

State of California
AIR RESOURCES BOARD

**Technical Status and Proposed Revisions to On-Board Diagnostic System
Requirements for Heavy-Duty Engines, Passenger Cars, Light-Duty Trucks,
Medium-Duty Vehicles and Engines**

Resolution 12-29

August 23, 2012

Agenda Item No.: 12-5-2

WHEREAS, sections 39002 and 39003 of the Health and Safety Code charge the Air Resources Board (ARB or the Board) with the responsibility for systematically attacking the serious air pollution problem caused by motor vehicles;

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the 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 39515 and 39516 of the Health and Safety Code provide that the Board may delegate any duty to the Executive Officer which the Board deems appropriate and that any power, duty, purpose, function, or jurisdiction which the Board may lawfully delegate shall be conclusively presumed to have been delegated to the Executive Officer unless the Board has expressly reserved such authority onto itself;

WHEREAS, sections 39010 and 39601 of the Health and Safety Code provide that a definition set forth in chapter 2 of division 26 of the Health and Safety Code shall govern the construction of the division unless and until rules and regulations are adopted by the Board that revise such definition, and that the Board may revise such definition in order to conform to definitions to federal laws and rules and regulations;

WHEREAS, in sections 43000 and 43000.5(a) of the Health and Safety Code, the Legislature declared that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State and that despite significant reductions in vehicle emissions in recent years, continued growth in population and vehicle miles traveled throughout California have the potential not only to prevent attainment of the State standards, but in some cases, to result in worsening of air quality;

WHEREAS, section 43000.5(c) of the Health and Safety Code provides that the burden for achieving needed reductions in vehicle emissions should be distributed equitably among various classes of vehicles, including heavy-duty vehicles to accomplish

improvements in both the emissions level and in-use performance and durability of all new motor vehicles;

WHEREAS, section 43004 of the Health and Safety Code provides that unless expressly exempted, the exhaust emission standards for gasoline powered motor vehicles shall apply to motor vehicles that have been modified or altered to use a fuel other than gasoline or diesel;

WHEREAS, section 43006 of the Health and Safety Code provides that ARB may certify the fuel system of any motor vehicle powered by a fuel other than gasoline or diesel that meets the standards specified by section 43004 and adopt test procedures for such certification;

WHEREAS, section 43806 of the Health and Safety Code directs the Board to adopt emission standards and procedures applicable to new engines used in publicly owned and privately owned public transit buses;

WHEREAS, sections 43013(a) and (b) of the Health and Safety Code authorizes the Board to adopt emission standards and in-use performance standards and other regulations for light-duty, medium-duty, and heavy-duty engines and vehicles that it finds to be necessary, cost-effective, and technologically feasible;

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 sources which significantly contribute to air pollution problems;

WHEREAS, the Legislature adopted and the Governor signed Senate Bill 1028 in October 2007, codified in part at Health and Safety Code section 39602.5, which identified that a number of areas within California have not attained national ambient air quality standards (NAAQS) for ozone and particulate matter of 2.5 microns or less (PM2.5), and which directed the Board to adopt every feasible rule and regulation that are sufficient, in conjunction with other applicable measures, to achieve and maintain the NAAQS by the applicable deadlines;

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 further directs the Board that in carrying out the directives of section 43018(a), 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, including but not limited to, reductions in exhaust and evaporative emissions and reductions in in-use emissions through improvements in motor vehicle emission system durability and performance;

WHEREAS, section 43101 of the Health and Safety Code directs the Board to adopt and implement emission standards for new motor vehicles for the control of emissions therefrom that are necessary and technologically feasible;

WHEREAS, section 43102 of the Health and Safety Code provides that the Board shall not certify a new motor vehicle or motor vehicle engine unless the vehicle or engine meets the emission standards adopted by the ARB pursuant to Part 5 of the Health and Safety Code under test procedures adopted pursuant to section 43104;

WHEREAS, section 43104 of the Health and Safety Code provides that the Board shall adopt test procedures and any other procedures necessary to determine whether vehicles and engines are in compliance with the emissions standards established under Part 5 of the Health and Safety Code;

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, sections 43105.5 of the Health and Safety Code directs the Board to require motor vehicle manufacturers to provide service information necessary to properly inspect, test and repair motor vehicles;

WHEREAS, sections 43016, 43154, 43211, and 43212 of the Health and Safety Code provide that penalties may be assessed against motor vehicle manufacturers for noncompliance with ARB emission standards, other certification requirements, or other rules and regulations of the Board;

WHEREAS, in July 1990, the Board adopted and the Office of Administrative Law (OAL) subsequently approved regulations regarding "Malfunction and Diagnostic System Requirements--1994 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines," (OBD II), which are codified at California Code of Regulations, title 13, section 1968.1 (section 1968.1), and which set forth requirements for: (1) monitoring catalyst efficiency, engine misfire, evaporative system integrity, secondary air injection, and chlorofluorocarbon containment; (2) improving current monitoring of the fuel system, oxygen sensor, exhaust gas recirculation system, and other emission-related components of the OBD II system; and (3) standardizing fault codes, diagnostic repair equipment, the vehicle connector used for attaching the repair equipment to the vehicle, and the protocol for downloading repair information in order to improve the effectiveness of emission control system repairs;

WHEREAS, the Board adopted amendments to section 1968.1 in 1991, 1993, 1994, and 1996, which were respectively approved by OAL;

WHEREAS, the United States Environmental Protection Agency (U.S.EPA) on October 3, 1996 approved California's request for a waiver of preemption under section 209(b) of the federal Clean Air Act (CAA) for the OBD II regulation (61 Fed.Reg. 53371 (October 11, 1996));

WHEREAS, in 1998, the Board adopted stringent new tailpipe and evaporative emission standards for low emission vehicles ("LEV II");

WHEREAS, in April 2002, the Board adopted and OAL approved regulations regarding "Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines," which are codified at California Code of Regulations, title 13, section 1968.2 (section 1968.2), and which (1) carried over most of the requirements of section 1968.1; (2) revised several monitoring requirements including, among other things, the requirements for catalyst monitoring, misfire monitoring, and oxygen sensor monitoring; and (3) established several new requirements including requirements for cold start emission reduction strategy monitoring, direct ozone reduction monitoring, production vehicle evaluation and verification testing, and standardized measurement of real world monitoring performance;

WHEREAS, in April 2002, the Board also adopted and OAL approved an enforcement regulation regarding OBD II compliance, "Enforcement of Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines," (OBD II enforcement regulation), which is codified at California Code of Regulations, title 13, section 1968.5 and which sets specific protocols for enforcement and remedying OBD II noncompliance;

WHEREAS, the Board adopted and OAL approved amendments to section 1968.2 in 2006, 2009, and 2012 and the ARB requested that U.S. EPA take appropriate action under CAA section 209 in granting California a waiver of preemption;

WHEREAS, in 2001 and 2002, the Board adopted more stringent tailpipe emission standards for 2007 and subsequent model year heavy-duty diesel engines and 2008 and subsequent model year heavy-duty Otto-cycle engines, respectively;

WHEREAS, in May 2004, the Board adopted and the OAL subsequently approved regulations regarding "Engine Manufacturer Diagnostic System Requirements—2007 and Subsequent Model-Year Heavy-Duty Engines," (EMD), which are codified at California Code of Regulations, title 13, section 1971 (section 1971), and which set forth requirements for (1) monitoring the fuel system, exhaust gas recirculation system, particulate matter (PM) trap, and emission-related electronic components; and (2) alerting the vehicle operator to the problem by illuminating a warning light and

outputting diagnostic information for use by repair technicians;

WHEREAS, the U.S. EPA approved California's request for a waiver of preemption under section 209(b) of the CAA for the EMD regulation (71 Fed.Reg. 335 (January 4, 2006));

WHEREAS, in July 2005, the Board adopted and OAL subsequently approved regulations regarding "On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Vehicles and Engines," (HD OBD), which are codified at section 1971.1, and 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 OBD systems comply with the proposed regulation, and requirements for standardized measurement of real world monitoring performance;

WHEREAS, U.S. EPA on August 13, 2008, approved California's request for a waiver of preemption under section 209(b) of the CAA for the HD OBD regulation (73 Fed.Reg. 52042 (September 8, 2008));

WHEREAS, in 2009, the Board adopted and OAL approved 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), which is codified at California Code of Regulations, title 13, section 1971.5 and sets specific protocols for enforcement and remedying HD OBD noncompliance, and ARB has requested that U.S. EPA take appropriate action under CAA section 209 in granting California a waiver of preemption;

WHEREAS, the staff has now proposed adoption of amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5;

WHEREAS, the proposed amendments to section 1971.1 would include, among other things, modifications that relax the malfunction thresholds until the 2016 model year for three major emission control systems (PM filters, NOx catalysts, and NOx sensors) on diesel engines based on the current status of manufacturers' capability to meet the requirements, revisions that accelerate the start date for OBD system implementation on alternate-fueled engines from the 2020 model year to the 2018 model year, and changes that would provide relaxations for OBD systems on heavy-duty hybrid vehicles for the 2013 through 2015 model years;

WHEREAS, the proposed amendments to section 1968.2 would update the medium-duty OBD II diesel-related monitoring and in-use monitor performance requirements to be consistent with the proposed diesel-related amendments to section 1971.1;

WHEREAS, the proposed amendments to sections 1968.5 and 1971.5 would align the regulations with the proposed changes to the OBD II and HD OBD regulations;

WHEREAS, the California Environmental Quality Act (CEQA), section 21080.5 of the Public Resources Code and Board regulations at California Code of Regulations, title 17, section 60006 require that no project that may have significant adverse environmental impacts, may be adopted as originally proposed if feasible alternatives or mitigation measures are available to reduce or eliminate such impacts;

WHEREAS, pursuant to section 43101 of the Health and Safety Code and section 11346.3 of the Government Code, the Board is required to consider and assess the effects of the proposed regulations on the economy of the State;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of chapter 3.5 (commencing with section 11340), part 1, division 3, title 2 of the Government Code to consider adoption of proposed amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5;

WHEREAS, the Board finds that the proposed amendments to sections 1968.2 and 1971.1 including a proposed definition of emission standards that conforms to the definition in federal law, which clarify and reaffirm the purpose of the OBD regulations and the fact that the OBD requirements include emission standards, are necessary to address confusion and misunderstanding on the part of some stakeholders;

WHEREAS, the Board finds regarding the adoption of proposed amendments to section 1971.1 that:

Emissions from heavy-duty trucks, especially NO_x and PM emissions released from diesel trucks are of great concern;

NO_x is a precursor to ozone and causes lung irritation, diesel PM is carcinogenic and identified as a toxic air contaminant, and both NO_x and diesel PM contribute to the formation of PM_{2.5};

Particulate filters are expected to be universally used on heavy-duty engines by the 2007 model year;

In an effort to meet NAAQS and State ambient air quality standards and comply with the federally mandated State Implementation Plan (SIP) to meet those standards, California has continued in the forefront in adopting the most stringent motor vehicle emission control program in the nation;

On-Road Heavy-Duty strategy #5 (previously called measure 17) was included as part of the 2007 SIP to complement the new emission standards for heavy-duty diesel engines and with the objective to reduce in-use emissions from on-road heavy-duty diesel vehicles;

Section 1971.1 was adopted in 2005, requiring comprehensive OBD requirements for 2010 and subsequent model year heavy-duty gasoline and diesel vehicles, as part of the State's efforts to meet the obligations of ARB's on-road heavy-duty SIP strategy; and

Since the adoption of section 1971.1 in 2005, it continues to be apparent that additional requirements and revisions to current requirements are necessary to improve emission-control system monitoring and compliance in light of increasingly stringent emission standards, the need to better serve repair technicians, and manufacturer concerns regarding compliance;

Proposed amendments to section 1971.1 include:

Revisions that push the start date for OBD system implementation on alternate-fueled engines from the 2020 model year to the 2018 model year;

Modifications that revise the malfunction thresholds for three major diesel emission control components (PM filters, NOx catalysts, NOx sensors), delay the implementation dates for some catalyst-based components, revise the diesel misfire monitoring requirements to no longer require emission threshold-based malfunction criteria and to require expanded monitoring conditions, and provide clarifications to many of the diesel monitoring requirements;

Revisions that provide relaxations for OBD systems on heavy-duty hybrid vehicles for the 2013 through 2015 model years; and

Revisions to the standardization requirements to assist the service and repair industry in the repair of emission-related malfunctions and to better allow ARB staff to determine compliance;

The proposed amendments to section 1971.1 are necessary, cost-effective, and technologically feasible to carry out the purposes of the California CAA;

WHEREAS, the Board finds regarding the adoption of proposed amendments to section 1968.2 that:

With the introduction of 1996 model year motor vehicles and engines, manufacturers have incorporated OBD II systems into nearly all of their light- and medium-duty vehicle models and engines pursuant to the standards and other requirements of sections 1968.1 and 1968.2;

Additional amendments to section 1968.2 were adopted in 2006 and 2009 requiring more comprehensive monitoring requirements for diesel vehicles to make it more consistent with the requirements adopted in 2005 for heavy-duty vehicles in section 1971.1; and

Since the adoption of amendments to section 1968.2 in 2009, additional amendments to section 1968.2 are necessary to improve emission-control system monitoring and compliance in light of increasingly stringent emission standards, the need to better serve repair technicians and to incorporate the use of OBD systems into inspection programs, and concerns of manufacturers regarding compliance;

Proposed amendments to section 1968.2 include:

Revisions to the monitoring requirements for medium-duty diesel vehicles to make them more consistent with those currently being proposed for heavy-duty diesel engines in section 1971.1;

Additional requirements and revisions to existing provisions to ensure that a motor vehicle certified to the LEV II emission standards will continue to operate in-use at or near certification levels throughout the motor vehicle's life; and

The proposed amendments to section 1968.2 are necessary, cost-effective, and technologically feasible to carry out the purposes of the California CAA;

WHEREAS, the Board finds regarding the adoption of proposed amendments to sections 1968.5 and 1971.5 that:

Changes are needed to sections 1968.5 and 1971.5 to align with the proposed amendments to sections 1968.2 and 1971.1;

More appropriate in-use criteria and thresholds (i.e., criteria and thresholds at which a vehicle would be found to have a nonconforming OBD system and would be subject to possible enforcement action) are needed to reflect diesel engines and vehicles certified to the proposed revised in-use monitor performance requirements and higher interim OBD malfunction thresholds;

Criteria to determine if mandatory recall is applicable to diesel misfire monitors are needed to account for the revised diesel misfire monitor requirements; and

More appropriate criteria to determine if mandatory recall is applicable to PM filter monitors are needed to ensure monitors that are unable to detect PM filters with missing substrates are subject to remedial action;

WHEREAS, the Board further finds regarding the adoption of proposed amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5 that:

With respect to the requirements of CEQA, proposed amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5 will, in the aggregate, not have a significant adverse effect on the environment;

The proposed amendments should not have a disproportionate impact on any community in the State, especially low-income or minority communities, in that the amendments will not cause an increase in emissions and affected diesel vehicles are located throughout the State and not congregated in any specific area;

The economic and cost impacts of proposed sections 1968.2, 1968.5, 1971.1, and 1971.5 have been analyzed as required by California law, and the conclusions and supporting documentation for this analysis are set forth in the Initial Statement of Reasons for this regulatory action;

The reporting requirements of sections 1968.2, 1968.5, 1971.1, and 1971.5 that are applicable to businesses are necessary for the health, safety, and welfare of the people of the State; and

The requirements of sections 1968.2, 1968.5, 1971.1, and 1971.5 are similar but not identical to requirements addressed in federal regulations; different California regulations 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.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves proposed amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5 of California Code of Regulation, title 13, as set forth in Attachments A through D, as modified by Attachment E, Staff's Suggested Modifications.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to adopt proposed amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5 after making the modified regulatory language and any additional supporting documents and information available for public comment for a period of 15 days, provided that the Executive Officer shall consider such written comments regarding the modifications and additional supporting documents and information as may be submitted during this period, make further modifications as may be appropriate in light of the comments received, and present the regulations to the Board for further consideration if he or she determines that this is warranted.

BE IT FURTHER RESOLVED that the Board hereby determines that pursuant to section 209(b) of the CAA, the amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5 do not undermine California's previous determinations that the State's standards are in the aggregate, at least as protective of the public health and welfare as applicable federal standards or that requirements and procedures are consistent with section 202(a) of the CAA and do not raise any new issues.

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, forward the amendments to sections 1968.2, 1968.5, 1971.1, and 1971.5 to the Administrator of U.S. EPA with a request that the amendments and regulation be found to be within the scope of the existing waiver(s) that have been requested and/or granted under section 209(b) of the CAA for title 13, California Code of Regulations, sections 1968.2 and 1971.1 or, to the extent that the Executive Officer deems necessary, be granted a new waiver.

BE IT FURTHER RESOLVED that to the extent a new waiver is required, the Board hereby determines that California continues to need its own motor vehicle emission reductions program to meet compelling and extraordinary environmental conditions.

BE IT FURTHER RESOLVED that the Board directs the staff to continue to closely monitor vehicle and engine manufacturers in complying with the requirements of sections 1968.2, 1968.5, 1971.1, and 1971.5, title 13, California Code of Regulations, and to report to the Board in approximately two years, if amendments to the regulations are necessary.

FILED

JUN 27 2013

Resources Agency of California

I hereby certify that the above is a true and correct copy of Resolution 12-29, as adopted by the Air Resources Board.

Mary Alice Morency

Mary Alice Morency, Clerk of the Board

for

Resolution 12-29
August 23, 2012

Identification of Attachments to the Resolution

- Attachment A:** Proposed Modifications to the Regulation for On-Board Diagnostic System Requirements -- 2010 and Subsequent Model Year Heavy-Duty Engines, California Code of Regulations, title 13, section 1971.1, as set forth in Appendix A to the Initial Statement of Reasons, released July 5, 2012.
- Attachment B:** Proposed Modifications to the Regulation for Malfunction and Diagnostic System Requirements -- 2004 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines, California Code of Regulations, title 13, section 1968.2, as set forth in Appendix B to the Initial Statement of Reasons, released July 5, 2012.
- Attachment C:** Proposed Modifications to the Regulation for Enforcement of Malfunction and Diagnostic System Requirements for 2010 and Subsequent Model Year Heavy-Duty Engines, California Code of Regulations, title 13, section 1971.5, as set forth in Appendix C to the Initial Statement of Reasons, released July 5, 2012.
- Attachment D:** Proposed Modifications to the Regulation for Enforcement of Malfunction and Diagnostic System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines, California Code of Regulations, title 13, section 1968.5, as set forth in Appendix D to the Initial Statement of Reasons, released July 5, 2012.
- Attachment E:** Staff's Suggested Modifications to the Original Proposal (Distributed at the August 23, 2012 ARB hearing)

State of California
Environment Protection Agency
AIR RESOURCES BOARD

Notice of Decision

Project Title: Amendments to the HD OBD and OBD II Regulations

Project Location: Statewide

Public Meeting Date: August 23, 2012; Agenda Item 12-5-2

Project Description: Amendments to HD OBD and OBD II regulations will affect current requirements that have not yet been implemented. The amendments will consist of short term interim delays in implementing start dates of a few emission threshold diesel monitoring requirements (due to technology development delays); changes to the engine/vehicle software (includes changes to the OBD system algorithms using existing hardware already on the engines/vehicles); enforcement requirements modifications; and OBD software structure and diagnostics standardization. These changes will help ensure that forecasted emission reduction benefits from adopted engine emission standards programs are achieved.

Approved By: Air Resources Board
Executive Order **#R-13-005**
Dated: **June 26, 2013**

This notice is to advise that the Air Resources Board (ARB), as the lead agency, has adopted the above described regulatory action on **June 26, 2013** and has determined that the regulatory action will not have a significant adverse effect on the environment (see attached Executive Order **#R-13-005**).

In accordance with CEQA and ARB's certified regulatory program, ARB prepared an environmental analysis as part of the Staff Report: Initial Statement of Reasons for Proposed Rulemaking (Staff Report) entitled "Technical Status and Revisions to Malfunction and Diagnostic System Requirements for Heavy-Duty Engines (HD OBD) and Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II)".

The Staff Report identified no significant adverse environmental effects, and no comments were received identifying any significant environmental issues pertaining to this item.

No mitigation measures, findings, or statement of overriding considerations were adopted for this regulatory action because the regulation will not have a significant adverse impact on the environment.

The copy of the environmental analysis included in the Staff Report is available at the ARB rulemaking webpage at: <http://www.arb.ca.gov/regact/2012/hdobd12/hdobd12.htm>

These rulemaking documents may also be examined at:

California Air Resources Board
Attn: Board Administration and Regulatory Coordination Unit
1001 I Street
Sacramento, CA 95814

Certified: CE Samra
ARB CEQA Unit

Date: 6/27/2013

FILED

JUN 27 2013

Attachments:

- Executive Order #R-13-005

Resources Agency of California