

State of California  
AIR RESOURCES BOARD

# Heavy-Duty Engine and Vehicle Omnibus Regulation and Associated Amendments

Proposed Amendments to the Exhaust Emissions Standards and Test Procedures  
for 2024 and Subsequent Model Year Heavy-Duty Engines and Vehicles,  
Heavy-Duty On-Board Diagnostic System Requirements,  
Heavy-Duty In-Use Testing Program,  
Emissions Warranty Period and Useful Life Requirements,  
Emissions Warranty Information and Reporting Requirements, and  
Corrective Action Procedures,  
In-Use Emissions Data Reporting Requirements, and  
Phase 2 Heavy-Duty Greenhouse Gas Regulations,  
and Powertrain Test Procedures

Resolution 20-23

August 27, 2020

Agenda Item No.: 20-8-2

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the California Air Resources Board (CARB 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, sections 43013, 43100, 43101, 43102, and 43104 of the Health and Safety Code authorize the Board to adopt emission standards, in-use performance standards, and test procedures to control air pollution caused by motor vehicles and motor vehicle engines;

WHEREAS, section 43013(h) of the Health and Safety Code states that it is the intent of the Legislature that the Board act as expeditiously as feasible to reduce oxides of nitrogen (NOx) emissions from diesel vehicles and other categories of vehicular and mobile sources which significantly contribute to air pollution problems;

WHEREAS, section 43018(a) of the Health and Safety Code directs the Board to achieve the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to accomplish the attainment of state 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 43105 of the Health and Safety Code provides that no new motor vehicle or engine required under Part 5 of the Health and Safety Code to meet emission standards shall be sold to the ultimate purchaser, ordered or delivered for sale to the ultimate purchaser, or registered in this state if the manufacturer has violated emission standards or test procedures and has failed to take corrective action, which may include recall of vehicles or engines, specified by the Board in accordance with its regulations; and provides that the Board shall establish procedures for determining, and the facts constituting, compliance or failure of compliance pursuant to section 43105;

WHEREAS, section 43106 of the Health and Safety Code requires each new motor vehicle or new motor vehicle engine required under Part 5 of the Health and Safety Code to meet the emission standards established pursuant to section 43101 to be, in all material respects, substantially the same in construction as the test motor vehicle or engine that has been certified by the Board [in accordance with Article 1, Chapter 2, of Part 5, Division 26 of the Health and Safety Code];

WHEREAS, section 43205.5 of the Health and Safety Code requires manufacturers of 1990 and subsequent model year heavy-duty engines or heavy-duty vehicles to warrant to ultimate purchasers and subsequent purchasers that such engines or vehicles are designed, built, and equipped to conform with applicable emission standards for a period of use determined by the Board, and to additionally warrant such engines or vehicles are free from defects in materials and workmanship causing such engines or vehicles to fail to conform with applicable requirements for the same or lesser period of use;

WHEREAS, section 43806 of the Health and Safety Code directs CARB to adopt emission standards and procedures applicable to new engines used in publicly owned and privately owned transit buses, and specifies that the standards shall consider the engine and fuel as a system and shall reflect the use of the best emission control technologies expected to be available at the time;

WHEREAS, section 28114 of the Vehicle Code requires every heavy-duty vehicle used to transport persons for compensation and operated by a transit authority or district, or owned by private entity to meet the emission standards adopted by the Board pursuant to Health and Safety Code 43806;

WHEREAS, the Legislature has enacted the California Global Warming Solutions Act of 2006 (Assembly Bill 32 (AB 32); Stats 2006, ch. 488, Health and Safety Code section 38500 et seq.) declares that global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California;

WHEREAS, AB 32 added section 38501 to the Health and Safety Code, which expresses the Legislature's findings that global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California, and the Legislature's intent that the Board coordinate with State agencies and consult with the environmental justice community, industry sectors, business groups, academic institutions, environmental organizations, and other stakeholders in implementing AB 32; and design emissions reduction measures to meet the statewide emissions limits for greenhouse gases (GHG) in a manner that minimizes costs and maximizes benefits for California's economy, and maximizes additional environmental and economic co-benefits for California, and complements the State's efforts to improve air quality;

WHEREAS, in recognition of the devastating impacts of climate change emissions on California, Governor Arnold Schwarzenegger, in June 2005, enacted Executive Order S-3-05 which established the following GHG emission targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emission 80 percent below 1990 levels;

WHEREAS, Governor Brown in Executive Order B-16-12 reaffirmed a 2050 GHG emission reduction target for the transportation sector of 80 percent below 1990 levels;

WHEREAS, Governor Brown in Executive Order B-30-15 established a 2030 GHG emission reduction target of 40 percent below 1990 levels, in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050;

WHEREAS, section 38510 of the Health and Safety Code designates CARB as the State agency charged with monitoring and regulating sources of GHG emissions in order to reduce these emissions;

WHEREAS, section 38505 of the Health and Safety Code defines GHGs as including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride;

WHEREAS, section 38560 of the Health and Safety Code directs the Board to adopt rules and regulations in an open public process to achieve the maximum

technologically feasible and cost-effective GHG reductions from sources or categories of sources, subject to the criteria and schedules set forth in part 4 of division 25.5 of the Health and Safety Code;

WHEREAS, section 38580 of the Health and Safety Code designates CARB as the agency charged with monitoring compliance and enforcing any regulation adopted by the Board pursuant to Division 25.5 of the Health and Safety Code;

WHEREAS, on-road heavy-duty vehicles and engines are significant sources of NO<sub>x</sub>, particulate matter (PM), and GHG emissions in California, contributing 31 percent of all statewide NO<sub>x</sub> emissions as well as 26 percent of total statewide diesel PM emissions;

WHEREAS, in March 2017, CARB approved the 2016 State Strategy for the California State Implementation Plan (2016 SIP). One of the key measures of the 2016 SIP is the establishment of on-road heavy-duty engine low-NO<sub>x</sub> emission requirements that provide a 90 percent reduction in NO<sub>x</sub> emissions compared to current engines. To complement this measure, the 2016 SIP also included a "Lower In-Use Emission Performance Level" measure to ensure that heavy-duty vehicles remain as "clean" in-use, as they were originally certified when new. These two measures are critical for attaining federal health-based air quality standards for ozone in 2031 in the South Coast and San Joaquin Valley air basins, as well as PM<sub>2.5</sub> standards in the next decade;

WHEREAS, since 2010, new California and federal on-road heavy-duty engines have been subject to a NO<sub>x</sub> standard of 0.20 grams per brake horsepower-hour (g/bhp-hr), and a PM standard of 0.01 g/bhp-hr. For diesel engines, the certification test cycles to determine compliance with these emission standards are the diesel heavy-duty transient Federal Test Procedure (FTP) and the Ramped Modal Cycle Supplemental Emission Test (RMC-SET). For Otto-cycle engines, the applicable certification test cycle is the Otto-cycle FTP;

WHEREAS, manufacturers must currently demonstrate that their engines comply with applicable emission standards throughout a period called the regulatory useful life, which for the heaviest diesel engines is currently 10 years, 435,000 miles, or 22,000 hours, whichever first occurs;

WHEREAS, manufacturers must currently warrant emission-related parts for a specified time-period, currently 100,000 miles or five years, whichever first occurs. For parts that fail under warranty, manufacturers must report certain data to CARB, as specified in CARB's Emission Warranty Information Reporting (EWIR) program. If failure rates meet or exceed established thresholds, manufacturers are required to conduct corrective actions;

WHEREAS, manufacturers are also currently required to conduct testing of a fraction of their engine families by actually operating vehicles on the road, using portable

emissions measurement systems (PEMS). The in-use test data are evaluated via the not-to-exceed (NTE) method and submitted to CARB and the United States Environmental Protection Agency (U.S. EPA). Engine families that fail the in-use testing requirements are subject to potential recall;

WHEREAS, beginning in October 2013, CARB, in partnership with the Manufacturers of Emission Controls Association, U.S. EPA, South Coast Air Quality Management District, and engine manufacturers, funded a Low NO<sub>x</sub> Demonstration Program with Southwest Research Institute (SwRI) to evaluate the feasibility of attaining a 0.02 g/bhp-hr tailpipe NO<sub>x</sub> emission standard on modern on-road heavy-duty engines. That tailpipe standard corresponds to a 90 percent reduction in NO<sub>x</sub> emissions from the current 0.20 g/bhp-hr emission standard for on-road heavy-duty engines. The Low NO<sub>x</sub> Demonstration Program has demonstrated the feasibility of achieving significantly lower exhaust emissions from heavy-duty engines;

WHEREAS, selective catalytic reduction (SCR) systems with ammonia as a reductant for diesel engines and three-way catalysts for Otto-cycle engines have been the technologies of choice for the majority of engine manufacturers to meet the current 0.20 g/bhp-hr NO<sub>x</sub> emissions standard. The ammonia is supplied to the SCR system in the form of aqueous urea solution, also known as diesel exhaust fluid (DEF), which decomposes into ammonia and carbon dioxide when it is injected in the hot exhaust;

WHEREAS, in current SCR systems, DEF cannot be injected at exhaust temperatures below 200°C to avoid permanent damage to the SCR system, thereby rendering SCR systems ineffective at the low exhaust temperatures that occur during cold starts, idling, low speed, and low load operations;

WHEREAS, on-road heavy-duty vehicles, including long haul vehicles operating in California, spend a significant portion of their operation idling and in stop-and-go urban operation, and NO<sub>x</sub> emissions from these operations are becoming increasingly significant because of SCR inactivity at low exhaust temperatures;

WHEREAS, SwRI, in the Low NO<sub>x</sub> Demonstration Program, has demonstrated the capability and feasibility of certain engine technologies and strategies that can quickly raise exhaust gas temperatures to SCR operating temperatures during cold starts and maintain high exhaust gas temperatures during sustained low load operations and that optimize NO<sub>x</sub> emission reductions without impacting GHG emissions;

WHEREAS, advanced SCR catalyst formulations and configurations and DEF management controls currently exist that provide higher NO<sub>x</sub> conversion efficiency at exhaust temperatures as low as 180°C, as well as increased NO<sub>x</sub> conversion efficiencies at higher exhaust temperatures;

WHEREAS, existing certification test cycles do not accurately represent today's traffic conditions, which are characterized by more congestion and more frequent low load

operations. Thus, there is a need for a new low load certification cycle (LLC) to demonstrate that engine and aftertreatment hardware and controls needed to deal with low load operations are present and functional;

WHEREAS, to comply with the existing PM standard of 0.01 g/bhp-hr, diesel engines are currently equipped with diesel particulate matter filters (DPFs);

WHEREAS, most currently certified engines are compliant with the existing PM emission standard of 0.01 g/bhp-hr PM , and in fact exhibit certification levels that are at or close to 0.001 g/bhp-hr;

WHEREAS, trucks congregate at locations such as truck stops, ports, distribution centers, etc., and idle for extended periods of time, thereby producing harmful emissions of diesel PM emissions and NOx that adversely affect the health of the drivers and affected communities;

WHEREAS, in 1998, CARB identified diesel PM as a toxic air contaminant based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects;

WHEREAS, emissions from idling diesel trucks are toxic, localized and concentrated, and of grave air quality concern, particularly to communities disproportionately impacted by air pollution from other sources;

WHEREAS, U.S. EPA has expressed that it is currently developing its own regulation to establish lower federal NOx emission standards, called the Cleaner Trucks Initiative, which will likely apply to 2027 and later model year engines;

WHEREAS, a nationally harmonized program would reduce the cost of compliance to the industry and improve cost-effectiveness for both CARB's program and U.S. EPA's Cleaner Trucks Initiative. To that end, CARB staff has encouraged U.S. EPA to align its Cleaner Trucks Initiative provisions with CARB's Proposed Amendments, to the greatest extent possible;

WHEREAS, federally certified on-road heavy-duty vehicles are responsible for over half of the total vehicle miles travelled in California, and thus without a companion federal action, these federally certified heavy-duty vehicles would still be emitting excess NOx emissions while operating in California and would compromise California's ability to achieve clean air;

WHEREAS, in 2013, the Board approved for adoption optional low NOx emission standards for on-road heavy-duty engines that are 50 to 90 percent lower than the current standards to encourage engine manufacturers to introduce new technologies capable of reducing NOx emissions below the existing NOx heavy-duty engine emission standards;

WHEREAS, since 2016, engine manufacturers have been certifying natural gas- and propane-fueled spark-ignited stoichiometric engines that meet the optional low NO<sub>x</sub> standards of 0.02 g/bhp-hr, while also complying with applicable GHG emissions standards;

WHEREAS, beginning with 2004 and subsequent model year engines, California and federal average, banking, and trading (ABT) programs were nearly identical, and a national pool of ABT credits was used to account for all of a manufacturer's on-road heavy-duty engines sold nationally;

WHEREAS, the key advantage of the ABT program is to provide flexibility to manufacturers in meeting the emission standards by allowing compliance with the emission standards to be demonstrated through corporate averaging of certified products, within certain restrictions;

WHEREAS, CARB's proposed 2024 and subsequent model year NO<sub>x</sub> and PM emission standards would be more stringent than the existing federal 2024 model year NO<sub>x</sub> and PM emission standards. Consequently, the current ABT accounting mechanism would no longer accurately account for credits generated under California's on-road heavy-duty engine emissions program;

WHEREAS, the Advanced Clean Trucks (ACT) Regulation was proposed at a December 2019 board hearing and was approved for adoption by the Board on June 25, 2020. The purpose of the ACT Regulation is to accelerate the widespread adoption of zero-emission vehicles in the heavy-duty truck sector;

WHEREAS, incentives to promote the development, production and distribution of additional on-road heavy-duty zero-emission vehicles beyond the ACT regulatory requirements would encourage the early introduction of advanced zero-emission technologies;

WHEREAS, during the engine certification process, manufacturers must demonstrate that their engines will comply with applicable emission standards throughout the regulatory useful life. To demonstrate this compliance during certification, the manufacturer must develop a durability demonstration program, which simulates engine and aftertreatment aging over test cycles and shows that engine emissions would comply with certification emission standards over the engine's useful life;

WHEREAS, studies show that CARB's current durability demonstration program requirements do not adequately predict emissions generated by actual in-use engines and vehicles. Analysis of data from U.S. EPA's "2014-2017 Progress Report, Vehicle and Engine Compliance Activities," and CARB's recent investigation of excess emissions that led to a nationwide recall of more than 500,000 on-road heavy-duty trucks indicate that the current laboratory aging process for durability demonstration

programs does not yield valid and accurate results for projecting full useful life deterioration of engines. Hence, improvements that better simulate real-world durability are needed;

WHEREAS, in November 2004, the Board adopted regulations regarding "Engine Manufacturer Diagnostic System Requirements--2007 and Subsequent Model-Year Heavy-Duty Engines," (EMD), codified at title 13, California Code of Regulations, section 1971, which set forth requirements for (1) monitoring the fuel system, exhaust gas recirculation system, PM trap, and emission-related electronic components; and (2) alerting the vehicle operator to the malfunction by illuminating a malfunction indicator light (MIL) and outputting diagnostic information for use by repair technicians;

WHEREAS, in December 2005, the Board adopted regulations regarding "On-Board Diagnostic System Requirements for 2010 and Subsequent Model Year Heavy Duty Vehicles and Engines," (HD OBD), codified at title 13, California Code of Regulations, section 1971.1, which include more comprehensive diagnostic system requirements than the EMD regulation by establishing, among other things, monitoring requirements for virtually every emission-related component or system, standardized requirements defining the content and format of specific diagnostic information required to be output for use by repair technicians, testing requirements to ensure the HD OBD systems comply with the proposed regulation, and requirements for standardized measurement of real world monitoring performance;

WHEREAS, in April 2010, the Board adopted amendments to section 1971.1 and a new enforcement regulation establishing HD OBD in-use compliance procedures, "Enforcement of Malfunction and Diagnostic System Requirements for 2010 and Subsequent Model Year Heavy-Duty Engines," (HD OBD enforcement regulation), codified at title 13, California Code of Regulations, section 1971.5, which sets specific protocols for enforcement and remedying HD OBD noncompliance;

WHEREAS, in *Engine Manufacturers Association v. California Air Resources Board* (2014) 231 Cal.App.4th 1022, the California Court of Appeal, Third Appellate District held that CARB's adoption of the in-use testing and recall provisions of the California HD OBD enforcement regulation was consistent with the broad scope of authority the Legislature has granted CARB to reduce air pollution caused by motor vehicle emissions;

WHEREAS, the Board adopted amendments to title 13, California Code of Regulations, sections 1971.1 and 1971.5 in 2013, 2016, and 2019;

WHEREAS, the malfunction criteria for HD OBD is based on the existing engine emission standards, and CARB staff is proposing substantially lower NOx and PM emission standards for 2024 and subsequent model year engines;

WHEREAS, the current HD OBD regulations require engines and vehicles to incorporate additional data stream parameters that can be used to characterize engine NOx emissions performance in the real world. These tracking parameters are collectively referred to as "Real Emissions Assessment Logging," or REAL. Under these requirements, 2022 and subsequent model year on-road heavy-duty diesel-fueled engines are required to store emissions data including NOx emissions data for the vehicle's lifetime, within the vehicle's engine control module;

WHEREAS, with the wide use of telematics by fleets, the capability to transmit in-use emission data via telematics to engine manufacturers from each new 2024 and subsequent model year on-road heavy-duty diesel-fueled truck would be feasible in the 2024 model year;

WHEREAS, the periodic reporting of all REAL parameters for each engine family could be used as a tool to verify the durability of on-road heavy-duty diesel-fueled engines in real-time;

WHEREAS, on-road heavy-duty diesel engine manufacturers were required to utilize the NTE method to certify engines in 2003 and 2004, as part of settlement agreements after U.S. EPA and CARB discovered several heavy-duty diesel engine manufacturers calibrated their engines to improve fuel economy at the expense of emitting excess NOx emissions during high speed cruise operation in the 1990s;

WHEREAS, in December 2000, the Board approved for adoption the NTE requirements and associated emission standards for 2005 and subsequent model year on-road heavy-duty diesel engines, to allow for practical in-use compliance testing of heavy-duty engines. In particular, it was believed that the NTE requirement would apply under any engine operating conditions that could reasonably be expected in normal vehicle use, notwithstanding the conditions outside the NTE control area called exclusions. In addition, heavy-duty diesel engine manufacturers were required to conduct a manufacturer-run in-use testing program (HDIUT) using the NTE method using PEMS to measure engine and vehicle emissions, and to provide emissions data;

WHEREAS, an analysis of manufacturer-submitted HDIUT data sets for 2010 to 2014 model year SCR-equipped engines shows the NTE method and exclusions reduce the valid data to a small fraction of the total operation and accordingly fails to adequately measure and record real-world emissions performance.

WHEREAS, based on staff analysis, modifications to the existing NTE procedure would not yield a significantly greater capture of valid data for compliance determination;

WHEREAS, the European Union uses a Moving Average Window (MAW) method for their In-Service Conformity Program (similar to HDIUT) adopted in Commission Regulation (EU) No 582/2011. The real world emissions from engines calibrated to the MAW requirements of the current European emission standards, Euro VI, have

resulted in lower real world emission rates compared to the engines certified to the NTE requirements, despite having a less stringent certification cycle emissions standard;

WHEREAS, the lower real world emission rates in Europe may be attributed to their Euro VI in-use testing program that covers a broader range of engine operation and requires engine manufacturers to design for NOx emission compliance over a greater portion of engine operation;

WHEREAS, CARB staff has been working with technical representatives of engine manufacturers, SwRI, and U.S. EPA staff to develop a new MAW approach that evaluates all modes of in-use operation of heavy-duty Otto-cycle and diesel engines and compares those emissions to the certification standards and equivalent test cycles;

WHEREAS, since the initial implementation of NTE testing, emissions control systems have advanced to using more electronic controls and measurement parameters. Examination of HD OBD emission control system data stream parameters and REAL data are crucial to verifying the condition of the test vehicle before, during, and after heavy-duty in-use testing, and to verify all sensors and tracking information are properly responding in agreement with data collected through the PEMS equipment. However, there are currently no requirements for engine manufacturers to submit such data during HDIUT;

WHEREAS, based on CARB staff's review of HDIUT data submissions, it appears some manufacturers had selected routes and times for testing specifically to ensure passing results, rather than to provide rigorous evaluation of real-world emissions. For example, many tests focused only on highway driving, thereby limiting the ability to assess emissions performance at lower engine loads, under which emissions compliance is more challenging;

WHEREAS, on-road heavy-duty Otto cycle engines are not required to certify to or have a certification compliance statement with the NTE procedures and therefore the NTE method is not currently included in the heavy-duty Otto-cycle test procedures;

Whereas, California's Heavy-Duty In-Use Compliance (HDIUC) program, in which CARB staff selects engine families and conducts compliance testing based on the NTE procedures, has identified gross polluter engine families that were not identified in the HDIUT program;

WHEREAS, manufacturers are currently required to provide emissions defect warranty coverage for new California on-road heavy-duty diesel vehicles and the engines that power them for a period of 100,000 miles in service, five years in service, or 3,000 hours of operation, whichever first occurs;

WHEREAS, manufacturers are currently required to provide emissions defect warranty coverage for new California on-road heavy-duty Otto-cycle vehicles and the engines that power them for a period of 50,000 miles in service or five years in service, whichever first occurs;

WHEREAS, manufacturers are required beginning in 2022 to provide emissions defect warranty coverage for new California on-road heavy-duty diesel vehicles equipped with light heavy-duty engines for a period of 110,000 miles in service or five years in service, whichever first occurs;

WHEREAS, manufacturers are required beginning in 2022 to provide emissions defect warranty coverage for new California on-road heavy-duty diesel vehicles equipped with medium heavy-duty engines for a period of 150,000 miles in service or five years in service, whichever first occurs;

WHEREAS, manufacturers are required beginning in 2022 to provide emissions defect warranty coverage for new California on-road heavy-duty diesel vehicles equipped with heavy heavy-duty engines for a period of 350,000 miles in service or five years in service, whichever first occurs;

WHEREAS, manufacturers are currently required to certify new California on-road light heavy-duty diesel engines to useful life periods of 110,000 miles or 10 years in service, whichever first occurs;

WHEREAS, manufacturers are currently required to certify new California on-road medium heavy-duty diesel engines to useful life periods of 185,000 miles or 10 years in service, whichever first occurs;

WHEREAS, manufacturers are currently required to certify new California on-road heavy heavy-duty diesel engines to useful life periods of 435,000 miles in service, 10 years in service, or 22,000 hours in service, whichever first occurs;

WHEREAS, manufacturers are currently required to certify new California on-road heavy-duty Otto-cycle engines used in vehicles greater than 14,000 pounds GVWR to useful life periods of 110,000 miles or 10 years in service, whichever first occurs;

WHEREAS, modern on-road heavy heavy-duty diesel vehicles have service lives greater than 850,000 miles on average before a major engine overhaul is required;

WHEREAS, modern on-road medium heavy-duty diesel vehicles have service lives greater than 430,000 miles on average before a major engine overhaul is required;

WHEREAS, modern on-road light heavy-duty diesel vehicles have service lives greater than 325,000 miles on average before a major engine overhaul is required;

WHEREAS, modern on-road heavy-duty Otto-cycle vehicles with a GVWR greater than 14,000 pounds have service lives greater than 215,000 miles on average before a major engine overhaul is required;

WHEREAS, on-road heavy-duty vehicles and engines operating with malfunctioning emissions-related parts or systems will likely emit substantially more NOx and PM than properly functioning vehicles and engines;

WHEREAS, owners of on-road heavy-duty vehicles and engines are more likely to have emissions-related part malfunctions repaired when the manufacturer is liable for the repair;

WHEREAS, owners of on-road heavy-duty vehicles are less likely to tamper with, and more likely to properly maintain their vehicles, during the warranty period to avoid voiding the emissions warranty;

WHEREAS, longer heavy-duty vehicle emissions warranty periods are both feasible and desirable, as evidenced by manufacturers and third-party vendors offering extended emissions warranty periods up to 1,000,000 miles at additional cost to vehicle owners;

WHEREAS, longer heavy-duty engine useful life periods are feasible because manufacturers have the option to design parts and systems to remain durable for the full useful life of the engine or to specify appropriate maintenance intervals such that vehicle owners inspect, repair, and replace parts as needed throughout the useful life of the engine;

WHEREAS, longer emissions warranty periods may incentivize manufacturers to produce or procure more durable emissions-related parts, resulting in decreased vehicle downtime, in cases where parts are frequently being replaced at the manufacturer's expense during the warranty period;

WHEREAS, some heavy-duty vehicle applications, such as vocational vehicles, accumulate miles much more slowly than heavy-duty vehicles used in cross country applications, such as line haul vehicles;

WHEREAS, the use of hours of operation to determine the expiration of warranty is appropriate for vehicles that accumulate miles slowly when warranty periods exceed five years;

WHEREAS, current minimum maintenance intervals for Otto-Cycle engines have the potential to circumvent the incentives provided by lengthened warranty periods, and any resulting timely emissions-related repairs, by transferring the liability for emissions-related part replacement from the manufacturer to the vehicle owner during the

lengthened warranty periods (thereby effectively shortening the lengthened warranty periods);

WHEREAS, in current practice engine manufacturers do not typically schedule maintenance that requires the replacement of critical emissions-related parts within the useful life of their heavy-duty engines, with a few exceptions, such as for DEF filters;

WHEREAS, the current provision to limit manufacturer liability after scheduled maintenance contained in title 13, California Code of Regulations, section 2036 (d)(3), has the potential to circumvent the incentives of lengthened warranty periods and timely repairs by requiring the vehicle owner to pay for subsequent repairs during the lengthened warranty periods;

WHEREAS, vehicle owners are not liable for non-scheduled maintenance throughout the warranty period pursuant to title 13, California Code of Regulations, section 2036 (d)(1);

WHEREAS, California's current light- and medium-duty vehicle emissions defect warranty regulations require manufacturers to provide longer warranties for high-cost, emissions-related systems and parts capable of causing severe emission increases when malfunctioning;

WHEREAS, manufacturers are currently liable for replacing SCR beds and DPF filters during the useful life of the engine if the manufacturer schedules those parts to be replaced;

WHEREAS, on-road heavy-duty Otto-cycle engine manufacturers, as a matter of current practice, do not schedule Otto-cycle catalyst beds to be replaced during the useful life of their engines;

WHEREAS, the current definition of an "emissions-related part" contained in title 13, California Code of Regulations, section 1900 (b)(3) is defined, in pertinent part, as any part "which affects any regulated emissions from a motor vehicle..."

WHEREAS, emissions-related parts are warrantable parts as per the definition of a "warranted part" contained in title 13, California Code of Regulations, section 2035 (c)(2);

WHEREAS, title 13, California Code of Regulations, section 1971.1 requires 2010 and newer model year on-road heavy-duty engines (with a delayed compliance allowance for small-volume manufacturers) to be equipped with HD OBD systems;

WHEREAS, HD OBD systems are required to monitor all emissions-related parts and systems installed on heavy-duty vehicles and to illuminate the MIL should a malfunction be detected;

WHEREAS, any part that enables or disables the monitoring of an emissions-related part is also an emissions-related part by virtue of its ability to mask the detection of emissions increases when those monitored parts malfunction;

WHEREAS, auxiliary power units (APUs) used on heavy-duty sleeper cabs to provide power to vehicle occupants, (e.g., to power air conditioners or heaters), should be equipped with engines that are certified to the most stringent PM standards to best protect the health of the vehicle occupants and to minimize toxic diesel PM emissions in California overall;

WHEREAS, aligning California APU certification standards to comparable federal APU requirements is needed to ensure California's authority to certify APUs to stringent PM standards, which will promote the most healthful air quality in California;

WHEREAS, independent California enforcement authority is necessary to ensure in-use compliance for APU engines including the timely remediation of violations should they occur;

WHEREAS, the purpose of the Emissions Warranty Information and Reporting (EWIR) program and associated corrective action procedures is to require manufacturers to timely report warranty and failure rate information for emission control components to CARB, and expeditiously take corrective action once failure rates exceed corrective action thresholds to remedy any issues with emission control components;

WHEREAS, under the existing EWIR regulations and corrective action procedures, manufacturers have failed to take required corrective action, even when CARB has identified a defective emissions control component;

WHEREAS, if a manufacturer contests the need for corrective action, CARB currently has the burden of proving that a substantial number of vehicles or engines contain a failure in an emission-related component that results in the failure of the vehicles or engines to meet applicable emission standards over their useful lives;

WHEREAS, under the existing EWIR regulations and corrective action procedures CARB would need to expend excessive time and resources to conduct numerous emissions tests to prove that substantial numbers of vehicles or engines are exceeding emission standards over their useful lives;

WHEREAS, the existing EWIR regulations and corrective action procedures are insufficient to timely require manufacturers to take corrective actions needed to

reduce excess emissions attributable to defects in emission control components that are identified through the EWIR program;

WHEREAS, U.S. EPA and the National Highway Traffic Safety Administration, on behalf of the federal Department of Transportation, jointly issued a Final Rule titled "Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles - Phase 2," on October 25, 2016 (81 Fed. Reg. 73478 et seq. (Oct. 25, 2016)), referred to as the federal Phase 2 GHG regulation;

WHEREAS, the federal Phase 2 GHG regulation, which applies to new 2021 and subsequent model year on-road medium- and heavy-duty engines and vehicles (with trailer requirements applying to 2018 and subsequent model year trailers) establish more stringent technology-forcing GHG emission standards and the first national GHG emission standards for certain trailers pulled by heavy-duty tractors;

WHEREAS, on February 8, 2018, the Board approved for adoption the California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles and Amendments to the Tractor-Trailer Greenhouse Gas Regulation, referred to as the California Phase 2 GHG Regulation, which generally aligns with the comparable federal Phase 2 GHG regulation;

WHEREAS, the trailer requirements in the federal Phase 2 GHG regulation have been challenged by the Truck Trailer Manufacturers Association;

WHEREAS, CARB has suspended its enforcement of the California Phase 2 GHG trailer standards (title 17, California Code of Regulations § 95663(c) and (d)) for model years 2020 and 2021 trailers manufactured before January 1, 2022;

WHEREAS, several minor clarifications and corrections are needed in the California Phase 2 GHG Regulation, including clarifications that trailers are a class of vehicles subject to the warranty, in-use compliance, and emissions warranty reporting provisions of the California Phase 2 GHG regulation;

WHEREAS, U.S. EPA has recently proposed technical amendments to the Phase 2 GHG test procedures for heavy-duty engines that are largely intended to provide manufacturers compliance flexibility and to reduce variability in test results;

WHEREAS, the California Phase 2 GHG Regulation requires the use of environmental performance consumer labels for new chassis-certified medium-duty vehicles, and pick-up trucks and vans, with GVWR of 8,501 to 14,000 pounds, except medium-duty passenger vehicles, manufactured on or after January 1, 2021;

WHEREAS, the California Phase 2 GHG regulation allows manufacturers of heavy-duty hybrid vehicles to optionally certify their hybrid vehicles to show compliance with the GHG emission standards using the Phase 2 GHG powertrain testing procedure;

WHEREAS, heavy-duty hybrid vehicles are currently not allowed to use the Phase 2 GHG powertrain testing procedures to certify to criteria pollutants emissions standards under the California Phase 2 GHG regulation;

WHEREAS, CARB adopted the California Interim Certification Procedure for 2004 and Subsequent Model Hybrid-Electric Vehicles in the Urban Bus and Heavy-Duty Vehicle Classes (hereinafter "Interim Procedure") on October 24, 2002, as last amended October 21, 2014, which provides a certification procedure for on-road heavy-duty hybrid vehicles to certify to criteria pollutants emission standards;

WHEREAS, heavy-duty hybrid powertrains cannot currently be certified to criteria pollutants emission standards using either the existing Interim Procedure since the Interim Procedure requires a complete vehicle for testing or the existing heavy-duty engine dynamometer certification test procedures since it was not designed to account for a hybrid powertrain's additional hybrid components;

WHEREAS, technology for heavy-duty hybrid vehicles is evolving, expanding into diverse applications, different vehicle configurations and duty cycles, which further adds to the challenge of properly characterizing the emission and fuel economy benefits of the diverse matrix of hybrid powertrain configurations;

WHEREAS, U.S. EPA has recently proposed technical amendments to the Phase 2 GHG test procedures for heavy-duty engines that update the existing powertrain test procedures to make them more robust and more suitable to be adapted for testing hybrid powertrains to show compliance with criteria pollutants emissions standards;

WHEREAS, it is costly to perform individual certification testing for each possible vehicle/hybrid powertrain configuration that is anticipated to be produced;

WHEREAS, industry stakeholders have requested that CARB develop an alternative, optional certification pathway for certifying hybrid powertrains that is able to account for the emission and fuel economy benefits due to hybridization, allow flexibility for certifying hybrid powertrains that could be installed in various vehicle applications, and reduce the overall costs of certification testing;

WHEREAS, medium-duty engines are defined as engines used in on-road heavy-duty vehicles with a GVWR from 8,501 to 14,000 pounds, called medium-duty vehicles;

WHEREAS, amendments to the medium-duty engine requirements are necessary to clarify the useful life period pertaining to these engines, to clearly delineate the certification of medium-duty engine to be used in medium-duty vehicles only, not in vehicles with a GVWR over 14,000 pounds, and to protect against allowing heavy-duty engines used in vehicles over 14,000 pounds GVWR to be certified with a medium-duty vehicle test group;

WHEREAS, staff has proposed amendments to the Exhaust Emissions Standards and Test Procedures for 2024 and Subsequent Model Year Heavy-Duty Engines and Vehicles, Heavy-Duty On-Board Diagnostic System Requirements, Heavy-Duty In-Use Testing Program, Emissions Warranty Period and Useful Life Requirements, Emissions Warranty Information and Reporting Requirements, and Corrective Action Procedures, In-Use Emissions Data Reporting Requirements, and Phase 2 Heavy-Duty Greenhouse Gas Regulations, and Powertrain Test Procedures (Proposed Amendments), as set forth in Appendices A-1 through B-6 to the Initial Statement of Reasons released to the public on June 23, 2020;

WHEREAS, staff has developed potential further modifications to the regulatory language, in response to comments received since the Initial Statement of Reasons (ISOR or Staff Report) was released, included as Attachment A to this resolution, for potential consideration at a future date;

WHEREAS, CARB'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 CARB conducts its CEQA review according to this certified program (California Code of Regulations, title 17, sections 60000-60005);

WHEREAS, the Proposed Amendments implement two measures previously included within CARB's Revised Proposed 2016 State Strategy for the State Implementation Plan (2016 State SIP Strategy), the "Low-NOx Engine Standard" and "Lower In Use Emission Performance Level." The environmental impacts of the Proposed Amendments were already examined as part of the Environmental Analysis (EA) prepared under CARB's certified regulatory program for the 2016 State SIP Strategy. Hence, the environmental impacts of the Proposed Amendments are considered to fall within the scope of that prior EA, entitled Final Environmental Analysis for the Revised Proposed 2016 State Strategy for the State Implementation Plan. CARB staff included a brief Environmental Analysis chapter in the Staff Report for these Proposed Amendments. This analysis, set forth in Chapter VII of the Staff Report, analyzed whether any aspect of the Proposed Amendments could result in any of the circumstances set forth in CEQA Guidelines section 15162. No additional environmental review is required, because the record evidence shows that the amendments would not result in any such circumstances.

WHEREAS, written comments were received during the 60-day comment period that purported to raise significant environmental issues associated with the Proposed Amendments. While no response to such comments is necessary because responses to comments are not required for addendum or "within the scope" type determinations, for informational purposes staff prepared written responses to those comments that purported to raise significant environmental issues as set forth in Attachment B, and the

Board has reviewed and considered the written responses along with the environmental analysis included in the Staff Report;

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

WHEREAS, in consideration of the ISOR, written comments, and public testimony, the Board finds that:

Despite advances in reducing emissions from mobile sources, stationary sources, and area sources, California still has the most severe air pollution problems in the United States;

To meet federal and California Clean Air Act emission reduction requirements, CARB must continue to seek reductions from all sources under its authority, including on-road heavy-duty vehicles;

On-road heavy-duty vehicles in California remain significant sources of PM, NO<sub>x</sub>, and HC emissions, which adversely affect the public health and welfare, and the environment;

The Proposed Amendments effectively implement both the "Low-NO<sub>x</sub> Engine Standard" and "Lower In Use Emission Performance Level" measures that were included within the 2016 State SIP Strategy;

Data generated from SwRI's Low NO<sub>x</sub> Demonstration Program, and modeling, testing, and research by engine manufacturers, manufacturers of emission controls, component suppliers, and non-governmental organizations demonstrate the technical feasibility of the proposed NO<sub>x</sub> and PM exhaust emissions standards and the new LLC;

The proposed reduction in the PM standard from the current 0.01 g/bhp-hr to 0.005 g/bhp-hr can be achieved with current DPF systems, and increasing the stringency of the standard would prevent backsliding and help maintain current robust PM emission control performance levels near 0.001 g/bhp-hr;

The Proposed Amendments that establish optional NO<sub>x</sub> emission standards for all on-road heavy-duty engines intended for service classes greater than 14,000 pounds GVWR would incentivize manufacturers to develop and certify engines that are even cleaner than the engines required by the Proposed Amendments in the future, and to the extent manufacturers utilize this option, it will result in greater emissions reductions of NO<sub>x</sub>;

The Proposed Amendments to the existing ABT program for criteria pollutants are needed to avoid potential credit accounting discrepancies between California and federal ABT credits resulting from the differences in proposed emission standards, certification test procedures, and useful life periods between the California and the federal programs;

The proposed California-only averaging, banking and trading (CA-ABT) program would provide flexibility to the engine manufacturers in producing on-road heavy-duty engines for the California market;

The proposed CA-ABT program would provide an incentive mechanism to manufacturers of on-road heavy-duty zero-emission vehicles to develop, produce, and distribute products in the California market from the 2022 model year until the 2030 model year;

The Proposed Amendments to the durability demonstration program include procedures that lengthen and standardize the durability demonstration process that are needed to ensure both that future engine and aftertreatment system designs are capable of meeting emissions standards over their useful life periods, and to ensure that the durability program can more accurately predict the actual emissions of engines and vehicles. These procedures include provisions for annually reporting in-use emission data from a segment of the on-road heavy-duty trucks originally sold in the California market in order to verify the performance of future engine and aftertreatment systems;

The Proposed Amendments to the HD OBD regulation that establish alternate NO<sub>x</sub> and PM malfunction criteria for emission threshold monitors are needed to accommodate the proposed lower NO<sub>x</sub> and PM standards for 2024 and subsequent model year engines until CARB staff is able to fully evaluate the capability of HD OBD monitors to robustly detect failures at the thresholds based on proposed lower emission levels;

The Proposed Amendments to California's HDIUC program and the manufacturer-run HDIUT program that would replace the current NTE-based methodology with a new MAW-based methodology would improve the coverage of both engine operations and emissions generated during in-use testing, would ensure that adequate test data are obtained to verify the condition of the test vehicle and sensors before, after, and during the testing, and would provide clear criteria for engine family pass or fail compliance determinations, and would help ensure that corrective action is taken in a timely manner, and would clarify current provisions;

The current on-road heavy-duty vehicle and engine emissions defect warranty periods and useful life periods are disproportionately low compared to the service lives of the majority of modern heavy-duty vehicles, and are therefore

insufficient to promote compliance with stringent emissions standards throughout a reasonable portion of such vehicles' service lives;

The Proposed Amendments to extend the emissions defect warranty periods for on-road heavy-duty vehicles and engines would reduce emissions by helping to minimize the occurrences of tampering, mal-maintenance, and by incentivizing the timely repair of emissions-related parts that heavy-duty vehicle owners might otherwise ignore or postpone due to cost concerns. Lengthening the emissions defect warranty mileage periods would occur in two phases: first, beginning with the 2027 model year for engines used in vehicles greater than 14,000 pounds GVWR, and then again, in the 2031 model year for engines used in vehicles greater than 14,000 pounds GVWR;

Timely emissions-related repairs help achieve and maintain the emission benefits of existing heavy-duty diesel engine emission standards by ensuring that engines continue to comply with applicable emissions standards longer in-use;

The proposed longer, more representative useful life periods are necessary to ensure that heavy-duty engines comply with applicable emission standards throughout a greater portion of their service lives, resulting in greater overall emission reductions than from the standards alone. Lengthening the useful life periods for on-road heavy-duty vehicles and engines would occur in two phases: first, beginning with the 2027 model year engines used in vehicles greater than 14,000 pounds GVWR, and then again, in the 2031 model year for engines used in vehicles greater than 14,000 pounds GVWR;

The proposed less frequent minimum maintenance intervals for Otto-cycle engines are appropriate, feasible, and necessary to ensure the effectiveness of lengthened emissions defect warranty periods, which reduce emissions;

Catalyst beds are high-cost parts that can have severe effects on emissions performance when they fail; therefore, the Proposed Amendments are appropriate, feasible, and necessary to prohibit manufacturers from scheduling Otto-cycle catalyst beds for replacement unless the manufacturer agrees to pay for the replacement throughout the lengthened useful life of the engine;

Because a HD OBD system must monitor all emission-related components and systems for proper operation, a condition that triggers the HD OBD system's MIL necessarily indicates the existence of a condition that should be covered by the emissions defect warranty. The Proposed Amendments that explicitly link triggering of the HD OBD MIL to the definition of an emissions warranted part will better ensure that repairs of malfunctioning emission-related parts and systems and/or parts or systems used by OBD systems to monitor for faults that

trigger the MIL on heavy-duty engines are performed in a more timely manner, and ensure excess emissions are reduced;

The Proposed Amendments to the scheduled maintenance interval provisions will ensure that the Proposed Amendments to extend the emissions warranty coverage will stay effective for the intended warranty periods and that warranty repairs and their associated emission reductions will be achieved;

The proposed PM standard for APUs is necessary to ensure that California's certification requirements and emissions standards for APUs are as stringent as existing federal requirements, and for CARB to have independent enforcement authority over APUs installed in on-road tractors;

The Proposed Amendments to the EWIR regulation and corrective action procedures are needed to ensure that emission control component problems are identified and corrected more expeditiously, to prevent or reduce the excess emissions associated with such defective components; would increase the amount of information required in warranty reports and provide staff with additional tools to verify the accuracy of the information provided in warranty reports; would base the need for corrective action solely on warranty failure rates, which will allow CARB to more expeditiously require needed corrective actions; and would prevent the use of components that are known to have failure rates that exceed the corrective action threshold in future model years;

Reducing GHG emissions from medium- and heavy-duty vehicles, including trailers, is an important element of CARB's programs to reduce the GHG emissions that contribute to climate change;

Although enforcement of the California Phase 2 trailer certification regulation is suspended for the time being, CARB staff continues to voluntarily administer its trailer certification program and is continuing to voluntarily certify trailers for Phase 2 compliance;

The proposed minor amendments to the California Phase 2 GHG Regulation are necessary to improve implementation of the original regulation, to clarify existing requirements for consistency among regulated entities, to conform with proposed emission standards, and to correct inadvertent ambiguities;

The proposed trailer-specific amendments to the California Phase 2 GHG Regulation are necessary to clarify that the initial California Phase 2 GHG emissions warranty, in use compliance, and emissions warranty reporting requirements apply to trailers certified to the California Phase 2 GHG emission standards;

The proposed trailer-specific amendments to the California Phase 2 GHG Regulation also provide compliance flexibility allowing exemption of specific trailer configurations if it is determined that technology is not available for trailers subject to the Phase 2 requirements;

The California Phase 2 GHG requirement for Environmental Performance labels for Class 2b/3 pick-up trucks and vans would allow consumers to compare vehicle choices based on the provided GHG and smog ratings on the required label and potentially choose lower-emitting vehicles;

The Proposed Amendments to the Environmental Performance label for Class 2b/3 pick-up trucks and vans are needed to clarify and improve the implementation of the original label specifications requirements, and for consistency purposes among manufacturers;

The Proposed Amendments to the California Phase 2 GHG Regulation would have no cost impacts to the regulated entities;

Although CARB staff is currently not proposing any amendments to the California Phase 2 GHG regulation or to the test procedures in response to the U.S. EPA notice of proposed rulemaking on Improvements for Heavy-Duty Engine and Vehicle Test Procedures, and Other Technical Amendments, staff may propose specific amendments as this rulemaking action proceeds;

Despite the availability of the Interim Procedure for certifying hybrid vehicles to criteria pollutants emissions standards since December 5, 2014, manufacturers have not used the Interim Procedure to certify heavy-duty hybrid vehicles for sale in California;

The proposed hybrid powertrain certification test procedure would provide significant flexibility to manufacturers seeking an optional alternative certification pathway to bring heavy-duty hybrid vehicles for sale in the California market;

If properly designed, integrated, and tested, heavy-duty hybrid vehicles have the potential to reduce emissions and/or improve fuel economy;

The Proposed Amendments for medium-duty engines clarify useful life requirements, prevent the usage of medium-duty engines in heavy-duty vehicles over 14,000 pounds, and sunset an existing allowance that permits engines in vehicles over 14,000 pounds to be certified with similar medium-duty vehicles by the 2023 model year, before the implementation of proposed lower NOx emission standards;

The Proposed Amendments meet the statutory requirements to adopt standards and regulations, in-use performance standards and other regulations for heavy-duty engines and vehicles that are necessary, cost-effective and technologically feasible, as identified in sections 43013(a) and (b) of the Health and Safety Code;

The Proposed Amendments meet the statutory requirement to reduce NO<sub>x</sub> emissions from diesel vehicles and other categories of vehicular sources which significantly contribute to air pollution problems as expeditiously as feasible, as identified in section 43013(h) of the Health and Safety Code;

The Proposed Amendments meet the statutory requirement that the Board adopt standards and regulations that will result in the most cost-effective combination of control measures on all classes of motor vehicles, including reductions in in-use emissions through improvements in motor vehicle emission system durability and performance, and that will achieve the maximum degree of emissions reductions possible from vehicular sources to attain state standards at the earliest practicable date, as identified in section 43018 of the Health and Safety Code;

The reporting requirements applicable to businesses in the Proposed Amendments are necessary for the health, safety, and welfare of the people of the State;

The requirements of the Proposed Amendments and new proposed regulatory provisions are similar, but not identical to requirements of corresponding federal criteria pollutant and Phase 2 GHG regulations; the different California requirements are authorized by the Health and Safety Code and the cost of the different state provisions is justified by the benefit to human health, public safety, public welfare, or the environment;

The proposed regulations are necessary, appropriate, and technologically feasible;

The economic and fiscal impacts of the Proposed Amendments have been analyzed as required by California law, and the conclusions and supporting documentation for this analysis are set forth in Chapter IX of the Staff Report, as supplemented by staff's presentation at the hearing of this item;

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 CARB, 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 CARB's environmental justice policies and do not disproportionately impact people of any race, culture, income, or national origin; 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.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves for adoption amendments to sections 1900, 1956.8, 1961.2, 1965, 1968.2, 1971.1, 2035, 2036, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2121, 2123, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2133, 2137, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2166, 2166.1, 2167, 2168, 2169, 2170, 2423, and 2485, title 13, California Code of Regulations, and sections 95662 and 95663, title 17, California Code of Regulations, and new sections 2139.5, 2169.1, 2169.2, 2169.3, 2169.4, 2169.5, 2169.6, 2169.7, and 2169.8, title 13, California Code of Regulations, as set forth in Appendices A-1 through B-6 to the Initial Statement of Reasons released to the public on June 23, 2020.

BE IT FURTHER RESOLVED that the Board delegates to the Executive Officer the authority to develop any further modifications to the proposed regulatory language, specifically, (1) modifications to retain or to remove the proposed optional 50-state directed engine standards for emissions of oxides of nitrogen (NOx) from 2024 to 2026 model year engines, (2) modifications to delegate to the Executive Officer the authority to exercise discretion to determine, on an individualized case-by-case basis, whether it is appropriate to provide a transit agency that is experiencing difficulty in complying with applicable requirements as a result of the Proposed Amendments, either compliance flexibility and/or assistance in complying with the Proposed Amendments, in recognition of the unique difficulties experienced by transit agencies and the fact that transit agencies are required to fully transition to zero emission buses pursuant to the Innovative Clean Transit regulation, and (3) staff's proposed modified regulatory language in Attachment A, as authorized by CARB's regulations at California Code of Regulations, title 17, sections 60000-60005. To this end, the Board delegates to the Executive Officer the authority to undertake any further public review process required by the Administrative Procedure Act, and to both (1) conduct any appropriate further environmental review, including preparing responses to any comments received raising

significant environmental issues where necessary, associated with any modifications to the proposed regulatory language , and (2) either approve or disapprove such changes. The Executive Officer may choose to instead present the modifications to the proposed regulatory language to the Board for approval, after preparing and circulating any additional environmental analysis and after preparing responses to any comments received raising significant environmental issues (to the extent any such further environmental analysis or responses to comments are required by CARB's regulations).

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, submit the proposed regulatory action to the U.S. EPA for approval as a revision to the California State Implementation Plan (SIP) as required by the federal Clean Air Act (CAA). The adopted regulatory action would be submitted as a SIP revision because it amends regulations intending to reduce emissions of air pollutants to attain and maintain the National Ambient Air Quality Standards promulgated by U.S. EPA under the CAA.

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

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

I hereby certify that the above is a true and correct copy of Resolution 20-23 as adopted by the California Air Resources Board.

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Ryan Sakazaki, Board Clerk

Resolution 20-23

**August 27, 2020**

Identification of Attachments to the Board Resolution

- Attachment A:** Staff's Suggested Modifications to the Original Proposal  
(Distributed at the August 27, 2020 CARB hearing).
- Attachment B:** Response to Comments on the Environmental Analysis for the  
Proposed Heavy-Duty Engine and Vehicle Omnibus Regulation and  
Associated Amendments  
(Released to the public on August 26, 2020).