TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER ONBOARD DIAGNOSTIC SYSTEM REQUIREMENTS FOR 2010 AND SUBSEQUENT MODEL YEAR HEAVY-DUTY ENGINES (HD OBD)

The Air Resources Board (the "Board" or "ARB") will conduct a public hearing at the time and place noted below to consider adoption of proposed California OBD requirements for 2010 and subsequent model year heavy-duty engines.

DATE: July 21, 2005

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium
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., July 21, 2005, and may continue at 8:30 a.m., July 22, 2005. This item might not be considered until July 22, 2005. Please consult the agenda for the meeting, which will be available at least ten days before July 21, 2005, to determine the day on which this item will be considered.

If you have a disability-related accommodation need, please go to http://www.arb.ca.gov/html/ada/ada.htm for assistance or contact the ADA Coordinator at (916) 323-4916. If you are a person who needs assistance in a language other than English, please contact the Bilingual Coordinator at (916) 324-5049. TTY/TDD/Speech-to-Speech users may dial 7-1-1 for the California Relay Service.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW

Sections Affected: Proposed adoption of title 13, California Code of Regulations (CCR) section 1971.1 – On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD).

Documents Incorporated by Reference:

International Standards Organization[1] (ISO) 15765-4:2001 “Road Vehicles – Diagnostics on Controller Area Network (CAN) – Part 4: Requirements for emission-related systems,” December 2001.

Society of Automotive Engineers[2] (SAE) J1930 "Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms – Equivalent to ISO/TR 15031-2:April 30, 2002," April 2002.

SAE J1939 APR00-“Recommended Practice for a Serial Control and Communications Vehicle Network” and the associated subparts included in SAE HS-1939, “Truck and Bus Control and Communications Network Standards Manual,” 2001 Edition.

SAE J1962 "Diagnostic Connector – Equivalent to ISO/DIS 15031-3:December 14, 2001," April 2002.

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

SAE J1979 "E/E Diagnostic Test Modes – Equivalent to ISO/DIS 15031-5:April 30, 2002," April 2002.

SAE J2012 "Diagnostic Trouble Code Definitions – Equivalent to ISO/DIS 15031-6:April 30, 2002," April 2002.

SAE J2403 “Medium/Heavy-Duty E/E Systems Diagnosis Nomenclature,” August 2004.

Background: The Board originally adopted title 13, CCR section 1968.1 in 1989, which required manufacturers to implement second generation on-board diagnostic (OBD II) systems on all 1996 and later model year passenger cars, light-duty trucks, and medium-duty vehicles and engines sold in California. OBD II systems serve an important role in helping to ensure that vehicles maintain low emissions throughout their full life. The regulation specifically requires monitoring of engine misfire, catalysts, oxygen sensors, evaporative systems, fuel systems, and electronic powertrain components, among other components and systems that can affect emissions when malfunctioning. The regulation also requires OBD II systems to provide specific diagnostic information in a standardized format through a standardized serial data link

[1] Copies of ISO documents are available through ISO by mail at Copyright Manager, ISO Central Secretariat, 1 rue de Varembe, 1211 Geneva 20 Switzerland; by phone at +41 22 749 0111; by fax at +41 22 734 1079; or by e-mail at iso@iso.ch.

[2] Copies of SAE documents are available through SAE by mail at SAE Customer Sales and Support, 400 Commonwealth Drive, Warrendale, PA 15096-0001, U.S.A.; by phone at 1-800-606-7323 (U.S. and Canada only) or 724-776-4970 (outside U.S. and Canada); by fax at 724-776-0790; by e-mail at CustomerService@sae.org; or by website at http://www.sae.org.

on-board the vehicles. Subsequently, the Board adopted section 1968.2 in 2002, which established OBD II requirements for 2004 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles and engines.

The Board also recently adopted diagnostic system requirements to apply to heavy-duty vehicles (i.e., vehicles with a gross vehicle weight rating (GVWR) greater than 14,000 pounds). Oxides of nitrogen (NOx) and particulate matter (PM) emissions emitted from heavy-duty trucks, especially diesel trucks, are of great concern, with those from diesel trucks accounting for about 28 percent and 16 percent of the total statewide mobile source NOx and PM emissions, respectively. NOx is a precursor to ozone as well as a lung irritant, while diesel PM is carcinogenic and has been identified as a toxic air contaminant by ARB. While emissions from heavy-duty diesels are of particular concern, emissions from heavy-duty gasoline vehicles are also of concern, given the state's ongoing problem in meeting state and federal ambient air quality standards. Additionally, more stringent emission standards for heavy-duty vehicles will be phased in starting in the 2007-2008 timeframe. There must be some assurance that these standards continue to be met in-use, since emission-related malfunctions can cause vehicle emissions to increase well beyond the standards that they are intended to meet. Thus, the Board adopted section 1971 in 2004, requiring engine manufacturer diagnostic (EMD) systems to be installed on all 2007 and subsequent model year heavy-duty engines. However, the EMD regulation is much less comprehensive than the OBD II regulation applicable to light- and medium-duty vehicles, requiring the monitoring of a few major emission control technologies and containing no standardized requirements. Essentially, the EMD regulation was developed to ensure that all heavy-duty engine manufacturers implement a basic diagnostic system for major emission controls. Accordingly, as the staff had indicated during the EMD rulemaking, it was the intention of ARB to come back in 2005 and adopt more comprehensive diagnostic, testing, and standardization requirements for future heavy-duty engines.

California's problems with ozone pollution continue to be the worst in the nation. In an effort to meet federal and state ambient air quality standards and comply with the federally mandated State Implementation Plan (SIP) to meet those standards, California has continued to be in the forefront in adopting the most stringent motor vehicle emissions control program in the nation. To complement the new emission standards for heavy-duty diesel engines, On-Road Heavy-Duty strategy #5 (previously called measure 17) was included as part of the SIP. This strategy targeted NOx emission reductions from the on-road heavy-duty fleet through improved inspection programs. The proposed OBD regulation is an essential part of this strategy because it can be used in an inspection to easily identify vehicles in need of emission-related repair. Adopting enhanced diagnostic requirements for heavy-duty vehicles is an essential step towards meeting the goals of On-Road Heavy-Duty strategy #5 to reduce emissions from on-road heavy-duty diesels.

Staff Proposal: As stated above, considering the amount of pollution emitted from heavy-duty vehicles (particularly NOx and PM emissions from diesel vehicles) and the

increasingly stringent emission standards being phased in, there must be some assurance that low emissions are maintained in-use.

Staff is proposing the adoption of title 13, CCR section 1971.1 that would require OBD systems to be phased-in starting with 2010 model year on-road heavy-duty engines produced for sale in California with a GVWR greater than 14,000 pounds. As stated above, the OBD systems would be much more comprehensive than the EMD systems. Sufficient leadtime exists to implement the OBD system by the 2010 model year when emission standards become substantially more stringent. The OBD system would help ensure that the engines are able to meet the stringent emission standards and maintain low emissions for the life of the engine. It would accomplish this by monitoring the performance of the emission control components and systems, and by providing technicians with information that would help in diagnosing and fixing malfunctions.

The proposed OBD regulation would require manufacturers to monitor virtually every emission-related component and system on the engine. These include the fuel system, catalyst systems (e.g., oxidation catalysts, selective catalytic reduction systems), exhaust gas recirculation system, particulate matter filter, variable valve timing and/or control system, and electronic engine components (e.g., sensors). Engine manufacturers would be required to indicate a malfunction of these components or systems before emissions exceed a specific threshold (e.g., 1.5 times the standards). For other systems and components, manufacturers would be required to design functional monitors that are capable of detecting malfunctions when the emission system or component is not operating properly. When a malfunction is detected, the proposed regulation would require the OBD system to illuminate a warning light to alert the driver of the problem. Additionally, the proposed regulation would establish standardized requirements defining the content and format of specific diagnostic information required to be output for use by repair technicians.

In addition to monitoring requirements, other provisions being proposed include:

- A standardized methodology for determining the frequency of monitor operation during in-use driving and a minimum operating frequency for most non-continuous monitors (sections 1971.1(d)(3.2) and (d)(4)).
- Standardization requirements for the availability of diagnostic information to assist repair technicians in effectively diagnosing and repairing vehicles and to assist in roadside inspections (section 1971.1(h)).
- Requirements for demonstration testing of engines to verify compliance with the emission threshold-based monitoring requirements (section 1971.1(i)).
- Requirements that manufacturers submit specified documentation with an application for certifying OBD systems (section 1971.1(j)).
- Deficiency provisions that would provide manufacturers with flexibility to have OBD systems certified even though they are not fully compliant with the requirements of section 1971.1 (section 1971.1(k)).
- Requirements for post-assembly line testing of production engines and vehicles to verify compliance with the requirements of section 1971.1 (section 1971.1(*l*)).

- Intermediate in-use compliance standards (section 1971.1(m)).

To alleviate engine manufacturers' concerns about workload, the proposed regulation would phase-in the incorporation of OBD systems into heavy-duty engines during the first few years of implementation. Specifically, the proposed requirements would require manufacturers to implement an OBD system on only a single engine family for the 2010 through 2012 model years. During this time, other engine families would continue to follow the EMD requirements of title 13, CCR, section 1971, with one exception. In addition to the other requirements of section 1971, manufacturers would be required to monitor NOx aftertreatment (e.g., NOx adsorber monitoring). (See section 1971.1(d)(7)). Manufacturers would not be required to fully implement the requirements on all engine models until the 2013 model year. This phase-in would allow manufacturers to more effectively use their personnel and testing resources (which are already being stretched to ensure compliance with the 2010 emission standards) and allow them to gain experience on a smaller number of engines prior to wide-scale implementation.

COMPARABLE FEDERAL REGULATIONS

Currently, the United States Environmental Protection Agency (U.S. EPA) has OBD requirements only for light-duty vehicles and trucks and federally defined "heavy-duty" vehicles and engines with a GVWR between 8,500 to 14,000 pounds. These are the same categories of vehicles covered by ARB's OBD II regulations, which apply to light- and medium-duty vehicles (where medium-duty is defined in California as the 8,500 to 14,000 pound GVWR range). However, the U.S. EPA currently does not have OBD requirements for vehicles and engines above 14,000 pounds, which is the weight range for California's "heavy-duty" class. The U.S. EPA staff has indicated its intent to propose and adopt an OBD regulation for heavy-duty vehicles and engines over 14,000 pounds in the near future, and has indicated a strong interest in developing harmonized ARB and federal OBD programs.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

The 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: Malfunction and Diagnostic System Requirements for 2010 and Subsequent Model Year Heavy-Duty Engines (HD OBD).

Copies of the ISOR and the full text of the proposed regulatory language may be accessed on the 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, 1st Floor, Sacramento, California 95814, (916) 322-2990 at least 45 days prior to the scheduled hearing (July 21, 2005).

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: Jason Wong, Air Resources Engineer, at (626) 575-6838 or e-mail jjwong@arb.ca.gov, or Mike McCarthy, Manager, Advanced Engineering Section, Mobile Source Control Division, at (626) 575-6615 or e-mail mmccarth@arb.ca.gov.

Further, the agency representative and designated back-up contact persons to whom nonsubstantive inquiries concerning the proposed administrative action may be directed are Artavia Edwards, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-6070, or Alexa Malik, Regulations Coordinator, (916) 322-4011. 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 the ARB Internet site for this rulemaking at: http://www.arb.ca.gov/regact/hdobd05/hdobd05.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 section 11346.5(a)(5), the Executive Officer has determined that the proposed regulations will not impose a mandate on local agencies or school districts. The Executive Officer has further determined pursuant to Government Code section 11346.5(a)(6), that the proposed regulatory action will result in some additional costs to ARB and will create minimal costs to all other state agencies that purchase 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, will create minimal costs to local agencies or school districts in the form of increased vehicle prices for heavy-duty vehicles (>14,000 lbs GVWR), which are not reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code, and will not result in 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. Staff determined that any business or individual purchasing a 2010 or subsequent model year heavy-duty vehicle equipped with an OBD system would incur additional costs as a result of this regulation. Specifically, retail costs for new heavy-duty vehicles equipped with an OBD system are

expected to increase by $132 per vehicle (an increase of approximately 0.2% of the retail cost of the vehicle). Further, because OBD systems are expected to detect emission-system and component malfunctions that would not otherwise be detected, the regulation is expected to result in owners and operators having to make additional emission-related repairs. It is expected that that these repairs will result in average costs of approximately $23 per vehicle, per year (two-thirds of the vehicles are expected to incur one additional repair over the first 21 years of operation at an average repair cost of $741).

The Executive Officer has made an initial determination, pursuant to Government Code section 11346.5(a)(8), that the adoption of this regulation 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. Support for this determination is set forth in the ISOR.

The Executive Officer has further found, pursuant to Government Code sections 11346.5(a)(10) and 11346.3(b), that the proposed regulation 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 California, or the expansion of businesses currently doing business within California. The Executive Officer's determination is based on the following: Heavy-duty vehicle 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.

For the engine manufacturers, the costs to comply with the proposed regulatory action are expected to be less than the $132 retail price increase that was calculated for implementation of the requirements. Manufacturers would incur these costs in the form of additional hardware and software installed on the engine and the testing and development costs to implement the requirements. These costs are expected to be recouped through the anticipated $132 retail price increase on each engine they sell to heavy-duty vehicle manufacturers. Likewise, the heavy-duty vehicle manufacturers are expected to pass these costs onto purchasers of assembled vehicles.

In developing this regulatory proposal, ARB staff has found that the proposed regulation will pose no adverse economic impact on private persons and businesses as consumers. The $132 cost increase represents less than a 0.2% increase in the retail price of a heavy-duty vehicle, and the $23 per engine per year in increased maintenance costs is negligible. Accordingly, the Executive Officer has determined that there will be negligible potential cost impact on representative private persons or businesses as a result of the proposed regulatory action.

The Executive Officer has also determined, pursuant to title 1, CCR, section 4, that the proposed regulatory action will affect small businesses.

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the Executive Officer has 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 board or that has otherwise been identified and brought to the attention of the board 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

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 submissions not physically submitted at the hearing must be received **by no later than 12:00 noon, July 20, 2005** and addressed to the following:

Postal Mail is to be sent to:

Clerk of the Board
Air Resources Board
1001 I Street, 23rd Floor
Sacramento, California 95814

Electronic mail is to be sent to: hdobd05@listserv.arb.ca.gov and received at the ARB **no later than 12:00 noon, July 20, 2005**.

Facsimile submissions are to be transmitted to the Clerk of the Board at (916) 322-3928 and received at the ARB **no later than 12:00 noon, July 20, 2005.**

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 ARB encourages members of the public to bring to the attention of the 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, 43018, 43100, 43101, 43104, 43105, 43105.5, and 43106. 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, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211, and 43212 of the Health and Safety Code.

HEARING PROCEDURES AND AVAILIBILITY OF MODIFIED TEXT

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Title 2, Division 3, Part 1, Chapter 3.5 (commencing with section 11340) of the Government Code.

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with nonsubstantial 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 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 the Board's Public Information Office, Air Resources Board, 1001 "I" Street, Visitors and Environmental Services Center, 1st Floor, Sacramento, California 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

Catherine Witherspoon
Executive Officer

Date: May 24, 2005

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.

Request for Staff Report and Proposed Regulatory Language

The documents listed on the lower portion of this page are available on the Air Resources Board's Web Site, which can be accessed at:

http://www.arb.ca.gov/msprog/obdprog/hdobdreg.htm

If you would like to receive a hard copy of any of the documents, please mail or fax this form to:

Ms. Adrieann Medina
California Air Resources Board
9528 Telstar Avenue
El Monte, California 91731

FAX: (626) 575-7012 Phone: (626) 459-4405

Please check all that apply:

_____ Staff Report: Initial Statement of Reasons. (136+ pages)

_____ Heavy-Duty OBD Regulation: Proposed Section 1971.1, title 13, California Code of Regulations. (101 pages)

Name: _____

Company: _____

Address: _____

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