

**APPENDIX B: FLEET AVERAGE EMISSION LEVEL REQUIREMENTS**

**Part 1**

Proposed Regulation Order Part 7: Adopt California Code of Regulations, Title 13, Sections 2775, 2775.1, and 2775.2 for Large Spark-Ignition (LSI) Engine Fleet Requirements.



## **PROPOSED REGULATION ORDER, PART 7**

NOTE: The entire text is new language proposed for addition to the California Code of Regulations.

Adopt Article 2, Large Sparks Ignition (LSI) Engine Fleet Requirements, within Chapter 15, Division 3, Title 13, California Code of Regulations, and new sections 2775, 2775.1, and 2775.2 to read as follows:

### **Article 2. Large Spark-Ignition (LSI) Engine Fleet Requirements**

#### **Section 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.
- (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:

“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.

“Agricultural Crop Preparation Services” means packinghouses, cotton gins, nut hullers and processors, dehydrators, feed and grain mills, and other related activities.

“Airport Ground Support Equipment,” “Ground Service Equipment,” or “GSE” means any large spark-ignition engine or electric-powered 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.

“Baseline Inventory” means an inventory of equipment as defined in this subdivision that reflects all equipment owned at the time of the inventory.

“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.

“Emission Control System” means any device or system employed with a new or in-use off-road LSI-engine vehicle or 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 catalysis, and combinations of the above.

“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.

“Executive Officer” means the Executive Officer of the California Air Resources Board, or his or her delegate.

“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.

“Facility” means any structure, appurtenance, installation, and improvement on land that operates and/or garages one or more pieces of equipment.

“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.

“Fleet Average Emission Level” means the arithmetic mean of the combined hydrocarbon plus oxides of nitrogen emissions certification standard for each piece of applicable equipment comprising an operator’s fleet. For the purposes of calculating the fleet average, electric-powered equipment shall be considered to have combined hydrocarbon plus oxides of nitrogen emissions level of zero (0). Electric-powered equipment of less than 19 kilowatts shall be allowed to be included in the fleet average calculation provided that the operator can demonstrate that the equipment performs the work equivalent of an LSI engine-powered piece of equipment.

“Forklift” means an electric 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.

“Industrial Tow Tractor” means an electric 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.

“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 standard to which the engine or equipment was certified.

“Large Fleet” means an operator’s aggregated operations in California of 26 or more pieces of equipment.

“LSI Retrofit Emission Control System” means an emission control system employed exclusively with an in-use off-road LSI-engine vehicle or piece of equipment.

“Manufacturer” means the manufacturer granted new engine certification or retrofit emission control system verification.

“Medium Fleet” means an operator’s aggregated operations in California of 4 to 25 pieces of equipment.

“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.

“Military tactical vehicles or equipment means vehicles or equipment owned by the U.S. Department of Defense and/or the U.S. military services and used in

combat, combat support, combat service support, tactical or relief operations, or training for such operations.

["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>

["New Engine" means an engine's ownership has not been transferred to the ultimate consumer.]

"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.

["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.]

"Operator" means a person with legal right of possession and use of LSI engine equipment other than a person whose usual and customary business is the rental or leasing of LSI engine equipment. 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.

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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.

“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.

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

“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.

“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.

“South Coast Air Basin Airports,” or “Basin Airports“ means one or more of the following airports: Burbank-Glendale-Pasadena Airport, the John Wayne Airport, the Los Angeles International Airport, the Long Beach Municipal Airport, and the Ontario International Airport.

“Sweeper/scrubber” means an electric 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.

“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.

[“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.]

“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 16.0 grams per kilowatt-hour of hydrocarbon plus oxides of nitrogen.

“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.

“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>
<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
<b>LSI Level 3b</b> <sup>(5)</sup>	Not Applicable	0.5, 1.0, 1.5, 2.0 g/bhp-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 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

“Zero Emission Vehicle” or “ZEV” means any vehicle that could meet the zero-emission standards set forth in the California Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes (Aug. 5, 1999), or is certified to meet applicable ZEV standards in Title 13 of the California Code of Regulations

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



**Section 2775.1. Standards.**

- (a) Except as provided in subdivisions (c), (d), (e), and (f), operators of medium and large forklift fleets and operators of non-forklift fleets with more than three pieces of equipment shall comply with the fleet average emission level standards in Table 2 by the specified compliance dates.

**Table 2: Fleet Average Emission Level Standards  
in grams per kilowatt-hour (brake-horsepower-hour)  
of hydrocarbons plus oxides of nitrogen**

Fleet Type	Initial Compliance Date		
	1/1/2009	1/1/2011	1/1/2013
Large Forklift Fleet	3.2 (2.4)	2.3 (1.7)	1.5 (1.1)
Medium Forklift Fleet	3.5 (2.6)	2.7 (2.0)	1.9 (1.4)
Non-forklift Fleet	4.0 (3.0)	3.6 (2.7)	3.4 (2.5)

- (1) Fleet operators subject to the fleet average provisions shall include in their fleet average calculations any piece of equipment that the operator has rented or leased or reasonably expects to rent or lease for a period of one year or more.
- (2) Fleet operators may exclude from the fleet average calculation rental or leased equipment if:
- (A) the rental or lease is for a period of less than one year, and
  - (B) the rental or lease component comprises no more than 20 percent of the operator's equipment at any time, and
  - (C) the equipment rented or leased during the period from January 1, 2009 through December 31, 2010 is controlled to a 4.0 g/kW-hr (3.0 g/bhp-hr) standard or better and equipment rented or leased on or after January 1, 2011 is controlled to a 2.7 g/kW-hr (2.0 g/bhp-hr) standard or better.
- (3) Fleet operators shall comply with the applicable fleet average standard in Table 2 with the following exceptions:

- (A) if through business expansion, a fleet meets the definition of a larger size category, the fleet may continue to comply with the applicable fleet standard for the initial size category until the subsequent compliance date, at which time the fleet must meet the applicable fleet standard for the new fleet size category, or
  - (B) if through retirement or other fleet size reduction mechanism the fleet would otherwise be required to comply with a less stringent fleet standard, then the less stringent fleet standard becomes effective immediately.
- (b) In addition to the fleet average emission level standards prescribed in subsection (a), each MOU Signatory shall ensure that 30 percent of their total new and in-use Basin airport GSE fleet meets the ZEV definition by December 31, 2010.
    - (1) Aggregation. The MOU Signatories may aggregate their Basin Airport fleets for the purpose of calculating the ZEV component of the fleet.
    - (2) Inter-carrier Averaging. At their election, two or more Basin Airport operators may also voluntarily agree to average or trade, at any time, their respective fleet conversions, or portions thereof, for purposes of complying with the ZEV requirement in subsection (b). Basin Airport operators that agree to inter-carrier averaging must submit signed agreements to ARB and other information as necessary to demonstrate that emission reductions available for inter-carrier averaging or trading are not otherwise required or relied upon for compliance under subsection (b).
    - (3) Exemptions. Air starts, cargo loaders, cargo tractors, and ground power units are exempt from the ZEV requirements of this subsection, but count toward the total fleet population.
  - (c) Operators of mixed fleets comprised of forklifts and non-forklift equipment shall determine fleet size individually for forklift fleets and non-forklift fleets; a mixed fleet with three or fewer forklifts and three or fewer non-forklift pieces of equipment shall be considered to be a small fleet.
  - (d) Except as provided in subdivisions (e), (f) and (g), each operator of a forklift fleet used in agricultural crop preparation services shall address emissions from their owned uncontrolled forklifts engines as follows:
    - (1) by January 1, 2009, identify that portion of the 1990 and newer LSI forklift fleet for which retrofit emission control systems have been verified and control 20 percent of that portion as prescribed in subdivision (e)(1)(D)(i) below; and
    - (2) by January 1, 2012, control 100 percent of the 1990 and newer LSI forklift fleet for which retrofit emission control systems have been verified as prescribed in subdivision (e)(1)(D)(i) below.

- (3) Operators of fleets used in agricultural crop preparation services may exclude from their 1990 and newer LSI forklift fleet any rental or leased equipment. Equipment rented or leased on or after January 1, 2009 shall be controlled to a 4.0 g/kW-hr (3.0 g/bhp-hr) standard or better.
- (e) Limited Hours of Use Provisions.
  - (1) Forklift and non-forklift equipment in medium and large fleets shall be exempted from the provisions of subdivision (a) of this section provided that:
    - (A) the equipment is used, on average over any three year period, less than 251 hours per year, and
    - (B) the equipment is equipped with an operational hours of use meter, and
    - (C) the operator maintains hours of use records for the piece of equipment at a facility, and
    - (D) the operator addresses the emissions by January 1, 2011, through option (i) or (ii) below:
      - (i) retrofit or repower the equipment to a Level 2 or Level 3 verification level as described in Title 13, California Code of Regulations, Section 2782 (f), or
      - (ii) retire the equipment or replace the equipment with a new or used piece of equipment certified to a 4.0 g/kW-hr (3.0 g/bhp-hr) hydrocarbon plus oxides of nitrogen standard.
  - (2) Forklifts used in agricultural crop preparation services fleets shall be exempted from the provisions of subdivision (d) of this section provided that they meet the requirements of subdivisions (e)(1)(A) through (e)(1)(C).
- (f) Specialty Equipment Exemption.
  - (1) Forklift and non-forklift specialty equipment shall be exempt from the requirements of subdivisions (a) through (d) of this section provided that:
    - (A) the replacement cost exceeds the replacement cost of a "typical" piece of equipment from that category by 50 percent or the retrofit cost exceeds the "typical" retrofit cost of a piece of equipment from that category by 100 percent, and
    - (B) they meet the requirements of subdivisions (e)(1)(A) through (e)(1)(C), and
    - (C) the Executive Officer approves the listing of the piece of equipment as specialty equipment.

- (g) Alternate Compliance Option for Operators of Fleets used in Agricultural Crop Preparation Services.
- (1) Operators of forklift fleets used in agricultural crop preparation services shall be exempted from the provisions of subdivision (d) of this section provided that the forklift fleet complies with a 4.0 g/kW-hr (3.0 g/bhp-hr) fleet average emission level.
- (h) Use of Experimental Emission Control Strategies.
  - (1) An operator may use an experimental emission control strategy provided by or operated by the manufacturer in no more than ten percent of his total fleet for testing and evaluation purposes. The operator shall keep documentation of this use in records as specified in Section 2775.2(b).
- (i) Severability. If any provision of this section or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the section that can be given effect without the invalid provision or application, and to this end the provisions of this section are severable.

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

### **Section 2775.2. Compliance Requirements for Fleet Operators.**

- (a) Fleet operators shall conduct a baseline inventory of their fleet within six months of [insert operative date of regulations after filing with Secretary of State] and shall maintain records at their facilities of their baseline inventory and subsequent inventories indicating accessions and retirements until June 30, 2016.
- (b) At a minimum, fleet operators shall record and maintain on file at their facilities, information on the equipment type, make, model, serial number, and emission certification standard or retrofit verification level. Fleet operators shall also maintain on file, for a period of three years, information on the quality of propane fuel they purchased for their fleet that includes a written statement from the fuel supplier that the fuel supplied to the operator meets all applicable state and federal laws for use in their engines. Operators that maintain multiple facilities may aggregate the records at a centralized facility or headquarters. Records for all equipment at all facilities shall be made available to the Air Resources Board within 30 calendar days upon request. Compliance staff may then select a facility sample for inspection purposes.
- (c) Medium and large fleets shall be required to demonstrate at any time between January 1, 2009 and December 31, 2015, based on actual inventory, and

reconciled against inventory records, that they meet the applicable fleet average emission level standard in Section 2775.1(a).

- (d) Agricultural crop preparation services fleets shall be required to demonstrate at any time on or after June 1, 2007, based on actual inventory and reconciled against inventory records, that they have addressed their 1990 and newer uncontrolled LSI engines as prescribed in Section 2775.1(d).
- (e) Compliance Extensions. An operator may be granted an extension to a compliance deadline specified in Section 2775.1 for one of the following reasons:
  - (1) Compliance Extension based on No Verified Retrofit Emission Control System
    - (A) If the Executive Officer has not verified a retrofit emission control system, or if one is not commercially available for a particular engine and equipment combination, the Executive Officer may grant a one-year extension in compliance if prior to each compliance deadline specified in subsections (a), (c), and (d), the Executive Officer finds that insufficient numbers of retrofit emission control systems are projected to be available.
  - (2) Compliance Extensions for GSE
    - (A) Compliance Extension based on no Verified or Commercially Available Retrofit Emission Control Systems for GSE. GSE of model year 1990 or newer with an uncontrolled LSI engine for which there is no verified retrofit as of January 1, 2007, or for which such verified retrofits are not commercially available by that date, shall be excluded from the GSE fleet average emission level standards contained in section 2775.1(a) until January 1, 2011. GSE of model year 1990 or newer with an uncontrolled LSI engine for which there is still no verified retrofit as of January 1, 2009, or for which such verified retrofits are not commercially available by that date, shall be excluded from the GSE fleet average emission level standards contained in section 2775.1(a) until January 1, 2013.
    - (B) Other Compliance Extensions for GSE. Operators may apply to the Executive Officer for an initial compliance extension of up to two years and one or more compliance extension renewals of up to one year in circumstances other than those addressed in subsection 2(A) above. The Executive Officer shall grant such applications if the applicant has made a good faith effort to comply with the fleet average emission level standards contained in section 2775.1(a) in advance of the compliance dates contained in the same section and documents either that it meets one of the following criteria independently, or that, when considering any combination of the criteria, the documentation justifies granting the application:
      - (i) due to conditions beyond the reasonable control of the applicant, sufficient numbers of tested and reliable emission-controlled GSE

are not projected to be available at a commercially reasonable cost;

- (ii) due to conditions beyond the reasonable control of the applicant, use of available emission-controlled GSE would result in significant operational or safety issues;
- (iii) any other criterion that reasonably relates to whether the application should be granted.

(C) Compliance extensions granted under subsections (e)(2)(A) and (e)(2)(B) shall not extend beyond January 1, 2013. After January 1, 2013, all uncontrolled GSE shall be included in calculations for determining compliance with the GSE fleet average emission level standards contained in section 2775.1(a).

- (3) If an extension to the compliance deadline is granted by the Executive Officer, the operator shall be deemed to be in compliance as specified by the Executive Officer's authorization.
- (f) Continuous Compliance. An operator is required to keep his equipment in compliance with this regulation, once it is in compliance, so long as the operator is operating the equipment in California.
- (g) Severability. If any provision of this section or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the section that can be given effect without the invalid provision or application, and to this end the provisions of this section are severable.

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