air Resources Board, August 31, 2017. https://www.arb.ca.gov/msprog/onroad/caphase2ghg/20170831_workshop_presentation.pdf

respiratory illnesses[7]. Furthermore, lower NOx emissions also help to prevent cases of bronchitis, asthma, emergency room visits, respiratory symptoms, and restricted activity days, as well as premature deaths. Staff estimates that 40 premature deaths will be avoided as a direct result from these amendments.

**The Board's Action**:

On June 28, 2018, CARB conducted a public hearing and received oral and written comments. At the conclusion of the hearing, the Board approved Resolution 18-24 for adoption of the Proposed Amendments to California Emission Control System Warranty Regulations and Maintenance Provisions for 2022 and Subsequent Model Year On-Road Heavy-Duty Diesel Vehicles and Heavy-Duty Diesel Engines with Gross Vehicle Weight Ratings Greater than 14,000 Pounds and Heavy-Duty Diesel Engines in Such Vehicles. The Board also conditionally approved modifications to the originally proposed amendments at the hearing subject to a subsequent 15-day public comment period.

The amendments and associated test procedures were initially proposed by staff and described in the Notice of Public Hearing (45-Day Notice) and staff report including Appendices A through J. Attachment C to Resolution 18-24, "Responses to Comments on the Environmental Analysis," was presented to the Board at the June 28, 2018, Board Hearing, to address comments regarding environmental issues related to the Environmental Analysis for the proposed amendments from a commentor during the 45-day comment period. Attachment C was made available on June 29, 2018, via the CARB website https://www.arb.ca.gov/regact/2018/hdwarranty18/res-attc.pdf?_

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.

**Fifteen-Day Changes**:

Subsequent to the hearing, staff proposed modifications to the originally proposed amendments to title 13, CCR, sections 2035 and 2036. The modifications to these regulations provided clarity that parts affecting the regulated emission of criteria pollutants, but not those parts exclusively affecting greenhouse gas emissions, are subject to the amended warranty regulations.

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[7] Inhalable Particulate Matter and Health (PM2.5 and PM10), California Air Resources Board, webpage last reviewed August 10, 2017. https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm

Furthermore, the modifications clarified that dedicated hybrid vehicles were not subject to the amended regulations. Staff also proposed modifications to the associated test procedures. The test procedure modifications clarified that non-integrated sensors and actuators (i.e., those that can be repaired or replaced without removal of the turbocharger or EGR assemblies) need not be subject to the more stringent minimum allowable maintenance intervals applicable for turbocharger and EGR systems. The text of the proposed modifications to the originally proposed regulation and supporting documents were made available for a supplemental 15-day comment period through a "Notice of Public Availability of Modified Text" (15-Day Notice) and were posted on January 2, 2019, on CARB's website at https://ww2.arb.ca.gov/rulemaking/2018/hd-warranty-2018, accessible to all stakeholders and interested parties.

During the 15-day comment period, two comments were received. One comment praised CARB's continuing efforts to protect public health and the environment by lengthening heavy-duty diesel vehicle warranty periods. The other comment was outside the scope of the heavy-duty warranty amendments.

**Comparable Federal Regulations**:

The adopted lengthened warranty period amendments for Class 4 - 8 California certified heavy-duty vehicles and the new heavy-duty diesel engines in such vehicles significantly differ from current federal warranty requirements in Title 40 Code of Federal Regulations (CFR) 86.004-2. The differences between the proposed California requirements and existing federal requirements (see Table 1 below) are intended to help ensure that heavy-duty engines certified and sold in California remain compliant with applicable emission standards throughout their useful lives, which currently is not happening.

**Table 1. Existing Federal/California Warranty vs. California Proposed Warranty**

| VEHICLE/ENGINE CATEGORY | FEDERAL/CALIFORNIA CURRENT WARRANTY (miles) | CALIFORNIA PROPOSED WARRANTY (miles) |
|---|---|---|
| | DIESEL | DIESEL |
| **Class 8 Heavy Heavy**<br>GVWR > 33,000 lbs. | 100,000<br>5 years / 3,000 hours[1] | 350,000<br>5 years |
| **Class 6-7 Medium Heavy**<br>19,500 lbs. < GVWR ≤ 33,000 lbs. | 100,000<br>5 years / 3,000 hours[1] | 150,000<br>5 years |
| **Class 4-5 Light Heavy**<br>14,000 lbs. < GVWR ≤ 19,500 lbs. | 100,000<br>5 years / 3,000 hours[1] | 110,000<br>5 years |

[1] The current warranty period for heavy-duty diesel vehicles in California includes a 3,000 hour of operation limit in addition to mileage and yearly limits. U.S. EPA does not limit warranty on the basis of hours of operation, and staff is proposing to eliminate the 3,000 hour warranty limit as part of its proposed amended warranty requirements.

In addition to lengthening heavy-duty vehicle warranty periods, the amendments also revised minimum allowable maintenance schedules so that they now differ

significantly from current federal requirements. It was necessary to revise the minimum allowable maintenance schedules to avoid negating the benefits from lengthening the warranty periods should a manufacturer schedule maintenance during the lengthened warranty period. Vehicle owners are liable for all scheduled maintenance, and as such, they would be required to pay out-of-pocket to replace a part (if it is included as scheduled maintenance) even though that part may still be under warranty.

**An Evaluation of Inconsistency or Incompatibility with Existing State Regulations (Gov. Code, § 11346.5, subd. (a)(3)(D)):**

During the process of developing the proposed regulatory action, CARB conducted a search of any similar regulations on this topic and concluded these regulations are neither inconsistent nor incompatible with existing state regulations.