into two separate subfamilies in accordance with 40 CFR 1036.230. The manufacturer may assign the numbers and configurations of engines within the respective subfamilies at any time prior to the submission of the end-of-year report required by 40 CFR 1036.730 and §535.8. The manufacturer must track into which type of vehicle each engine is installed, although EPA may allow the manufacturer to use statistical methods to determine this for a fraction of its engines.

(ii) The following engines are excluded from the engine families used to determined FCL values and the benefit for these engines is determined as an advanced technology credits under the ABT provisions provided in §535.7(e):

(A) Engines certified as hybrid engines or power packs.

(B) Engines certified as hybrid engines designed with PTO capability and that are sold with the engine coupled to a transmission.

(C) Engines with Rankine cycle waste heat recovery.

(4) Calculate equivalent fuel consumption values for emissions FCLs and the CO_2 levels for certified engines, in gallons per 100 bhp-hr and round each fuel consumption value to the nearest 0.01 gallon per 100 bhp-hr.

(i) Calculate equivalent fuel consumption FCL values for compression-ignition engines and alternative fuel compression-ignition engines. CO_2 FCL value (grams per bhp-hr)/10,180 grams per gallon of diesel fuel) × (10^2) = Fuel consumption FCL value (gallons per 100 bhp-hr).

(ii) Calculate equivalent fuel consumption FCL values for spark-ignition engines and alternative fuel spark-ignition engines. CO_2 FCL value (grams per bhp-hr)/8,877 grams per gallon of gasoline fuel) × (10^2) = Fuel consumption FCL value (gallons per 100 bhp-hr).

(iii) Manufacturers may carryover fuel consumption data from a previous model year if allowed to carry over emissions data for EPA in accordance with 40 CFR 1036.235.

(iv) If a manufacturer uses an alternate test procedure under 40 CFR 1065.10 and subsequently the data is rejected by the EPA, NHTSA will also reject the data.

EFFECTIVE DATE NOTE: At 76 FR 59922, Sept. 28, 2011, §535.6 was amended by revising paragraphs (a)(4)(ii) and (c)(4)(ii), effective Nov. 14, 2011. For the convenience of the user, the revised text is set forth as follows:

§535.6 Measurement and calculation procedures.

* * * * *

(a) * * *

(4) * * *

(ii) Calculate the equivalent fuel consumption test group results as follows for spark-ignition vehicles and alternative fuel spark-ignition vehicles. CO_2 emissions test group result (grams per mile)/8,887 grams per gallon of gasoline fuel) × (10^2) = Fuel consumption test group result (gallons per 100 mile).

* * * * *

(c) * * *

(4) * * *

(ii) Calculate equivalent fuel consumption FCL values for spark-ignition engines and alternative fuel spark-ignition engines. CO_2 FCL value (grams per bhp-hr)/8,887 grams per gallon of gasoline fuel) × (10^2) = Fuel consumption FCL value (gallons per 100 bhp-hr).

* * * * *

§535.7 Averaging, banking, and trading (ABT) program.

(a) *Fuel consumption credits (FCC).* At the end of each model year, manufacturers may earn credits for heavy-duty vehicles and engines exceeding the fuel consumption standards in §535.5 or by using one or more of the flexibilities in this paragraph (a) to gain credits. Manufacturers may average, bank, and trade fuel consumption credits for purposes of complying with fuel consumption standards. The following criteria and restrictions apply to averaging, banking and trading FCC (hereafter reference as the NHTSA ABT program).

(1) *Averaging.* Averaging is the exchange of FCC among a manufacturer's engines or vehicle families or test groups within an averaging set. With the exception of FCC earned for advance technologies as further clarified below, a manufacturer may average FCC only within the same averaging set. The principle averaging sets are defined in §535.4.

(2) *Banking.* Banking is the retention of surplus FCC by the manufacturer generating the credits for use in future

model years for averaging or trading. Banked FCC retain the designation from the averaging set and model year in which they were generated and expire after five model years.

(3) *Trading*. Trading is a transaction that transfers FCC between manufacturers or other entities. A manufacturer may use traded FCC for averaging, banking, or further trading transactions. Traded FCC, other than advanced technology credits, may be used only within the averaging set in which they were generated.

(b) *ABT provisions for heavy-duty pickup trucks and vans*. (1) This regulatory category consists of one regulatory subcategory, heavy-duty pickup trucks and vans. This one regulatory subcategory makes up one averaging set.

(2) Manufacturers that manufacture vehicles within this regulatory subcategory shall calculate credits at the end of each model year based upon the final average fleet fuel consumption standard and final average fleet fuel consumption performance value within this one regulatory subcategory as identified in paragraph (b)(8) of this section. If the manufacturer's fleet includes conventional vehicles (gasoline, diesel and alternative fuel) and advanced technology vehicles (hybrids with regenerative braking, vehicles equipped with Rankine-cycle engines, electric and fuel cell vehicles) it should be divided into two separate fleets each with its own final average fleet fuel consumption standard and final average fleet fuel consumption performance value. Credits shall be calculated for each of the two fleets.

(3) Fuel consumption levels below the standard create a ''credit surplus,'' while fuel consumption levels above the standard create a ''credit shortfall.''

(4) Surplus credits, other than advanced technology credits, generated and calculated within this averaging set may only be used to offset a credit shortfall in this same averaging set.

(5) Advanced technology credits can be used to offset a credit shortfall in this same averaging set or other averaging sets. However, a manufacturer must first apply advanced technology credits to any deficits in the same averaging set before applying them to other averaging sets.

(6) Surplus credits, other than advanced technology credits, may be traded among credit holders but must stay within the same averaging set. Advanced technology credits can be traded across averaging sets.

(7) Surplus credits, if not used to offset a credit shortfall may be banked by the manufacturer for use in future model years, or traded, given the restriction that the credits have an expiration date of five model years after the year in which the credits are earned. For example, credits earned in model year 2014 may be utilized through model year 2019.

(8) Credit shortfalls must be offset by an available credit surplus within three model years after the shortfall was incurred. If the shortfall cannot be offset, the manufacturer is liable for civil penalties as discussed in § 535.9.

(9) Calculate the value of credits generated in a model year for this regulatory subcategory or averaging set using the following equation:

$$\text{Total MY Fleet FCC (gallons)} = (\text{Std} - \text{Act}) \times (\text{Volume}) \times (\text{UL}) \times (10^2)$$

Where:

Std = Fleet average fuel consumption standard (gal/100 mile).

Act = Fleet average actual fuel consumption value (gal/100 mile).

Volume = the total U.S.-directed production of vehicles in the regulatory subcategory.

UL = the useful life for the regulatory subcategory (120,000 miles).

(10) If a manufacturer generates credits from its fleet of advanced technology vehicles in accordance with 535.7(e)(1) a multiplier of 1.5 can be used. Advanced technology credits can be used in other averaging sets different from the one they are generated within with the following restrictions.

(i) The maximum amount of credits a manufacturer may bring into the service class group that contains the heavy-duty pickup and van averaging set is 5.89 Mgallons (for advanced technology credits based upon compression ignition engines) or 6.76 Mgallons (for advanced technology credits based upon spark-ignition engines) per model year as specified in 40 CFR 1037.104.

(ii) The limit specified in paragraph (b)(10)(i) of this section does not limit the amount of advanced technology credits that can be used across averaging sets within the same service class group.

(11) If a manufacturer chooses to generate CO_2 emission credits under EPA provisions of 40 CFR 1037.150(a), it may also voluntarily generate early credits under the NHTSA fuel consumption program. Fuel consumption credits may be generated for vehicles certified in model year 2013 to the model year 2014 standards in § 535.5(a). To do so a manufacturer must certify its entire U.S. directed production volume of vehicles in its fleet. The same production volume restrictions specified in 40 CFR 1037.150(a)(2) relating to when test groups are certified apply to the NHTSA early credit provisions. Credits are calculated as specified in paragraph (b)(9) of this section relative to the fleet standard that would apply for model year 2014 using the model year 2013 production volumes. Surplus credits generated under this paragraph are available credits for banking or trading. Credit deficits for an averaging set prior to model year 2014 do not carry over to model year 2014. These credits may be used to show compliance with the standards of this part for 2014 and later model years. Once a manufacturer opts into the NHTSA program they must stay in the program for all of the optional model years and remain standardized with the same implementation approach being followed to meet the EPA CO_2 emission program.

(c) *ABT provisions for vocational vehicles and tractors.* (1) The two regulatory categories for vocational vehicles and tractors consist of 12 regulatory subcategory as follows:

(i) Vocational vehicles with a GVWR up to and including 19,500 pounds (Light Heavy-Duty (LHD));

(ii) Vocational vehicles with a GVWR above 19,500 pounds and no greater than 33,000 pounds (Medium Heavy-Duty (MHD));

(iii) Vocational vehicles with a GVWR over 33,000 pounds (Heavy Heavy-Duty (HHD));

(iv) Low roof day cab tractors with a GVWR above 26,000 pounds and no greater than 33,000 pounds;

(v) Mid roof day cab tractors with a GVWR above 26,000 pounds and no greater than 33,000 pounds;

(vi) High roof day cab tractors with a GVWR above 26,000 pounds and no greater than 33,000 pounds;

(vii) Low roof day cab tractors with a GVWR above 33,000 pounds;

(viii) Mid roof day cab tractors with a GVWR above 33,000 pounds;

(ix) High roof day cab tractors with a GVWR above 33,000 pounds;

(x) Low roof sleeper cab tractors with a GVWR above 33,000 pounds;

(xi) Mid roof sleeper cab tractors with a GVWR above 33,000 pounds; and

(xii) High roof sleeper cab tractors with a GVWR above 33,000 pounds.

(2) The 12 regulatory subcategories consist of three averaging sets as follows:

(i) Vocational light-heavy vehicles at or below 19,500 pounds GVWR.

(ii) Vocational and tractor medium-heavy vehicles above 19,500 pounds GVWR but at or below 33,000 pounds GVWR.

(iii) Vocational and tractor heavy-heavy vehicles above 33,000 pounds GVWR.

(3) Manufacturers that manufacture vehicles within either of these two vehicle categories, in one or more of the regulatory subcategories, shall calculate a total credit balance within each applicable averaging set at the end of each model year based upon final production volumes and the sum of the credit balances derived for each of the vehicle family groups within each averaging set.

(4) Each designated vehicle family group has a ''family emissions limit'' (FEL) which is compared to the associated regulatory subcategory standard. A FEL that falls below the regulatory subcategory standard creates ''positive credits,'' while fuel consumption level of a family group above the standard creates a ''credit shortfall.''

(5) Manufacturers shall sum all shortfalls and surplus credits for each vehicle family within each applicable averaging set to obtain the total credit balance for the model year before rounding. The sum of fuel consumptions credits must be rounded to the nearest gallon.

(6) Surplus credits, other than advanced technology credits, generated and calculated within this averaging set may only be used to offset a credit shortfall in this same averaging set.

(7) Advanced technology credits can be used to offset a credit shortfall in this same averaging set or other averaging sets. However, a manufacturer must first apply advanced technology credits to any deficits in the same averaging set before applying them to other averaging sets.

(8) Surplus credits, other than advanced technology credits, may be traded among credit holders but must stay within the same averaging set. Advanced technology credits can be traded across averaging sets.

(9) Surplus credits, if not used to offset a credit shortfall may be banked by the manufacturer for use in future model years, or traded, given the restriction that the credits have an expiration date of five model years after the year in which the credits are earned. For example, credits earned in model year 2014 may be utilized through model year 2019.

(10) Credit shortfalls must be offset by an available credit surplus within three model years after the shortfall was incurred. If the shortfall cannot be offset, the manufacturer is liable for civil penalties as discussed in § 535.9.

(11) The value of credits generated in a model year is calculated as follows:

(i) Calculate the value of credits generated in a model year for each vehicle family within an averaging set using the following equation:

$$\text{Vehicle Family FCC (gallons)} = (\text{Std} - \text{FEL}) \times (\text{Payload}) \times (\text{Volume}) \times (\text{UL}) \times (10^{3})$$

Where:

Std = the standard for the respective vehicle family regulatory subcategory (gal/1000 ton-mile).

FEL = family emissions limit for the vehicle family (gal/1000 ton-mile).

Payload = the prescribed payload in tons for each regulatory subcategory as shown in the following table:

Regulatory subcategory	Payload (Tons)
LHD Vocational Vehicles	2.85
MHD Vocational Vehicles	5.60
HHD Vocational Vehicles	7.5
Class 7 Tractor	12.50
Class 8 Tractor	19.00

Volume = the number of U.S.-directed production volume of vehicles in the corresponding vehicle family.

UL = the useful life for the regulatory subcategory (miles) as shown in the following table:

Regulatory subcategory	UL (miles)
LHD Vocational Vehicles	110,000
MHD Vocational Vehicles	185,000
HHD Vocational Vehicles	435,000
Class 7 Tractor	185,000
Class 8 Tractor	435,000

(ii) Calculate the value of credits generated in a model year for each vehicle family for advanced technology vehicles within an averaging set using the equation above, the guidelines provided in paragraph (e)(1)(i) of this section, and the 1.5 credit multiplier.

(iii) Calculate the total credits generated in a model year for each averaging set using the following equation:

$$\text{Total averaging set MY credits} = \Sigma \text{ Vehicle family credits within each average set}$$

(12) If a manufacturer chooses to generate CO_2 emission credits under EPA provisions of 40 CFR 1037.150(a), it may also voluntarily generate early credits under the NHTSA fuel consumption program as follows:

(i) Fuel consumption credits may be generated for vehicles certified in model year 2013 to the model year 2014 standards in § 535.5(b) and (c). To do so a manufacturer must certify its entire U.S. directed production volume of vehicles. The same production volume restrictions specified in 40 CFR 1037.150(a)(1) relating to when test groups are certified apply to the NHTSA early credit provisions. Credits are calculated as specified in paragraph (c)(11) of this section relative to the standards that would apply for model year 2014. Surplus credits generated under this paragraph (c)(12) may be increased by a factor of 1.5 for determining total available credits for banking or trading. For example, if you have 10 gallons of surplus credits for model year 2013, you may bank 15 gallons of credits. Credit deficits for an

averaging set prior to model year 2014 do not carry over to model year 2014. These credits may be used to show compliance with the standards of this part for 2014 and later model years. Once a manufacturer opts into the NHTSA program they must stay in the program for all of the optional model years and remain standardized with the same implementation approach being followed to meet the EPA CO_2 emission program.

(ii) A tractor manufacturer may generate fuel consumption credits for the number of additional SmartWay designated tractors (relative to its MY 2012 production), provided that credits are not generated for those vehicles under paragraph (c)(12)(i) of this section. Calculate credits for each regulatory sub-category relative to the standard that would apply in model year 2014 using the equations in paragraph (c)(11) of this section. Use a production volume equal to the number of verified model year 2013 SmartWay tractors minus the number of verified model year 2012 SmartWay tractors. A manufacturer may bank credits equal to the surplus credits generated under this paragraph multiplied by 1.50. A manufacturer's 2012 and 2013 model years must be equivalent in length. Once a manufacturer opts into the NHTSA program they must stay in the program for all of the optional model years and remain standardized with the same implementation approach being followed to meet the EPA CO_2 emission program.

(13) If a manufacturer generates credits from vehicles certified for advanced technology in accordance with § 535.7(e)(1), a multiplier of 1.5 can be used, but this multiplier cannot be used on the same credits for which the early credit multiplier is used. Advanced technology credits can be used in other averaging sets different from the one they are generated, but the maximum amount of credits a manufacturer may bring into a service class group that contains the vocational vehicle and tractor averaging sets is 5.89 Mgallons (for advanced technology credits based upon compression ignition engines) or 6.76 Mgallons (for advanced technology credits based upon spark-ignition engines) per model year as specified in 40 CFR 1037.740. However, this does not limit the amount of advanced technology credits that can be used across averaging sets within the same service class group.

(d) *ABT provisions for heavy-duty engines.* (1) Heavy-duty engines consist of six regulatory subcategories as follows:

(i) Spark-ignition engines.

(ii) Light heavy-duty compression-ignition engines.

(iii) Medium heavy-duty vocational compression-ignition engines.

(iv) Medium heavy-duty tractor compression-ignition engines.

(v) Heavy heavy-duty vocational compression-ignition engines.

(vi) Heavy heavy-duty tractor compression-ignition engines.

(2) The six regulatory subcategories consist of four averaging sets as follows:

(i) Compression-ignition light heavy-duty engines.

(ii) Compression-ignition medium heavy-duty engines.

(iii) Compression-ignition heavy heavy-duty engines.

(iv) Spark-ignition engines.

(3) Manufacturers that manufacture engines within one or more of the regulatory subcategories, shall calculate a total credit balance within each applicable averaging set at the end of each model year based upon final production volumes and the sum of the credit balances derived for each of the engine families within each averaging set.

(4) Each designated engine family has a ''family certification level'' (FCL) which is compared to the associated regulatory subcategory standard. A FCL that falls below the regulatory subcategory standard creates ''positive credits,'' while fuel consumption level of a family group above the standard creates a ''credit shortfall.''

(5) Manufacturers shall sum all surplus and shortfall credits for each engine family within the applicable averaging set to obtain the total credit balance for the model year before rounding. Round the sum of fuel consumptions credits to the nearest gallon.

(6) Surplus credits, other than advanced technology credits, generated and calculated within this averaging set may only be used to offset a credit shortfall in this same averaging set.

(7) Advanced technology credits can be used to offset a credit shortfall in this same averaging set or other averaging sets. However, a manufacturer must first apply advanced technology credits to any deficits in the same averaging set before applying them to other averaging sets.

(8) Surplus credits, other than advanced technology credits, may be traded among credit holders but must stay within the same averaging set. Advanced technology credits can be traded across averaging sets.

(9) Surplus credits, if not used to offset a credit shortfall may be banked by the manufacturer for use in future model years, or traded, given the restriction that the credits have an expiration date of five model years after the year in which the credits are earned. For example, credits earned in model year 2014 may be utilized through model year 2019.

(10) Credit shortfalls must be offset by available surplus credits within three model years after shortfall was incurred. If the shortfall cannot be offset, the manufacturer is liable for civil penalties as discussed in § 535.9.

(11) The value of credits generated in a model year is calculated as follows:

(i) The value of credits generated in a model year for each engine family within a regulatory subcategory equals

Engine Family FCC (gallons) = (Std − FCL) × (CF) × (Volume) × (UL) × (10^2)

Where:

Std = the standard for the respective engine regulatory subcategory (gal/100 bhp-hr).

FCL = family certification level for the engine family (gal/100 bhp-hr).

CF = a transient cycle conversion factor in bhp-hr/mile which is the integrated total cycle brake horsepower-hour divided by the equivalent mileage of the applicable test cycle. For spark-ignition heavy-duty engines, the equivalent mileage is 6.3 miles. For compression-ignition heavy-duty engines, the equivalent mileage is 6.5 miles.

Volume = the number of engines in the corresponding engine family.

UL = the useful life of the given engine family (miles) as shown in the following table:

Regulatory subcategory	UL (miles)
Class 2b–5 Vocational Vehicles, Spark Ignited (SI), and Light Heavy-Duty Diesel Engines	110,000
Class 6–7 Vocational Vehicles and Medium Heavy-Duty Diesel Engines	185,000
Class 8 Vocational Vehicles and Heavy Heavy-Duty Diesel Engines	435,000
Class 7 Tractors and Medium Heavy-Duty Diesel Engines	185,000
Class 8 Tractors and Heavy Heavy-Duty Diesel Engines	435,000

(ii) Calculate the total credits generated in a model year for each averaging set using the following equation:

Total averaging set MY credits = Σ Engine family credits within each averaging set

(12) The provisions of this section apply to manufacturers utilizing the compression-ignition engine voluntary alternate standard provisions specified in § 535.5(d)(4) as follows.

(i) Manufacturers may not certify engines to the alternate standards if they are part of an averaging set in which they carry a balance of banked credits. For purposes of this section, manufacturers are deemed to carry credits in an averaging set if they carry credits from advance technology that are allowed to be used in that averaging set.

(ii) Manufacturers may not bank fuel consumption credits for any engine family in the same averaging set and model year in which it certifies engines to the alternate standards. This means a manufacturer may not bank advanced technology credits in a model year it certifies any engines to the alternate standards.

(iii) Note that the provisions of paragraph (d)(10) of this section apply with respect to credit deficits generated while utilizing alternate standards.

(13) Where a manufacturer has chosen to comply with the EPA alternative compression ignition engine phase-in standard provisions in 40 CFR 1036.150(e), and has optionally decided to follow the same path under the NHTSA fuel consumption program, it must certify all of its model year 2013 compression-ignition engines within a given averaging set to the applicable alternative standards in § 535.5(d)(5). Engines certified to these standards are not eligible for early credits under

paragraph (d)(14) of this section. Credits are calculated using the same equation provided in paragraph (d)(11) of this section.

(14) If a manufacturer chooses to generate early CO_2 emission credits under EPA provisions of 40 CFR 1036.150, it may also voluntarily generate early credits under the NHTSA fuel consumption program. Fuel consumption credits may be generated for engines certified in model year 2013 (2015 for spark-ignition engines) to the standards in § 535.5(d). To do so a manufacturer must certify its entire U. S.-directed production volume of engines except as specified in 40 CFR 1036.150(a)(2). Credits are calculated as specified in paragraph (d)(11) of this section relative to the standards that would apply for model year 2014 (2016 for spark-ignition engines). Surplus credits generated under this paragraph may be increased by a factor of 1.5 for determining total available credits for banking or trading. For example, if you have 10 gallons of surplus credits for model year 2013, you may bank 15 gallons of credits. Credit deficits for an averaging set prior to model year 2014 (2016 for spark-ignition engines) do not carry over to model year 2014 (2016 for spark-ignition engines). These credits may be used to show compliance with the standards of this part for 2014 and later model years. Once a manufacturer opts into the NHTSA program they must stay in the program for all of the optional model years and remain standardized with the same implementation approach being followed to meet the EPA CO_2 emission program.

(15) If a manufacturer generates credits from engines certified for advanced technology in accordance with § 535.7(e)(1), a multiplier of 1.5 can be used, but this multiplier cannot be used on the same credits for which the early credit multiplier is used. Advanced technology credits can be used in other averaging sets different from the one they are generated, but the maximum amount of credits a manufacturer may bring into a service class group that contains the heavy-duty engine averaging sets is 5.89 Mgallons (for advanced technology credits based upon compression ignition engines) or 6.76 Mgallons (for advanced technology credits based upon spark-ignition engines) per model year as specified in 40 CFR 1036.740. However, this does not limit the amount of advanced technology credits that can be used across averaging sets within the same service class group.

(e) *Additional credit provisions.* (1) *Advanced technology credits.* Manufacturers of heavy-duty pickup trucks and vans, vocational vehicles, tractors and associated engines showing improvements in CO_2 emissions and fuel consumption using hybrid vehicles with regenerative braking, vehicles equipped with Rankine-cycle engines, electric vehicles and fuel cell vehicles are eligible for advanced technology credits. Advanced technology credits may be increased by a 1.5 multiplier and applied to any heavy-duty vehicle or engine subcategory consistent with sound engineering judgment.

(i) *Heavy-duty vehicles.* (A) For advanced technology system (hybrid vehicles with regenerative braking, vehicles equipped with Rankine-cycle engines and fuel cell vehicles), calculate the advanced technology credits as follows:

(1) Measure the effectiveness of the advanced system by chassis testing a vehicle equipped with the advanced system and an equivalent conventional system in accordance with 40 CFR 1037.615.

(2) For purposes of this paragraph (e), a conventional vehicle is considered to be equivalent if it has the same footprint, intended vehicle service class, aerodynamic drag, and other relevant factors not directly related to the advanced system powertrain. If there is no equivalent vehicle, the manufacturer may create and test a prototype equivalent vehicle. The conventional vehicle is considered Vehicle A, and the advanced technology vehicle is considered Vehicle B.

(3) The benefit associated with the advanced system for fuel consumption is determined from the weighted fuel consumption results from the chassis tests of each vehicle using the following equation:

Benefit (gallon/1,000 ton mile) = Improvement Factor × GEM Fuel Consumption Result__B

Where:

Improvement Factor = (Fuel Consumption__A—Fuel Consumption__B)/(Fuel Consumption__A)

Fuel Consumption Rates A and B are the gallons per 1,000 ton-mile of the conventional and advanced vehicles, respectively, as measured under the test procedures specified by EPA.

GEM Fuel Consumption Result B is the estimated gallons per 1,000 ton-mile rate resulting from emission modeling of the advanced vehicle as specified in 40 CFR 1037.520 and § 535.6(b).

(4) Calculate the benefit in credits using the equation in paragraph (c)(11) of this section and replacing the term (Std-FEL) with the benefit.

(B) For electric vehicles calculate the fuel consumption credits using an FEL of 0 g/1000ton-mile.

(ii) *Heavy-duty engines.* (A) This section specifies how to generate advanced technology-specific fuel consumption credits for hybrid powertrains that include energy storage systems and regenerative braking (including regenerative engine braking) and for engines that include Rankine-cycle (or other bottoming cycle) exhaust energy recovery systems.

(*1*) Pre-transmission hybrid powertrains are those engine systems that include features that recover and store energy during engine motoring operation but not from the vehicle wheels. These powertrains are tested using the hybrid engine test procedures of 40 CFR part 1065 or using the post-transmission test procedures.

(*2*) Post-transmission hybrid powertrains are those powertrains that include features that recover and store energy from braking at the vehicle wheels. These powertrains are tested by simulating the chassis test procedure applicable for hybrid vehicles under 40 CFR 1037.550.

(*3*) Test engines that include Rankine-cycle exhaust energy recovery systems according to the test procedures specified in 40 CFR part 1036, subpart F, unless EPA approves the manufacturer's alternate procedures.

(B) Calculate credits as specified in paragraph (c) of this section. Credits generated from engines and powertrains certified under this section may be used in other averaging sets as described in 40 CFR 1036.740(d).

(2) *Innovative technology credits.* This provision allows engine and vehicle manufacturers to generate CO_2 emission credits consistent with the provisions of 40 CFR 1036.610 (for engines), 40 CFR 1037.104(d)(13) (for heavy-duty pickup trucks and vans) and 40 CFR 1037.610 (for vocational vehicles and tractors) for introducing innovative technology in heavy-duty engines and vehicles for reducing greenhouse gas emissions and fuel consumption. Upon identification and approval from EPA of a manufacturer seeking to obtain innovative technology credits in a given model year, NHTSA may adopt an equivalent amount of fuel consumption credits into its program. Such credits must remain within the same regulatory subcategory in which the credits were generated. NHTSA will adopt these fuel consumption credits depending upon whether:

(i) The technology has a direct impact upon reducing fuel consumption performance;

(ii) The manufacturer has provided sufficient information to make sound engineering judgments on the impact of the technology in reducing fuel consumption performance; and

(iii) Credits will be accepted on a one-for-one basis expressed in terms of gallons.

§ 535.8 Reporting requirements.

(a) *General requirements.* Manufacturers producing heavy-duty vehicles and engines applicable to fuel consumption standards in § 535.5, for each given model year, must submit the required information as specified in paragraphs (b) through (h) of this section.

(1) The information required by this part must be submitted by the deadlines specified in this section and must be based upon all the information and data available to the manufacturer 30 days before submitting information.

(2) Manufacturers must submit information electronically through the EPA database system as the single point of entry for all information required for this national program and both agencies will have access to the information. The format for the required information is specified by EPA.

(3) If by model year 2012 the agencies are not prepared to receive information