

**FINAL REGULATION ORDER**  
**LSI FLEET REQUIREMENTS REGULATION**

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Note: The proposed modifications are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions, compared to the preexisting regulatory language.

Amend Article 2, Large Sparks Ignition (LSI) Engine Fleet Requirements, within Chapter 15, Division 3, Title 13, California Code of Regulations, sections 2775, to read as follows:

**§ 2775. Applicability.**

- (a) General Applicability. This article applies to operators of off-road large spark-ignition (LSI) engine forklifts, sweepers/scrubbers, industrial tow tractors or airport ground support equipment operated within the State of California in the conduct of business with:
  - (1) 25 horsepower or more (greater than 19 kilowatts for 2005 and later model year engines), and
  - (2) greater than 1.0 liter displacement.
- (b) Exemptions.
  - (1) Small Fleets as defined in subsection (d).
  - (2) Rental or lease equipment operated in California no more than 30 aggregated calendar days per year shall be exempt from the requirements of this article.
  - (3) Off-road military tactical vehicles or equipment exempt from regulation under the federal national security exemption, 40 CFR, subpart J, section 90.908, are exempt from the requirements of this article. Vehicles and equipment covered by the definition of military tactical vehicle that are commercially available and for which a federal certificate of conformity has been issued under 40 CFR Part 90, subpart B, shall also be exempt from the requirements of this article.
  - (4) In-field equipment shall be exempt from the requirements of this article.
- (c) Each part of this article is severable, and in the event that any part of this chapter or article is held to be invalid, the remainder of the article shall remain in full force and effect.
- (d) Definitions. The definitions in Section 1900 (b), Chapter 1, and Section 2431 (a), Chapter 9 of Title 13 of the California Code of Regulations apply to this article. In addition, the following definitions apply to this article:

- (1) “Aggregated Operations” means all of an operator’s California facilities for which equipment purchasing decisions are centrally made. Facilities that budget and make equipment purchasing decisions independent of a government or corporate headquarters are assumed to be independent and therefore are not required to be aggregated for the purpose of determining fleet size.
- (2) “Agricultural Crop Preparation Services” means packinghouses, cotton gins, nut hullers and processors, dehydrators, feed and grain mills, and other related activities that fall within the United States Census Bureau NAICS (North American Industry Classification System) definition for Industry 115114 – “Postharvest Crop Activities,” as published in the North American Industry Classification System – United States, 2002. For forest operations, “Agricultural Crop Preparation Services” means milling, peeling, producing particleboard and medium density fiberboard, and producing woody landscape materials and other related activities that fall within the United States Census Bureau NAICS definition for Industries 321113 (Sawmills) and 321219 (Reconstituted Wood Product Manufacturing), as published in the North American Industry Classification System – United States, 2007.
- (3) “Agricultural Operations” means (1) the growing or harvesting of crops from soil (including forest operations) and the raising of plants at wholesale nurseries, but not retail nurseries, or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution, or (2) agricultural crop preparation services.

For purposes of this regulation, a piece of equipment that is used by its operator for both agricultural and non-agricultural operations is considered to be a piece of equipment engaged in agricultural operations, only if over half of its annual operating hours are for agricultural operations.

- (4) “Airport Ground Support Equipment,” “Ground Service Equipment,” or “GSE” means any large spark-ignition engine or electric- motor powered equipment capable of and used for performing the work normally performed by an LSI engine-powered piece of equipment contained in the 24 categories of equipment included in section B.3. of Appendix 2 of the South Coast Ground Support Equipment Memorandum of Understanding, dated November 27, 2002 except that equipment that falls into the “other” category shall not be considered GSE for the purposes of this regulation. Specifically included in this definition are those categories of GSE equipment designed for on-road use, but not licensed for on-road use (“On-Road Equivalent” GSE).
- (5) “Baseline Inventory” means an inventory of equipment as defined in this subdivision that reflects all equipment ~~owned~~ operated at the time of the inventory.

- (6) “Boneyard” means a grouping of decommissioned or retired pieces of equipment at a location geographically separated from operational fleets subject to the fleet average requirements and intended for transfer, sale, spare parts, or scrap. These pieces of equipment are not generally operational.
- (7) “Certification Standard” means the level to which an LSI engine is certified, in grams per kilowatt-hour of hydrocarbon and oxides of nitrogen, combined, as identified in an Executive Order (EO) issued by the Executive Officer of the California Air Resources Board.
- (8) “Dehydrators” means sun drying of fruits, vegetables, tomatoes, dates, prunes, raisins and olives, or artificially drying and dehydrating fruits, vegetables, tomatoes, dates, prunes, raisins, grapes, and olives.
- (9) “Emission Control System” means any device or system employed with a new or in-use off-road LSI-engine ~~vehicle or~~ powered piece of equipment that is intended to reduce emissions. Examples of LSI emission control systems include, but are not limited to, closed-loop fuel control systems, fuel injection systems, three-way catalysts, and combinations of the above.
- (10) “Equipment” or “Pieces of Equipment” means one or more forklifts, industrial tow tractors, sweeper/scrubbers, or pieces of airport ground support equipment as defined in this section powered by an LSI engine or electric motor.
- (11) “Executive Officer” means the Executive Officer of the California Air Resources Board, or his or her delegate.
- (12) “Executive Order” means a document signed by the Executive Officer that specifies the standard to which a new LSI engine is certified or the level to which an LSI retrofit emission control system is verified.
- (13) “Facility” means any structure, appurtenance, installation, and improvement on land that operates and/or garages one or more pieces of equipment.
- (14) “Facility Sample” means the selection of one or more individual facilities from an operator’s California facilities for comparison to the operator’s aggregate fleet inventory for fleet average calculation.
- (15) “Fleet Average Emission Level” means the arithmetic mean of the combined hydrocarbon plus oxides of nitrogen emissions certification standard or verification absolute emissions level for each ~~piece of~~ applicable LSI engine with an emission control system equipment and the default emission rate for each uncontrolled LSI engine comprising an operator’s fleet. LSI engines installed in equipment meeting the boneyard or retired equipment definitions shall not be included in fleet average emission level compliance calculations. For the purposes of calculating the fleet average, electric- motor powered equipment shall be considered to have combined hydrocarbon plus oxides of nitrogen emissions level of zero (0). Electric- motor powered equipment of less than 19

kilowatts shall be allowed to be included in the fleet average calculation provided that it meets the airport ground support equipment, forklift, industrial tow tractor, or sweeper/scrubber definition and the operator can demonstrate that the equipment performs, with similar efficiency, the same function as the work equivalent of an LSI engine-powered piece of equipment. For the purposes of calculating the fleet average for a non-forklift fleet, each piece of On-Road Equivalent GSE shall be considered to have a combined hydrocarbon plus oxides of nitrogen emissions level as follows: 1.1 g/bhp-hr (1.5 g/kW-hr) for purposes of determining compliance with the 1/1/2009 standard; 0.8 g/bhp-hr (1.1 g/kW-hr) for purposes of determining compliance with the 1/1/2011 standard; and 0.7 g/bhp-hr (0.9 g/kW-hr) for purposes of determining compliance with the 1/1/2013 standard. For the purpose of calculating the fleet average, fleet operators shall be permitted to exclude at their discretion any electric- motor powered equipment that could otherwise be used to lower the LSI fleet's average emission level.

- (16) “Forest operations” means (A) forest fire prevention activities performed by public agencies, including but not limited to construction and maintenance of roads, fuel breaks, firebreaks, and fire hazard abatement or (B) cutting or removal or both of timber, other solid wood products, including Christmas trees, and biomass from forestlands for commercial purposes, together with all the work incidental thereto, including but not limited to, construction and maintenance of roads, fuel breaks, firebreaks, stream crossings, landings, skid trails, beds for falling trees, fire hazard abatement, and site preparation that involves disturbance of soil or burning of vegetation following forest removal activities. Forest operations include the cutting or removal of trees, tops, limbs and or brush which is processed into lumber and other wood products, and or for landscaping materials, or biomass for electrical power generation. Forest operations do not include conversion of forestlands to other land uses such as residential or commercial developments.
- (17) “Forklift” means an electric motor powered Class 1 or 2 rider truck or a large spark-ignition engine-powered Class 4 or 5 rider truck as defined by the Industrial Truck Association. Electric Class 3 trucks are not forklifts for the purposes of this regulation.
- (18) “Industrial Tow Tractor” means an electric motor powered or large spark-ignition engine-powered Class 6 truck as defined by the Industrial Truck Association. Industrial tow tractors are designed primarily to push or pull non-powered trucks, trailers, or other mobile loads on roadways or improved surfaces. Industrial tow tractors are commonly referred to as tow motors or tugs. Industrial tow tractors are distinct from airport ground support equipment tugs for the purposes of this regulation.
- (19) “In-field equipment” means agricultural operations or forest operations equipment that is used no more than half of its annual operating hours in agricultural crop preparation services.

- (20) “Label” means a permanent material that is welded, riveted or otherwise permanently attached to the engine block or other major component in such a way that it will be readily visible after installation of the engine in the equipment. If the equipment obscures the label on the engine, the equipment manufacturer must attach a supplemental label such that it is readily visible. The label will state the emission standard or verification absolute emissions level to which the engine or ~~equipment~~ was certified.
- (21) “Large Fleet” means an operator’s aggregated operations in California of 26 or more pieces of equipment.
- (22) “Leased forklift” for use in agricultural crop preparation services means a forklift under a contract or agreement for a term or period of one year or more that may include an option to purchase the forklift.
- (23) “Limited Hours of Use equipment or LHU equipment” means a piece of equipment that, on a year-by-year basis, was operated in California fewer hours than the prescribed threshold established for the preceding calendar year (the 12-month period running from January 1 to December 31). The threshold for the 2010 calendar year is 251 hours. The threshold for 2011 and subsequent calendar years is 200 hours. For example, an operator would only consider that a piece of equipment had met the requirements of the LHU provisions for exclusion from a fleet average emission level calculation performed in 2014 if the piece of equipment were used fewer than 200 hours between January 1, 2013 and December 31, 2013.
- (24) “LSI Retrofit Emission Control System” means an emission control system employed exclusively with an in-use ~~off-road~~ LSI-engine powered vehicle or piece of equipment.
- (25) “Manufacturer” means the manufacturer granted new engine certification or retrofit emission control system verification.
- (26) “Medium Fleet” means an operator’s aggregated operations in California of 4 to 25 pieces of equipment.
- (27) “Memorandum of Understanding Signatories” or “MOU Signatories” means any of the airlines that entered into the South Coast Ground Support Equipment Memorandum of Understanding, dated November 27, 2002.
- (28) “Military tactical vehicles or equipment” means vehicles or pieces equipment that meet military specifications, are owned by the U.S. Department of Defense and/or the U.S. military services or its allies, and are used in combat, combat support, combat service support, tactical or relief operations, or training for such operations.

- (29) ["Model Year" means the manufacturer's annual production period, which includes January 1 of a calendar year or, if the manufacturer has no annual production period, the calendar year.]<sup>1</sup>
- (30) ["New Engine" means an engine's ownership has not been transferred to the ultimate consumer.]
- (31) "Non-forklift fleet" means an operator's aggregated operations in California of four (4) or more sweeper/scrubbers, industrial tow tractors, or pieces of airport ground support equipment, alone or in combination.
- (32) "Nut hullers and processors" means facilities where nuts are received, hulled, aspirated, shelled, sized, stored, packaged and shipped. Facilities that blanch, slice, dice, roast, salt, or smoke nuts or nut meats are not included in the "nut hullers and processors" definition.
- ~~(3332)~~["Off-Road Large Spark-ignition Engines" or "LSI Engines" means any engine that produces a gross horsepower of 25 horsepower or greater (greater than 19 kilowatts for 2005 and later model years) or is designed (e.g., through fueling, engine calibrations, valve timing, engine speed modifications, etc.) to produce 25 horsepower or greater (greater than 19 kilowatts for 2005 and later model years). If an engine family has models at or above 25 horsepower (greater than 19 kilowatts) and models below 25 horsepower (at or below 19 kilowatts), only the models at or above 25 horsepower (above 19 kilowatts) would be considered LSI engines. The engine's operating characteristics are significantly similar to the theoretical Otto combustion cycle with the engine's primary means of controlling power output being to limit the amount of air that is throttled into the combustion chamber of the engine. LSI engines or alternate fuel-powered LSI internal combustion engines are designed for powering, but not limited to powering, forklift trucks, sweepers, generators, and industrial equipment and other miscellaneous applications. All engines and equipment that fall within the scope of the preemption of Section 209(e)(1)(A) of the Federal Clean Air Act, as amended, and as defined by regulation of the Environmental Protection Agency, are specifically excluded from this category. Specifically excluded from this category are: 1) engines operated on or in any device used exclusively upon stationary rails or tracks; 2) engines used to propel marine vessels; 3) internal combustion engines attached to a foundation at a location for at least 12 months; 4) off-road recreational vehicles and snowmobiles; and 5) stationary or transportable gas turbines for power generation.]
- (3433) "Operations equipment" as used in the "Operator" definition means equipment that is operated by a person whose usual and customary business is the rental, leasing, or sale of equipment and is used more than 50 percent of the time for rental or lease, or is designated for sale.

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<sup>1</sup> Bracketed definitions are replicated for ease of use and presentation clarity from Section 1900 (b), Chapter 1, or Section 2431 (a), Chapter 9, of Title 13 of the California Code of Regulations.

~~(3534)~~ “Operator” means a person with legal right of possession and use of LSI engine piece of equipment other than including a person whose usual and customary business is the rental, or leasing, or sale of LSI engine equipment as provided below. ~~Operator includes a person whose usual and customary business is the rental or leasing of LSI engine equipment for any LSI engine equipment not solely possessed or used for rental or leasing.~~

A person whose usual and customary business is the rental, leasing, or sale of equipment will be deemed an operator of:

(A) all service equipment (as defined in section 2775(d)(40) regardless of hours of operation, and

(B) any operations equipment (as defined in section 2775(d)(33) they use more than 50 hours per year.

~~(3635)~~ “Rental forklift” for use in agricultural crop preparation services means a forklift under a contract or agreement for a term or period of less than one year that may include an option to renew the contract or agreement.

~~(3736)~~ “Repower” means a new or remanufactured engine and parts offered by the OEM or by a non-OEM rebuilder that has been demonstrated to the ARB to be functionally equivalent from a durability standpoint to the OEM engine and components being replaced.

~~(3837)~~ “Retired equipment” means equipment with an operational non-resettable hour meter that has been removed from service and rendered inoperable using the following procedures:

~~1.(A)~~ Remove fuel and the starter battery from the piece of equipment. For propane-fueled LSI engines, the operator may simply remove the fuel canister.

~~2.(B)~~ Remove the steering wheel from the piece of equipment.

~~3.(C)~~ Store the retired equipment at a central location, apart from operational equipment, either within the facility or elsewhere, and employ lockout/tagout controls. At a minimum, place a lockout box on either the propane connector or the positive cable to the starter battery. Operators planning to scrap a piece of equipment need not use a lockout box, but may instead sever the positive battery cable more than six inches from the connector.

~~4.(D)~~ Record the initial hour meter reading at the time of decommission and write the date of decommission and the initial meter reading in permanent ink in a readily visible location on a non-removable surface of the piece of equipment. Additionally, record the hour meter serial number, if available. Continue to record meter readings at quarterly intervals (every three months), and sign under penalty of perjury. Retain records in accordance with the LSI record keeping requirements in section 2775.2.

5.(E) Develop an inventory for all retired pieces of equipment at the date of first retirement and sign, under penalty of perjury, that the equipment is retired for the purposes of the LSI Fleet Regulation.

Retired equipment may remain at the facility for up to one year. After one year, the retired equipment must either be removed from the facility or reentered into FAEL standards calculations.

~~(3938)~~ “Retrofit” means the application of an emission control system to a non-new LSI engine.

~~(4039)~~ “Serial Number” means an engine serial number and date of engine manufacture (month and year) that are stamped on the engine block or stamped on a metal label riveted or permanently attached to the engine block. Engine manufacturers must keep records such that the engine serial number can easily be used to determine if an engine was certified for the applicable model year, and beginning January 1, 2007, the standard to which the engine was certified.

~~(4140)~~ “Service equipment” as used in the “Operator” definition means equipment that is operated by a person whose usual and customary business is the rental, leasing, or sale of equipment and is used more than 50 percent of the time for yard operations necessary to support the equipment rental, leasing, or sales business.

~~(4244)~~ “Small Fleet” means an operator’s aggregated operations in California of 1 to 3 forklifts and/or 1 to 3 pieces of non-forklift equipment.

~~(4342)~~ “Sweeper/scrubber” means an electric motor powered or large spark-ignition engine-powered piece of industrial floor cleaning equipment designed to brush and vacuum up small debris and litter or scrub and squeegee the floor, or both.

~~(4443)~~ “Specialty Equipment” means a piece of equipment with unique or specialized performance capabilities that allow it to perform prescribed tasks and as approved by the Executive Officer.

~~(4544)~~ [“Ultimate Purchaser” means the first person who in good faith purchases a new LSI engine or equipment using such engine for purposes other than resale.]

~~(4645)~~ “Uncontrolled LSI Engine” means pre-2001 uncertified engines and 2001-2003 certified uncontrolled LSI engines. The default emission rate for an uncontrolled LSI engine is 12.0 grams per brake horsepower-hour (16.0 grams per kilowatt-hour) of hydrocarbon plus oxides of nitrogen.

~~(4746)~~ “Verification” means a determination by the Executive Officer that the LSI emission control system meets the requirements of this Procedure. This determination is based on both data submitted or otherwise known to the Executive Officer and engineering judgement.



(4847) “Verification Level” means one of four emission reduction classifications that apply to the performance capability of retrofit emission control systems as described in Title 13, California Code of Regulations, Section 2782(f), Table 1, as set forth in Table 1:

**Table 1. LSI Engine Retrofit System Verification Levels**

<i>Classification</i>	<i>Percentage Reduction (HC+NOx)</i>	<i>Absolute Emissions (HC+NOx)</i>
<b>LSI Level 1</b> <sup>(1)</sup>	> 25% <sup>(2)</sup>	Not Applicable
<b>LSI Level 2</b> <sup>(1)</sup>	> 75% <sup>(3)</sup>	3.0 g/bhp-hr <sup>(3)</sup> (4.0 g/kW-hr)
<b>LSI Level 3a</b> <sup>(1)</sup>	> 85% <sup>(4)</sup>	0.5, 1.0, 1.5, 2.0, 2.5 g/bhp-hr (0.7, 1.3, 2.0, 2.7, 3.4 g/kW- hr)
<b>LSI Level 3b</b> <sup>(5)</sup>	Not Applicable	0.5, 1.0, 1.5, 2.0 g/bhp-hr (0.7, 1.3, 2.0, 2.7 g/kW- hr)

Notes:

- (1) Applicable to uncontrolled engines only
- (2) The allowed verified emissions reduction is capped at 25% regardless of actual emission test values
- (3) The allowed verified reduction for LSI Level 2 is capped at 75% or 3.0 g/bhp-hr (4.0 g/kW-hr) regardless of actual emission test values
- (4) Verified in 5% increments, applicable to LSI Level 3a classifications only
- (5) Applicable to emission-controlled engines only

NOTE: Authority cited: Sections 39600, 39601, 43013, and 43018, Health and Safety Code. Reference: Sections 43013, 43017, and 43018, Health and Safety Code.