

ATTACHMENT

PROPOSED 15-DAY MODIFICATIONS TO THE ORIGINAL PROPOSED REGULATION ORDER

Amend Article 1, Chapter 9, Division 3, Title 13, California Code of Regulations, to read as follows:

The following text shows the proposed modifications to the regulatory text for sections 2401, 2403, 2404, 2405, 2406, 2408, and the adoption of 2408.1, title 13, of the California Code of Regulations (CCR), that were adopted by the Board on November 21, 2008, as part of a rulemaking for a zero-emission equipment credit program, but which have not yet been approved by the Office of Administrative Law. Unless otherwise indicated, the text of the amendments adopted on November 21, 2008 is shown in underline to indicate additions and ~~strikeout~~ to indicate deletions. The modified language now proposed by staff is shown in double underline to indicate additions and ~~double strikeout~~ to indicate deletions. Text that is not proposed for modification has been omitted, and the omission is indicated by either “ * * * * ” or “[No change].”

CHAPTER 9. Off-Road Vehicles and Engines Pollution Control Devices ARTICLE 1. Small Off-Road Engines

§ 2401. Definitions.

(a) [No Change, except add the following new definitions. Note: The numbered order of each definition within the section will be modified to reflect a proper alphabetical listing in the final version of these regulations.]

“Eight-hour workday” means the zero-emission small off-road equipment manufacturer specified operational sequence of a particular type of equipment over an eight-hour period. The operational sequence reflects periods of equipment use, and applicable battery recharging and exchanging.

“Professional level” means the degree of equipment performance expected by commercial operators. For zero-emission small off-road equipment, the degree of performance is based on durability test power loading, supplied battery capacity, cutter speed, as applicable, and other performance requirements or parameters that are specific to a particular equipment type.

“Standard battery package” means the manufacturer-specified combination of battery(ies) and battery charger(s) required for an individual unit of zero-emission equipment to perform one hour of continuous operation, allowing for battery

exchanges, as applicable in order for designation as professional-level zero-emission equipment. The one-hour periods of continuous operation and battery exchanges are repeated in cycles over the course of an eight-hour workday.

“Zero-emission equipment credits” means the amount of emission reductions generated by using zero-emission small off-road equipment in place of small spark-ignition off-road equipment. Zero-emission equipment credits are calculated pursuant §2408.1 and approved by ARB. Electrically powered equipment that are powered exclusively through an electrical cord and require continuous external power generation for operation are not eligible for such credits.

“Zero-emission equipment engine family” means the engine family for zero-emission small off-road equipment based on characteristics of the equipment, its emissions, and its power source, which may be an electric motor, and its energy storage device, which may be a battery.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

§ 2403. Exhaust Emission Standards and Test Procedures – Small Off-Road Engines.

(a) [No Change]

(b) (1) [No Change]

(2) Low-emitting Blue Sky Series engine requirements.

Voluntary standards. Engines may be designated “Blue Sky Series” engines by meeting:

- (A) All applicable requirements of this Article, and
- (B) The following voluntary exhaust emission standards, which apply to all certification and compliance testing. Blue Sky Series engines shall not be included in the averaging, banking, and trading program. Zero-emission small off-road equipment may certify to the Blue Sky Series emission standards. Manufacturers of zero-emission small off-road equipment are not required to perform emissions testing, but must file an application of certification and comply with the administrative requirements outlined in the 2005 and Later Test Procedures to certify their equipment for sale in California.

(3) In lieu of meeting the requirements of subsection 2403(b)(2)(B) above, manufacturers of zero-emission small off-road equipment may obtain zero-emission equipment credits as detailed in section 2408.1.

* * * *

Voluntary Emission Standards
(grams per kilowatt-hour)

<i>Model Year</i>	<i>Displacement Category</i>	<i>Hydrocarbon plus Oxides of Nitrogen</i>	<i>Carbon Monoxide</i>	<i>Particulate *</i>
2005 and subsequent	<50 cc	25	536	2.0
	50 - 80 cc, inclusive	36	536	2.0
2007 and subsequent	>80 cc - <225 cc	5.0	549	
2008 and subsequent	≥225 cc	4.0	549	

* Applicable to all two-stroke engines

(43) Evaporative emission requirements for small off-road engines are specified in Title 13, Chapter 15, Article 1.

(c) [No change.]

(d) [No change.]

(e) Averaging. For new 2000 and subsequent model year small off-road engines, a manufacturer may comply with the standards established in paragraph (b), above, by choosing either to certify an engine family to the standards or to use the corporate average described below.

(1) For each model year, the corporate average value for a pollutant is defined by the following equation:

$$\frac{\sum_{j=1}^n (\text{FEL}_j)(\text{Sales}_j)(\text{Power}_j)(\text{Load Factor})(\text{EDP}_j) - \text{credits expended}}{\sum_{j=1}^n (\text{Sales}_j)(\text{Power}_j)(\text{Load Factor})(\text{EDP}_j)} = \text{AVG}$$

where

- n = the number of small off-road engine families.
- FEL = the Family emission level for an engine family.
- Sales_j = eligible sales of engine family *j*.
- Power_j = sales-weighted maximum modal power, in horsepower or kilowatt as applicable, of engine family *j*, or an alternative approved by the Executive Officer.
- EDP_j = Emissions durability period of engine family *j*, in hours.

AVG = For a given pollutant (HC+NO_x, CO, or Particulate Matter), a manufacturer's corporate average of the exhaust emissions from those California small off-road engines subject to the California corporate average pollutant exhaust emission standard, as established by an Executive Order certifying the California production for the model year. Engines certified to voluntary standards of 2403 (b)(2) are not eligible for corporate averaging.

Credits expended = HC+NO_x or Particulate Matter credits, as defined in sections 2408 and 2409, that are expended by the manufacturer to adjust the corporate average. This term has no meaning for any pollutants other than HC+NO_x and Particulate Matter.

Load Factor = For Test Cycle A and Test Cycle B, the Load Factor = 47% (i.e., 0.47). For Test Cycle C, the Load Factor = 85% (i.e., 0.85). For approved alternate test procedures, the load factor must be calculated according to the Load Factor formula found in paragraph (f)(1) of section 2408.

(2) [No Change]

(3) [No Change]

(f) to (h) [No Change]

~~(i) Executive Officer Discretion for Technical Changes.~~

~~The Executive Officer may revise or incorporate specific technical requirements with respect to the test procedures incorporated at § 2403(d) of these regulations. For the purposes of this subparagraph (i), "technical requirements" includes revisions to test procedures, test methodology, or any requirement to enhance alignment with similar federal regulations promulgated after the amendments to this Article 1, as noticed October 3, 2008, are adopted. Such technical requirements shall be electronically noticed to listserv subscribers, shall be made available to the public via appropriate ARB webpage postings, and shall be noticed in the California Regulatory Notice Register. Such technical requirements will become effective 30 days after notice, unless any person notifies the Executive Officer in writing that they object to any part of the technical requirements noticed.~~

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

§2404. Emission Control Labels and Consumer Information – 1995 and Later Small Off-Road Engines.

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(m) Zero-Emission Equipment Label Content and Placement.

(1) A manufacturer of zero-emission small off-road equipment has the option to place a label on a piece of equipment, which has earned zero-emission equipment credits, to facilitate identification of such equipment by the ultimate purchaser that the equipment was certified as zero-emission small off-road equipment, and thereby meets the required professional-level specifications indicated in Table 1, subsection 2108.1(b)(5)(D), as applicable.

(A) Such label must read, "This is a professional-level, California-certified zero-emission [indicate equipment type]."

(B) Use of this option does not relieve a manufacturer of zero-emission small off-road equipment of the other label requirements.

(2) The manufacturer of zero-emission small off-road equipment must submit, with its certification application, a statement attesting that its label(s) comply with these requirements.

(3) Samples of all such labels used by a manufacturer of zero-emission small off-road equipment must be submitted to the Executive Officer within thirty days after the start of production.

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NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

§ 2405. Defects Warranty Requirements for 1995 and Later Small Off-Road Engines.

(a) Applicability. [No Change]

(b) General Emissions Warranty Coverage. The manufacturer of each small off-road engine must warrant to the ultimate purchaser and each subsequent purchaser that the engine is:

(1) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code; and

(2) Free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to the part as described in the engine manufacturer's application for certification for a minimum period of two years.

* * * *

(h) Zero-Emission Equipment Warranty Requirements.

(1) The manufacturer of zero-emission small off-road equipment that wishes to obtain zero-emission equipment credits must warrant to the ultimate purchaser, and each subsequent purchaser, that the equipment, including batteries and battery chargers, as applicable, is:

(A) Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board; and,

(B) Free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to the part as described in the manufacturer of zero-emission small off-road equipment's application for certification for a minimum period of two years.

(2) A manufacturer of zero-emission small off-road equipment may establish contractual agreements with a battery supplier, as necessary, to satisfy the specified battery and battery charger warranty coverage over the required warranty period. The equipment manufacturer will remain ultimately liable for the warranty coverage.

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NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

§ 2406. Emission Control System Warranty Statement.

(a) [No Change]

(b) Warranty Contact Requirement

(1) Commencing with the 1995 calendar year, each manufacturer must furnish with each new engine a warranty statement that generally describes the obligations and rights of the manufacturer and owner under this article. Manufacturers must also include in the warranty statement a phone number the consumer may use to obtain their nearest franchised United States service center.

(2) The service center phone number must be staffed with at least one English speaking contact. The contact must be able to respond to inquiries

in real time or if the volume of calls precludes a real time response, within one business day.

(c) [No Change]

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

§ 2408. Emission Reduction Credits – Certification Averaging, Banking, and Trading Provisions.

(a) Applicability. [No Change]

(b) General provisions.

(1) [No Change]

(2) An engine family may use the averaging, banking and trading provisions for HC+NO_x and NMHC+NO_x and Particulate Matter emissions if it is subject to regulation under this article with certain exceptions specified in paragraph (3) of this section. ~~HC+NO_x and Particulate Matter credits are interchangeable subject to the limitations on credit generation, credit usage, cross-class averaging and other provisions described in this section.~~

* * * *

(d) Banking.

(1) to (3) [No Change]

(4) Commencing with the 2009 model year, any previously banked certification emission credits and any new certification emission credits earned can be used for up to five years. In the sixth year, any unused certification credits will expire. (For example, if a 2009 model year engine family earns emission credits, those emission credits may be used or banked until the 2014 model year. Any remaining banked credits earned with the 2009 model year, will be invalid for use in the 2015 and subsequent model years.)

* * * *

(f) Credit calculation and manufacturer compliance with emission standards.

(1) For each engine family, HC+NO_x and Particulate Matter certification emission credits (positive or negative) are to be calculated according

to the following equation and rounded to the nearest gram. Consistent units are to be used throughout the equation.

$$\text{Credits} = (\text{Standard} - \text{FEL}) \times \text{Sales} \times \text{Power} \times \text{EDP} \times \text{Load Factor}$$

Where:

Standard = the current and applicable small off-road engine HC+NO_x (NMHC+NO_x) or Particulate Matter emission standard as determined in Section 2403.

FEL = the family emission limit for the engine family in grams per brake-horsepower hour or g/kW-hr as applicable.

Sales = eligible sales as defined in section 2401. Annual sales projections are used to project credit availability for initial certification. Actual sales volume is used in determining actual credits for end-of-year compliance determination.

Power = the sales weighted maximum modal power, in horsepower or kilowatts as applicable. This is determined by multiplying the maximum modal power of each configuration within the family by its eligible sales, summing across all configurations and dividing by the eligible sales of the entire family.

Manufacturers may use an alternative if approved by the Executive Officer (for example, maximum modal power of the test engine).

EDP = the Emissions Durability Period for which the engine family was certified in hours.

Load Factor = For Test Cycle A and Test Cycle B, the Load Factor = 47% (i.e., 0.47). For Test Cycle C, the Load Factor = 85% (i.e., 0.85). For approved alternate test procedures, the load factor must be calculated according to the following formula:

$$\sum_{i=1}^n (\% \text{MTT mode}_i) \times (\% \text{MTS mode}_i) \times (\text{WF mode}_i)$$

Where:

%MTT mode_i = percent of the maximum torque for mode i

%MTS mode_i = percent of the maximum engine rotational speed for mode i

WF mode_i = the weighting factor for mode i

(2) [No Change]

(3) If, as a result of production line testing as required in section 2407, an engine family is determined to be in noncompliance, the manufacturer may ~~raise its~~ recertify to a higher FEL for past and future production as necessary. Further, a manufacturer may carry a negative credit balance (known also as a credit deficit) for the subject class and model year forward to the next model year. The credit deficit may be no larger than that created by the nonconforming family. If the credit deficit still exists after the model year following the model year in which the nonconformity occurred, the

manufacturer must obtain and apply credits to offset the remaining credit deficit at a rate of 1.2 grams for each gram of deficit within the next second model year after the model year of the initial deficit. The provisions of this paragraph are subject to the limitations in paragraph (4) of this section.

(4) Regulations elsewhere in this section notwithstanding, if an engine manufacturer experiences two or more production line testing failures pursuant to the regulations in section 2407 of this article in a given model year, the manufacturer may ~~raise the FEL of~~ recertify previously produced engines to a higher FEL only to the extent that such engines represent no more than 10% of the manufacturer's total eligible sales for that model year. For any additional engines determined to be in noncompliance, the manufacturer must conduct offsetting projects approved in advance by the Executive Officer.

(5) If, as a result of production line testing under section 2407, a manufacturer desires to lower its FEL, it may do so subject to Executive Officer approval and demonstration that the family would meet the new FEL in the production line testing using the existing data. A manufacturer may lower their FEL at most once per model year.

(6) [No Change]

~~(7) Credits for Zero-emission small off-road equipment or Zero Emission Equipment (ZEE)~~

~~(A) A manufacturer can earn zero-emission equipment credits for zero-emission small off-road equipment provided it meets all of the following requirements:~~

~~(1) The equipment must be able to perform at a level equivalent to that of professional equipment (e.g., power, cutting width, etc.).~~

~~(2) The equipment to be considered for emission credits must not be powered through an electrical cord.~~

~~(3) Each recharge or refueling should allow the equipment to perform at a professional performance level for at least four hours.~~

~~(4) The time to re-power (i.e., replace the battery pack) the zero-emission small off-road equipment should be equivalent to the time of refueling typical spark-ignition equipment.~~

~~(5) The equipment must meet the maximum durability period requirement for its equivalent displacement category.~~

~~(6) The equipment must be able to perform the small off-road engine test cycle repeatedly for the full durability period.~~

~~(7) The equipment must be certified as required in California Exhaust Emission Standards and Test Procedures for 2005 and Later Small Off-Road Engines adopted July 26, 2004, as last amended **[INSERT DATE]**.~~

~~(B) For each equipment type, HC+NO_x and Particulate Matter certification emission credits are to be calculated according to the following~~

~~equation and rounded to the nearest gram. Consistent units are to be used throughout the equation.~~

$$\underline{\underline{\text{ZEE Credits} = \text{Standard} \times \text{Sales} \times \text{Power} \times \text{EDP} \times \text{Load Factor}}}$$

~~Where the definitions of each variable is the same as in subsection (f)(1) in this section.~~

(g) Certification Using Credits.

(1) In the application for certification a manufacturer must:

* * * *

(E) 1. If the engine family is projected to generate negative emission credits, state specifically the source (manufacturer/engine family or reserved) and quantity of the credits necessary to offset the credit deficit according to projected production. Zero emission equipment credits can be used to compensate for negative certification emission credits, up to forty percent above the standard. If an engine family has emissions higher than forty percent above the standards, certification emission credits can be used to account for the remaining emission deficit.

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(i) End-of-year and final reports.

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(3) (A) End-of year reports must be submitted within 90 days of the end of the model year to: Chief, Mobile Source Operations Division, Air Resources Board, 95289480 Telstar Avenue, Suite 4, El Monte, CA 91731.

(B) Unless otherwise approved by the Executive Officer, final reports must be submitted within 270 days of the end of the model year to: Chief, Mobile Source Operations Division, Air Resources Board, 95289480 Telstar Avenue, Suite 4, El Monte, CA 91731.

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NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.

§ 2408.1 Emission Reduction Credits – Zero-Emission Equipment Credits Averaging, Banking, and Trading Provisions.

(a) Applicability. The requirements of section 2408.1 are applicable to all small off-road equipment produced in the 2010 and later model years. Equipment certified to the voluntary standards in subsection 2403(b)(2), or equipment that receive funding through any emission reduction programs, are not eligible for participation in the zero-emission equipment credit averaging, banking, and trading program. Participation in this program is voluntary, but if a manufacturer elects to participate, it must do so in compliance with the provisions set forth in section 2408.1. The provisions of section 2408.1 are limited to HC+NO_x (or NMHC+NO_x, as applicable) and Particulate Matter emissions.

(b) General provisions.

(1) Zero-emission equipment credits may be used to offset emissions for an engine family, if the engine family is either a carry-over engine family for which the original Executive Order was issued for the 2009 or earlier model year, or is certified to comply with applicable emissions standards for 2009 and subsequent model year small off-road engines.

(2) A manufacturer must only include in its calculation of zero-emission equipment credit generation, zero-emission small off-road equipment that are sold and used in California.

(3) For an engine family using zero-emission equipment credits to compensate for negative certification emission credits, a manufacturer may, at its option, include its entire production of that engine family in its calculation of credit usage for a given model year.

(4) A manufacturer of zero-emission small off-road equipment that wishes to generate zero emission equipment credits must certify zero-emission equipment engine families at Family Emission Limits (FEL) of zero grams per kilowatt-hour.

(A) A manufacturer of zero-emission small off-road equipment which certifies an engine family as a zero-emission equipment engine family may generate positive zero-emission equipment credits for averaging, banking, or trading, or a combination thereof.

(B) Except as noted in section 2408.1(b)(4)(C), an engine family certified as a zero-emission equipment engine family must meet the following durability requirements:

1. 300 hours for zero-emission small off-road equipment that functions and performs equivalently to equipment using spark-ignition engines with a displacement of less than or equal to 80cc.

2. 500 hours for zero-emission small off-road equipment that functions and performs equivalently to equipment using spark-ignition engines with a displacement between 80cc and 225cc.

(C) An engine family that is certified as a zero-emission equipment engine family, but cannot achieve the full durability period, may generate 75 percent of the zero-emission equipment credits if the zero-emission equipment engine family can meet a minimum of 75 percent up to 99 percent of the durability period. The amount of zero-emission credits would be calculated as 75 percent of the result obtained using the equation in section 2408.1(f). This allowance will remain in effect through the 2012 model year, after which all zero-emission small off-road equipment will be required to meet the full durability requirement specified in subsection 2408.1(b)(4)(B).

(D) Minimum professional-level requirements for zero-emission small off-road equipment.

1. An engine family certified as a zero-emission equipment engine family must be able to operate continuously, allowing for any battery exchanges, for a minimum of one hour and meet the minimum specifications indicated in Table 1.

Table 1. Minimum Professional Level Requirements For Zero-Emission Equipment Eligibility.

<u>Product Type</u>	<u>Durability Test Power Load</u>	<u>Minimum Supplied Battery Capacity (Using a maximum of four individual batteries)</u>	<u>Minimum Cutter Speed</u>	<u>Other Performance Requirements or Parameters</u>
<u>Chainsaw</u>	<u>0.6 kW</u>	<u>295 Wh</u>	<u>8,000 revolutions/min (rpm)</u>	<u>Minimum 12-inch bar length (305 millimeter (mm))</u>
<u>Trimmer/ Brushcutter</u>	<u>0.5 kW</u>	<u>295 Wh</u>	<u>Minimum tip speed of 20,000 feet/min(102 meters/sec) with double</u>	<u>Minimum cutting swath of 12 inch (305mm)</u>

			<u>line extension and line diameter of 0.080 inch (2mm)</u>	
<u>Hedge Clipper</u>	<u>0.4 kW</u>	<u>180 Wh</u>	<u>1,400 strokes/min</u>	<ul style="list-style-type: none"> • <u>Minimum 20-inch (508mm) cutter length</u> • <u>Double reciprocating</u> • <u>Minimum 0.709 inch (18mm) tooth opening</u>
<u>Blower (Handheld)</u>	<u>See "Other Performance Requirements or Parameters"</u>	<u>395 Wh</u>	=	<ul style="list-style-type: none"> • <u>Exit velocity multiplied by volume (measured at the discharge pipe at the same time) shall be 47,000 miles-ft³/hour-min. (3,564 meter-meter³/hour-min.)</u> • <u>The blower rating must be based on a measurement with single discharge pipe using the American National Standards Institute (ANSI) B175.2 test procedure.</u>

<u>Blower (Backpack)</u>	<u>See “Other Performance Requirements or Parameters”</u>	<u>790 Wh</u>	<u>=</u>	<ul style="list-style-type: none"> • <u>Exit velocity multiplied by volume (measured at the discharge pipe at the same time) shall be 68,000 miles-ft³/hour-min. (4,760 meter-meter³/hour-min)</u> • <u>The blower rating must be based on a measurement with single discharge pipe using the ANSI B175.2 test procedure.</u>
<u>Edger</u>	<u>0.5 kW</u>	<u>295 Wh</u>	<u>6,500 rpm</u>	<u>=</u>
<u>Split Boom System</u>	<u>0.5 kW</u>	<u>295 Wh</u>	<u>6,500 rpm</u>	<u>=</u>
<u>Walk-Behind Lawnmower</u>	<u>3.0 kW</u>	<u>1,400 Wh</u>	<u>=</u>	<ul style="list-style-type: none"> • <u>Minimum battery capacity to operate one hour over a five-mode duty cycle (with no idle mode) at 3,060 rpm</u> • <u>A minimum cutting width of 21 inch, and</u>

				<u>the maximum speed defined by the ANSI B71.1 blade tip speed safety requirements.</u>
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2. Durability testing must be performed in an equipment configuration that is representative of actual operation of the equipment by the end user (i.e., using standard battery package cycling).

3. The minimum battery durability/life cycle is based on the maximum durability power specified and the equivalent engine duty cycle (i.e., handheld equipment is 85 percent at 100 percent load rated speed, and 15 percent at minimum load idle speed; a walk-behind lawn mower is a five-mode test cycle [without an idle mode] at 3,060 rpm).

(E) In order to generate zero-emission equipment credits, manufacturers of battery-powered zero-emission small off-road equipment must provide the ultimate purchaser with a standard battery package, as defined in section 2401.

(F) 1. A manufacturer of zero-emission small off-road equipment must include in the certification application, a description of an operational sequence over the eight-hour workday for the applicable zero-emission equipment engine family.

2. Total time for battery exchanges during an eight-hour workday for an engine family certified as a zero-emission equipment engine family must not exceed the total refueling time for that of an equivalently performing professional-level gasoline-powered piece of equipment during an eight-hour period of operation.

(G) Manufacturers must demonstrate compliance under the averaging, banking, and trading provisions for a particular model year within 270 days after the end of the model year.

(H) 1. Batteries in an equipment manufacturer's original standard battery package must be identified with unique part numbers that differ from the part numbers of any applicable replacement batteries.

2. Replacement batteries cannot be used to generate zero-emission equipment credits.

(c) Averaging.

(1) Fifty percent of negative credits from engine families with FELs above the applicable emission standard may be offset by positive zero-emission equipment credits, as allowed under the provisions of section 2408.1. The remaining negative credits must be offset by positive certification emission credits. Averaging of credits in this manner is used to determine compliance under subsection 2408.1(f)(2).

(2) Subject to the limitations above, zero-emission equipment credits used in averaging for a given model year may be obtained from zero-emission equipment credits banked in previous model years, or zero-emission equipment credits of previous model years obtained through trading.

(3) Zero-emission equipment credits generated from zero-emission small off-road equipment that performs equivalently to professional-level spark-ignition engine powered equipment, with a displacement of 80cc or less, may only be used to offset emissions from other gasoline-powered equipment with a displacement of 80cc or less.

(4) Zero-emission equipment credits generated from zero-emission small off-road equipment that performs equivalently to spark-ignition engine powered equipment, with a displacement between 80cc and 225cc, may only be used to offset emissions from other gasoline-powered equipment with a displacement between 80cc and 225cc.

(d) Banking.

(1) Beginning with the 2010 model year, a manufacturer of zero-emission small off-road equipment that meets the zero-emission equipment credit requirements may bank credits for that engine family in the model year of certification for use in future years in averaging and trading.

(2) A manufacturer of zero-emission small off-road equipment may bank zero-emission equipment credits only after the end of the model year and after ARB has reviewed the manufacturer's end-of-year reports. During the model year, and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved, and may be re-designated for trading in the end-of-year report and final report.

(3) Zero-emission equipment credits may be banked for up to five years.

(4) Unused zero-emission equipment credits after five years will expire and may no longer be used toward offsetting negative certification emission credits from other engine families.

(e) Trading

(1) Zero-emission equipment credits for trading can be obtained from zero-emission equipment credits banked in previous model years.

(2) Traded zero-emission equipment credits can be used for averaging or banking for up to five years from the time of zero-emission equipment credit generation.

(f) Credit calculation and manufacturer compliance with emission standards. For each engine family, HC+NO_x and Particulate Matter zero-emission equipment credits are to be calculated according to the following equation and rounded to the nearest gram. Consistent units are to be used throughout the equation.

Zero-Emission Equipment Credits = Exhaust Standard x Sales x Power x EDP x Load Factor

Where:

Exhaust Standard = the current and applicable small off-road engine HC+NO_x (NMHC+NO_x), or Particulate Matter, exhaust emission standard, expressed in grams per kilowatt-hour (g/kW-hr), as determined in section 2403, based on the engine displacement of equivalently performing, professional level, gasoline-powered equipment.

Sales = eligible sales as defined in section 2401. Annual sales projections are used to project credit availability for initial certification. Actual sales volume is used in determining actual credits for end-of-year compliance determination.

Power = the product of the battery capacity delivered in one hour and the motor efficiency, expressed in kilowatts (kW). The motor efficiency is a declared value from the motor manufacturer.

Battery capacity = the total amount of electrical energy available in the equipment's standard battery package, expressed in Watt-hours (Wh).

EDP = the Emissions Durability Period for which the engine family was certified, expressed in hours (hr).

Load Factor = For Test Cycle A and Test Cycle B, the Load Factor = 47 percent (i.e., 0.47). For Test Cycle C, the Load Factor = 85 percent (i.e., 0.85). For alternate test procedures, a manufacturer must submit for approval an alternative method for calculating the load factor.

(g) Certification Using Zero-Emission Equipment Credits.

(1) In the application for certification, a manufacturer using zero-emission equipment credits must:

(A) Submit a statement that the equipment for which certification is requested will not, to the best of the manufacturer's belief, cause the manufacturer to be in noncompliance, under subsection 2408(f)(2), when accounting for the total amount of credits used for of all the manufacturer's applicable engine families.

(B) Indicate the projected number of zero-emission equipment credits generated/required for this engine family; the projected applicable eligible sales volume, and the values required to calculate zero-emission equipment credits as given in subsection 2408.1(f).

(C) Indicate that the zero-emission equipment credits used came from the same displacement category as those needed for the engine family.

(D) Submit calculations in accordance with subsection 2408.1(f) of the projected zero-emission equipment credits based on production projections for each engine family.

(E) Specify the recipient (manufacturer/engine family or reserved) and quantity of the zero-emission equipment credits used (whether they are banked, traded, or to be used to offset a deficit).

(2) The manufacturer of zero-emission small off-road equipment may supply the information required in subsections 2408.1(g)(1)(C), 2408.1(g)(1)(D), and 2408.1(g)(1)(E), by use of an electronic spreadsheet detailing the manufacturer's annual production plans, and the zero-emission equipment credits generated by each zero-emission equipment engine family.

(3) All Executive Orders issued are conditional upon manufacturer compliance with the provisions of this section 2408.1 both during and after the model year of production.

(4) Failure to comply with all provisions of this section 2408.1 will be considered to be a failure to satisfy the conditions upon which the Executive Order was issued, and the Executive Order may be determined to be void *ab initio*.

(5) The manufacturer bears the burden of establishing to the satisfaction of the Executive Officer that the conditions upon which the Executive Order was issued were satisfied or waived.

(h) Maintenance of records.

(1) The manufacturer of zero-emission small off-road equipment must establish, maintain, and retain the following adequately organized and indexed records for each engine family:

(A) ARB engine family identification code.

(B) Family Emission Limit (FEL).

(C) Maximum equivalent modal power for each configuration sold or an alternative approved by the Executive Officer.

(D) Projected sales volume for the model year; and

(E) Records appropriate to establish the quantities of equipment that constitute eligible sales for each power rating for each FEL.

(F) Records of standard battery package sales per equipment sales, if batteries were sold separately from the equipment.

(2) Any manufacturer of zero-emission small off-road equipment participating in trading reserved zero-emission equipment credits must maintain the following records on a quarterly basis for each such engine family:

(A) The engine family.

(B) The actual quarterly and cumulative applicable production/sales volume.

(C) The values required to calculate zero-emission equipment credits as given in subsection 2408.1(f).

(D) The resulting number of zero-emission equipment credits generated, and

(E) How and where zero-emission equipment credit surpluses are dispersed.

(3) The manufacturer must retain all records required to be maintained under this section 2408.1 for a period of eight years from the due date for the end-of-year report. Records may be retained as hard copy or reduced to microfilm, diskettes, or other media, depending on the manufacturer's record retention procedure.

(4) Nothing in this section 2408.1 limits the Executive Officer's discretion in requiring the manufacturer to retain additional records or submit information not specifically required by this section 2408.1.

(5) Pursuant to a request made by the Executive Officer, the manufacturer must submit to the Executive Officer the information that the manufacturer is required to retain.

(6) ARB may void *ab initio* the Executive Order for an engine family for which the manufacturer fails to retain the records required in this section 2408.1 or to provide such information to the Executive Officer upon request.

(i) End-of-year and final reports.

(1) End-of-year and final reports must indicate the engine family, the actual sales volume, the values required to calculate zero-emission equipment credits as given in subsection 2408.1(f), and the number of zero-emission equipment credits generated/required. Manufacturers of zero-emission small off-road equipment must also submit how and where zero-emission equipment credit surpluses were dispersed (or are to be banked). Copies of contracts related to zero-emission equipment credit trading must be included or supplied by the broker, if applicable. The report must include a calculation of zero-emission equipment credit balances to show that the zero-emission equipment credit summation for each class of engines is equal to or greater than zero.

(2) The calculation of eligible sales, as defined in section 2401, for end-of-year and final reports, must be based on the location of the point of first retail sale (for example, retail customer or dealer), which is also called the final product purchase location. Upon advance written request, the Executive Officer will consider other methods to track equipment and batteries (if sold separately) for credit calculation purposes, such as shipments to distributors of products intended for sale in California, that provide high levels of confidence that eligible sales are accurately counted.

(3) End-of-year report and final report submissions.

(A) End-of-year reports must be submitted within 90 days of the end of the model year to: Chief, Mobile Source Operations Division, Air Resources Board, 9480 Telstar Avenue, Suite 4, El Monte, CA 91731.

(B) Unless otherwise approved by the Executive Officer, final reports must be submitted within 270 days of the end of the model year to: Chief, Mobile Source Operations Division, Air Resources Board, 9480 Telstar Avenue, Suite 4, El Monte, CA 91731.

(4) A manufacturer of zero-emission small off-road equipment that generates zero-emission equipment credits only for banking and that fails to submit end-of-year reports in the applicable specified time period (90 days after the end of the model year) may not use the zero-emission equipment credits until such reports are received and reviewed by ARB. Use of projected zero-emission equipment credits pending ARB review is not permitted in these circumstances.

(5) Errors discovered by either ARB or the manufacturer in the end-of-year report, including errors in zero-emission equipment credit calculation, may be corrected in the final report.

(6) If ARB or the manufacturer determines that a reporting error occurred in an end-of-year or final report previously submitted to ARB under this section 2408.1, the manufacturer's zero-emission equipment credits and credit calculations must be recalculated. Erroneous zero-emission equipment credits will be void except as provided in subsection 2408.1(h).

(7) If within 270 days of the end of the model year, an ARB review reveals a reporting error in the manufacturer's favor (that is, resulting in an increased zero-emission equipment credit balance), or if the manufacturer discovers such an error within 270 days of the end of the model year, ARB will restore the zero-emission equipment credits for use by the manufacturer.

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.