TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER TECHNICAL STATUS AND PROPOSED REVISIONS TO ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES AND ENGINES AND HEAVY-DUTY ENGINES ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS, AND TO CONSIDER ENFORCEMENT PROVISIONS FOR HEAVY-DUTY ENGINES ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS

The Air Resources Board (ARB or the Board) will conduct a public hearing at the time and place noted below to review the technical status and implementation of California's On-Board Diagnostic System Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II) and Heavy Duty Engines On-Board Diagnostic System Requirements (HD OBD) requirements. The Board will consider amendments to the OBD II and HD OBD regulations to update the diesel monitoring requirements, to make some requirements consistent between the OBD II and HD OBD regulations, and to clarify and improve the regulation where necessary, among other revisions. The Board will also consider adoption of enforcement provisions for heavy-duty engines with OBD systems.

DATE: May 28, 2009

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium, Second Floor
1001 I Street
Sacramento, California 95814

This item will be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., May 28, 2009, and may continue at 8:30 a.m., May 29, 2009. This item may not be considered until May 29, 2009. Please consult the agenda for the meeting, which will be available at least ten days before May 28, 2009, to determine the day on which this item will be considered.

If you require special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by Fax at (916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW

Sections Affected: Proposed adoption of amendments to California Code of Regulations, title 13, section 1968.2 and section 1971.1; and proposed adoption of California Code of Regulations, title 13, section 1971.5 for 2010 and subsequent model year heavy-duty engines.

Documents Incorporated by Reference:

International Standards Organization (ISO) 15765-4:2005 “Road Vehicles – Diagnostics on Controller Area Network (CAN) – Part 4: Requirements for emission-related systems,” January 2005.

Society of Automotive Engineers (SAE) J1699-3 – “OBD II Compliance Test Cases”, May 2006.

SAE J1930 "Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms – Equivalent to ISO/TR 15031-2," October 2008.

SAE J1978 "OBD II Scan Tool – Equivalent to ISO/DIS 15031-4:December 14, 2001," April 2002.

SAE J1979 "E/E Diagnostic Test Modes," May 2007.

SAE J2012 "Diagnostic Trouble Code Definitions," December 2007.

SAE J2403 “Medium/Heavy-Duty E/E Systems Diagnosis Nomenclature,” August 2007.

SAE J2534-1 – “Recommended Practice for Pass-Thru Vehicle Programming”, December 2004.

SAE J1939 consisting of:

J1939 Recommended Practice for a Serial Control and Communications Vehicle Network, March 2009;
J1939/1 Recommended Practice for Control and Communications Network for On-Highway Equipment, September 2000;
J1939/11 Physical Layer, 250K bits/s, Twisted Shielded Pair, September 2006;
J1939/13 Off-Board Diagnostic Connector, March 2004;
J1939/15 Reduced Physical Layer, 250K bits/sec, UN-Shielded Twisted Pair (UTP), August 2008;
J1939/21 Data Link Layer, December 2006;
J1939/31 Network Layer, April 2004;
J1939/71 Vehicle Application Layer (Through February 2008), January 2009;
J1939/73 Application Layer—Diagnostics, September 2006;
J1939/81 Network Management, May 2003; and
J1939/84 OBD Communications Compliance Test Cases For Heavy Duty Components and Vehicles, December 2008.

Background: OBD systems serve an important role in helping to ensure that engines and vehicles maintain low emissions throughout their full life. OBD systems monitor virtually all emission controls on gasoline and diesel engines, including catalysts, particulate matter (PM) filters, exhaust gas recirculation systems, oxygen sensors, evaporative systems, fuel systems, and electronic powertrain components as well as other components and systems that can affect emissions when malfunctioning. The systems also provide specific diagnostic information in a standardized format through a standardized serial data link on-board the vehicles.

The Board originally adopted comprehensive OBD regulations in 1989, requiring all 1996 and newer model year passenger cars, light-duty trucks, and medium-duty vehicles and engines to be equipped with OBD systems (referred to as OBD II). The Board has modified the regulation in regular updates since initial adoption to address manufacturers' implementation concerns and, where needed, to strengthen specific monitoring requirements. Most recently, the Board updated the OBD II requirements in 2006 to address several concerns and issues regarding the regulation (California Code of Regulations, title 13, §1968.2) and enforcement requirements (Cal. Code Regs., title 13, §1968.5). In 2004, the Board adopted the Engine Manufacturer Diagnostic system (EMD) regulation (California Code of Regulations, title 13, §1971), which requires manufacturers of heavy-duty engines and vehicles (i.e., vehicles with a gross vehicle weight rating greater than 14,000 pounds) to implement diagnostic systems on all 2007 and subsequent model year on-road heavy-duty Otto-cycle (gasoline) and diesel engines. However, the EMD regulation is much less comprehensive than the OBD II regulation, requiring the monitoring of only a few major emission control technologies and containing no standardized requirements, and was developed to require heavy-duty engine manufacturers to achieve a minimum level of diagnostic capability while focusing most of their resources on meeting the new 2007 exhaust emission standards. Subsequently, in 2005, ARB adopted California Code of Regulations, title 13, section 1971.1, which established comprehensive OBD requirements for 2010 and subsequent model year heavy-duty engines and vehicles.

Staff Proposal: In adopting the HD OBD requirements in 2005, the Board directed the staff to continue to follow manufacturers' progress towards meeting the regulation's requirements and to report back should modifications to the requirements be deemed appropriate. Since then, staff has identified areas in which modifications to section 1971.1, would provide for improved monitoring system performance.

The proposed changes include revisions to the HD OBD regulation for diesel engines that relax the malfunction thresholds until 2013 model year for three major emission controls (PM filters, oxides of nitrogen (NOx) catalysts, and NOx sensors) based on the current limits of technical feasibility, delay the monitoring requirements for some catalyst-based components until 2013 to provide further leadtime for emission control strategies to stabilize, clarify terms or definitions for several monitors, expand the monitoring requirements for exhaust gas recirculation (EGR) and boost control to cover all types of system architectures, and provide for additional data to be output to a scan tool for use by technicians or ARB staff for diagnosis, repair, and determining compliance.

The proposed changes also include revisions to the HD OBD regulation for gasoline engines that are similar to those adopted in 2006 for light-duty gasoline vehicles. These changes would ensure robust detection of oxygen sensor slow response faults and specific fuel system faults that result in an imbalance from cylinder to cylinder.

Changes are also proposed to the light- and medium-duty OBD II regulation primarily to harmonize the medium-duty diesel vehicle requirements with the proposed revisions noted above for HD OBD diesel engines to allow manufacturers of both heavy-duty and medium-duty diesel engines to design to and meet essentially the same requirements. Some of the proposed amendments, however, would also apply to light-duty vehicles covered by the OBD II regulation.

Finally, a separate enforcement regulation for HD OBD is proposed (similar to the stand-alone enforcement regulation for the light- and medium-duty vehicles covered under the OBD II regulation) to define the procedures and criteria staff and manufacturers would be required to use in determining compliance of in-use engines with the HD OBD regulation.

Proposed amendments to the HD OBD regulation include:

- Clarifying storage and erasure of permanent fault codes.
- Adding flexibility to calculate the infrequent regeneration adjustment factors.
- Revising in-use monitoring frequency tracking for the PM filter monitor.
- Revising the definition of “idle” for several tracking requirements.
- Clarifying the definition of “continuous” monitoring for several monitors
- Revising diesel fuel system monitoring requirements for non-common rail systems to allow less frequent monitoring.
- Expanding monitoring for slow response faults in diesel boost pressure control systems to all types of boost control systems.
- Revising the 2010 through 2012 model year malfunction thresholds for the diesel PM filter monitor, the NOx catalyst monitor, and the NOx sensor monitor.
- Delaying some monitoring requirements for catalyzed PM filters and diesel NMHC converting catalysts to the 2013 model year.
- Deleting the monitoring requirement for MIL circuit faults.
- Revising the gasoline fuel system monitoring requirements to add detection of failures caused by an air-fuel ratio cylinder imbalance.
- Revising the gasoline primary and secondary oxygen sensor monitoring requirements to clarify the minimum acceptable monitoring.
- Revising the cooling system monitoring requirements to include monitoring of faults that cause the coolant temperature to drop after the system reaches “warmed-up” temperature.
- Adding specific language for monitoring of emission control strategies.
- Updating the SAE and ISO document references.
- Adding data parameters that manufacturers must output to generic scan tools for diesel vehicles.
- Adding tracking requirements for emission-increasing auxiliary emission control devices (EI-AECD).

- Revising the service information requirements to be consistent with the stand-alone service information regulation (California Code of Regulations, title 13, §1969) for the 2010-2012 model years.
- Revising the aging requirements and test data collection requirements for certification demonstration testing.

Concurrently, as stated, the staff is proposing to update the medium-duty vehicle diesel-related requirements in the light- and medium-duty OBD II regulation (§1968.2) to be consistent with the proposed diesel-related amendments to the HD OBD regulation. These proposed changes for medium-duty vehicles include diesel monitoring requirements and diesel-related standardization requirements mentioned above. These changes also include clarification for several monitoring requirements that would apply to light- and medium-duty diesel vehicles. Additionally, in the OBD II regulation, staff is proposing to delay until the 2011 model year, the implementation of the gasoline primary oxygen sensor monitoring requirement that requires manufacturers to submit data demonstrating proper calibration and detection of all response rate malfunctions.

Lastly, staff had indicated during the adoption of the HD OBD regulations in 2005 that it intended to develop and implement an HD OBD-specific enforcement regulation similar to that already implemented for light- and medium-duty OBD II (California Code of Regulations, title 13, §1968.5). Thus, staff is also proposing detailed procedures (proposed California Code of Regulations, title 13, §1971.5) for in-use enforcement testing of HD OBD systems installed on 2010 and subsequent model year heavy-duty engines. The proposed regulation would set forth engine procurement and testing procedures that both ARB and engine manufacturers would have to follow for initial determination of possible HD OBD nonconformance. In addition, the proposal sets forth procedures that would be followed by both ARB and manufacturers if, after such testing, HD OBD systems of a tested engine group were found to be nonconforming. Among other provisions, the procedures would authorize ARB to take remedial action, which may include recall of vehicles in which the nonconforming systems are installed and assessment of monetary penalties against the affected manufacturer. Finally, staff is proposing a specific protocol to be followed by the Executive Officer and affected manufacturers in implementing remedial action plans.

At the Board's discretion, additional changes to the HD OBD or OBD II regulations may be considered to address concerns or provide additional flexibility or compliance options.

COMPARABLE FEDERAL REGULATIONS

In February 1993, the United States Environmental Protection Agency (U.S. EPA) promulgated final OBD requirements for federally certified light-duty vehicles and trucks. (40 CFR Part 86, §§ 86.094-2, 86.094-17, 86.094-18(a), 86.094-21(h), 86.094-25(d), 86.094-30(f), 86.094-35(l), 86.095-30(f), 86.095-35(l); see 58 Fed.Reg. 9468-9488 (February 19, 1993).) The requirements were later amended to require OBD systems on medium-duty vehicles by the 2008 model year. The final rule with the latest modifications of the requirements was signed on November 29, 2005. A central part of the federal regulation is that, for purposes of federal certification of vehicles, U.S. EPA

will deem California-certified OBD II systems to comply with the federal regulations. On October 3, 1996, the U.S. EPA formally granted California's request for a waiver regarding the OBD II regulation, as last amended in December 1994,[1] recognizing that the OBD II regulation is at least as stringent in protecting public health and welfare as the federal regulation, and that unique circumstances exist in California necessitating the need for the State's own motor vehicle regulations program.

The federal OBD requirements are comparable in concept and purpose with California's OBD II regulation; however, differences exist with respect to the scope and stringency of the requirements of the two regulations. More specifically, California's current OBD II regulations are generally more stringent than the comparable federal requirements. Under OBD II requirements, manufacturers must implement monitoring strategies for essentially all emission control systems and emission-related components. Generally, the OBD II regulation requires that components be monitored to indicate malfunctions when component deterioration or failure causes emissions to exceed 1.5 times the applicable tailpipe emission standards of the certified vehicle. The regulation also requires that components be monitored for functional performance even if the failure of such components does not cause emissions to exceed the 1.5 times the standard. The federal requirements, in contrast, require monitoring only of the catalyst, engine misfire, evaporative emission control system, and oxygen sensors. Other emission control systems or components, such as exhaust gas recirculation and secondary air systems, need only be monitored if by malfunctioning, vehicle emissions exceed 1.5 times the applicable tailpipe standards. No functional monitoring is required. Historically, virtually every vehicle sold in the U.S. is designed and certified to California's OBD II requirements in lieu of the federal OBD requirements.

In Health and Safety Code sections 43013, 43018, and 43101, the Legislature has expressly directed ARB to adopt emission standards for new motor vehicles that are necessary and technologically feasible and to endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of the state standards at the earliest practicable date. ARB initially adopted and is proposing to amend the HD OBD and OBD II regulations to meet those legislative directives.

The U.S. EPA recently adopted OBD requirements for vehicles and engines above 14,000 pounds, which is the weight range for California's "heavy-duty" class. The federal regulation is consistent with ARB's California regulation in almost all important aspects, and while minor differences may exist between these requirements, it is believed that heavy-duty OBD systems can be designed to comply with both the federal and California programs. In fact, U.S. EPA's regulation directly allows acceptance of systems that have been certified to California's HD OBD regulation.

[1] *California State Motor Vehicle Pollution Control Standards; Waiver of Federal Preemption; Decision,* dated October 3, 1996, 61 Fed.Reg. 53371-53372.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

ARB staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the proposed regulatory action that includes a summary of the environmental and economic impacts of the proposal. The report is 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).

Copies of the ISOR and the full text of the proposed regulatory language, in underline and strikeout format to allow for comparison with the existing regulations, may be accessed on ARB's Web site listed below, or may be obtained from the Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990 at least 45 days prior to the scheduled hearing on May 28, 2009.

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons in this notice, or may be accessed on the Web site listed below.

Inquiries concerning the substance of the proposed regulation may be directed to the designated agency contact persons for this rulemaking, Mike McCarthy, Manager, Advanced Engineering Section, at (626) 771-3614 or Adriane Chiu, Air Resources Engineer, Advanced Engineering Section, at (626) 350-6453.

Further, the agency representative and designated back-up contact persons to whom non-substantive inquiries concerning the proposed administrative action may be directed are Lori Andreoni, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-4011, or Amy Whiting, Regulations Coordinator, (916) 322-6533. The Board has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the agency contact persons.

This notice, the ISOR, and subsequent regulatory documents, including the FSOR, when completed, are available on ARB's Web site for this rulemaking at: http://www.arb.ca.gov/regact/2009/hdobd09/hdobd09.htm.

COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

The determinations of the Board's Executive Officer concerning the costs or savings necessarily incurred by public agencies and private persons and businesses in reasonable compliance with the proposed regulations are presented below.

Pursuant to Government Code sections 11346.5(a)(5), the Executive Officer has determined that the proposed amendments would not impose a mandate on local agencies or school districts. Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer has determined that the proposed regulatory action will result in some additional costs to ARB and will not create costs to other State agencies that purchase light-, medium-, and heavy-duty vehicles. In addition, the

Executive Officer has determined that the proposed regulatory action will not create costs or savings in federal funding to the State, costs to any local agency or school district whether or not reimbursable by the State pursuant to the Government Code, title 2, division 4, part 7 (commencing with section 17500) or other nondiscretionary savings to State or local agencies.

In developing this regulatory proposal, ARB staff evaluated the potential economic impacts on representative private persons and businesses, and has determined that any business or individual purchasing a light-, medium-duty, or heavy-duty diesel vehicle equipped with an OBD system would not incur additional costs as a result of these amendments. The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

The Executive Officer has made an initial determination, pursuant to Government Code section 11346.5(a)(8), that the proposed regulatory action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with business in other states, or on representative private persons. Support for this determination is set forth in the Staff Report (ISOR).

In accordance with Government Code section 11346.3, the Executive Officer has determined that the proposed regulatory action would have minor or no impact on the creation and elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within the State of California, or the expansion of businesses currently doing business within the State of California. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the ISOR.

For manufacturers of light- and medium-duty gasoline and diesel engines and vehicles, the costs to comply with the proposed regulatory action are expected to be negligible. The proposed revisions consist primarily of modifications to existing computer software. Incorporation and verification of the revised OBD software would be accomplished during the regular design updates at no additional cost. As a result, costs to manufacturers, and therefore consumers, are anticipated to remain virtually unchanged.

Of the 34 domestic and foreign corporations that manufacturer California-certified passenger cars, light-duty trucks, and medium-duty gasoline and diesel vehicles equipped with OBD II systems, only one motor vehicle manufacturing plant, the New United Motor Manufacturing, Inc. (NUMMI), a joint venture between Toyota Motor Corporation and General Motors Corporation, is located in California. As stated, the costs associated with the amendments principally involve research and development costs and do not affect assembly line production.

Heavy-duty engine manufacturers, the businesses to which the proposed requirements primarily apply, are located outside of California. Although the proposed requirements have some application to manufacturers of heavy-duty vehicles (assemblers, coach builders, etc.) installed with California-certified heavy-duty engines, the requirements imposed are negligible.

The Executive Officer has also determined, pursuant to California Code of Regulations, title 1, section 4, that the proposed regulatory action will have no significant adverse effect on small businesses. The OBD II regulation primarily affects vehicle manufacturers, none of which are small businesses. For the HD OBD regulation, the additional costs per engine were determined to be negligible. Further, small businesses which service or repair vehicles should not see any increased cost in equipment or tools or any reduction in the number of vehicles needing repair as a result of these amendments. Small businesses that own or operate light-, medium-, and heavy-duty vehicles would incur the same costs as individuals or other businesses, which was determined to be negligible.

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the Executive Officer has previously found that the reporting requirements of the regulation which apply to businesses are necessary for the health, safety, and welfare of the people of the State of California.

Before taking final action on the proposed regulatory action, the Board must determine that no reasonable alternative considered by the agency or that has been otherwise identified and brought to the attention of the agency would be more effective in carrying out the purpose for which the action is proposed, or would be as effective and less burdensome to affected private persons than the proposed action.

SUBMITTAL OF COMMENTS

Interested members of the public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the hearing. To be considered by the Board, written comments, not physically submitted at the hearing, must be received **no later than 12:00 noon, May 27, 2009,** and addressed to the following:

Postal mail: Clerk of the Board, Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

Facsimile submittal: (916) 322-3928

Please note that under the California Public Records Act (Gov. Code, § 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and any other search engines.

The Board requests, but does not require, that 30 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing so that ARB staff and Board Members have time to fully consider each comment. The Board encourages members of the public to bring to the attention of staff in advance of the hearing any suggestions for modification of the proposed regulatory action.

STATUTORY AUTHORITY AND REFERENCES

This regulatory action is proposed under that authority granted in Health and Safety Code, sections 39600, 39601, 43000.5, 43013, 43016, 43018, 43100, 43101, 43104, 43105, 43105.5, 43106, 43154, 43205, 43211, and 43212. This action is proposed to implement, interpret and make specific sections 39002, 39003, 39010-39060, 39515, 39600-39601, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150-43156, 43204, 43205, 43211, and 43212 of the Health and Safety Code.

HEARING PROCEDURES

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Government Code, title 2, division 3, part 1, chapter 3.5 (commencing with section 11340).

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with non substantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice and that the regulatory language as modified could result from the proposed regulatory action; in such event, the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15 days before it is adopted.

The public may request a copy of the modified regulatory text from ARB's Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

/s/

James N. Goldstene
Executive Officer

Date: March 30, 2009

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs see our Web site at www.arb.ca.gov.