State of California
Air Resources Board

Resolution 08-42

November 21, 2008

Agenda Item No.: 08-10-4

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (ARB or 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 43013 and 43018 of the Health and Safety Code authorize the Board to adopt standards and regulations to control emissions from all off-road mobile source categories to achieve the maximum degree of emission reductions possible at the earliest practicable date;

WHEREAS, federal Clean Air Act section 209(e)(2) allows California to adopt standards and to seek authorization from the United States Environmental Protection Agency (U.S. EPA) prior to enforcing emission standards or other requirements relating to the control of emissions from nonroad engines, not otherwise preempted by section 209(e)(1);

WHEREAS, in 1998, the Board adopted regulations to control exhaust emissions from off-road large spark-ignition (LSI) engines of 25 horsepower or more used in certain non-preempted categories;

WHEREAS, in 1998, manufacturers of LSI engines argued before the Board that LSI engines with an engine displacement less than or equal to one liter (1.0 L.) were more similar to small off-road engines (SORE) than to the LSI engines greater than 1.0 L. and therefore it would be more appropriate that they be required to meet the SORE emission standards;

WHEREAS, for LSI engines larger than 1.0 L. in displacement, emission control requirements were implemented beginning with the 2001 model year (MY);

WHEREAS, in October of 1998, the Board agreed and approved LSI engine equal to or less than 1.0 L emission standards equivalent to those for SORE engines greater than or equal to 225 cubic centimeters (SORE ≥ 225 cc) beginning with the 2002 MY;

WHEREAS, in May of 2006, the Board approved more stringent regulations for LSI engines greater than 1.0 L;

WHEREAS, staff proposed no changes to LSI engines equal to or less than 1.0 L at that time;

WHEREAS, LSI engines are regulated under title 40 of the Code of Federal Regulations, part 1048, which generally harmonizes with the California emission standards until 2010, when more stringent California standards go into effect for LSI engines greater than 1.0 L;

WHEREAS, these federal LSI engine regulations allow manufacturers to certify LSI engines less than or equal to 1.0 L that are between 19 kW and 30 kW to the nonroad spark-ignition engines (i.e., SORE) requirements of Code of Federal Regulations, title 40, part 90 or 1054;

WHEREAS, on September 4, 2008, U.S. EPA finalized its phase 3 $HC+NO_x$ emission standard of 8.0 g/kW-hr for the SORE ≥ 225 cc and LSI engines less than or equal to 1.0 L starting in the 2011 MY;

WHEREAS, both the phase 2 and phase 3 U.S. EPA standards are less stringent than the proposed exhaust emissions standards for LSI engines less than or equal to1.0 L;

WHEREAS, LSI engines less than or equal to 1.0 L, are typically used in such applications as portable generators, large turf care equipment, and industrial equipment;

WHEREAS, evaporative emissions from this equipment are currently uncontrolled;

WHEREAS, some LSI engines are used in vehicles that meet the "Off-Road Sport Vehicle," or "Off-Road Utility Vehicle" definitions, except for payload capacity in California Code of Regulations, title 13, section 2411;

WHEREAS, the Board has considered the effects of the proposed regulatory requirements on the economy of the state;

WHEREAS, the California Environmental Quality Act and Board regulations require that no project which may have significant adverse environmental impacts be adopted as originally proposed if feasible alternatives or mitigation measures are available to reduce or eliminate such impacts;

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;

WHEREAS, the Board finds that:

> The current standards for LSI engines less than or equal to 1.0 L are significantly less stringent than those for LSI engines greater than 1.0 L, and in fact are even

less stringent than ARB's recently implemented tier 3 emission standards for SORE greater than or equal to 225 cc;

The population and number of engine families of the LSI engines less than or equal to 1.0 L have grown significantly since 2002, when emission standards first went into effect;

The projected sales of LSI engines less than or equal to 1.0 L are approaching 50 percent of the total LSI engines sales, up from the 15 percent estimated in 2002;

The number of engine families offered with displacements between 1.0 L and 1.6 L has declined to zero;

There is a migration from the more stringently regulated LSI engines greater than 1.0 L category to the significantly more lenient LSI engines less than or equal to 1.0 L category;

Most of LSI engines with an engine displacement below 825 cc are designed for turf care equipment, and their performance and operation characteristics are comparable to those of SORE greater than or equal to 225 cc;

WHEREAS, the Board further finds that:

The amendments to the LSI engines less than or equal to 1.0 L regulations are necessary, cost-effective, and technologically feasible;

The proposed exhaust emission standards are already being met which demonstrates the technological and the economic feasibility of the proposal;

LSI engines less than or equal to 1.0 L would meet the same evaporative emission requirements applicable to small off-road engine equipment starting in 2011;

LSI engines used in vehicles that meet the off-highway recreational vehicle definitions (except for payload capacity) in California Code of Regulations, title 13, section 2411, would be subject to the proposed LSI engines less than or equal to 1.0 L emission standards beginning in 2011, but be excluded from the proposed 2015 standards;

The proposed emission standards are achievable within the available lead time by using existing technologies and manufacturing processes;

Meeting the proposed emission standards could require liquid-cooling, closed-loop electronic fuel injection systems, and three-way catalysts;

Almost every manufacturer has experience with liquid cooling;

Liquid-cooled engines offer several advantages, primarily because they are capable of running cooler than air-cooled engines;

Liquid-cooled engines are more fuel efficient and reduce production of carbon dioxide, a greenhouse gas;

Closed-loop electronic fuel injection and catalysts are well understood technologies commonly used on LSI engines greater than 1.0 L;

LSI engines below 825 cc tend to be used in much less expensive equipment, which would be less able to absorb increased costs of more advanced technologies like an electronic fuel injection system;

The regulations would not result in any adverse impacts;

Adoption of the exhaust and evaporative standards and test procedures would result in a reduction of approximately 8.4 tons per day of reactive organic gases plus oxides of nitrogen (ROG+NO_x) emissions statewide in 2020 at an estimated cost of approximately $0.01 to $7.16 per pound of ROG+$NO_x$ emissions reduced;

The economic and cost impacts of the amendments 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;

The regulatory action will have some impact, although not significant, on small businesses that buy and sell portable generators, large turf care equipment, and industrial equipment; and

The alternatives are either unnecessarily relaxed, achieving little or no emissions benefit compared to staff's proposal, or are overly aggressive and likely to cause major market disruption.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves the proposed amendments to section 2433, within chapter 9, article 4.5, title 13, California Code of Regulations, and proposed amendments to the incorporated "California Exhaust and Evaporative Emission Standards and Test Procedures For New 2010 and Later Off-Road Large Spark-Ignition Engines," as adopted March 2, 2007, all as set forth in the attachments to the Initial Statement of Reasons, and as set forth in Attachment A.

BE IT FURTHER RESOLVED that the Board hereby determines that pursuant to section 209(e)(2) of the federal Clean Air Act that the emission standards and other requirements related to the control of emissions adopted as part of these regulations are, in the aggregate, at least as protective of public health and welfare as applicable

federal standards, that California needs the adopted standards to meet compelling and extraordinary conditions, and that the adopted standards and accompanying enforcement procedures are consistent with the provisions of section 209.

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, forward the regulations to U.S. EPA with a request for an authorization to enforce the regulations, or confirmation that the regulations are within the scope of an existing authorization, pursuant to section 209(e)(2) of the Clean Air Act, as appropriate.

I hereby certify that the above is a true and correct copy of Resolution 08-42, as adopted by the Air Resources Board.

Monica Vejar

Monica Vejar, Clerk of the Board

RECEIVED BY
Office of the Secretary
SEP 08 2009
RESOURCES AGENCY OF CALIFORNIA

Resolution 08-42

November 21, 2008

Identification of Attachments to the Board Resolution

ATTACHMENT A-1: Proposed Amendments to the California Regulations for Large Spark-Ignition Engines, section 2433, within chapter 9, article 4.5, title 13, California Code of Regulations, as set forth in the attachment A to the Initial Statement of Reasons, released October 3, 2008.

ATTACHMENT A-2: Proposed Amendments to the "California Exhaust and Evaporative Emission Standards and Test Procedures for New 2010 and Later Off-Road Large Spark-Ignition Engines," as set forth in the attachment B to the Initial Statement of Reasons, released October 3, 2008.

State of California
Environmental Protection Agency
AIR RESOURCES BOARD

Notice of Decision and
Response to Significant Environmental Issues

Item:	Large Spark-Ignition Engine Regulations
Adopted by:	Resolution 08-42
Agenda Item:	08-10-4
Public Hearing Date:	November 20, 2008
Issuing Authority:	Air Resources Board
Comment:	No comments were received identifying any significant environmental issues pertaining to this item. The Staff Report identified no adverse environmental effects.
Response:	N/A
Certified:	Amy Whiting, Regulations Coordinator
Date:	March 12, 2009