

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

(a) [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.~~

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(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.)

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(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]

(g) Certification Using Credits.

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

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(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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Date of Release of 45-Day Notice: October 3, 2008

Date of Board Hearing: November 21, 2008

Dates of 15-Day Notice Period: February 4, 2010 – February 19, 2010

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

