

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 lbs, 4.0 grams per test.

(4)(i) For vehicles with a Gross Vehicle Weight Rating of up to 26,000 lbs, the standards set forth in paragraph (b)(3) of this section refer to a composite sample of evaporative emissions collected under the conditions set forth in subpart M and measured in accordance with those procedures.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 26,000 lbs, the standard set forth in paragraph (b)(3)(ii) of this section refers to the manufacturers' engineering design evaluation using good engineering practice (a statement of which is required in § 86.091-23(b)(4)(ii)).

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1991 or later model year methanol-fueled diesel, or any naturally-aspirated diesel heavy-duty engine. For petroleum fueled engines only, this provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in subpart I or N of this part to ascertain that such test engines meet the requirements of paragraphs (a), (b), and (c) and (d) of this section.

(Secs. 202, 203, 206, 207, 208, 301a, Clean Air Act, as amended; 42 U.S.C. 7521, 7522, 7525, 7541, 7542, 7601a)

[50 FR 10653, Mar. 15, 1985, as amended at 54 FR 14465, Apr. 11, 1989; 55 FR 30622, July 26, 1990; 56 FR 64711, Dec. 12, 1991]

**§ 86.091-15 NO<sub>x</sub> and particulate averaging, trading, and banking for heavy-duty engines.**

(a)(1) Heavy-duty engines eligible for the NO<sub>x</sub> and particulate averaging, trading, and banking programs are described in the applicable emission standards sections in this subpart. Participation in these programs is voluntary.

(2)(i) Engine families with FELs exceeding the applicable standard shall

obtain emission credits in a mass amount sufficient to address the shortfall. Credits may be obtained from averaging, trading, or banking, within the averaging set restrictions described in this section.

(ii) Engine families with FELs below the applicable standard will have emission credits available to average, trade, bank or a combination thereof. Credits may not be used to offset emissions that exceed an FEL. Credits may not be used to remedy an in-use nonconformity determined by a Selective Enforcement Audit or by recall testing. However, credits may be used to allow subsequent production of engines for the family in question if the manufacturer elects to recertify to a higher FEL.

(iii) Engine families within a given averaging set may not both generate and use like emission credits in the same model year. This restriction is to be applied on a pollutant-specific basis.

(b) Participation in the NO<sub>x</sub> and/or particulate averaging, trading, and banking programs shall be done as follows.

(1) During certification, the manufacturer shall:

(i) Declare its intent to include specific engine families in the averaging, trading and/or banking programs. Separate declarations are required for each program and for each pollutant (*i.e.*, NO<sub>x</sub> and particulate).

(ii) Declare an FEL for each engine family participating in one or more of these three programs.

(A) The FEL must be to the same level of significant digits as the emission standard (one-tenth of a gram per brake horsepower for NO<sub>x</sub> emissions and one-hundredth of a gram per brake horsepower-hour for particulate emissions).

(B) In no case may the FEL exceed the upper limit prescribed in the section concerning the applicable heavy-duty engine NO<sub>x</sub> and particulate emission standards.

(iii) Calculate the projected emission credits (+ / -) based on quarterly production projections for each participating family and for each pollutant (NO<sub>x</sub> and particulate), using the equation in paragraph (c) of this section

and the applicable factors for the specific engine family.

(iv)(A) Determine and state the source of the needed credits according to quarterly projected production for engine families requiring credits for certification.

(B) State where the quarterly projected credits will be applied for engine families generating credits.

(C) Credits may be obtained from or applied to only engine families within the same averaging set as described in paragraphs (d) and (e) of this section. Credits available for averaging, trading, or banking as defined in § 86.090-2, may be applied to a given engine famil(y) (ies), or reserved as defined in § 86.091-2.

(2) Based on this information each manufacturer's certification application must demonstrate:

(i) That at the end of model year production, each engine family has a net emissions credit balance of zero or more using the methodology in paragraph (c) of this section with any credits obtained from averaging, trading or banking.

(ii) The source of the credits to be used to comply with the emission standard if the FEL exceeds the standard, or where credits will be applied if the FEL is less than the emission standard. In cases where credits are being obtained, each engine family involved must state specifically the source (manufacturer/engine family) of the credits being used. In cases where credits are being generated/supplied, each engine family involved must state specifically the designated use (manufacturer/engine family or reserved) of the credits involved. All such reports shall include all credits involved in averaging, trading or banking.

(3) During the model year manufacturers must:

(i) Monitor projected versus actual production to be certain that compliance with the emission standards is achieved at the end of the model year.

(ii) Provide the end-of-model year reports required under § 86.091-23.

(iii) Maintain the quarterly records required under § 86.091-7(c)(8).

(4) Projected credits based on information supplied in the certification application may be used to obtain a cer-

tificate of conformity. However, any such credits may be revoked based on review of end-of-model year reports, follow-up audits, and any other verification steps deemed appropriate by the Administrator.

(5) Compliance under averaging, banking, and trading will be determined at the end of the model year. Engine families without an adequate amount of actual NO<sub>x</sub> and/or particulate emission credits will violate the conditions of the certificate of conformity. The certificates of conformity may be voided *ab initio* for those engine families.

(6) If EPA or the manufacturer determines that a reporting error occurred on an end-of-year report previously submitted to EPA under this section, the manufacturer's credits and credit calculations will be recalculated. Erroneous positive credits will be void. Erroneous negative credit balances may be adjusted by EPA.

(i) If EPA review of a manufacturer's end-of-year report indicates an inadvertent credit shortfall, the manufacturer will be permitted to purchase the necessary credits to bring the credit balance for that engine family to zero, at the ratio of 1.2 credits purchased for every credit needed to bring the balance to zero. If sufficient credits are not available to bring the credit balance for the engine family in question to zero, EPA may void the certificate for that engine family *ab initio*.

(ii) If within 90 days of receipt of the manufacturer's end-of-year report, EPA review determines a reporting error in the manufacturer's favor (*i.e.*, resulting in a positive credit balance) or if the manufacturer discovers such an error within 90 days of EPA receipt of the end-of-year report, the credits will be restored for use by the manufacturer.

(c)(1) For each participating engine family, NO<sub>x</sub> and particulate emission credits (positive or negative) are to be calculated according to one of the following equations and rounded, in accordance with ASTM E29-67, to the nearest one-tenth of a Megagram (Mg). Consistent units are to be used throughout the equation.

For determining credit need for all engine families and credit availability

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for engine families generating credits for averaging programs only:

$$\text{Emission credits} = (\text{Std} - \text{FEL}) \times (\text{CF}) \times (\text{UL}) \times (\text{Production}) \times (10^{-6})$$

For determining credit availability for engine families generating credits for trading or banking programs:

$$\text{Emission credits} = (\text{Std} - \text{FEL}) \times (\text{CF}) \times (\text{UL}) \times (\text{Production}) \times (10^{-6}) \times (0.8)$$

Where:

Std=the current and applicable heavy-duty engine NO<sub>x</sub> or particulate emission standard in grams per brake horsepower hour or grams per Megajoule.

FEL=the NO<sub>x</sub> or particulate family emission limit for the engine family in grams per brake horsepower-hour or grams per Megajoule.

CF=a transient cycle conversion factor in BHP-hr/mi or MJ/mi, as given in paragraph (c)(2) of this section.

UL=the useful life, or alternative life as described in paragraph (f) of § 86.090-21, for the given engine family in miles.

Production=the number of engines produced for U.S. sales within the given engine family during the model year. Quarterly production projections are used for initial certification. Actual production is used for end-of-year compliance determination.

0.8=a one-time discount applied to all credits to be banked or traded within the model year generated. Banked credits traded in a subsequent model year will not be subject to an additional discount. Banked credits used in a subsequent model year's averaging program will not have the discount restored.

(2) The transient cycle conversion factor is the total (integrated) cycle brake horsepower-hour or Megajoules, divided by the equivalent mileage of the applicable transient cycle. For Otto-cycle heavy-duty engines, the equivalent mileage is 6.3 miles. For diesel heavy-duty engines, the equivalent mileage is 6.5 miles. When more than one configuration is chosen by EPA to be tested in the certification of an engine family (as described in § 86.085-24), the conversion factor used is to be based upon the configuration generating the highest conversion factor when determining credit need and the lowest conversion factor when determining credit availability for banking, trading or averaging.

(d) *Averaging sets for NO<sub>x</sub> emission credits*: The averaging and trading of NO<sub>x</sub> emission credits will only be allowed between heavy-duty engine families in the same averaging set and in the same regional category. Engines produced for sale in California constitute a separate regional category than engines produced for sale in the other 49 states. Banking and trading are not applicable to engines sold in California. The averaging sets for the averaging and trading of NO<sub>x</sub> emission credits for heavy-duty engines are defined as follows:

(1) For Otto-cycle heavy-duty engines:

(i) Otto-cycle heavy-duty engines constitute an averaging set. Averaging and trading among all Otto-cycle heavy-duty engine families is allowed. There are no subclass restrictions.

(ii) Gasoline-fueled heavy-duty vehicles certified under the provisions of § 86.085-1(b) may not average or trade credits with gasoline-fueled heavy-duty Otto-cycle engines, but may average or trade credits with light-duty trucks.

(2) For diesel cycle heavy-duty engines:

(i) Each of the three primary intended service classes for heavy-duty diesel engines, as defined in § 86.090-2, constitute an averaging set. Averaging and trading among all diesel cycle engine families within the same primary service class is allowed.

(ii) Urban buses are treated as members of the primary intended service class where they would otherwise fall.

(e) *Averaging sets for particulate emission credits*. The averaging and trading of particulate emission credits will only be allowed between diesel cycle heavy-duty engine families in the same averaging set and in the same regional category. Engines produced for sale in California constitute a separate regional category than engines produced for sale in the other 49 states. Banking and trading are not applicable to engines sold in California. The averaging sets for the averaging and trading of particulate emission credits for diesel cycle heavy-duty engines are defined as follows:

(1) Engines intended for use in urban buses constitute a separate averaging set from all other heavy-duty engines.

Averaging and trading among all diesel cycle bus engine families is allowed.

(2) For heavy-duty engines, exclusive of urban bus engines, each of the three primary intended service classes for heavy-duty diesel cycle engines, as defined in § 86.090-2, constitute an averaging set. Averaging and trading between diesel cycle engine families within the same primary service class is allowed.

(3) Otto-cycle engines may not participate in particulate averaging, trading, or banking.

(f) Banking of NO<sub>x</sub> and particulate emission credits:

(1) *Credit deposits.* (i) Under this phase of the banking program, emission credits may be banked from engine families produced during the three model years prior to the effective model year of the new HDE NO<sub>x</sub> or particulate emission standard. Credits may not be banked from engine families made during any other model years.

(ii) Manufacturers may bank credits only after the end of the model year and after EPA has reviewed their end-of-year report. 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 redesignated for trading or averaging.

(2) *Credit withdrawals.* (i) After being generated, banked/reserved credits shall be available for use three model years prior to, through three model years immediately after the effective date of the new HDE NO<sub>x</sub> or particulate emission standard, as applicable. However, credits not used within the period specified above shall be forfeited.

(ii) Manufacturers withdrawing banked emission credits shall indicate so during certification and in their credit reports, as described in § 86.091-23.

(3) *Use of banked emission credits.* The use of banked credits shall be within the averaging set and other restrictions described in paragraphs (d) and (e) of this section, and only for the following purposes:

(i) Banked credits may be used in averaging, trading, or in any combination thereof, during the certification period. Credits declared for banking

from the previous model year but unreviewed by EPA may also be used. However, they may be revoked at a later time following EPA review of the end-of-year report or any subsequent audit actions.

(ii) Banked credits may not be used for NO<sub>x</sub> or particulate averaging and trading to offset emissions that exceed an FEL. Banked credits may not be used to remedy an in-use nonconformity determined by a Selective Enforcement Audit or by recall testing. However, banked credits may be used for subsequent production of the engine family if the manufacturer elects to recertify to a higher FEL.

(g)(1) The following paragraphs assume NO<sub>x</sub> and particulate nonconformance penalties (NCPs) will be available for the 1991 and later model year HDEs.

(2) Engine families paying an NCP for noncompliance of any emission standard *may not*:

(i) Participate in the averaging program,

(ii) Generate emission credits for any pollutant under banking and trading, and

(iii) Use emission credits for any pollutant from banking and trading.

(3) If a manufacturer has any engine family to which application of NCPs and averaging, banking, and trading credits is desired, that family must be separated into two distinct families. One family, whose FEL equals the standard, must use NCPs only, while the other, whose FEL does not equal the standard, must use emission credits only.

(4) If a manufacturer has any engine family in a given averaging set which is using NO<sub>x</sub> and/or particulate NCPs, none of that manufacturer's engine families in that averaging set may generate credits for banking and trading.

(h) In the event of a negative credit balance in a trading situation, both the buyer and the seller would be liable.

(i) Certification fuel used for credit generation must be of a type that is both available in use and expected to be used by the engine purchaser. Therefore, upon request by the Administrator, the engine manufacturer must provide information acceptable to the Administrator that the designated fuel

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is readily available commercially and would be used in customer service.

[55 FR 30622, July 26, 1990, as amended at 55 FR 46628, Nov. 5, 1990]

### § 86.091-21 Application for certification.

(a) A separate application for a certificate of conformity shall be made for each set of standards (or family emission limits, as appropriate) and each class of new motor vehicles or new motor vehicle engines. Such application shall be made to the Administrator by the manufacturer and shall be updated and corrected by amendment.

(b) The application shall be in writing, signed by an authorized representative of the manufacturer, and shall include the following:

(1)(i) Identification and description of the vehicles (or engines) covered by the application and a description of their engine (vehicles only), emission control system and fuel system components. This shall include a detailed description of each auxiliary emission control device (AECD) to be installed in or on any certification test vehicle (or certification test engine).

(ii)(A) The manufacturer shall provide to the Administrator in the application for certification:

(1) A list of those parameters which are physically capable of being adjusted (including those adjustable parameters for which access is difficult) and that, if adjusted to settings other than the manufacturer's recommended setting, may affect emissions;

(2) A specification of the manufacturer's intended physically adjustable range of each such parameter, and the production tolerances of the limits or stops used to establish the physically adjustable range;

(3) A description of the limits or stops used to establish the manufacturer's intended physically adjustable range of each adjustable parameter, or any other means used to inhibit adjustment;

(4) The nominal or recommended setting, and the associated production tolerances, for each such parameter.

(B) The manufacturer may provide, in the application for certification, information relating to why certain pa-

rameters are not expected to be adjusted in actual use and to why the physical limits or stops used to establish the physically adjustable range of each parameter, or any other means used to inhibit adjustment, are effective in preventing adjustment of parameters on in-use vehicles to settings outside the manufacturer's intended physically adjustable ranges. This may include results of any tests to determine the difficulty of gaining access to an adjustment or exceeding a limit as intended or recommended by the manufacturer.

(C) The Administrator may require to be provided detailed drawings and descriptions of the various emission related components, and/or hardware samples of such components, for the purpose of making his determination of which vehicle or engine parameter will be subject to adjustment for new certification and Selective Enforcement Audit testing and of the physically adjustable range for each such vehicle or engine parameter.

(2) Projected U.S. sales data sufficient to enable the Administrator to select a test fleet representative of the vehicles (or engines) for which certification is requested. The sales data shall also include the altitude of intended sale for light-duty trucks.

(3) A description of the test equipment and fuel proposed to be used.

(4)(i) For light-duty vehicles and light-duty trucks, a description of the test procedures to be used to establish the evaporative emission deterioration factors required to be determined and supplied in § 86.091-23(b)(2).

(ii) For heavy-duty vehicles equipped with gasoline-fueled or methanol-fueled engines, the Administrator does not assume that each evaporative emission family-evaporative emission control system combination will deteriorate in a unique manner during the useful life of the vehicle. The manufacturer shall therefore identify those evaporative emission deterioration factors which shall be applied to the various evaporative emission family-evaporative emission control system combinations which are expected to exhibit similar deterioration characteristics during the useful life of the vehicle.