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§ 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.

Product Type	**Durability Test Power Load**	**Minimum Supplied Battery Capacity (Using a maximum of four individual batteries)**	**Minimum Cutter Speed**	**Other Performance Requirements or Parameters**
Chainsaw	0.6 kW	295 Wh	8,000 revolutions/min (rpm)	Minimum 12-inch bar length (305 millimeter (mm))
Trimmer/ Brushcutter	0.5 kW	295 Wh	Minimum tip speed of 20,000 feet/min(102 meters/sec) with double line extension and line diameter of 0.080 inch (2mm)	Minimum cutting swath of 12 inch (305mm)
Hedge Clipper	0.4 kW	180 Wh	1,400 strokes/min	• Minimum 20-inch (508mm) cutter length • Double reciprocating • Minimum 0.709 inch (18mm) tooth opening

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Final Regulation Order, as adopted February 24, 2010, and corrected March 29, 2010

Blower (Handheld)	See "Other Performance Requirements or Parameters"	395 Wh	-	• Exit velocity multiplied by volume (measured at the discharge pipe at the same time) shall be 47,000 miles-ft^3/hour-min. (3,564 meter-meter^3/hour-min.) • The blower rating must be based on a measurement with single discharge pipe using the American National Standards Institute (ANSI) B175.2 test procedure.
Blower (Backpack)	See "Other Performance Requirements or Parameters"	790 Wh	-	• Exit velocity multiplied by volume (measured at the discharge pipe at the same time) shall be 68,000 miles-ft^3/hour-min. (4,760 meter-meter^3/hour-min) • The blower rating must be

				based on a measurement with single discharge pipe using the ANSI B175.2 test procedure.
Edger	0.5 kW	295 Wh	6,500 rpm	-
Split Boom System	0.5 kW	295 Wh	6,500 rpm	-
Walk-Behind Lawnmower	3.0 kW	1,400 Wh	-	• Minimum battery capacity to operate one hour over a five-mode duty cycle (with no idle mode) at 3,060 rpm • A minimum cutting width of 21 inch, and the maximum speed defined by the ANSI B71.1 blade tip speed safety requirements.

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(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 all of 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,

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

(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(g).

(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, 43151, 43152, 43153, 43154, 43205.5 and 43210, 43210.5, 43211, and 43212, Health and Safety Code.