

TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTION OF EMISSION STANDARDS AND TEST PROCEDURS FOR NEW 2007 AND LATER OFF-ROAD LARGE SPARK-IGNITION (LSI) ENGINES AND FLEET REQUIREMENTS FOR USERS OF OFF-ROAD LSI ENGINES

The Air Resources Board (the Board or ARB) will conduct a public hearing at the time and place noted below to consider the adoption of new emission standards for 2007 and later off-road large spark-ignition (LSI) engines, requirements for fleet users of such equipment and verification procedures for retrofit control systems.

DATE: June 23, 2005

TIME: 9:00 a.m.

PLACE: San Joaquin Valley Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, California 93726

or Via Videoconference (2 Locations)

District Northern Region Office
4230 Kiernan Avenue, Suite 130
Modesto, California 95356

District Southern Region Office
2700 M Street, Suite 275
Bakersfield, California 93301

This item will be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., June 23, 2005, and may continue at 8:30 a.m., June 24, 2005. This item may not be considered until June 24, 2005. Please consult the agenda for the meeting, which will be available at least 10 days before June 23, 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 amendments and adoptions to title 13, California Code of Regulations, and the documents incorporated by reference therein: Amend sections 2430, 2433, and 2434. Amend the title of incorporated “California Exhaust Emission Standards and Test Procedures for New 2001 and Later Off-Road Large Spark-Ignition Engines,” adopted September 1, 1999; and adopt incorporated “California Exhaust Emission Standards and Test Procedures for New 2007 and Later Off-Road Large Spark-ignition Engines.” Adopt sections 2775, 2775.1, 2775.2, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, and 2789.

Background: The California Clean Air Act in Health and Safety Code sections 43013 and 43018 grants the ARB authority to regulate off-road mobile source categories. Included are marine vessels, locomotives, utility engines, off-road motorcycles, and off-highway vehicles. Measures within the 2003 State Implementation Plan for Ozone directed ARB staff to develop regulations that continue efforts to reduce emissions from LSI engines above 25 horsepower. In crafting the proposal, the ARB staff developed an outreach program that involved LSI engine and equipment manufacturers, emission control system manufacturers, propane fuel refiners and distributors, end-user facility operators, federal regulatory agencies, environmental/pollution prevention and public health advocates and other interested parties. ARB staff also held five public workshops to solicit input as the proposed regulation was developed.

Over 90 percent of Californians breathe unhealthy air at times. To improve air quality and human health, the United States Environmental Protection Agency (U.S. EPA) and the ARB set ambient air quality standards for harmful air pollutants including ozone. Ozone is formed when hydrocarbons (HC) and oxides of nitrogen (NOx) combine through chemical reactions in the atmosphere in the presence of sunlight.

To reduce HC and NOx emissions from off-road vehicles, the ARB adopted regulations in late 1998 requiring that new LSI engines be certified to a standard of 3.0 grams per brake horsepower per hour (g/bhp-hr) HC+NOx starting in 2001. The regulation phased in the standard such that by 2004, all new engines must meet this requirement. The U.S. EPA later adopted its own LSI regulation incorporating test information obtained from the development of the 1998 ARB LSI regulation. The U.S. EPA regulation required all new LSI engines nationwide to meet the same 3.0 g/bhp-hr standard as of January 2004 and a 2.0 g/bhp-hr standard beginning in 2007.

As a result of these regulations, new LSI engines are now 75 percent cleaner than previously uncontrolled engines and engines meeting the 2007 standard will be approximately 85 percent cleaner. Opportunities exist, however, to further reduce emissions from LSI equipment. First, forklifts accounted for six percent of all off-road emissions in 2000 and this percentage is increasing. Second, there are large numbers of uncontrolled LSI engines still in use that contribute significantly to the overall emissions inventory in California. For example, a forklift with an uncontrolled engine

can produce as much emissions in three 8-hour shifts as one new car certified to California's lowest emission level would emit over its entire life. Finally, LSI engines are generally based upon automotive engine technology and there are opportunities to adapt advanced automotive-inspired emission control technologies into new and in-use LSI equipment to cost-effectively reduce emissions.

In recognition of these factors, the 2003 State Implementation Plan included two measures to further reduce emissions from LSI engines. The first measure proposed that the California program harmonize with the U.S. EPA regulations by adopting the 2.0 g/bhp-hr emission standard for 2007 and beyond. The second measure proposed that existing uncontrolled LSI engine emissions be reduced by 80 percent or to a 3.0 g/bhp-hr verification level. The later measure also proposed that zero and near-zero emission standards be developed for new LSI engines. The proposed regulation described below meets the objectives of the two SIP measures.

Proposed Provisions Applicable to Engine Manufacturers

The proposal has three components for manufacturers of LSI engines. The first component harmonizes the ARB standard with the more stringent U.S. EPA emission standards and test procedures that become effective in 2007. Under this requirement, manufacturers of 2007 and later model year engines must meet a nominal 2.0 g/bhp-hr HC+NO_x and 3.3 g/bhp-hr carbon monoxide (CO) emission levels. The federal requirement allows manufacturers to optionally certify according to the following formula: $(\text{HC}+\text{NO}_x) \times (\text{CO})^{0.784} \leq 8.57$. This optional certification standard provides manufacturers the flexibility to let their CO emissions increase so that they may achieve lower HC+NO_x levels. The proposed regulation would incorporate these provisions within the first component of the manufacturer lower emission standards.

The second proposed component would require that new 2010 and subsequent model year engines meet a 0.6 g/bhp-hr HC + NO_x with a corresponding CO emission standard of 15.4 g/bhp-hr. The 0.6 g/bhp-hr level corresponds to the minimum HC+NO_x level on the HC+NO_x versus CO emission trade off curve established by the U.S. EPA optional certification formula noted above. As such, the proposed 2010 standard is consistent with the 2007 standard, but limits flexibility to the most stringent HC+NO_x emission level to maximize ozone benefits.

The third proposed component establishes optional low emission standards below the 2007 and 2010 mandatory standards. Under this component, engines could be certified to optional tiered new engine standards of 0.1, 0.2, 0.4, 0.6, 1.0 and 1.5 g/bhp-hr HC+NO_x through the 2009 model year, and 0.1, 0.2 and 0.4 g/bhp-hr HC+NO_x in 2010 and beyond. The low emission standards provide fleet operators additional flexibility in meeting the proposed fleet average emission requirements.

Proposed Provisions Applicable to Fleet Operators

To address emissions from uncontrolled in-use (non-new) engines and encourage zero-emission and lower-emission equipment, the ARB staff is proposing fleet average emission requirements for large and mid-size fleets of equipment powered by LSI engines, including forklifts, industrial tow tractors, sweepers/scrubbers, and airport ground support equipment. Fleet size is determined by aggregating each operators equipment in the State of California. Large LSI fleets are defined as those with more than 25 pieces of equipment while mid-size fleets are defined as those with 4 to 25 pieces of equipment.

Large fleets would have to meet more stringent fleet averages than mid-size fleets because they have greater flexibility when incorporating combinations of emission-reduction strategies to achieve a prescribed level. Additionally, the fleet average would be more stringent for the forklift portion of the fleet than for the non-forklift portion of the fleet.

The fleet average would be determined using the certification levels of 2001 and newer LSI engines and the retrofit verification levels of engines with retrofit kits. These values are clearly indicated on the engine label. To make the proposal less complex and less intrusive for operators while maintaining cost effective emission benefits, the fleet average would not incorporate load factor, horsepower, or hours of use.

Small fleets, those with 1 to 3 pieces of equipment, would be exempt from the fleet average requirement and instead would be required to control all equipment by January 1, 2011. The proposal would allow small fleets until 2013 to comply with the requirements if the equipment has an hour of use meter and is used 250 hours per year or less.

The proposal provides LSI fleets with the flexibility to incorporate any combination of retrofits, low-emission purchases, and zero-emission electric purchases to meet the fleet average emission level. Voluntary low emission standards for manufacturers of new LSI engines will allow manufacturers to certify engines at levels significantly lower than current or pending standards. The following table summarizes the proposed fleet average emission levels for forklift and non-forklift LSI fleets.

Fleet Average Emission Level Requirement (g/bhp-hr)

LSI Fleet Type	Number of units	By 1/1/2009	By 1/1/2011	By 1/1/2013
Large fleet – forklift component	26 +	2.4	1.7	1.1
Mid-size fleet – forklift component	4-25	2.6	2.0	1.4
Mid-size or Large Non-forklift fleet	N/A	3.0	2.3	1.7
Small fleet	1-3	No uncontrolled equipment after 12/31/2010		

Alternative Compliance Option for Agricultural-Related Fleets

ARB staff is proposing an alternative compliance option for agricultural-related fleets that would allow additional time to control the highest emitting forklifts as long as steady documented progress is made. The proposal reflects the longer retention periods characteristic of agricultural operations. Under this option, agricultural fleet operators would be required to control (to a 3.0 g/bhp-hr level) ten percent of their uncontrolled forklift fleet each year for ten years through retrofit, repower, or retirement.

Verification Procedure

ARB staff is also proposing a verification procedure for retrofit control systems to address in-use emissions and to provide fleet operators with additional options to meet the proposed fleet average emission requirements. Such procedures will ensure that the retrofit systems deliver real and quantifiable emission reductions.

The proposed verification procedures would apply to manufacturers of retrofit systems sold in California. These systems include but are not limited to, closed-loop fuel control systems, fuel injections systems, and three-way catalysts.

COMPARABLE FEDERAL REGULATIONS

In 1998 California adopted emission standards for new LSI engines. Following California’s lead, in 2002 U.S. EPA did the same (Volume 67, Federal Register, page 68242, November 8, 2002; title 40, Code of Federal Regulations, part 1048). As the preamble to the federal regulations notes, the federal regulations extend California’s standards for new LSI engines to the rest of the United States in 2004 through 2006 and adopt more stringent standards for new LSI engines beginning in 2007.

In the staff’s proposal, California would harmonize with the federal standards for new LSI engines in 2007 through 2009 and would adopt yet more stringent California

standards for 2010 and later. Optional reduced emission standards for new LSI engines would be established in California for 2007 and later.

To further reduce emissions from LSI engines, the proposal requires California LSI equipment operators to meet fleet average standards. To this end, the proposal allows for retrofitting of in-use (non-new) LSI engines and proposes a verification procedure for retrofit emission controls. The federal regulations do not impose requirements on fleet operators or on in-use engines.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

The Board staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the Proposed Regulatory Action, which includes a summary of the economic and environmental impacts of the proposal. The report entitled: Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Emissions Standards for New 2007 and Later Off-Road Large Spark Ignition (LSI) Engines and Fleet Requirements for Users of Off-Road LSI Engines.

Copies of the ISOR and the full text of the proposed regulatory language, in underline and strikethrough format to allow for comparison with the existing regulations, 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, CA 95814, (916) 322-2990 at least 45 days prior to the scheduled hearing on June 23, 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 ARB's web site listed below.

Inquiries concerning the substance of the proposed regulation may be directed to , Mr. Mark Williams by phone at (916) 327-5610 or by email at mwilliam@arb.ca.gov, or to Mr. Tom Evashenk by phone at (916) 445-8811 or by email at tevashen@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 contact persons.

This notice and the ISOR are available on the ARB Internet site for this rulemaking: <http://www.arb.ca.gov/regact/lore2005/lore2005.htm>. All subsequent regulatory documents, including the FSOR, will be available from the same Internet site when completed.

COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

The determination of the Board's Executive Officer concerning the costs or savings necessarily incurred by the 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) and 11346.5(a)(6), the Executive Officer has determined that the proposed regulatory action will not create costs or savings to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code, or other nondiscretionary savings to state or local agencies.

In general, local and state agencies will need to take to comply with the regulatory standards by purchasing new low emission equipment or by retrofitting existing equipment. However, the staff analysis concludes that over the lifecycle of the equipment, a reduction in operating costs through improved fuel use and reduced maintenance can offset the increased initial cost.

In developing this regulatory proposal, the ARB staff evaluated the potential economic impacts on representative private persons or businesses. An assessment of the economic impacts of the proposed regulatory action can be found in the ISOR. The Executive Officer has also determined, pursuant to title 1, CCR, section 4, that the proposed regulatory action will affect small business.

The Executive Officer has also determined that adoption of 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 businesses in other states, or on representative private persons.

In accordance with Government Code section 11346.3, the Executive Officer has determined that the proposed regulatory action will not affect the creation or 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. An assessment of the economic impacts of the proposed regulatory action can be found in the ISOR.

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.

BENEFITS OF THE PROPOSAL

The staff analysis of the proposal indicates that the statewide emissions benefit associated with the new engine standards and operator fleet average emission level requirements will exceed 13 tons per day of HC+NOx in 2010 and 6 tons per day of HC+NOx in 2020. The emission benefit in the South Coast Air Basin (SCAB) will exceed 6 tons per day in 2010, which corresponds to the upper range of the Board's state implementation plan commitment for ozone. The cost-effectiveness of the proposal compares favorably with that of other mobile source regulations promulgated by the ARB.

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 **no later than 12:00 noon, June 22, 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: lore2005@listserv.arb.ca.gov and received at the ARB **no later than 12:00 noon, June 22, 2005**.

Facsimile transmissions 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, June 22, 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 document. 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 39002, 39003, 39500, 39600, 39601, 39650-39675, 43000, 43011, 43013, 43017, 43018, 43101, 43102, 43104, 43600, and 43700, and 43104. This action is proposed to implement, interpret and make specific Health and Safety Code sections 43000, 43009.5, 43013, 43017, 43018, 43101, 43102, 43104, 43105, 43106,

43107, 43150, 43151, 43152, 43153, 43154, 43204, 43205, 43205.5, 43210, 43210.5, 43211, and 43212.

HEARING PROCEDURES

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 ARB'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: April 26, 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.