



**Terry Tamminen**  
Agency Secretary

# Air Resources Board

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**Alan C. Lloyd, Ph.D.**  
Chairman

9528 Telstar • El Monte, California 91731  
www.arb.ca.gov



**Arnold Schwarzenegger**  
Governor

July 27, 2004

Mail-Out #MSC 04-13

TO: All Interested Parties

SUBJECT: PUBLIC WORKSHOP TO DISCUSS A REGULATORY PROPOSAL FOR  
NEW AND IN-USE LARGE SPARK-IGNITION (LSI) ENGINES GREATER  
THAN 25 HORSEPOWER

The California Air Resources Board (ARB/Board) staff invites you to participate in a public workshop to discuss a regulatory proposal designed to obtain emission reductions from off-road equipment with large spark ignition (LSI) engines. This equipment includes, but is not limited to, most forklifts, street sweepers, generators, airport ground support equipment and large turfcare equipment. The proposal contains fleet averaging and retrofit requirements that would apply to LSI equipment users. It also contains mandatory and optional new engine certification levels and optional retrofit kit verification levels.

Under the fleet average requirement, LSI end users would have to meet a prescribed gram per brake horsepower-hour (g/bhp-hr) fleet average emission level for their in-use fleet. The proposal provides the LSI end user the flexibility to use a combination of retrofit, near-zero emission internal combustion, and zero-emission electric procurement to meet the fleet average emission level, which would become progressively more stringent over time. Optional tiered emission standards for manufacturers of new LSI engines would allow them to certify their engines at levels significantly lower than current or pending standards. In the long term, staff is proposing that manufacturers meet a lower maximum emission certification standard than required under current or pending rules.

In order to allow interested parties to attend the workshop in either Southern or Northern California, the workshop meetings will be held at the two locations below. ARB staff is especially interested in receiving comments from LSI fleet owners and users. Staff will present the same materials at both workshops. The Sacramento workshop will also be webcasted (live Internet broadcast).

*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 Website: <http://www.arb.ca.gov>.*

California Environmental Protection Agency

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**EI Monte**

Wednesday, August 25, 2004  
1:00 PM – 4:30 PM (PDT)  
Air Resources Board  
Auditorium  
9530 Telstar Avenue  
EI Monte, California 91731  
<http://www.arb.ca.gov/maps/elmomaps.htm>

**Sacramento**

Thursday, August 26, 2004  
9:00 AM – 12:30 PM (PDT)  
Cal/EPA Headquarters Building  
Sierra Hearing Room, 2<sup>nd</sup> Floor  
1001 I Street  
Sacramento, California 95814  
<http://www.arb.ca.gov/maps/sactomap.htm>

**Background**

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. The ARB then develops State Implementation Plans or SIPs that demonstrate to the U.S. EPA how California plans to attain those air quality standards.

In November 1994, the ARB approved a SIP for ozone. The SIP identified several categories of off-road equipment including LSI equipment where significant opportunities existed to reduce emissions of oxides of nitrogen (NOx) and hydrocarbons (HC). This is important because NOx and HC emissions combine in the atmosphere to form ozone, and more than one-third of NOx emissions come from off-road vehicles.

Four years later, in 1998, the ARB adopted regulations requiring new LSI engines to be certified to a standard of 3.0 g/bhp-hr HC+NOx. Those regulations were phased in between January 2001 and January 2004. The U.S. EPA later adopted their own LSI regulation incorporating test information obtained from the development of the 1998 ARB LSI regulation. The U.S. EPA regulation requires all new LSI engines nationwide to meet the same 3.0 g/bhp-hr standard beginning this year and a 2.0 g/bhp-hr standard in 2007.

As a result of the State and federal regulations, new LSI engines are now 75 percent cleaner than an uncontrolled LSI engine, and will become 84 percent cleaner beginning in 2007. However, staff believes that significant opportunities exist to further reduce NOx emissions from LSI equipment. First, forklifts accounted for six percent of off-road emissions in 2000 and this percentage is increasing. Second, there are large numbers of uncontrolled LSI engines still in use. These engines contribute significantly to the smog problems in California. For example, a forklift with an uncontrolled engine can emit as much in three shifts as a new car certified to California's lowest emission level would emit over its entire life. Finally, LSI engines are generally based upon automotive

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engine technology, and there are opportunities to incorporate advanced automotive-inspired emission control technologies into new and in-use LSI equipment to significantly reduce emissions.

In recognition of this, the 2003 SIP included two measures for LSI engines. The first measure, LSI-1, proposed that California harmonize with the 2007 U.S. EPA 2.0 g/bhp-hr emission standard. The second measure, LSI-2, proposed that existing LSI engine emissions be reduced by 80% or to a 3.0 g/bhp-hr verification level. It also proposed that zero and near-zero emission standards be developed for new LSI engines.

### **Workshop materials**

The formal meeting agenda and a detailed description of the staff's proposal will be available on our web site for your review at <http://www.arb.ca.gov/msprog/offroad/orspark/orspark.htm> prior to the workshop. If you did not receive this letter directly but would like to be on the mailing list for future notification, please sign up via our web site at <http://www.arb.ca.gov/listserv/orspark/orspark.htm>.

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 go to <http://inside.arb.ca.gov/as/eo/languageaccess.htm> or contact the Bilingual Coordinator at (916) 324-5049. For public transit information, please view the transportation information on the California Environmental Protection Agency's web site at <http://www.calepa.ca.gov/epabldg/location.htm>.

We welcome your participation in this effort. If you have general questions regarding either the workshop or the proposed LSI rulemaking, please contact Mr. Mark Williams, Air Pollution Specialist, at (916) 327-5610 or [mwilliam@arb.ca.gov](mailto:mwilliam@arb.ca.gov), or Mr. Jack Kitowski, Chief, On-Road Controls Branch, at (916) 323-6169 or [jkitowsk@arb.ca.gov](mailto:jkitowsk@arb.ca.gov).

Sincerely,

/s/

Robert H. Cross, Chief  
Mobile Source Control Division